

Scientometric Studies in Marketing

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De doctoraatsverhandeling spitst zich toe op scientometrisch onderzoek binnen de marketing discipline. Scientometrie is de wetenschappelijke studie van de wetenschap op een kwantitatieve manier. De eerste studie binnen de verhandeling focust op citatie gedrag binnen de wetenschap, de tweede studie op review gedrag van reviewers bij wetenschappelijke tijdschriften en de derde studie op een welbepaalde onderzoeksdiscipline binnen marketing.

De eerste studie onderzoekt voor de eerste keer in welke mate challenging commonly held beliefs de citatie-impact van gepubliceerde studies bepaalt. De studie maakt duidelijk dat gepubliceerde studies met een hogere score op het challenging commonly held beliefs construct meer geciteerd worden. Echter, indien men een te hoge score heeft, wordt men minder geciteerd. Voor deze studie werden 664 artikels in vooraanstaande internationale marketing tijdschriften gecodeerd op hun challenging commonly held beliefs niveau. Er werd ook data verzameld voor een grote set van controlevariabelen. De eerste studie toont verder ook verschillen aan in de mate waarin de marketing discipline challenging onderzoek publiceert, over de tijd en over tijdschriften heen, en beschrijft meer in detail hoe deze challenging studies dan wel geciteerd worden.

De tweede studie bestudeert het review proces dat elke wetenschappelijke paper moet ondergaan om goedgekeurd te worden ter publicatie in een vooraanstaand internationaal marketing tijdschrift, the *International Journal of Research in Marketing*. Deze unieke dataset laat toe om na te gaan welke persoonlijke eigenschappen van reviewers hun beslissing bëinvloeden en te onderzoeken of favoritisme naar bepaalde papers toe bestaat. De studie toont aan dat persoonlijke eigenschappen, zoals geslacht van de reviewer, en favoritisme variabelen, zoals voorgaande samenwerking tussen reviewers en auteurs, wel degelijk het oordeel van reviewers over papers bëinvloeden. De derde studie tenslotte, focust op gepubliceerde studies rond innovatie binnen de marketing discipline. Een nieuwe, meer objectieve methode om bestaande wetenschappelijke literatuur te onderzoeken werd ontwikkeld in deze studie. Aan de hand van deze methode wordt er vervolgens nagegaan welke thema's reeds uitvoerig zijn bestudeerd in innovatie-onderzoek en hoe de innovatie discipline zich over de tijd ontwikkeld heeft binnen de marketing discipline. Ook worden de auteurs, instituties en tijdschriften die een belangrijke bijdrage hebben geleverd aan de innovatie onderzoeksdiscipline uitvoerig besproken.

Chapter 1: Introduction

This dissertation contains three scientometric studies in marketing. In the following section, we define S*cientometrics* and subsequently review relevant studies in the marketing literature. In the third section, we sketch the importance of scientometric research for academia. Next, we discuss the dissertation outline and discuss the data and methods used to investigate the research questions I will focus on.

1. Scientometrics

Scientometrics is the quantitative study of science as such (Hood and Wilson 2001). It "involves quantitative studies of scientific activities and also includes, among others, publication, and thus overlaps *bibliometrics* to some extent" (Tague-Sutcliffe 1992, p.1). There has been a considerable amount of confusion in the literature about the distinction between scientometrics and bibliometrics. Tague-Sutcliffe (1992) argues that the two disciplines have overlapping, but not equal meanings. Bibliometrics uses document counts to gain insights in the evolution of science (Hood and Wilson 2001). In a similar vein, White and McCain (1989) define bibliometrics as the quantitative study of science through bibliographies. Thus, we can conclude that scientometrics is a broader research domain than bibliometrics as it makes use of a larger set of data sources to map science.

Eugene Garfield, who was involved in research on citation indexes in the 1950's and founded the Institute for Scientific Information (ISI) (now Thomson Reuters), played a very important role in the development of the scientometric research discipline. Garfield (1955) realized the usefulness of citations in helping researchers to get an overview of what has been published yet in the literature. Now, citation indexes have proven their use in tracing the origins of literature streams and many current scholars cannot imagine how time consuming and difficult searching the literature was half a century ago. "The development, dissemination, and utilization of knowledge in any academic field of inquiry depends on the circulation of ideas through the publications that appear in scholarly books and journals" (Hoffman and Holbrook 1993, p. 505). Through citations and references one can easily trace the evolution of a research field (Garfield 1955).

The development of citation indexes provided a stimulus for performing scientometric studies in various disciplines. For example, scholars became interested in gaining insights in to what extent their own research is cited, how it is cited over time and by whom. Cote, Leong and Cote (1991, p. 402) note that "citation analysis is now a widely used procedure for examining knowledge exchange".

2. Scientometrics and marketing

Also in marketing, authors have already studied diverse scientometric topics. The research methods in these studies are not limited to the use of citation analysis only. Although still a majority of these studies use citation data, many authors realize that many other sources of scientometric information may provide valuable and interesting insights.

A first group of scientometric articles in marketing focuses on the influence of marketing journals on other disciplines or on the relations between journals in terms of mutual citations. Cote, Leong and Cote (1991) find that articles published in JCR are influential in various disciplines, such as consumer research, marketing and psychology. Zinkhan, Roth and Saxton (1992) performed a citation analysis of social science journals and concluded, in a similar vein as Cote, Leong and Cote (1991), that JCR bridged the marketing and psychology literature. Hoffman and Holbrook (1993) also focus on JCR and investigate the underlying structure of author cocitations in this journal. Pieters et al. (1999) use IJRM data and examine the evolving citation network of this journal. Pieters and Baumgartner (2002) examine intra- and interdisciplinary communication of economics journals through citation analysis. The same authors also investigated citation exchanges among marketing journals (Baumgartners and Pieters 2003). They find that a few journals have a large influence on other marketing journals and that these influential journals derive their influence from multiple other journals.

Secondly, previous scientometric studies in marketing already examined which factors influence citation counts of articles. Stremersch, Verniers and Verhoef (2007) examine the influence

of universalist, social constructivist and presentation variables on the number of citations articles receive. The authors find that the number of citations an article receives depends particularly on universalist and social constructivist variables. Bauerly, Johnson and Singh (2005) examine the readability of JM articles over time and discussed the role of readability to create impact.

Thirdly, previous studies have also examined the reference diversity in marketing journals. Leong (1989) studies references used by authors in JCR over a five-year time period. The author finds that consumer research is linked most closely with psychology and marketing. Bettencourt and Houston (2001a) investigate the effect of article method type and subject area on article citations and reference diversity. Tellis, Chandy and Ackerman (1999) examine how diverse journal's publications are through their references. The authors examine if this level of diversity is consistent with the mission of the journals and if there are any trends over time. Remarkably, they find that JCR is not as diverse as it claims to be and that JCR is less diverse than JM and JMR. However, Bettencourt and Houston (2001b) refute the findings of Tellis, Chandy and Ackermann (1999). They reanalyzed the data and argue that JCR is more diverse than JMR.

Fourth, previous studies have also used author data to examine co-authorship patterns or exceptional publication productivity. Stremersch and Verhoef (2005) examine the globalization of authorship in the marketing discipline and find that marketing scholars are globalizing in authorship. Seggie and Griffith (2009) examine how publication productivity impacts a scholar's career and what exceptional publication productivity is in the major marketing journals. Goldenberg et al. (2010) discuss the value of social network analysis on collaboration data among scholars for gaining insights in the evolution of such networks over time, as well as on the impact thereof on the marketing discipline.

Finally, some papers focus on more broad topics such as the readability of articles in marketing (Sawyer, Laran and Xu, 2008), the financial impact of publishing (Mittal, Feick, Murshed 2008), name ordering conventions (Maciejovsky, Budesco and Ariely 2009), the publication of conceptual articles in marketing (Yadav 2010) and the development of specific research areas over time (such as market orientation, see Goldman and Grinstein 2010).

3. Importance of scientometric research for academia

As a result of this increased attention to scientometrics, scholars now grasp the importance of publishing and being cited for their further academic career. Publishing is the currency of academia. The saying "Publish or Perish" is very well known among academics as nowadays there is a lot of pressure on academics (Stremersch, Verniers and Verhoef 2007). The number of publications and citations is an important criterion for tenure, salary increases, author reputation and funding (e.g. Baumgartner and Pieters 2003, McAlister 2005, Mittal, Feick and Murshed 2008, Stremersch, Verniers and Verhoef, 2007). Already early in their career, academics are expected to publish their work in scientific peer reviewed journals, preferably in journals with a high impact factor. Publications in these journals are generally regarded to be of excellent quality and hence will be cited to a larger extent than articles published in lower tier journals. Only if academics have an extensive publication record and receive a significant amount of citations, they will enjoy a good reputation among their peers in the discipline. In sum, academics are only viewed as successful when their research has impact on the discipline at large.

Thus, scientometric insights on your research are of managerial use. They are relevant for evaluating researchers or groups of researchers, for evaluating research productivity of departments, countries, etc. For example, governments are more inclined to fund researchers with high scores on these scientometric measures (i.e. publication record in top journals, affiliation with a highly ranked business school ...) as they want to get high quality for their money.

This dissertation responds to the growing interest of marketing scholars in scientometrics and provides new insights on scientometrics and marketing, which will be outlined in the next section.

4. Dissertation outline

This dissertation contains three scientometric studies in marketing. It unravels reviewing and citation behavior and provides an overview of innovation research within the marketing discipline. More specifically, this dissertation contributes to answering the following research questions:

Chapter 2: Previous research has already extensively examined which factors influence the number of citations articles receive once published. In Chapter 2, we examine the explanatory power of a new variable, namely the extent to which an article challenges commonly held beliefs. Though several journals and authors believe in the existence of citation benefits from challenging commonly held beliefs, we believe that both reasons pro and against the existence of citation rewards can be raised. Chapter 2's focal research question therefore is: Does challenging commonly held beliefs has a positive impact on citations?

For chapter 2, we have a random sample of articles published between 1990 and 2007 in five major marketing journals, namely: *International Journal of Research in Marketing, Journal of Consumer Research, Journal of Marketing, Journal of Marketing Research* and *Marketing Science*. For IJRM, we studied a random sample from 1997 to 2007 as IJRM only entered the ISI-SSCI in 1997. These five journals are generally regarded as good representatives of the marketing discipline (Stremersch, Verniers and Verhoef 2007). 8 articles were randomly sampled per year and per journal, resulting in a total study sample of 664 articles. We have data on previously identified explanatory variables for the number of citations an article receives (see Stremersch, Verniers and Verhoef 2007). One of the contributions of this study to the discipline is the development of a new scale which measures the extent to which an article challenges commonly held beliefs. We subsequently examine the impact of challenging commonly held beliefs on citations through a negative binomial count model. We also examine the consequences of challenging commonly held beliefs more into detail beyond the mere count of citations one receives (e.g. the nature of received citations, whether such articles receive more easily the first position in the journal size, etc).

Chapter 3: Whereas Chapter 2 focuses amongst others on the effect of challenging commonly held beliefs on the number of citations articles receive once published, Chapter 3 examines how papers fare through the review process in a top marketing journal. Previous scientometric research in marketing has mainly focused on outcomes that occur after publication, namely drivers of citations and impact (see e.g. Stremersch, Verniers and Verhoef 2007). This means that some of the results are conditional upon acceptance. Chapter 3 provides insights in the review process of a top marketing journal, *International Journal of Research in Marketing*. We focus on the role expert opinions play in editorial review processes and examine which factors influence reviewer recommendations. The focal questions of Chapter 3 in this dissertation therefore are: do reviewer characteristics determine reviewer recommendations and does favoritism towards certain manuscripts exists in the marketing discipline?

We obtained all manuscripts - and the review correspondence they generated - submitted to the *International Journal of Research in Marketing* (IJRM) between the last quarter of 2006 and the second quarter of 2009. After deleting desk rejections our sample contains 467 manuscripts. In total, we have data on 970 reviewer recommendations. We used an ordered probit model to examine whether past co-authorship between the authors and reviewer, geodesic distance between the authors and reviewer, and number of times a reviewer is cited influences reviewer recommendation. We also estimate which reviewer and review characteristics affect reviewer recommendations.

Chapter 4: The purpose of the third study in this dissertation is to examine what has been published yet in the marketing literature on innovation and to determine how this subject area has evolved over time. The paper aims to identify important trends in the innovation research in terms of quantity of publications and also reveals from which journals, authors and institutions they originate. Thus far, studies that provide reviews of existing literature are predominantly based on a subjective selection of relevant research topics within the discipline. In this study, we aim to quantify and map the innovation literature in a more objective manner, i.e. through a content analysis.

For Chapter 4, all articles published in IJRM, JCR, JM, JMR and MKS between 1981 and 2010 were content analyzed. We retained articles on innovation only and examined the use of specific abstract words across time and across journals. We also tracked the evolution of research on

innovation over time. We developed a quantitative procedure to review the literature and apply the method on the innovation research discipline. To examine differences in the use of abstract words and research themes within the innovation field across time and journals, we use analysis of variance (ANOVA) and ordinary least square regressions. We use a hierarchical cluster analysis to map co-occurrence patterns of abstract words in the innovation field.

To summarize, Figure 1 displays the outline of this dissertation. Various steps need to be followed if scholars want to become successful in science. Whereas Chapter 4 deals with the importance of reviewing the literature thoroughly when writing a new paper, Chapter 3 focuses on factors that influence the review process each paper should undergo before it gets published. More specifically, we study individual reviewer recommendation behavior. Chapter 2 focuses on outcomes after publication, i.e. citation behavior of scholars. All three studies fall within the scientometric literature in marketing.



Figure 1: Dissertation Outline

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Zinkhan, G.M., Roth, M.S. & Saxton, M.J. (1992). Knowledge Development and Scientific Status in Consumer Behavior Research. A Social Exchange Perspective. *Journal of Consumer Research*, 19 (2), 282-291. Chapter 2: The Citation Rewards from Challenging Commonly Held Beliefs: A Study of Publishing Counterintuitive Research in Marketing

1. Abstract

Publishing papers that have an impact on other scholars is an ultimate goal of authors and journal editors. In this study the authors examine if one can have more impact by challenging commonly held beliefs. Research challenging commonly held beliefs stimulates memory, generates new research streams and excites other scholars to engage in research in the same area and may therefore be rewarded with higher citation counts. On the other hand, there is a possibility that these types of articles may receive fewer citations than other articles because other scholars in the field are reluctant to support new theories which attack their prior beliefs and prior research. We studied a random sample of articles published in five major marketing journals from 1990 to 2007. We developed a new measurement scale to content-code these articles on the extent to which they challenge commonly held beliefs. We find a curvilinear effect indicating that citation rewards from challenging commonly held beliefs exist, but that theories which are too counterintuitive are cited to a lesser extent by its readers' audience. Secondly, we find differences in how challenging versus less challenging articles are cited. Articles which challenge commonly held beliefs to a larger extent may be cited more compared to less challenging articles, but they do not necessarily add to the literature to a larger extent as these articles are cited more through review citations than use/application citations. Thirdly, we find that challenging articles are not rewarded with a lead position in journals although journal editors state that they welcome such articles. Fourth, we also find marked differences in the extent to which articles in the marketing discipline challenge commonly held beliefs, over time and journals. The extent to which articles in marketing are challenging is stabilizing, with the exception of articles that appeared in International Journal of Research in Marketing and Journal of Marketing, which show an increasing trend.

2. Introduction

Counterintuitive theories in science attract the attention of the audience because they challenge commonly held beliefs among their audience and stir up controversy. Other theories often solicit a so-what reaction as they merely reconfirm or refine existing beliefs. Publishing papers that deliver unexpected insights, which challenge the worldview of the reader, is an ultimate goal for journals and authors (e.g. Bartunek, Rynes and Ireland 2006; Dekimpe 2009; Huber 2008; Shugan 2003; Smith 2003; Stremersch and Lehmann 2009).

This paper examines the extent to which challenging papers are cited. Authors who dare to challenge commonly held beliefs in their paper pursue a very risky strategy, but potentially also a very rewarding one. Though several journals and authors believe in citation rewards from challenging commonly held beliefs, we believe that both reasons for and against the existence of citation rewards from challenging commonly held beliefs can be raised. On the one hand, a paper that challenges commonly held beliefs may be cited more through increased memory, development of new research streams or excitement to engage in research in the same area. On the other hand, it is also plausible that just these types of articles may be cited to a lesser extent since journal readers are typically experts and it is their research that is attacked. Anyone who tries to dispute what is taken for granted can be easily regarded with suspicion (Walton 1997). In his seminal work, Kuhn (1996) already indicated that paradigm changes are often accompanied by resistance of the specialists on whose area of expertise they impinge. As other scientists are very reluctant to embrace such a challenging theory, these types of theories may experience a lot of difficulties to integrate in the normal science tradition and hence may be cited to a lesser extent. This paper also examines into detail the nature of the citations challenging versus less challenging articles receive. Authors may have different underlying reasons to cite a paper (such as using it to support their own research findings or citing an article only perfunctory). Therefore we also map the differences in how challenging versus less challenging articles are cited.

Thus, it is clear that the nature of citation outcomes from challenging commonly held beliefs needs to be examined more into detail. There has been a spur of interest in citation outcomes of scholarship, at the journal level (Stremersch and Verhoef 2005), article level (Berger 2009; Sawyer, Laran and Xu 2008; Stremersch, Verniers and Verhoef 2007; Yadav, 2010) and author level (Lynch 2008; Seggie and Griffith 2009). The reason for such research on citation outcome is that it is treated as a metric for journal stature (journals are often ranked on the basis of their impact factor) or a scholar's greatness (citations are an often-used criterion for promotion to more senior positions, such as chaired professor, and drive a scholar's fame).

Prior research on citations does not characterize the articles they study on the degree to which they challenge commonly held beliefs, and thus cannot infer its outcome in citations. The content coding undertaken in prior research is constrained to subject area (e.g. customer relationship management), method type (e.g. conceptual versus analytical papers), and orientation (e.g. behavioral, managerial and quantitative papers).

This paper empirically examines the extent to which challenging papers are cited. Are they cited to a lower extent, as suggested by Kuhn (1996)? Or, are they cited to a higher extent, as suggested by other authors and scientific managers (such as journal editors)? Second, we also examine which types of citations these articles receive and how they are cited over time. Next, we examine whether challenging articles are rewarded by journal editors with the first position in the journal issue. Fourth, this paper also describes the marketing discipline along the extent to which it challenges commonly held beliefs. We develop a new measurement instrument to content-code and capture the extent to which articles challenge the worldview of the reader. It fits with the prevailing anecdotal views on what makes a paper challenging as detailed by scholars and editors both inside and outside marketing (Abelson 1995; Davis 1971; Huber 2008; Shugan 2003).

The empirical base for our study consists of a random sample of articles published in five major marketing journals, *International Journal of Research in Marketing* (IJRM), *Journal of Consumer Research* (JCR), *Journal of Marketing* (JM), *Journal of Marketing Research* (JMR), and *Marketing Science* (MKS). These journals are generally regarded as a good representation of the marketing discipline (Stremersch, Verniers and Verhoef 2007). We randomly sample 8 articles per journal per year, over the time period 1990-2007 for a total of 664 articles. For IJRM, we randomly sampled articles over the time period 1997-2007 because IJRM entered the Institute for Scientific Information's

Social Sciences Citation Index (ISI-SSCI) only in 1997. We content-code all these articles on the extent to which they challenge commonly held beliefs and include variables identified by earlier literature as control variables in our empirical tests.

Next, we present the theory underlying our study. The third section describes the data. The fourth section describes the impact of challenging commonly held beliefs on citations, maps the consequences of being challenging (such as which types of citations these articles receive and whether they get rewarded with the lead position in the journal) and subsequently describes the extent to which articles in marketing challenge commonly held beliefs. We end with a discussion of our findings and develop implications for scholars, journal editors, and schools, and state the limitations of our study.

3. Theory

3.1. Citations

Citations are references to sources, included in abbreviated form in the body of a manuscript, and in full, in the list of references, typically at the end of a manuscript. The number of times the source is cited over a population of other publications is commonly referred to as the number of citations, in short, the citations of a source. There are two popular populations across which to count the number of times a source is cited. The first population is all ISI journals, in short ISI cites. The second population is all on-line resources, across which one can archive through Google Scholar, in short Google cites. While the population captured by Google is larger, which always leads to higher citation counts as compared to ISI cites, Google citation counts can be more easily manipulated by scholars than ISI citation counts. The reason is that the majority of on-line resources do not have a review process that is customary for ISI-covered journals, which are all peer-reviewed (Garfield 1990).

In a comprehensive model, Stremersch, Verniers and Verhoef (2007) summarize article characteristics that may affect the citation count according to three perspectives, universalism, social constructivism and the presentation perspective. According to the universalist view, article quality predominantly drives citations (Cole and Cole 1973; Van Dalen and Henkens 2001). The domain of

the article (e.g. its subject area) may also affect its citation count beyond quality (Bettencourt and Houston 2001), for instance because larger domains contain a larger number of papers and thus a larger opportunity to get cited.

The social constructivist perspective suggests that citations are also based on the source of the article, more in particular a scientist's status and background. Merton popularized social constructivism as the Matthew effect in science. According to Merton (1968), the contributions to science by scholars of acknowledged standing are more visible, while the visibility of the contributions by authors who are less well known is smaller. Therefore, paraphrasing the Gospel of Matthew, scientists that have accrued more citations will get even more, while those that have accrued less will obtain even less. Judge et al. (2007) find that the author's publication history, prestige or author's affiliation and author's gender explain citation counts. Stremersch, Verniers and Verhoef (2007) find that two social constructivist dimensions – visibility and personal promotion – both affect citation counts.

The presentation perspective suggests that citations are driven by the manner in which science is presented. Presentation elements examined in prior literature are title length, the use of attention grabbers in the title and expositional clarity, such as readability, number of tables and figures, number of footnotes, number of keywords, number of appendices and number of equations (Stremersch, Verniers and Verhoef 2007).

There exist other articles that offer a comprehensive view on drivers of citations. Bergh, Perry and Hanke (2006) show that author characteristics, article characteristics and research methodology all predict the impact of an article. Research by Judge et al. (2007) and Van Dalen and Henkens (2001), also recognizes the impact of author characteristics, article characteristics and journal characteristics on article citations.

Beyond these perspectives, scholars have argued that the journal in which an article is published and the time of publication (age) affect citation counts. Scientists are more likely to cite papers published in the top tier journals (Judge et al. 2007; LaBand 1986; Van Dalen and Henkens 2001). Older articles have had more time to collect citations than younger articles, and, thus, are on average cited more (Bergh, Perry and Hanke 2006; Judge et al. 2007). In addition, in many young fields (e.g. Marketing), the population of articles may increase over time, e.g. because new journals appear or existing journals publish more articles. In consequence, the number of articles that cite prior work increases over time. In essence, the population from which citations may be garnered increases over time. Finally, scholars have also argued that citations may be driven by strategic considerations by the author(s) in the publication process, e.g. citing the editor or reviewers (Bauerly, Johnson and Singh 2005; Baumgartner and Pieters 2003; Tellis, Chandy and Ackerman 1999). Besides strategic considerations, other differences in citation functions may exist (see Baumgartner and Pieters 2003; Moravcsik and Murugesan 1975). Therefore we also examine into detail the manner to which challenging versus less challenging articles are cited in this study.

3.2. Challenging commonly held beliefs

None of the above studies capture the extent to which an article challenges commonly held beliefs. Counterintuitive papers deny an aspect of the assumption-ground of its audience (Davis 1971). They typically have a structure, such as: "What seems to be X is in reality non-X" or "What is accepted as X is actually non-X".

Counterintuitive research engages readers' attention by attacking what has been traditionally assumed in a particular area. Other theories often solicit a so-what or who-cares reaction as they merely reconfirm or refine existing beliefs (Davis 1971; Smith 2003).

Davis (1971) beliefs that the impact of a theory is not related to its truth, but rather to its capacity to stimulate interest. Scholars and editors in- and outside marketing have provided views on what makes a paper interesting (Abelson 1995; Bartunek, Rynes and Ireland 2006; Huber 2008; Shugan 2003; Smith 2003) and agree with Davis' view that a theory is interesting when this theory engages the attention by challenging some (but not all) of their taken-for-granted beliefs. Davis (1971) identifies twelve distinct propositional forms in the "Index of the Interesting". For example, to stand out, research can show that two phenomena believed to be unrelated are correlated phenomena, or that phenomena that are believed to be related are uncorrelated phenomena. It is important that only part of the assumption ground of the audience is denied. When a paper denies all the taken-for-granted beliefs of its audience, the reader will think the article is absurd.

The claim of Davis - i.e. that the impact of a theory is not related to its truth, but rather to its capacity to stimulate interest - is very contentious for scientists and has not been empirically scrutinized yet. In this paper we will quantify the citation impact from being challenging. Davis (1971) particularly pays attention to the upside of challenging commonly held beliefs, though we believe that several reasons can be raised for and against the existence of positive citation outcomes from challenging commonly held beliefs.

3.2.1. Upside of challenging commonly held beliefs

Once published, there are multiple reasons why counterintuitive papers may yield a higher citation count. First, counterintuitive papers disconfirm a widely held belief (Davis 1971). Thereby they attract a greater degree of attention from their audience. The audience remembers messages more easily if they show a high level of attention (Hidi 1990). If papers are more easily remembered by future authors, they are more likely to get cited than papers that are not remembered. Second, because counterintuitive papers disconfirm a widely held belief from the past, they may present a breakthrough in a new direction and stimulate research that fine-tunes and extends the original breakthrough along the new path it has unveiled (Abelson 1995). Such follow-on research will very likely cite the original breakthrough that generated the stream of research it belongs to. Scholars and editors, inside and outside marketing, have voiced similar expectations, without empirical testing (for example, Barley 2006; Bartunek, Rynes and Ireland 2006; Huber 2008; Smith 2003).

3.2.2. Downside of challenging commonly held beliefs

On the other hand, the presence of challenging propositions in an article may have a downside as well. A new theory draws the attention to the flaws of the previous paradigm and is perceived by other scholars as 'revolutionary', because these new theories disconfirm prior beliefs held by experts in the field and also discredit their prior work. Therefore, challenging theories may receive little support from the broader academic community and may be cited to a lesser extent by other scholars. According to Kuhn's (1996) theory on the structure of scientific revolutions, first published in 1962,

their first emergence typically is interpreted as an anomaly by vested scientists, i.e. a violation of accepted scientific principles, and therefore they may be discredited and ignored. It is only after anomalies – that often first need to appear multiple times in work by different scholars – are assimilated in a revision of the existing paradigm or incorporated in the organization of a new paradigm that scientists accept them and see them as the "expected". In Kuhn's own words (1996, p. 65): "In science … novelty emerges only with difficulty, manifested by resistance, against a background provided by expectation." Historically, great and original theories, which most scientists later accepted, challenged common beliefs and met with stiff resistance when they first appeared as "anomalies". Also, when scholars challenge previous findings obtained by fellow scholars they actually may hurt their feelings or even egos as their previous work is negated and challenged. Some scholars will take this criticism personally.

3.2.3. Summary

The preceding review discloses several theories for and against citation benefits from challenging commonly held beliefs. Most scholars believe in the advantages from being challenging. Editors often stimulate scholars to submit more papers that deliver unexpected insights to their journal (e.g. Bartunek, Rynes and Ireland 2006; Dekimpe 2009; Huber 2008; Shugan 2003; Smith 2003; Stremersch and Lehmann 2009). Journals anticipate citation rewards from papers which challenge commonly held beliefs. They expect to be more read by other researchers and cited to a larger extent.

We examine whether this is really true or whether being challenging can also backfire in terms of received citations. We hope to provide new insights as previous studies have never thoroughly examined this issue through a set of published articles in marketing. Neither has this research question ever been empirically scrutinized in other disciplines.

4. Data

4.1. Data collection procedures

We studied a random sample of articles published in five major marketing journals – IJRM, JCR, JM, JMR, and MKS – from 1990 to 2007. For IJRM, we studied a random sample from 1997 to 2007 because IJRM entered the ISI-SSCI only in 1997. These five journals are a good representation of the marketing field (Stremersch, Verniers and Verhoef 2007).

For each journal-year, we randomly sampled 8 articles, thus composing a sample of 664 articles. We excluded editorials, book reviews and articles that do not reflect in any way upon marketing theory, e.g. articles that introduce a new estimation technique (7% of the full sample).

For each article, we gathered cumulative ISI citation counts until end 2009 from the Web of Science, in Fall 2010. We content-coded all 664 articles on the extent to which it challenges commonly held beliefs. We are grateful to Isabel Verniers, from whom we obtained a large set of control variables, as used in Stremersch, Verniers and Verhoef (2007), which we subsequently updated.

4.2. Variable operationalization

4.2.1. Citations

As a measure for citations, we use the number of citations in academic journals registered in ISI's Web of Science, excluding self-citations, an article received until December 31, 2009, as inventoried in the fall of 2010. This provides the articles in our sample more than two years of citation opportunity.
4.2.2. Challenging commonly held beliefs

We content-coded all 664 articles on the extent to which they challenge commonly held beliefs. We developed a new measurement instrument containing 8 reflective items which all capture the extent to which an article disconfirms prior beliefs. The 8 items are generally formulated in order to capture the various ways through which an article can challenge commonly held beliefs. Davis (1971) already noted that an exhaustive list of ways through which an article can be challenging is impossible to construct. Hence, the authors opted to use reflective items capturing one underlying dimension, rather than formative items to capture various ways through which an article can be challenging. The items were defined in a brainstorm session among the authors and were subsequently compared with the literature (e.g. Abelson 1995; Davis 1971). We use seven-point Likert scales to indicate the level of agreement of the coder with the included statements (1= "completely disagree", and 7="completely agree"). In essence, underlying our coding is the recognition that articles challenge commonly held beliefs to a certain degree. Appendix B contains the eight scale items we identified to measure the extent to which an article challenges commonly held beliefs, along with the seven-point scale.

Each article was content-coded by multiple coders to assure an objective and reliable coding of the 664 articles. We carefully selected two graduate students with high grades and interest in academic research and two PhD students, and subsequently set up a training procedure similar to Yadav (2010). First, we described the measurement scale in detail and provided examples of articles that challenge commonly held beliefs to a large extent, and also to a lower extent. Second, the four selected coders and one of the authors separately and individually coded a set of nine articles that did not belong to our final sample of 664 articles. The mean ICC (Intra-Class Correlation), the measure of choice for inter-rater reliability when data are interval-scaled (Shrout and Fleiss 1979), over all the items was equal to .83, which crosses the commonly accepted threshold of .70. Finally, feedback was given to all coders on the inter-rater agreement for the training sample of nine articles and a discussion was set up so they could share their experiences with coding these articles. Figure 1 displays the training procedure (along with the coding procedure, detailed below).





Figure 1: Training and Coding Procedure

After completion of the training procedure, each article was coded by two selected coders and one of the authors. Thus, the four selected coders each coded half of our sample (i.e. 332 articles) and one of the authors content-coded the whole sample of articles (i.e. 664 articles). The four students were assigned only half of our total sample to keep their workload manageable. The articles were read and coded in a random order to decrease respondent's fatigue and avoid biases in coding over time and journals. We applied the Delphi method to a small subsample of articles to minimize the coding variance across the coders. In general, the Delphi method is applied to obtain a high degree of consensus among experts regarding a particular research issue and has been used in a wide set of applications (e.g. business and economics, health research and psychology) (Linstone and Turoff 2002). The Delphi technique now assists the coders in converging towards the 'correct' coding by reducing the variance in the coding across the coders. Following this procedure, the coders were first allowed to code the articles freely and separately. Next, their coding was analyzed for agreement and consensus. Overall, the mean ICC across all 664 articles over all 8 items was equal to .69 before the Delphi method was applied. Twenty percent of the most divergent coded articles¹ in the first round were subsequently picked out and the coders were informed of the other coders' responses for these selected articles through a summary of the answers from the previous round (i.e. the average responses across the three coders). In a second round, the coders were given the opportunity to revise their original coding in light of the average coding across all coders. The mean ICC across all 664 articles over all the 8 items equals .77, which crosses the commonly accepted threshold of .70. Figure 1 displays also the coding procedure.

We subsequently factor analyzed the measurement instrument to assess its validity and reliability. We identified that a one-factor structure represented the data structure the best. The total variance explained by the factor equals 95.17%. Our measures showed acceptable unidimensionality, reliability

¹In order to identify the articles with the highest variation between the answers of the three coders, we calculated the deviation per coder from the average response across all coders for each item. Next, we retained the highest deviation across the coders for each item, calculated the average across these 8 deviations and subsequently ranked all coded articles on this obtained deviation score.

and convergent validity. In terms of reliability², the Cronbach's alpha was .99, the composite reliability was .99 and the variance extracted was .94. We assess convergent validity from the factor loadings. All factor loadings are statistically significant (p < .01) and the lowest factor loading equals .96.

Given the good measurement properties our scale, we calculate the extent to which an article challenges commonly held beliefs as the average agreement across all statements (i.e. items). Thus the extent to which an article challenges commonly held beliefs is a variable with a range of 1 to 7.

4.2.3. Other variables

The other variables we control for in our statistical testing of the effect of challenging commonly held beliefs on citations, are exactly the same as in Stremersch, Verniers and Verhoef (2007, p. 175-176). They are:

- Article quality, as operationalized by article order (a variable that takes the value of 1 if the article is the lead article in the issue, 2 if the article appears second in the issue...), journal awards (a dummy variable that takes the value of 1 if the article has won a best paper award at one of the respective journals we study (e.g. the Maynard award), 0 if it has not), and article length in number of pages.
- Article domain, as operationalized by method type (non-exclusive dummies for conceptual, empirical, methodological or analytical method types), subject area (non-exclusive dummies for 19 different subject areas), and orientation (non-exclusive dummies for behavioral, managerial, and quantitative).
- Visibility, as operationalized by the authors' publication record (a sum of the total number of papers in IJRM, JCR, JM, JMR, and MKS published by all the authors on the article), editorial board membership (a dummy variable that takes the value of 1 if at least one of the authors was on the editorial board of IJRM, JCR, JM, JMR, and MKS), ranking of the business schools (the average business school ranking across all authors according to the Financial

 $^{^{2}}$ Given the extensive training of the coders, the reliability of our scale is very high. In the future we will examine how the reliability of the coding evolved over time to capture learning effects among the coders more into detail.

Times ranking end of 2009), centrality (the centrality score of the most central author, as downloaded from www.mconnectivity.com. We used the March 2009 update of the Web site), U.S. affiliation (the share of all authors with an affiliation to a U.S.-based university), and number of authors.

- Personal promotion, as operationalized by reference intensity (the number of references that the article contains) and self-citation intensity (the number of times the author has self-cited the article until end of 2009).
- Title length, operationalized as the number of significant words in the title.
- Attention grabbers, dummy variables equal to 1 if the title of the article contains words such as 'new', 'market' and 'marketing', 0 otherwise, and the number of keywords.
- Expositional clarity, as operationalized by the number of equations, number of figures, number of tables, number of footnotes, number of appendices and reading ease.

Table 1 describes our sample of articles along all examined drivers of article citations, as distinguished above, in this study. Appendix A contains a detailed overview of all the measures.

Variables	Value	Entire Sample
Quality: article order (R)	Average [range]	5.2 [1, 18]
Quality: awards	Average [range]	.03 [0, 1]
Quality: article length	Average [range]	14.7 [4, 35]
Orientation: behavioral	Count	416
Orientation: quantitative	Count	196
Method type: conceptual	Count	275
Method type: empirical	Count	538
Method type: methodological	Count	115
Method type: analytical	Count	116
Subject area: new products	Count	50
Subject area: business-to-business	Count	68
Subject area: relationship	Count	40
Subject area: brand and product management	Count	107
Subject area: adverting	Count	81
Subject area: pricing	Count	61
Subject area: promotions	Count	33
Subject area: retailing	Count	41
Subject area: strategy	Count	115
Subject area: sales	Count	41

Subject area: methodology	Count	76
Subject area: services	Count	30
Subject area: consumer knowledge	Count	80
Subject area: consumer emotions	Count	50
Subject area: other consumer behavior	Count	65
Subject area: consumption behavior	Count	41
Subject area: international marketing	Count	25
Subject area: other	Count	36
Subject area: e-commerce	Count	19
Visibility: Publication record	Average [range]	11.1 [0, 65]
Visibility: Editorial board membership	Average [range]	.6 [0, 1]
Visibility: Business school ranking (R)	Average [range]	60.6 [1, 101]
Visibility: Centrality (R)	Average [range]	6.0 [4.5, 10.9]
Visibility: U.S. affiliation	Average [range]	.8 [0, 1]
Visibility: number of authors	Average [range]	2.3 [1, 6]
Personal promotion: reference intensity	Average [range]	47 [0, 315]
Personal promotion: self-citation intensity	Average [range]	2.4 [0, 33]
Title length	Average [range]	7.4 [1,17]
Attention grabbers: "Marketing"	Count	60
Attention grabbers: "Market"	Count	61
Attention grabbers: "New"	Count	42
Expositional clarity: Number of keywords	Average [range]	6.6 [1, 11]
Expositional clarity: Number of equations	Average [range]	4.1 [0, 34]
Number of figures	Average [range]	1.9 [0, 16]
Number tables	Average [range]	3.5 [0, 29]
Number of footnotes	Average [range]	6 [0, 38]
Number of appendixes	Average [range]	.6 [0, 13]
Reading ease	Average [range]	35.2 [12.9, 65]

Number of observations

664

Table 1: Sample Characteristics for Independent Variables

5. Results

5.1. The effect of challenging commonly held beliefs on citations

Next, we estimate the effect of the extent to which an article challenges commonly held beliefs on the number of citations an article receives. We estimate a negative binomial model, estimated with a quasi-maximum likelihood procedure and the quadratic hill-climbing optimization algorithm, specified as follows:

$$CITE_{ij} = \alpha + \sum_{j=1}^{4} (\beta_j * D_j) + \chi_j Q_{ij} + \delta_j Q_{ij}^2 + \phi * z_{ij} + \varphi * z_{ij}^2 + \sum_{q=1}^{Q} \gamma_q * x_{qij}^Q + \sum_{r=1}^{R} \eta_r * x_{rij}^R + \sum_{s=1}^{S} \iota_s * x_{sij}^S + \varepsilon_{ij} + \varepsilon_$$

Where, $CITE_{ij}$ is the number of citations an article *i* in journal *j* receives. *Dj* represents journal dummies for *IJRM*, *JCR*, *JM* and *JMR* (*MKS* is the base category against which the other journals are compared). The variables Q_{ij} (number of quarters since the article appeared) and Q_{ij}^2 in the equation correct for the time the article has been out, which we estimate as journal-specific. z_{ij} and z_{ij}^2 represent the extent to which an article challenges commonly held beliefs. The x-vectors represent: the score of the article on its universalist characteristics (x^Q , Q = 28), the score of the article on its social constructivist characteristics (x^R , R = 8), and the score of the article on its presentation characteristics (x^S , S = 11).

We use the Likelihood Ratio index (LRI) to assess model fit³. Compared to a base model that only contains an intercept, journal dummies and the number of quarters the article has been out (including its squared value), our full model has an LRI of .37. This value represents a satisfactory fit, given that the LRI takes more conservative values than the R-squared fit measure, used in OLS regression. We use the AIC (Akaike Information Criterion) and SIC (Schwarz Information Criterion) to compare our full model with the nested model as specified by Stremersch, Verniers and Verhoef (2007), as these criteria account for the higher number of parameters in our full model. We find that our full model (AIC = 9.12; SIC = 9.56) – including the challenging commonly held beliefs construct – fits the data slightly better than the model by Stremersch, Verniers and Verhoef (2007) (AIC = 9.13; SIC = 9.55). Thus, the extent to which an article challenges commonly held beliefs can explain the citations that article receives, beyond a large set of control variables, identified by prior literature according to the AIC.

³ Articles for which the difference between the actual and predicted value for the dependent variable does not lie in a range of three standard deviations of the mean residual are excluded from the sample. Excluding these outliers reduces the final sample size from 664 to 652.

Variable	Coefficient		SE
Tudo mont	1.04	***	0.20
Challenging Commonly Hold Polisfe	1.04	**	0.39
Challenging Commonly Held Beliefs	0.20	*	0.10
Article order [D]	-0.02		0.01
Article Order [K]	0.00	***	0.01
Article lengin	0.03	***	0.01
Orientation: hohovieral	0.42		0.11
Orientation: benavioral	-0.01		0.05
Mathed type: concentual	-0.04	***	0.00
Method type: conceptual	0.17	**	0.04
Method type: empirical	0.13	***	0.00
Method type: methodological	-0.23	*	0.07
Subject area: new products	-0.14		0.00
Subject area: huginaga ta huginaga	0.02	*	0.09
Subject area, business-to-business	0.14	***	0.07
Subject area: relationship	0.75	***	0.08
Subject area, offand and product	0.22	**	0.00
Subject area: advertising	-0.14		0.00
Subject area: pricing	-0.07	***	0.08
Subject area: promotions	-0.25	***	0.10
Subject area: retaining	0.20	*	0.08
Subject area: strategy	0.10	*	0.06
Subject area: sales	-0.15	-1-	0.08
Subject area: methodology	0.10	***	0.08
Subject area: services	0.4/	***	0.09
Subject area: consumer knowledge	-0.14	ጥጥ	0.07
Subject area: consumer emotions	-0.01	**	0.08
Subject area: other consumer behavior	0.16	~~ **	0.07
Subject area: consumption benavior	0.10		0.08
Subject area: international marketing	0.10		0.11
Subject area: other	-0.10	***	0.09
Subject area. e-commerce	1.01	***	0.11
Fublication record	0.01	*	0.00
Eulional board membership	0.09	***	0.05
Controlity [D]	-0.00		0.00
US officiation	-0.01		0.02
U.S. allillation	-0.04		0.00
Pafarance intensity	-0.03	**	0.03
Solf oitotion intensity	0.00	***	0.00
Title length	0.08	***	0.01
"Marketing"	-0.02		0.01
"Market"	-0.04		0.07
Market	-0.08		0.07
New Number of konnerds	0.11		0.09
Number of equations	-0.01		0.01
Number of figures	0.00		0.00
Number of tables	-0.01		0.01
Number of factness	-0.01		0.01
Number of appendives	0.01	***	0.00
Deading assa	0.00	***	0.02
ICP	-0.02		0.00
IM	-0.20		0.32
J1VI TMD	0.10		0.30
JIVIIN	-0.02		0.32

IJRM	-0.59		0.46
Quarter*JCR	0.08	***	0.01
Quarter*JM	0.07	***	0.01
Quarter*JMR	0.06	***	0.01
Quarter*IJRM	0.08	***	0.03
Quarter*MKS	0.08	***	0.01
QuarterSQ*JCR	0.00	***	0.00
QuarterSQ*JM	0.00	***	0.00
QuarterSQ*JMR	0.00	***	0.00
QuarterSQ*IJRM	0.00	**	0.00
QuarterSQ*MKS	0.00	***	0.00
Akaike information criterion	9.12		
Schwarz information criterion	9.56		
Number of observations	652		

* p < .10 (two-sided tests).
** p < .05 (two-sided tests).
*** p < .01 (two-sided tests).
[R] = reverse-coded variable.

Table 2: Estimation Results

The effect of challenging commonly held beliefs on citations

We present our model estimates in Table 2. We find that the challenging commonly held beliefs construct has a curvilinear effect on the number of citations. Challenging commonly held beliefs has a significant positive effect on the citation count of an article (ϕ = .20, p <.05). However, the square of the challenging commonly held beliefs construct exerts a significant negative influence on citations (ϕ = -.02, p < .10). These model estimates indicate that articles that challenge commonly held beliefs are cited to a larger extent than other articles. Nevertheless, if they are too challenging, they are cited to a lesser extent by other scholars.

Counterintuitive articles are rewarded with a higher citation count because they attract the attention of fellow researchers as they stand out in some way compared to other articles in the marketing discipline. Unexpected results create a gap between observation and expectation and as a consequence fellow researchers re-examine the basis for their expectations resulting in much follow-on research that cites the original breakthrough paper (Abelson 1995). However, the curvilinear effect implies that not all counterintuitive research is cited to a larger extent. Articles which challenge commonly held beliefs to a very large extent are cited less. This finding accords with Davis (1971) who believes that only part of the assumptions of the audience can be denied because otherwise there

is a risk that the audience refutes the article. The supposition of Davis (1971) - i.e. that being too challenging can also be harmful - is now confirmed in this study.

Secondly, a mere memory-effect may also be responsible for our observation that more counterintuitive papers are cited to a larger extent, unless they are too challenging.

Other variables

We find that articles that are longer (γ_2 = .03, p < .01) or that received best paper awards (γ_3 = .42, p < .01) are cited more than articles that are shorter and that did not receive such awards. Article domain also affects citations. Articles that use conceptual (γ_6 = .17, p < .01) and empirical (γ_7 = .15, p < .05) method types are cited more than other articles. Articles that are methodological (γ_8 = -.25, p < .01) or analytical (γ_9 = -.14, p < .10) are cited less.

Articles on B-2-B marketing (γ_{11} = .14, p < .10), relationship marketing (γ_{12} = .75, p < .01), brand and product management (γ_{13} = .22, p < .01), retailing (γ_{17} = .20, p < .01), strategy (γ_{18} = .10, p < .10), services (γ_{21} = .47, p < .01), other consumer behavior (γ_{24} = .16, p < .05), consumption behavior (γ_{25} = .16, p < .05) and e-commerce (γ_{28} = 1.01, p < .01) tend to be cited more, whereas articles on advertising (γ_{14} = -.14, p < .05), promotions (γ_{16} = -.25, p < .01), sales (γ_{19} = -.15, p < .10) and consumer knowledge (γ_{22} = -.14, p < .05) are cited less than other articles.

We find that authors with an extensive publication record (η_1 = .01, p < .01), who are editorial board members (η_2 = .09, p < .10), or from highly ranked schools (η_3 = -.00, p < .01 [reverse-scored]) receive more citations to the articles they (co-) author, consistent with the Matthew effect (Merton 1968). Personal promotion, as operationalized by reference intensity (η_7 = .00, p < .05) and selfcitation intensity (η_8 = .08, p < .01) positively affects the number of citations an article receives.

Title length (ι_1 = -.02, p < .01) negatively affects the number of citations. The results for expositional clarity are mixed. We find that number of appendixes (ι_{10} = .06, p < .01) positively affects number of citations an article receives. Reading ease (ι_{11} = -.02, p < .01) negatively affects citations. The latter effect is consistent with Stremersch, Verniers and Verhoef (2007), who argued that more readable articles may be found to be less credible and, therefore, less cited.

These results largely confirm earlier findings by Stremersch, Verniers and Verhoef (2007), beyond shifts in significance levels.

Robustness

We checked the robustness of our findings in Table 2 in multiple ways. First, some journals have more pages per article on average and therefore we may also standardize the variable *article length*. Standardization leads to exactly the same findings.

Second, there are different ways to control for time an article has been published. In our model, we included $q + q^2$ to capture the time dependence in citations. When we estimated a model with q + lnq or $q + q^2 + lnq$ as a time trend, the results remain highly similar.

Third, to assess article quality we use the article order in which an article appeared in the journal issue. Quality distinctions may be more difficult to make between articles that appear later in the issue. When we use a dummy for being a lead article or not, results remain exactly the same.

Fourth, we ran all our analyses without including any *IJRM* articles as it may be argued that *IJRM* is a journal with a different nature than the other four. Articles published in *IJRM* have a different and more diverse geographical background and we have data on fewer articles in *IJRM* than the other journals in our sample. The results remain highly similar.

Fifth, we ran all our analyses by excluding the revised articles through the Delphi method. The challenging commonly held beliefs construct and the square of the construct become insignificant (p > .10). However, the signs of both variables retain the same sign. Due to the elimination of a large number of observations (i.e. twenty percent of the total sample) significance levels may shift.

Sixth, it takes about four years for articles to be well accepted and cited in the social science literature (Van Dalen and Henkens 2001, Glänzel and Schoepflin 1995). Because the articles in our sample that are published in 2006 and 2007 do not have a four-year period to gather these citations, we ran our analyses excluding those articles. Again, we found similar results.

5.2. *Citation functions*

In this section we want to examine more into detail the manner to which challenging versus less challenging articles are cited through a classification of the citations they receive. Baumgartner and Pieters (2003) identify five functions that citations may serve: (1) use/application, (2)

affirmation/support, (3) review, (4) perfunctory mention and (5) negation. Table 3 contains a detailed description of each citation function.

Citation Function	Description
Use/application	Authors may cite an article because they use the
	obtained findings of the cited study (e.g. new
	research methods, scale) in their own research.
	Narasimhan, Neslin and Sen (1996) provide an
	example of an use/application citation. They use
	the PromotionScan methodology developed by
	Abraham and Lodish (1993) in their study.
Affirmation/support	Authors may cite an article because their results
	confirm the previous findings of the cited study.
	Leonidou, Katsikeas and Samiee (2002) provide
	an example of an affirmative citation. Their
	results support the earlier findings of Samiee and
	Anckar (1998) that foreign currencies were used
	more often by active exporters when compared to
	reactive exporters.
Review	Authors may cite an article because they use it in
	their study to show what has been done yet in
	prior literature. Griffith and Lusch (2007) provide
	an example of a review citation. They use the
	study of Wotruba and Tyagi (1991) as a
	representative example of the literature on job
	outcome constructs.

Perfunctory mention Authors may cite an article only indirectly without really using it. Zhao, Zhao and Song (2009) provide an example of perfunctory mentioning. They mention that state space models have been used in various marketing modeling areas and list many examples, such as Van Heerde, Mela and Manchanda (2004), who used these models in market structure modeling. Negations Authors may cite an article because they critique or attack the findings of the cited study. Padmanabhan and Png (2004) provide an example of negative citing. They find that return policies do change manufacturer profitability in the presence of demand uncertainty. This finding is in contrast with Wang (2004) who showed that return policies do not change manufacturer profitability. Table 3: Citation Functions

All the citations articles in our study sample received till end 2009 were content-coded on their nature. As this content coding is again very time-consuming we received the help of three graduate students with high grades and interest in academic research. We set up a training procedure similar to the one used for the content coding of the extent to which articles challenge commonly held beliefs. First, we described the citation functions in detail and provided examples of each citation function. Second, the three selected coders and one of the authors separately and individually content-coded a set of 515 citations ten articles in our study sample received. The inter-rater reliability was examined to assure an objective and reliable coding of the citation functions. The mean ICC (Intra-Class Correlation), the measure of choice for inter-rater reliability when data are interval-scaled (Shrout and Fleiss 1979), over all the citation functions was equal to .78, which crosses the commonly accepted threshold of .70. Thus far the citations of 465 articles (out of our total sample of 664 articles) have been content-coded, which amounts to a total of 18,269 citations for now. We will continue to content-code the citations all articles in our study sample received, but as we have already content-coded a very large set of citations the obtained preliminary insights that follow now are already very reliable.

Figure 2 displays bar charts representing the extent to which the citation functions appear across the seven challenging commonly held beliefs categories. The Y-axis displays the average proportion of occurrence of each citation function compared to the total amount of citations a particular article receives. The X-axis displays the seven challenging commonly held beliefs categories. We categorized the challenging commonly held beliefs construct into 7 categories, from 0-1 to 6-7. Significant differences across the seven categories only exist for use/application, review and perfunctory citations. Less challenging articles (i.e. belonging to category 0-1) are cited to a greater extent through use/application compared to the all other categories (p < .01). Articles in category 1-2 are also cited more through use/application compared to category 2-3, 3-4 and 5-6 (p < .10). This means that less challenging papers are used more by other scholars to build their research upon, whereas challenging papers are used to a lesser extent. Significant differences also exist for review citation functions. Articles in category 5-6 are cited more in review of the literature than articles in category 1-2, 2-3, 3-4 and 4-5 (p < .10). Articles in category 6-7 are also cited more for review than articles in category 1-2 (p < .10). Thus, as articles challenge commonly held beliefs to a larger extent, they also get cited to a larger extent through review citations. Also, articles that belong to category 5-6 are cited less perfunctory than articles belonging to the categories 1-2, 2-3 and 3-4 (p < .05). To conclude, articles which challenge commonly held beliefs to a larger extent may be cited more compared to less challenging articles, but they do not necessarily add to the literature to a larger extent as these articles are cited more through review citations than use/application citations. Differences with category 6-7 are not always significant due to the small number of articles in that category, but Figure 2 clearly displays the underlying patterns in citation functions. Figure 3 displays the occurrence of each citation function per challenging commonly held belief category in one figure and provides an overview of the overall importance of each citation function per category.



Figure 2: Citation Functions



Figure 3: Citation Functions per Challenging Commonly Held Beliefs Category

5.3. Further insights

Impact of challenging commonly held beliefs on article order

As a consequence of challenging commonly held beliefs, articles could receive a better position in the journal more easily. In our sample, 65 articles were positioned first in the journal. We find that lead articles have a lower score on the challenging commonly held beliefs construct compared to other articles (p < .05). Whereas lead articles have an average score of 2.74, other articles have an average score of 3.01. Thus, challenging articles are not rewarded with the first position in the journal issue. A binary logit model with a dummy variable for being the lead article or not as dependent variable and challenging commonly held beliefs as explanatory variable confirms the existence of a significant negative relationship (p < .05). The results of the binary logit model are presented in table 4. Thus, articles that challenge commonly held beliefs to a greater extent are put forth less as a lead article within the journal issue. This finding remains robust when we also include other control variables (i.e. manuscript, author and presentation variables) in the binary logit model.

Variable	Coefficient		SE	Exp(coefficient)
Intercept	-1.42	***	0.41	0.24
Challenging Commonly Held Beliefs	-0.28	**	0.14	0.76

* p < .10 (two-sided tests).

** p < .05 (two-sided tests).

*** p < .01 (two-sided tests).

Table 4: Binary Logit Model Lead Article

Article order is believed to be an indicator of article quality as journal editors asses quality a priori and place better articles earlier (Stremersch, Verniers and Verhoef 2007; Van Dalen and Henkens 2001). However, Berger (2009) shows that article order not only reflects quality, but also helps to determine it through primacy effects which lead them to be cited more. In this study, article order neither reflects the extent to which articles present challenging findings (i.e. a new breakthrough) as more challenging articles appear later in the journal issue. Various editors make a plea for publishing papers that deliver unexpected insights, but our analyses indicate that these types

of papers are not rewarded with the first position in the journal. Thus, we can conclude that editors of journals do not act upon what they say.



Distribution citations across challenging commonly held beliefs categories

Figure 4: Average Impact and Number of Articles per Sub Class of Challenging Articles

Next, we examine more into detail the nature of the effect of challenging commonly held beliefs on citations. Figure 4 categorizes the challenging commonly held beliefs construct into 7 categories, from 0-1 to 6-7. Category 0-1 contains articles that challenge commonly held beliefs to the smallest extent and category 6-7 contains articles that challenge commonly held beliefs to the largest extent. The figure shows that the number of articles in each category is not equally distributed. The frequency distribution is skewed to the right. Only 33 articles are classified in the last two categories containing articles challenging commonly held beliefs to a very high extent. Figure 4 also includes the average impact for each category measured by the average number of citations of the articles in each category. We see that articles which challenge commonly held beliefs to a larger extent are not necessarily cited to a larger extent when compared with other categories of articles. Thus, more challenging articles are not always rewarded with a higher citation count. This figure shows that only few articles challenge commonly held beliefs to a very high extent as few are classified in the highest two categories. Secondly, for these two categories no citation benefits exist from challenging commonly held beliefs.

Citation patterns over time

We examined whether differences exist in how challenging articles are cited over time. We randomly sampled 25 articles per challenging commonly held beliefs category (with exception of the first and seventh category which contain only three and four articles respectively). Figure 5 displays the percentile cumulative number of citations obtained over a ten-year time period for the randomly sampled articles. The figure shows that the curves fluctuate very much. It appears that less challenging articles obtain faster a larger share of citations compared to more challenging articles. However, there are no significant differences between the percentile cumulative number of citations across the seven groups over time (p > .10). Thus, we can conclude that challenging versus less challenging articles display a similar citation pattern over time.



Figure 5: Obtained Number of Citations After Publication

Occurrence of challenging papers over time and journals

Next, we examine the extent to which articles in the five studied journals challenge commonly held beliefs. We use the average score across the 8 items across all articles in a given year as a measure for the extent to which articles challenge commonly held beliefs.

	IJRM	JCR	JM	JMR	MKS
Challenging commonly held beliefs (full sample)	2.86	2.97	3.10	2.86	3.07
	(.89)	(1.04)	(1.05)	(.98)	(1.12)
Average of Challenging commonly held beliefs Over All		2.90	2.86	2.77	3.01
Articles (1990-1995)		(1.09)	(1.07)	(.94)	(1.18)
Average of Challenging commonly held beliefs Over All	2.73	2.92	3.23	2.88	3.32
Articles (1996-2001)	(.86)	(.97)	(1.07)	(.95)	(1.17)
Average of Challenging commonly held beliefs Over All	2.97	3.10	3.21	2.92	2.88
Articles (2002-2007)	(.91)	(1.06)	(.98)	(1.07)	(.99)

Standard deviations mentioned in-between brackets.

Table 5: The Extent to Which Articles in Marketing Challenge Commonly Held Beliefs over Journals

Table 5 shows that the *Journal of Marketing* has the highest score on the challenging commonly held beliefs construct, closely followed by *Marketing Science*. However, a one-way ANOVA test determines that the five studied journals do not distinguish themselves from one another on the extent to which they publish counterintuitive research. Differences between the journals on the challenging commonly held beliefs construct are not significant (p > .05). There are also no significant differences between the journals in a particular time period (p > .05).



Figure 6: The Extent to Which Articles in Marketing Challenge Commonly Held Beliefs over Time

Figure 6 displays the evolution of the challenging commonly held beliefs construct over time, averaged across all journals with 1990 as the reference year (=100). Figure 6 indicates that the extent to which articles challenge commonly held beliefs in marketing has remained relatively stable during our observation window 1990-2007. At a reference value of 100 in 1990, the value for 2007 is 99. A regression with a linear time trend confirms the non-existence of a time trend (p > .10). Thus, we can conclude from Figure 6 that the extent to which articles in marketing are challenging is stabilizing. Next, we examine the extent to which articles in the five studied journals challenge commonly held beliefs over time.



Figure 7: The Extent to Which Journals in Marketing Challenge Commonly Held Beliefs over Time

Figure 7 shows the evolution of the extent to which all five studied journals challenge commonly held beliefs over time. For IJRM, the reference year is 1997. For IJRM we discover a significant positive time trend (p = .05). The extent to which articles in IJRM contradict commonly held beliefs increases over the observation period of 1997-2007. Compared to a reference value of 100 in 1990, the value for 2007 is 135 (an increase of 35%).

For Journal of Marketing, a regression with a linear time trend reveals a significant upward trend (p < .05). At a reference value of 100 in 1990, the value for 2007 is 140 (an increase of 40%). For *Journal of Consumer Research, Journal of Marketing Research* and *Marketing Science* we do not observe a significant time trend (p > .10).

Rank	Top 25 Most-Challenging	Journal (Publication	Score on Challenging
		y ear)	Commonly Held Beliefs Construct
1	Gerstner and Hess	MKS (1990)	6.17
2	Lal and Sarvary	MKS (1999)	6.13
3	Hunter	JCR (2001)	6.08
4	Mao and Krishnan	JCR (2006)	6.00
5	Echambadi et al.	IJRM (2006)	5.96
6	Sheng et al.	IJRM (2006)	5.79
7	Pham	JCR (1996)	5.79
8	Wosinka	JMR (2005)	5.79
9	Yeung and Wyer Jr.	JMR (2005)	5.75
10	Chen, Narasimhan and Zhang	MKS (2001)	5.75
11	Bucklin and Lattin	MKS (1991)	5.67
12	Agrawal and Kamakura	IJRM (1999)	5.58
13	Simonson, Carmon and O'Curry	MKS (1994)	5.54
14	Brown and Rothschild	JCR (1993)	5.50
15	Costley and Brucks	JCR (1992)	5.46
16	Van Osselaer and Alba	JCR (2003)	5.38
17	Samiee and Roth	<i>JM</i> (1992)	5.37
18	Miller, Reardon and McCorkle	<i>JM</i> (1999)	5.37
19	Kuksov	MKS (2004)	5.33
20	Wright and Lynch Jr.	JCR (1995)	5.29
21	Golder and Tellis	MKS (1997)	5.29
22	Verhoef	<i>JM</i> (2003)	5.29
23	Lehmann and Weinberg	<i>JM</i> (2000)	5.25
24	Song, Xie and Dyer	<i>JM</i> (2000)	5.21
25	Johnston et al.	JMR (1990)	5.13

Table 6: The 25 Most-Challenging Articles Between 1990-2007

Table 6 provides an overview of the 25 most-challenging papers in our random sample of articles. JCR is represented by seven articles in the table, MKS by six articles, JM by five articles and IJRM and JMR both by three articles. Note that these papers challenge commonly held beliefs to the largest extent in the random sample we took of all articles published in the five major journals between 1990 and 2007. Thus, they are illustrative for a restricted random sample, not of the full population of published articles. We also examined which articles are the most influential in our sample of articles published between 1990 and 2007 in the five major marketing journals. Table 7 provides an overview of the 25 most-cited articles, corrected for the time the article has been published (see Stremersch, Verniers and Verhoef 2007).

Rank	Top 25 Most Cited (Corrected for Time)	Journal	Number of Citations	
		(Publication	(Absolute Number, December 2000)	
1	Doney and Cannon	IM (1997)	Determoer 2009)	651
2	Zeithaml. Berry and Parasuraman	JM (1996)		605
3	Steenkamp and Baumgartner	JCR (1998)		439
4	Anderson and Sullivan	MKS (1993)		404
5	Boulding et al.	JMR (1993)		418
6	Deshpandé, Farley and Webster	JM (1993)		434
7	Alba et al.	JM (1997)		374
8	Novak, Hoffman and Yung	MKS (2000)		287
9	Noordewier, John and Nevin	JM (1990)		352
10	Heide	JM (1994)		345
11	Gundlach, Achrol and Mentzer	JM (1995)		333
12	Moorman, Deshpandé and Zaltman	JM (1993)		330
13	Bolton and Drew	JCR (1991)		319
14	Bolton and Drew	MKS (1998)		239
15	Aaker and Keller	JM (1990)		303
16	Dodds, Monroe and Grewal	JMR (1991)		311
17	Kohli, Jaworski and Kumar	JMR (1993)		252
18	Gatignon and Xuereb	JMR (1997)		226
19	Han, Kim and Srivastava	JM (1998)		262
20	Cronin and Taylor	JM (1994)		285
21	Smith, Bolton and Wagner	JMR (1999)		185
22	Mittal and Kamakura	JMR (2001)		166
23	Lynch and Ariely	MKS (2000)		172
24	Sirdeshmukh, Singh and Sabol	JM (2002)		190
25	Mohr and Nevin	JM (1990)		226

Table 7: The 25 Most-Cited Articles Between 1990-2007

6. Discussion

In this article, we investigated to which extent articles that challenge commonly held beliefs are cited. We find that a curvilinear relation exists between challenging commonly held beliefs and the number of citations an article receives. Challenging articles are rewarded with a higher citation count, unless they challenge prior beliefs to a too large extent. Thus, increased attention and the follow-on research it generates have a significant positive impact on citations, except for the types of articles which fall in the two highest challenging commonly held beliefs categories.

We also examined the consequences of challenging commonly held beliefs more into detail. Differences exist in how challenging and less challenging articles are cited. Less challenging articles are cited to a larger extent through use and/or application by other authors. On the other hand, more challenging articles (i.e. belonging to category 5-6 and 6-7) are cited more in reviews of the literature by scholars compared to other articles. Our analyses also indicated that challenging articles are not rewarded with the first position in the journal issue in which they appear. This finding is surprising since journal editors state that they welcome papers that deliver unexpected insights, but we find that they do not reward them with the first position in the journal when published. We also examined consequences of challenging commonly held beliefs in terms of citations. We found no significant differences in the extent to which less versus more challenging articles obtain their citations over time. Next, the study indicates that the extent to which articles in the marketing discipline do so has remained stable over the observation period 1990-2007, with the exception of articles in *IJRM* and *JM* challenge commonly held beliefs is increasing, rather than stabilizing.

Our findings contribute to the marketing and scientometrics literature in the following ways. To the best of our knowledge, this study is the first to empirically demonstrate the curvilinear effect and explanatory power of challenging commonly held beliefs on the number of citations to an article, over and above a large set of control variables defined by prior literature. Second, this study provides an overview of the extent to which articles challenge commonly held beliefs in marketing, over time and journals. The results indicated that the extent to which articles challenge commonly held beliefs has remained stable over the observation period 1990-2007, with the exception of *IJRM* and *JM*, which distinguish themselves from the other journals with an increasing trend.

We should consider whether we want all research to be counterintuitive or provocative (Barley, 2006). If this would be the case, then the marketing discipline would be flooded by a muddle of ideas and become fragmented and chaotic. Research would no longer build elaborately upon prior research. Theories and research traditions would only be able to survive for short moments of time, until the next theory or research tradition would take over. However, in order to get published, the high-core

elements of high-quality research (e.g. methodological rigor and validity) should always be present, no matter how intriguing a research claim may sound (Bartunek, Rynes and Ireland, 2006).

6.1. Implications for scholars

This study has three main implications for scholars. First, our research shows that papers that challenge commonly held beliefs obtain a greater number of citations than papers that do not, unless they are too controversial. Then they run the risk to be refuted by the audience. Scholars that seek impact should seek to develop research ideas that challenge commonly held beliefs and try to stand out in some way. Thus, they should try to deny some aspects of the assumption-grounds of its audience and not the whole assumption-ground.

Second, challenging commonly held beliefs can result in citation rewards (unless the paper is too challenging) but differences exist in how challenging versus less challenging articles are cited and in the extent to which such articles are positioned first in the journal. We found that challenging articles are cited to a larger extent for review, than for use/application. This finding indicates that challenging papers do not necessarily add more to the literature in a fundamental way. Also, results indicate that challenging articles are not rewarded with the first position in the journal issue, which is actually very important for scholars to have a higher visibility of your article.

Three, our research informs scholars on the suitability of specific major journals in marketing, given the extent to which their paper challenges commonly held beliefs, beyond other characteristics of journals such as the subject area (e.g. consumer behavior in Journal of Consumer Research).

6.2. Implications for journal editors and schools

First, no significant differences exist in the extent to which journals publish challenging papers. However, two journals publish such articles to a larger extent over time. For *Journal of Marketing*, we discovered a significant upward trend in the extent to which JM articles challenge commonly held beliefs. Also for *International Journal of Research in Marketing* we observed an increase in the extent to which challenging research is published. Both journals are appropriate to submit manuscripts that explore new paradigms.

Second, we show that publishing counterintuitive papers – papers that challenge commonly held beliefs – shows citation benefits for journals, unless when the articles are too controversial. On the other hand, an experience, many journal editors and associate editors share, is that such papers may not always get "easy" reviews. Our study showed that the extent to which counterintuitive papers are published has remained stable during our observation period. A reason why we do not see an increase in this trend for the whole marketing discipline is that most scholars in the field tend to be risk averse (Staelin 2005). Editors are sometimes reluctant to accept counterintuitive articles. While our results do not allow an assessment of how these papers fare in the review process, they do stimulate editors further to engage actively in the review process to steer papers that challenge commonly held beliefs through the review process, even if reviewers are negative (as it is their beliefs – as traditional experts in the field of inquiry – that typically get challenged). Counterintuitive manuscripts should be approached with an open mind by both reviewers and editors (Smith 2003; Staelin 2005).

Third, a remarkable finding in this study is that journal editors do not seem to reward challenging articles with a first position in the journal, although editors have already stated previously in various editorials that they welcome such papers.

6.3. Research limitations

In this article, we use citations as dependent variable. Although using citations as a measure for article influence or attention is consistent with prior scientometric studies, it also has its shortcomings because citations do not always reflect transfer of knowledge (Baumgartner and Pieters 2003; Tellis, Chandy and Ackerman 1999).

Second, our observation window ends in 2007. More recent papers may not have got sufficient time to display a reliable citation pattern (Van Dalen and Henkens 2001).

Third, more research is needed on the effect of time since publication as a potential moderator of the effect of challenging commonly held beliefs on citations. Also, the current study contains only one model estimated on the total dataset of articles published between 1990 and 2007. We can split up the

total observation period in multiple subsamples to examine whether the model results remain the same across different time periods.

Fourth, the results in this study are conditional upon acceptance of an article. We have a sample of published studies and thus we have no insights into the trajectory of challenging versus less challenging papers in the review process before it gets published. Future research can examine the influence of challenging commonly held beliefs on how papers fare through the review process and if differences across journals and time exist. For example, future research can investigate whether reviewers in more specialized journals are tougher for challenging research than reviewers in more general journals. Manuscripts are more likely to be reviewed by specialized reviewers in specialized journals, resulting in a higher chance of being reviewed by an expert whose beliefs you are challenging.

Fifth, we only study five major marketing journals. While this choice is consistent with prior citation research (e.g. Stremersch, Verniers and Verhoef 2007) and coding is extremely time-intensive, it would be interesting to see whether similar patterns are observed at other journals or in other disciplines.

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Appendix A: Measurement of Variables

Variable	Symbol in paper	Definition	Measurement description
Dependent variable			
Citation		Number of citations the article has received.	Count of the number of citations the article has received until end of December 2009 from journals in the ISI-SSCI.
Independent variables Challenging commonly held beliefs			
Challenging commonly held beliefs construct		Extent to which an article challenges commonly held beliefs.	The average score across the 8 items measuring the extent to which an article challenges commonly held beliefs of all 3 coders.
Quality			
Article order (R)		Article order in journal issues.	1 (lead article in journal issues) n (last article in journal issues).
Awards		Whether the article received a best- article award.	Dummy: 0 (if the article did not win a best- article award) or 1 (if the article won a best- article award), based on best-article awards at JCR and IJRM, the Harold H. Maynard Award and the MSI/H. Paul Root Award at JM, the Paul E. Green Award and the O'Dell Award at JMR, and the J.D.C. Little Award at MKS.
Article length		Length of the article.	Count of the number of pages of the article.
Domain			

	connected to other researchers in the discipline.	article of their individual centrality in the discipline. To calculate individual centrality of a researcher, the shortest route of this researcher to all other researchers (based on coauthor relationships) must be found, and then the average across all these paths must be computed.
U.S. affiliation	Affiliation of the authors to U.S. universities or institutions.	Share of all authors of the article having a U.S. affiliation.
Number of authors	Number of authors of the article.	Count of the number of authors of the article.
Personal Promotion		
Reference intensity	Number of references in the article.	Count of the number of references in the reference list of the article.
Self-citation intensity	Intensity with which authors of the article cite their own prior work.	Count of the number of self-citations by all authors of the article until December 31, 2009.
Title Length		
Title length	Length of the title of the article.	Count of the number of significant words in the title of article.
Attention Grabbers		
"Marketing" in title	The presence of the word "marketing" in the title.	Dummy indicating whether the word "marketing" is present in the title of the article $(0 = \text{not present}, \text{ and } 1 = \text{present})$.
"Market" in title	The presence of the word ''market'' in the title.	Dummy indicating whether the word "market" is present in the title of the article (0 = not present, 1 = present).

"New" in title	The presence of the word "new" in the title.	Dummy indicating whether the word "new" is present in the title of the article (0 = not present, 1 = present).
Number of keywords	The number of keywords for the article	Count of the number of keywords as assigned by ISI.
Expositional Clarity		
Number of equations	Number of equations in the article.	Count of the number of equations in the article.
Number of figures	Number of figures in the article	Count of the number of figures in the article.
Number of tables	Number of tables in the article.	Count of the number of tables in the article.
Number of footnotes	Number of footnotes in the article.	Count of the number of footnotes in the article.
Number of appendixes	Number of appendixes in the article.	Count of the number of appendixes in the article.
Reading case	Flesch reading ease score.	The Flesch reading ease score is obtained by the formula: $206.835 - [.846 \times (number of syllables per 100 words)] - [1.015 \times (average number of words per sentence)]. The text is easier to understand as the score is higher.$
^a Notes: R= reverse scored		

ile Items
Sci
Scale:
Measurement
B:
Appendix

	Item in Questionnaire	нк ік том Уібітаром	легу тис ћ
1	The authors of this paper claim that what is accepted as X is in reality non-X.		
7	The authors of this paper claim that this paper is an attack on what was taken-for-granted.		
З	The authors of this paper claim that this paper disconfirms prior beliefs.		
4	The authors of this paper claim that this paper challenges what has long been thought of as true.		
5	The authors of this paper claim that this paper disconfirms what has been traditionally assumed.		
9	The authors of this paper claim that this paper shows that what has been traditionally assumed is not		
	true.		
7	The authors of this paper claim that this paper shows that what was thought to be true is actually false.		
8	The authors of this paper claim that this paper disconfirms well-accepted assumptions.		
Chapter 3: Assessing Scientific Studies: Uncovering the Drivers of Reviewer Recommendation Behavior

Chapter 3: Assessing Scientific Studies: Uncovering the Drivers of Reviewer Recommendation Behavior

1. Abstract

Reviewers function as experts in the editorial review process of scientific journals and predetermine an editor's decision to accept, revise or reject a manuscript. Because of their influence in the editorial review process, reviewers are often portrayed as 'the gatekeepers in science'. Remarkably, reviewer recommendation behavior has only received limited attention in the scientometric literature. Past research has already indicated that reviewers are not always fair and objective in their judgment. We propose three new variables that also capture reviewer favoritism. This study provides insights in the review process of a major marketing journal and empirically examines for the first time whether past coauthorship between the authors and reviewer, geodesic distance between the authors and the reviewer, and number of times a reviewer is cited affect reviewer recommendation. We obtained all manuscripts and the review correspondence they generated submitted to the International Journal of Research in Marketing between the last quarter of 2006 and the second quarter of 2009. Results indicate that favoritism does influence reviewer recommendation in marketing. Past co-authorship and citing more than one article of the reviewer in the manuscript significantly affects the chances of receiving a more favorable reviewer recommendation. We also find that reviewer characteristics significantly affect reviewer recommendation. Reviewers who are female, member of the editorial board of the journal or affiliated with lower ranked business schools evaluate manuscripts less favorably. Citation record of the reviewers positively affects reviewer recommendation. Review characteristics also influence reviewer recommendation. Number of issues raised in the reviewer's letter to the authors and reviewer turnaround time both have a positive impact on reviewer recommendation.

2. Introduction

Review of the literature indicates that previous scientometric research in marketing has mainly focused on outcomes that occur after publication, namely drivers of citations and impact (see e.g. Stremersch, Verniers and Verhoef 2007). This means that some of the results are conditional upon acceptance. In this study we will examine the editorial review process in a major marketing journal, the *International Journal of Research in Marketing* and investigate whether favoritism variables such as past co-authorship between the authors and reviewer, geodesic distance between the authors and reviewer, and number of times a reviewer is cited affects reviewer recommendation behavior.

Reviewers play an important role in the editorial review process as they function as experts to assess the merits of a manuscript. When journal editors receive a new manuscript they forward it to reviewers, who are selected for their expertise in the field, for evaluation purposes. These reviewers evaluate the manuscript and propose a recommendation to accept⁴, revise or reject the manuscript. Hence, the influence these reviewers have on the editorial review process is very large (Hojat, Gonella and Caelleigh 2003). Remarkably, research on expert opinions of manuscripts is very limited in the scientometric research discipline (Bornmann, Weymuth and Daniel 2010; Campanario 1998a). More detailed insights in reviewer recommendation behavior are of great importance as reviewers help to determine whether a scientific breakthrough will be published or not. Consequently, in science, innovation lies with the experts and detailed insights are needed on which factors influence expert opinions. Recent studies have already showed that behavioral biases in reviewer recommendations exist (e.g. Beyer, Chanove and Fox 1995; Gilbert, Williams and Lundberg 1994; Petty, Fleming and Fabrigar 1999).

⁴ Reviewers actually can only recommend to conditionally accept a manuscript. In the remainder of this study the term 'accept' also captures the reviewer recommendation 'conditionally accept'.

To the best of our knowledge, no study has yet examined whether reviewers tend to judge manuscripts more favorably when the manuscript originates from authors who previously co-authored a study with the reviewer, from authors living geographically nearby the reviewer or from authors that cite the reviewer's work in the manuscript. We test our theory on a unique dataset of ratings given by reviewers to manuscripts submitted for publication in a top academic journal in marketing. We demonstrate that our theory is able to help us detect that reviewer evaluations of academic papers are influenced by drivers such as past collaboration between the reviewer and one of the authors of the manuscript and citing more than one article of the reviewer in the manuscript.

In the next section we review relevant literature. Then we describe the data used for the empirical analyses. In the fourth section we discuss the method and present estimation results. We conclude by discussing the implications of these results and suggest avenues for further inquiry.

3. Theoretical Background

In this section we first demonstrate that reviewer recommendation behavior in science is only one particular aspect of reviewing behavior in society. We subsequently discuss how editorial review processes work and how they are typically administered in the marketing discipline. In the second subsection of the theoretical background of the study, we will review theories that help us understand what drives reviewer recommendations and develop hypotheses.

3.1. Occurrence of reviewing behavior

This subsection focuses on reviewing behavior in society and how reviewing processes are handled in science and more specifically, in marketing.

3.1.1. Review processes

Expert evaluation and judgment of the quality of a certain object (e.g. a product, a service or even a performance) is a widespread phenomenon. In terms of societal welfare, expert judgments range from relatively mundane reviews in entertainment- and sports-related events to situations where expert judgments can have very important consequences for the lives of other people, for example when health-related or legal expert judgments are required. Thus, expert opinions are of great importance in a variety of societal processes and are not limited in use to scholarly processes only.

In this study we particularly focus on scientific breakthroughs that are reviewed by experts. One such industry where innovations are reviewed by experts is the pharmaceutical industry. In the pharmaceutical industry new drugs cannot be launched in the market unless they have received regulatory approval. This means that in this case experts help to determine market access of innovations. Here, the Food and Drug Administration (FDA) has to approve new drug launches. The FDA takes considerable time to review new-drug applications and decides whether or not to approve the drug (Olsen 1997). Because of the high stakes involved, it is very important that each firm is equally treated by the organization. However, Chok (2009) argues that many firms approach advisory committee members to influence the new product's approval process. Previous research has already indicated that social effects may appear in such open review processes (i.e. all parties are aware of each other's identity).

It can also occur that peers (e.g. colleagues) review each other's performances. In science, peer review is defined as 'an organized method for evaluating scientific work which is used by scientists to certify the correctness of procedures, establish the plausibility of results, and allocate scant resources (such as journal space, research funds, recognition, and special honor) (Chubin and Hackett 1990, p.2). Hence, in science, reviewer recommendations are not only used in editorial review processes, it is for example also used for evaluating funding applications (e.g. post-doctoral fellowships). Funding agencies decide whether or not to fund a research proposal. Typically, these funding agencies rely on the opinion of multiple reviewers when making their decision and reviewers are supposed to impartially evaluate the

proposal (Bornmann and Daniel 2005). In this case, reviewers are usually aware of the applicants' identities, but the applicants do not know the reviewers' identities. This is a single blind review process. Bornmann and Daniel (2005) already showed that social effects can be found in these single blind review processes. We will examine whether social effects are still of importance in review processes which are double blinded (i.e. applicants and referees do not know each other).

3.1.2. Editorial review processes

In this study we will focus on review processes in academic journals that are used to evaluate whether manuscripts are suitable for publication. Publishing is the currency of academia as the publication record of an academic is its most valuable asset. However, in most journals the percentage of submitted manuscripts that gets published can be dauntingly low. As an example, in his last editorial in the *Journal of Marketing*, Stewart (2002) acknowledged that, at the time, only 10% of the submitted manuscripts were published in the journal. It is well-known that many other journals show similar figures (e.g. Hargens 1990).

Editors have a major responsibility in guiding the review process manuscripts undergo in journals. They have to select reviewers, guide authors and reviewers through the process and make the final decision whether a manuscript can be published or not (Benos et al. 2007). Typically one person serves as editor of a journal, but in some cases multiple editors can be appointed (for example, to increase efficiency, see Stremersch and Lehmann 2007). Some journals have a desk reject policy so editors can decide to immediately reject a manuscript if they feel that the manuscript does not fit the journals' mission or for other reasons. In this case, the manuscript will not be evaluated by reviewers. Hargens (1990) reports that up to 10% of manuscripts are desk rejected, although this figure varies strongly across journals and disciplines. If editors believe that the manuscript has potential to be published, they will select reviewers who are experts in the studied research domain. Typically reviewers are selected because of their expertise and availability (Benos et al. 2007). Reviewers evaluate the quality of a manuscript and

examine if the manuscript satisfies the minimum requisites to qualify for publication and also increase the quality of a potential publication through their comments (Laband 1990). Most editors send the manuscript to more than one reviewer (Campanario 1998a). On average two to four reviewers are selected per manuscript. Some journals also use area editors who are perceived as experts in a given research domain within the discipline to assist the editor (Shugan 2007). Finally, reviewer recommendations are returned to the editor, who decides whether the manuscript can move to a next round (i.e. a revision or publication). Important to note is that if revisions are asked by the editor, manuscripts can still be rejected after revision in a next round (Benos et al. 2007). This implies that manuscripts often have to undergo multiple rounds of revisions before it (potentially) becomes published.

Differences across journals may also exist in the extent to which authors and reviewers have information on each other's identity. In open peer review processes both the author and reviewers know each other's identity, whereas in single blind peer review processes the reviewer knows the authors' identity but not vice versa (Blank 1991). Nowadays, double blind peer reviewing is used to the largest extent. In double blind review processes authors and reviewers are not informed about each others' identity. The main advantage of double blind review processes is that such processes result in a minimum of reviewers' biases (Blank 1991; Campanario 1998b). This study therefore examines the extent to which a set of favoritism variables from the reviewer towards the authors still influences reviewer recommendations in a double blind peer review process in marketing.

3.1.3. Editorial review processes in marketing

In this section, we briefly discuss how the editorial review process in the marketing discipline typically works⁵. The major marketing journals (i.e. *International Journal of Research in Marketing, Journal of Consumer Research, Journal of Marketing, Journal of Marketing Research* and *Marketing Science*) all have a desk reject policy. This means that when a manuscript is submitted to a marketing

⁵ This study examines a generic review process, such as in the journal we consider, besides deviations across journals.

journal, a first step in the editorial review process consists of the editor considering whether or not the manuscript has potential to be published in the journal (Shugan 2007). If the editor deems that the manuscript would not fit in the journal, he will desk reject it. Otherwise, the editor forwards the manuscript to reviewers so they can evaluate the manuscript and propose a recommendation to the editor (Shugan 2006; Stremersch and Lehmann 2007). On average two to three reviewers are asked to evaluate a manuscript (for an exception see Shugan 2007, who requested four reviews). Also, all major marketing journals⁶ use area editors who assist editors by guiding the reviewer team or by summarizing and synthesizing reviewer comments (Shugan 2007). Manuscripts submitted to marketing journals need on average two to four rounds in order to get published (if the manuscript is not rejected in a previous round). Reviewer turnaround time typically takes three months on average (Kamakura 2001). Increasing efforts have been made to provide timely feedback to authors (Rust 2008). Next, marketing journals typically use a double blind review process. That is, the reviewer's identity (Blank 1991). This implies that reviewers should base their reviewer recommendation particularly on manuscript characteristics.

3.2. Prior research on editorial review processes

In this subsection we review prior research on editorial review processes and more specifically which drivers have already been identified to impact reviewer recommendation behavior.

⁶ So far, the *Journal of Marketing* did not use area editors, but it has become a new policy of the journal since July 1, 2011 when the new editor started his three-year term.

Article title	Authors (Year Published)	Study orientation	Main findings	Independent variable	Explanatory variables
Overview studies on reviewe	r recommendat	iion behavior			
The Ups and Downs of Peer Review	Benos et al. (2007)	Non- empirical	Review of the development of peer review process and discussion of its advantages and disadvantages.	ı	ı
Peer Review for Journals as It Stands Today – Part I	Campanario (1998)	Non- empirical	Review of research on peer review process and the people involved in this system, along with reliability, accuracy and bias issues.	ı	1
Peer Review for Journals as It Stands Today – Part II	Campanario (1998)	Non- empirical	Review of self interest and connections among participants in review process.	I	ı
Impartial Judgment by the Gatekeepers of Science: Fallibility and Accountability in the Peer Review Process	Hojat, Gonella & Caelleigh (2003)	Non- empirical	Review of pitfalls that can impede reviewers' impartial judgment.	I	1
Favoritism					
Favoritism versus Search for Good Papers: Empirical Evidence Regarding the Behavior of Journal Editors	Laband & Piette (1994)	Empirical	Editors publish papers authored by colleagues, but can use their professional connections to identify high-impact papers for publication.	Article citations (proxy for article quality)	Connection, article length, lead article, gender authors, mean age authors, citation record authors and journal Quality
The Review Process and The	Beyer,	Empirical	Results indicate that gatekeeping	Measures of the	Gatekeeping perspective,

Fates of Manuscripts Submitted to AMJ	Chanove and Fox (1995)		and reviewer style perspectives play a major role in review processes	review and editorial processes	particularism perspective, accumulative advantage and reviewer style
Editorial Favoritism in Economics?	Medoff (2003)	Empirical	Articles with author-editor connections are of higher quality than articles without such connections.	Article citations (proxy for article quality)	Institutional connection, editorial board membership author of publishing journal, thank editor, citation record author, number of authors, subject area, length, article order and journal quality
Are Reviewers Influenced by Citations of Their Own Work? Evidence from the International Journal of Epidemiology	Egger et al. (2005)	Empirical	Reviewers evaluate manuscripts more favorably when it cites work of the reviewer.	Reviewer recommendation	Number of times articles published by the reviewer are cited
Reviewer Characteristics					
Gender Is there Gender Bias in JAMA's Peer-Review Process?	Gilbert, Williams & Lundberg (1994)	Empirical	Gender differences exist but have no significant impact on the final publication decision.	Reviewer recommendation	Gender of the reviewer
Gender Factors in Reviewer Recommendations for Manuscript Publication	Lloyd, M.E. (1990)	Empirical	Results indicate that gender of the reviewer affects review outcome. Female reviewers evaluated female-authored manuscripts more favorably.	Reviewer recommendation	Gender of the reviewer, gender of the author(s)
Differences in Editorial Board Reviewer Behavior	Wing et al. (2010)	Empirical	Gender effects of editorial board members' recommendation exist.	Reviewer recommendation	Gender of the reviewer

Based on Gender					
Other reviewer characteristic	CS				
The Effect of Masking Manuscripts for the Peer Review Process of an Ophtalmic Journal	Isenberg, Sanchez & Zafran (2011)	Empirical	Manuscripts are less likely to be published when reviewers had no idea of the author's identity, compared to when it was thought to be known or suspected. Editorial board members recommend accepting a manuscript to a lesser extent.	Reviewer recommendation	Author's identity, gender reviewer, location reviewer, setting reviewer, editorial board membership reviewer
The Review Process at PSPB: Correlates of Interreviewer Agreement and Manuscript Acceptance	Petty, Fleming & (1999) (1999)	Empirical	Author prestige, text length, number of experiments and number of reviewers have a positive effect on reviewer recommendation.	Reviewer recommendation	Text length, number of experiments, number of references, overall time to decide, author gender, author institutional prestige, author experience, reviewer gender, reviewer prestige, number of reviewers, reviewer turnaround time
Review characteristics					
A Content Analysis of Referees' Comments: How do Comments on Manuscripts Rejected by a High-Impact Journal and Later Published in either a Low-Impact Journal or High-Impact Journal Differ?	Bornmann, Weymouth & Daniel (2010)	Empirical	Manuscripts with a large number of comments on 'Relevance of contribution' and 'Design/Conception' are later published to a lesser extent in a high-impact journal.	Dummy publication later high-impact versus low-impact journal	Reviewer comments areas
	Table	I: Review of lit	erature on reviewer recommendation	1 behavior	

Table 1 contains an overview of relevant articles that study reviewer recommendation behavior in scientific peer review processes. Thus far, research on reviewer recommendations of manuscripts is very limited in the scientometric research discipline (Bornmann, Weymuth and Daniel 2010; Campanario 1998a). One of the main reasons for this lack of research is the difficulty to obtain data on reviewer recommendations as this process is typically anonymous and strictly regulated. Hence, most studies on reviewer recommendations are descriptive and rely on personal experiences (Beyer, Chanove and Fox 1995). Such articles and editorials are not included in Table 1.

Recent literature on behavioral biases in expert judgments indicates that other factors may come into play besides manuscript characteristics only (e.g. Hojat, Gonnella and Caelleigh 2003). Beyer, Chanove and Fox (1995) state that four categories of drivers influence reviewer recommendation: (1) gatekeeping, (2) particularism, (3) accumulative advantage and (4) reviewer style. The gatekeeping perspective is the normative view which relates likelihood of acceptance with the degree to which the paper contributes to the field and deserves being published according to its significance, conceptual elegance and adequacy of the methods used (Beyer, Chanove and Fox 1995). The word gatekeeping already hints at the importance of the review process in separating research that contributes enough to the scientific field and merits publication, from research not worthy to publish (Crane 1967). This focus on the objective content and scientific merit of an article as the main driver of the probability of getting a publication is in line with the universalist view on the reward structure of science, used by Stremersch, Verniers and Verhoef (2007) to study drivers of citations in marketing papers.

However, prior research has shown that other factors, besides manuscript characteristics, may also influence reviewer recommendations (Campanario 1998b). Particularism focuses on a potential and predictable bias introduced by idiosyncratic preferences of the reviewers (Beyer, Chanove and Fox 1995). It portrays a view of the review process that is in line with the strongest views from the social constructivist perspective of science reward structure. Here, the main drivers of publication supposedly include such irrelevant factors as personal relations (i.e. connections), social origins and social status. This perspective can accommodate some of the most critical opinions about review processes that have

been documented in descriptive and anecdotal studies (Frey 2003; Gans and Shepherd 1994; McAlister 2005). Thus, particularism focuses on biases of reviewers who also take personal preconceptions and preferences into account and actually results in favoritism (Beyer, Chanove and Fox 1995). Previous research has mainly focused on author characteristics and on connections between authors and editors rather than on connections between authors and reviewers. Previous research has typically taken into account the following author characteristics: gender, seniority, institutional prestige, citation record and editorial board membership (e.g. Laband and Piette 1994; Medoff 2003; Petty, Fleming and Fabrigar 1999). Laband and Piette (1994) examine the existence of favoritism of journal editors and investigate whether quality differences exist between published articles with author-editor connections versus those without such connections. Here, the presence of editorial favoritism is only indirectly examined as the authors use the number of citations an article received once published as a proxy for article quality. The authors define author-editor connections in terms of whether or not any of the authors received his PhD from the same university that the editor is affiliated with. Medoff (2003) also examined whether articles with author-editor connections are of higher quality than other articles. The author examines the impact of institutional connections, membership of the editorial board of the journal and whether or not the authors thank the editor in the article. Both studies conclude that author-editor connections can actually help editors to identify impactful papers for publication (Laband and Piette 1994; Medoff 2003). In the current study we focus on reviewer recommendations instead of editorial recommendations. More specifically, we will particularly focus on whether past co-authorship, geodesic distance and number of times the reviewer is cited affects reviewer recommendations. These three variables have only received scant attention in the literature and also comprise how reviewer favoritism may affect review processes.

Another perspective studied by Beyer, Chanove and Fox (1995) is also, and even more clearly, linked to the social constructivist perspective and was accumulative advantage. This view defends that scholars face situation of increasing returns, i.e. they accumulate reputational advantages that will reinforce their future probabilities of producing and publishing quality research. The prediction that researchers success is self-reinforcing (in the review process) is in line with the Matthew effect in science which defends that the contributions of famous researchers will be overweighed while those of anonymous researchers will probably be underweighted (Merton 1968; Hojat, Gonella and Caelleigh 2003).

Finally, review characteristics (i.e. reviewer style) grasp the impact of how reviewers evaluate a manuscript, in terms of how they articulate their comments on a manuscript. For example, reviewer recommendations can be supported by a wide range of comments or only a few, be critically formulated or more helpful (Beyer, Chanove and Fox 1995). Also, comments can contain different content-wise reasons to recommend rejecting a manuscript (Bornmann, Weymuth and Daniel 2010). Past research has already shown that these factors are related to reviewer recommendation.

3.3. Hypotheses

We now turn to the formulation of hypotheses for each subset of variables.

Favoritism. We propose that the following variables related to favoritism may affect reviewer recommendations: (1) past co-authorship, (2) geodesic distance and (3) citing articles published by the reviewer. First, when a reviewer previously co-authored a paper with an author of the manuscript under review, this implies that both scholars know each other and usually have positive feelings toward each other. Also, it is likely that these scholars share similar research interests and previous research has already indicated that reviewers tend to judge manuscripts more favorably when manuscripts have the same ideological orientation (Hojat, Gonella and Caelleigh 2003). Therefore, we expect that:

H1: Past co-authorship between the author and reviewer will have a positive impact on reviewer recommendation.

Next, geodesic distance typically grasps differences in cultural orientations and can also be reflected in different research approaches followed by scholars. Therefore we suspect that geographical distance between the authors and reviewer may negatively affect reviewer recommendation when the distance is larger. People who live nearby each other are more similar (Hofstede 2001) and people tend to favor other people with similar backgrounds. For example, previous research has already indicated that country-of-origin effects impact product evaluations in innovation research (e.g. Verlegh and Steenkamp 1999). In a similar vein, we hypothesize that:

H2: Geodesic distance between the author and reviewer will have a negative impact on reviewer recommendation.

Another variable that grasps favoritism from the reviewer towards authors is the number of times the reviewer is cited in a manuscript. In an exploratory study, Egger et al. (2005) study the impact of citing articles published by the reviewer on reviewer recommendation in an epidemiology journal. The authors find that reviewers judge manuscripts more favorably when it cites articles from the reviewer. These effects may be explained by the presence of self-interest of the reviewer (i.e. a higher citation record has a positive effect on academic standing) or the fact that reviewers feel flattered when their work is cited. Our study complements the study of Egger et al. (2005) by incorporating a larger set of explanatory variables to control for other possible influences on reviewer recommendation. We presume that authors knowingly cite other scholars whom they suspect will be reviewers of their study hoping that citing these scholars will positively affect reviewer recommendation. We hypothesize:

H3: Citing a reviewer in the manuscript will have a positive impact on reviewer recommendation.

Reviewer characteristics. In this study we will also examine the influence of a set of reviewer characteristics on recommendation behavior. First, we discuss the impact of reviewer gender. Previous research has particularly indicated that female reviewers are tougher than male reviewers. Wing et al. (2010) find that female reviewers are less likely to recommend an 'accept' or 'minor revision' than male reviewers. Lloyd (1990) empirically examines the impact of reviewer gender on recommendations in a

single blind peer review process. The author finds that female reviewers judge female-authored manuscripts more favorably than male-authored manuscripts. Therefore, we hypothesize in a similar vein:

H4: Male reviewers will evaluate manuscripts more favorably than female reviewers

Academic prestige and reputation of the reviewer (e.g. scientific positions like editorial board membership or significant positions in academic institutions, publication record and citation record) will have a negative impact on the chances of giving a more favorable review recommendation. More successful reviewers expect relatively higher quality manuscripts than other scholars do. For example, reviewers who are member of the editorial board of the journal are on average more senior and typically have already an extensive publication experience. Therefore, we expect that these reviewers may judge manuscripts less favorably than other reviewers. With regard to editorial board membership of the reviewer, we suspect that reviewers also may want to safeguard their journal and therefore tend to be tougher than other reviewers. Previous research by Isenberg, Sanchez and Zafran (2011) has already shown that editorial board members judge manuscripts less favorably. Thus, we hypothesize:

H5: Reviewers who are member of the editorial board of the journal will evaluate manuscripts less favorably than non members.

Next, we also examine the impact of business school ranking of the reviewer on reviewer recommendation. Typically, scholars affiliated with higher ranked business schools (which are partially based on publication productivity) are expected to publish high quality research. We hypothesize that reviewers affiliated with higher ranked business schools will look particularly for higher quality research and may be tougher. Therefore, we expect:

H6: Reviewers affiliated with higher ranked business schools will evaluate manuscripts less favorably (note: this is a reverse-coded variable, thus we expect a positive sign).

Reviewers may also differ on the extent to which their research has been published and cited by other scholars in the field. Publications and citations are very important as they determine career prospects (Stremersch, Verniers and Verhoef 2007). Scholars who publish and are cited to a large extent are considered as being successful. Given a scholar's background (i.e. gender, editorial board membership and business school ranking), expectations of peers with regard to a scholar's publication and citation record may vary. Typically one expects that scholars who are male, editorial board members or affiliated with higher ranked business schools will excel in publishing and being cited. In this study we examine whether reviewers that perform better in terms of number of publications and citations than we would expect given their background, judge manuscripts less favorably. Having a higher publication or citation record than other scholars with similar backgrounds can be a sign of research excellence. We expect that more successful scholars will judge manuscripts less favorably. We hypothesize:

H7: Reviewers who have a higher citation record than expected will evaluate manuscripts less favorably.
H8: Reviewers who have a higher publication record than expected will evaluate manuscripts less favorably.

Review characteristics. Beyer, Chanove and Fox (1995) already indicated that reviewer recommendations may be influenced by review characteristics, such as the type of comments given or the length of reviewer's comments. Longer comments provide more feedback to the authors. However, Beyer, Chanove and Fox (1995) find that the length of a reviewers' comment does not significantly impact review outcome. We suspect that longer reviewer comments can have a positive as well as a negative impact on reviewer recommendation. Reviewers can write a long comment to the authors with an extensive list of issues to be solved in order to raise a manuscripts' publication potential and thereby

increase its chances of getting published (Laband 1990). On the other hand, reviewers can list many issues to be solved that are not always feasible to solve. Then reviewers may judge that the manuscript is not suitable for publication in the journal. Therefore we do not hypothesize the direction of the relationship between comment length and reviewer recommendation a priori. Reviewer turnaround captures the time it takes for a reviewer to make a recommendation about the manuscript to the editor (Petty, Fleming and Fabrigar 1999). We neither hypothesize the direction of the relationship between reviewer turnaround and reviewer recommendation a priori.

4. Data

We sampled all manuscripts - and the review correspondence they generated - submitted to the *International Journal of Research in Marketing* (IJRM) between the last quarter of 2006 and the second quarter of 2009. There are three major reasons that led us to restrict our sample to this period. First, we wanted to avoid biases due to the changing structure of the network of marketing scholars, as it has already been documented that patterns of collaboration among marketing scholars change over time (Goldenberg et al. 2010). Unless such network dynamics are explicitly modeled, it is a common practice to temporally restrict the sampling window to ensure that the scientific network under analysis is static enough to allow valid inferences (see e.g. Newman 2001). Second, as we analyze data about submitted rather than published papers, our period of analysis offers us a very large sample of observations from which to draw statistical inferences. Hence we did not feel that extending this sampling window would be advantageous for our analyses. Third, for the period before December 2006, little data is available in digital form. Processing such earlier periods would thus require a cumbersome process of opening and manually coding paper copies of the review documentation and submitted manuscripts. Moreover, for a large fraction of these older manuscripts, not even paper copies of all the correspondence could be accessed.

The editorial review process in IJRM resembles very much to the editorial review processes of other major marketing journals. One point of difference is that for our study period 2006 till 2009 the journal has two editors. Manuscripts were equally distributed across both editors and no agreements were made on reviewer selection. The journal has a desk reject policy and requests on average two reviews. Typically one reviewer is member of the editorial board of IJRM and one reviewer is appointed by the editors themselves (Stremersch and Lehmann 2007). When the assigned editor receives the reviewer recommendations and the area editor's recommendation, a decision is made. Stremersch and Lehmann

(2007) note that usually a final decision on publication is made after two rounds and that total turnaround time per round fluctuates around two months.

About one third of the manuscripts submitted to IJRM in this period are desk rejected, which means that the editor(s) deemed the probability of such manuscript being accepted for publication too low and opted for sparing the authors from the uncertainty and time involved in completing a review process. In such cases we do not observe any assessment made by reviewers. After discarding desk rejected manuscripts our sample contains 467 unique manuscripts. We restrict the study sample to reviewer recommendations in first round. Thus, we do not take area editor's recommendations into account. Table 2 displays how many manuscripts were evaluated by one, two or three reviewers. The majority of the manuscripts (85.87%) were evaluated by two reviewers. As 15 manuscripts were evaluated by one reviewer, 401 manuscripts by two reviewers and 51 manuscripts by three reviewers, our dataset consists of 970 reviewer recommendations in total.

Number of reviewers	Frequency	Percentage
One reviewer	15	3.21%
Two reviewers	401	85.87%
Three reviewers	51	10.92%
Total	467	100%
Table 2. Number	of monitor more a	aniou od

Table 2: Number of reviewers assigned

Table 3 displays the extent to which four categories of reviewer recommendations occur: (1) 'reject', (2) 'major revision', (3) 'minor revision' and (4) 'accept'. Column 2 contains the frequency of each reviewer recommendation in our study sample and column 3 the percentage. The table shows that reviewers most often recommend to reject a manuscript (59.8%), followed by 'major revision' (30.5%). Only 9.7% of reviewer recommendations in first round are a 'minor revision' or an 'accept'. For research purposes we merged the reviewer recommendations 'minor revision' and 'accept' into one category as only few reviewers suggested to accept a manuscript immediately (2.5%).

Reviewer recommendation	Frequency	Percentage
Reject	580	59.8%
Major revision	296	30.5%
Minor revision	70	7.2%
Accept	24	2.5%
Total	970	100%
Tuble 2. Deviewen		

Table 3: Reviewer recommendations

Next, reviewers for IJRM also review to a large extent manuscripts submitted to the other four major marketing journals, *Journal of Consumer Research* (JCR), *Journal of Marketing* (JM), *Journal of Marketing Research* (JMR) and *Marketing Science* (MKS). Editorial board membership represents whether a journal appreciates your expertise in a specific research domain and overlaps across journals reflect the extent to which these journals use the same sample of reviewers. We coded whether IJRM editorial board members are also member of the editorial board of these other four major marketing journals and map the editorial board membership overlap between IJRM and the other four journals.

	2006	2007	2008	2009
Total number of editorial board members IJRM	82	119	126	135
Also member of minimum one editorial board of the other four journals	39 (47.56%)	68 (57.14%)	71 (56.35%)	73 (54.07%)
Also member of editorial board JCR	6 (7.32%)	22 (18.49%)	20 (15.87%)	19 (14.07%)
Also member of editorial board JM	14 (17.07%)	37 (31.09%)	35 (27.78%)	39 (28.89%)
Also member of editorial board JMR	17 (20.73%)	36 (30.25%)	40 (31.75%)	41 (30.37%)
Also member of editorial board MKS	19 (23.17%)	26 (21.85%)	31 (24.60%)	37 (27.41%)

Table 4: Editorial board membership

Table 4 shows for our study period 2006 till 2009 the overlap between editorial board membership in IJRM and also being a member of at least one editorial board of the other four journals, and across the other four boards individually. Column 2 to 5 display the count of overlap and between brackets the percentage of overlap compared to the total number of editorial board members of IJRM in that particular year. The table shows that in 2006 47.56% of the academics who are member of the editorial board of IJRM were also a member of at least one editorial board of the other four major

marketing journals. This percentage increases in 2007 to 57.14% and takes a value of 56.35% in 2008 and a value of 54.07% in 2009. Overall, the mean percentage of overlap is 53.78%. These figures imply that our sample of reviewer recommendations in IJRM is representative for reviewer recommendations in the broad marketing discipline in general. Thus, the results found in this study can easily be generalized to reviewing behavior in marketing. Table 4 also indicates that IJRM editorial board members are to a larger extent also a member of JM, JMR, and MKS than JCR.

Reviewer seniority	Frequency	Percentage	Average number of manuscripts
PhD Student/Post-doc	9	2.50%	2.33
Assistant Professor	45	12.50%	1.60
Associate Professor	110	30.56%	2.53
Full Professor	196	54.44%	3.06
Total	360	100%	2.69
	Table 5	: Reviewer sei	niority

Table 5 displays the seniority levels of IJRM reviewers in our study period and shows how many reviewers in our sample are PhD Students or Post-docs, Assistant Professor, Associate Professor or Full Professor. The majority of reviewers are Full Professor (54.44%). Column four in Table 5 shows that reviewers are assigned more manuscripts to evaluate on average when they are Associate Professor of Full Professor. Analysis of variance indicates that Assistant Professors are assigned significantly less manuscripts than Full Professors to review (p < .01).

4.1. Privacy Issues

Our research objectives and proposal has been carefully discussed, analyzed and approved by the Policy Board of IJRM. Still, we want to leave absolutely no doubt that the confidentiality of the review process in IJRM has not been compromised in any manner by our study. In order to guarantee this we have hired a team of research assistants (RAs), with the main objective of guaranteeing anonymity in the final database. We hired these RAs from our University's Finance department, to make sure that none of

them was familiar with the names of reviewers and authors. Furthermore, at the start of their contract, Dr. Cecilia Nalagon, IJRM's editorial manager, had a meeting with the RA where she explained the review policy of IJRM and the importance of maintaining confidentiality and asked them to sign a non-disclosure agreement. In the first weeks of data collection Dr. Cecilia Nalagon also helped guaranteeing the data quality.

4.2. Measures

Dependent variable. Our focal variable is the recommendation of each reviewer about the manuscript being submitted for publication at IJRM. We simplified IJRM's classification (which uses 10 categories) by classifying the advices of reviewers into 3 categories: (1) reject – when the reviewer recommends that the paper should not be accepted for publication in IJRM, (2) major revision – the reviewer sees merit in the manuscript but the problems encountered led her or him to recommend a major, or even a major-risky revision, if the manuscript is to be accepted for publication at IJRM, (3) minor revision or accept – the reviewer thinks the paper has some minor problems but is close to being publishable at IJRM or the manuscript satisfies the standards of IJRM and should be accepted for publication.

Explanatory variables: Favoritism. We characterize possible favoritism from reviewers towards authors by three measures: (1) past co-authorship, (2) geodesic distance and (3) number of times the reviewer is cited in the paper.

Past co-authorship is a dummy variable that assume the value 1 if at least one of the authors had published a paper with the reviewer until (i.e. including) the year of submission of the manuscript to IJRM in any of the 40 journals considered by Theoharakis and Hirst (2002). This is the same list used by the Marketing Connectivity Project to characterize the network of marketing scholars.

Next we compute a measure of the geographical distance between the authors and the reviewer. We measured it by (1) retrieving the geo-graphical coordinates of each university associated with any author or reviewer using geo-mapping tools, (2) converting these values into decimal degrees and (3) calculating the great-circle distance (the shortest path between two points in a sphere) using the common formula:

$$GDIST_{art} = \rho \cdot \left[2 \cdot \arcsin\left(\sqrt{\sin^2\left(\frac{\phi_{ay(t)} - \phi_{ry(t)}}{2}\right) + \cos\phi_{ay(t)} \cdot \cos\phi_{ry(t)} \cdot \sin^2\left(\frac{\lambda_{ay(t)} - \lambda_{ry(t)}}{2}\right)}\right) \right]$$

With $\rho = 6,378.1$ km being the Earth radius, and $\varphi i, y(j)$ and $\lambda i, y(j)$ being, respectively, the geographical latitude and longitude of the university of affiliation of the author (i=a) or reviewer (i=r) at the year of submission of manuscript j - y(j). We then define Geodesic (or great-circle) distance (ar2), for each reviewer, as the minimum between her or his university and any of the authors in the manuscript. Next, the natural logarithm is calculated to reduce the impact outliers may have and to smoothen the variation in the studied variable. For the same reasons, we will also use the natural logarithm for a set of other explanatory variables.

Finally, we measured, for each reviewer, the number of articles from the reviewer cited in the manuscript under appreciation. We include two dummy variables in the model: (1) a dummy variable that takes the value of 1 when a manuscript cites one article from the reviewer and (2) a dummy variable that takes the value of 1 when a manuscript cites an article from the reviewer twice or more. A third variable 'number of cites reviewer' grasps the total number of times the reviewer is cited. For model estimation purposes we include the logarithm of 'number of cites reviewer'.

Explanatory variables: Reviewer characteristics. We discern five reviewer characteristics that are hypothesized to influence reviewer recommendation behavior: (1) editorial board membership IJRM, (2) gender, (3) business school ranking, (4) publication record and (5) citation record.

Editorial board membership is a dummy variable that takes the value of 1 if the reviewer is a member of the editorial board of IJRM in the year of submission of the manuscript.

Gender is a dummy variable that takes the value of 0 if the reviewer is female and the value of 1 if the reviewer is male.

Next, business school ranking of the reviewer is measured by the ranking of the business school in 2009 (provided by the Financial Times ranking) at which the reviewer is affiliated. It is a reverse-scored variable, meaning that highly-ranked business schools have a low value and low-ranked business schools have a high value. If the institution at which the reviewer holds a position falls outside the top 100 business school ranking, the value of 101 is assigned. Next, the logarithm is calculated.

For publication and citation record we estimate auxiliary regressions to estimate the deviation between how reviewers actually perform (with regard to number of publications and citations) compared to how we expect them to perform given their background (i.e. gender, editorial board membership of at least one of the five major marketing journals and business school ranking). The residuals obtained from these two auxiliary regressions are used in the models to capture how differences in expected versus actual performance with regard to publications and citations influence reviewer recommendation behavior. When reviewers are more impactful in terms of publications and citations, we can expect them to be tougher in the review process.

Explanatory variables: Review characteristics. Review characteristics are operationalized through three variables: (1) number of words in reviewer's letter, (2) number of issues raised in reviewer's letter and (3) reviewer turnaround.

Number of words in reviewer's letter captures the total number of words in the letter of the reviewer to the authors. For model estimation purposes we include the logarithm of this variable.

Number of issues raised in reviewer's letter captures the total number of issues raised in the reviewer's letter to the authors. For model estimation purposes we include the logarithm of this variable.

Next, reviewer turnaround indicates the total number of days it took for a reviewer to form his judgment of the manuscript. For model estimation purposes we include the logarithm of 'reviewer turnaround'.

We describe the explanatory variables used in the analysis in Table 6. Appendix A contains the correlation matrix for the studied variables.

Variable	Measurement Description
DEPENDENT VARIABI	LE
Reviewer recommendation	Reviewer recommendation classified in three categories: (1) Reject, (2) Major Revision, (3) Minor Revision/Accept.
FAVORITISM	
Past co-authorship	Dummy variable that takes the value of 1 if at least one of the authors had published a paper in the top 40 journals with any of the reviewers until (i.e. including) the year of submission.
Geodesic distance author-reviewer	Distance between author and reviewer, as operationalized by the minimum of the Great Circle Distance between every author and every reviewer of a manuscript, considering their affiliations in the year of submission.
Reviewer times cited once	Dummy variable that takes the value of 1 if one article published by the reviewer is cited.
Reviewer times cited twice or more	Dummy variable that takes the value of 1 if two or more articles published by the reviewer are cited.
Number of cites reviewer	The cumulative number of times articles by the reviewer are cited in a manuscript.

REVIEWER CHARACTERISTICS

Gender reviewer	Dummy variable for gender of the reviewer that take the value 0 for female reviewers and 1 for male reviewers.
Editorial board membership reviewer	Dummy variable that takes the value of 1 if reviewer is a member of the editorial board of IJRM in the year of submission of the article.
Business school ranking reviewer [R]	The business school ranking of the reviewer (provided by the Financial Times Ranking of the MBA at the reviewer's school). Reverse-scored variable that takes the value of 101 when the institution does not appear in the top 100 business school ranking.
Publication record reviewer	Residuals obtained through auxiliary regression with cumulative number of papers of the reviewer at year of submission in top 5 journals (MKS, JCR, JMR, JM, IJRM) as dependent variable and gender, editorial board membership and business school ranking as explanatory variables.
Citation record reviewer	Residuals obtained through auxiliary regression with cumulative number of citations of reviewer's work at year of submission in top 5 journals (MKS, JCR, JMR, JM, IJRM) as dependent variable and gender, editorial board membership and business school ranking as explanatory variables.

REVIEW CHARACTERISTICS

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Number of words in reviewer's letter	Total number of words in reviewer's letter to the author.
Number of issues raised in reviewer's letter	Total number of issues raised by reviewer in his or her letter to authors.
Reviewer turnaround	Total number of days since manuscript is sent to reviewer until reply of reviewer.

Table 6: Explanatory variables

Table 7 contains the descriptives for the explanatory variables mentioned in Table 6. Column 1 in table 7 contains the drivers of reviewer recommendation. Column 3 contains a single number (which is a count) when it pertains to past co-authorship, reviewer cited once, reviewer cited twice or more, gender of the reviewer and to editorial board membership IJRM of the reviewer. Column 3 contains the average and the range in square brackets for all other variables.

	Value	Entire Sample
FAVORITISM		
Past co-authorship	Count	29
Geodesic distance author-reviewer	Average [range]	5554 [0, 19588]
Reviewer cited once	Count	242
Reviewer cited twice or more	Count	180
Number of cites reviewer	Average [range]	1.75 [0,32]
REVIEWER CHARACTERISTICS		
Gender reviewer (dummy equals 1 for male reviewers)	Count	837
Editorial board membership IJRM reviewer	Count	604
Business school ranking reviewer[R]	Average [range]	55.27 [1,101]
Publication record reviewer	Average [range]	7.41 [0, 43]
Citation record reviewer	Average [range]	199.70 [0, 1973]

REVIEW CHARACTERISTICS		
Number of words in reviewer's letter	Average [range]	681.50 [0, 2721]
Number of issues raised in reviewer's letter	Average [range]	7.80 [1, 35]
Reviewer turnaround time	Average [range]	34.42 [0, 150]
Number of observations		970

Table 7: Descriptives of explanatory variables

5. Model and Results

Given that our dependent variable consists of three ranked choice options, we use an ordered probit model to estimate the drivers of reviewers' advice. Let $EVALUATION_{rj}$ * be the unobserved evaluation reviewer *r* has about manuscript *j*.

$$EVALUATION_{rj}^{*} = \alpha X_{rj} + \beta Y_r + \mu_j + \varepsilon_{rj}$$

Where X_{rj} is a vector of favoritism variables, Y_r is a vector of reviewer and review variables, and μ_j are manuscript specific random effects. In practice, one usually opts not to include an intercept in this model because this facilitates the interpretation of the ordered regression model as the threshold parameters and the intercept in the latent variable equation are not jointly identified. This variable is subsequently mapped onto an ordered categorical variable (i.e. reviewers' advice):

 $Y_1 = 1$ (Reject) if $v_0 < EVALUATION_{rj} * < v_1$

 $Y_1 = 2$ (Major revision) if $v_1 < EVALUATION_{rj} * < v_2$

 $Y_1 = 3$ (Minor revision/Accept) if $v_2 < EVALUATION_{rj}* < v_3$

 υ_0 to υ_3 are the unobserved thresholds. In practice one usually sets υ_0 and υ_3 equal to $-\infty$ and $+\infty$. Next, we checked the fit of our model. We used the Likelihood Ratio Chi-Square test to assess model fit. This test examines whether at least one of the explanatory variables included in the model is not equal to zero (against the null hypothesis that all explanatory variables in the model are equal to zero). The small p-value (p < .01) indicates that at least one of the explanatory variables has a significant effect on reviewer recommendation. Ordered choice models do not have a statistic such as R² to assess model fit (besides pseudo-R²s which can only be interpreted with great care). We present our estimates in table 8.

Variable	Coefficient		SE
FANODITICM			
FAVUKI I ISIVI Dest ee enthembin	50	**	24
Past co-authorship	.53	~~~	.24
Geodesic distance author-reviewer	.02		.03
Reviewer times cited once	08		.13
Reviewer times cited twice or more	.39	***	.15
Number of cites reviewer	.05		.09
REVIEWER CHARACTERISTICS			
Gender reviewer	.37	***	.14
Editorial board membership IJRM reviewer	26	***	.10
Business school ranking reviewer [R]	09	**	.04
Publication record reviewer	03		.09
Citation record reviewer	.07	*	.04
REVIEW CHARACTERISTICS			
Number of words in reviewer's letter	01		.04
Number of issues raised in reviewer's letter	.17	*	.09
Reviewer turnaround	.14	**	.07

* p < .10 (two-sided tests).

** p < .05 (two-sided tests).

*** p < .01 (two-sided tests).

[R]=Reverse coded

Table 8: Results of random effects ordered probit model

The interpretation of the model results is not straightforward because the effects of the explanatory variables get channeled through a nonlinear cumulative standard normal distribution function in an ordered probit model (Franses and Paap 2001). We will interpret the model results in terms of ordered log-odds coefficients (shown in column 2). For a one unit increase in the explanatory variable, the

dependent variable (i.e. reviewer recommendation) will change by the coefficient given that the other explanatory variables are held constant.

The model results indicate that past co-authorship has a significant positive effect on reviewer recommendation. If the reviewer has published a paper with one of the authors of the manuscript, then the chance of a more favorable review outcome increases ($\alpha_1 = .53$, p < .05). Apparently, although the review process is blind, reviewers tend to judge manuscripts of acquainted authors more favorably. The relation between past co-authorship and reviewer recommendation is particularly interesting given that reviewers are unaware of the identity of the authors. This finding may be explained by the fact that scholars that have previously collaborated on a project are familiar with each others' work and share similar research interests. Reviewers also tend to judge a manuscript more favorably when two articles or more published by the reviewer are cited in the manuscript ($\alpha_4 = .39$, p < .01). Citing a reviewer at least once does not significantly affect reviewer recommendation ($\alpha_5 = .05$, p > .10). Thus, our hypothesis that citing a reviewer always results in a more favorable reviewer recommendation is not supported. Only when authors cite more than one article of the reviewer, chances of receiving a more favorable reviewer recommendation increase.

Next, the study results indicate that reviewer characteristics play a major role in review outcome. Manuscripts with male reviewers have higher odds of receiving a more favorable reviewer recommendation ($\beta_1 = .37$, p < .01). Whereas previous research on this issue is inconsistent (see Wing et al. 2010), our study confirms the existence of gender biases in the review process, i.e. male authors tend to judge manuscripts more favorably than female reviewers. Table 9 indicates to what extent female versus male reviewers differ in their reviewer behavior by representing the frequency and percentage (between brackets) for each of the recommendation categories. Male reviewers judge manuscripts more favorably than female reviewers (p < .05). For example, 58.5% of male review recommendations are refusals of a manuscript versus 67.7% of female recommendations.

	Female reviewer	Male reviewer
Reject	90 (67.7%)	490 (58.5%)
Major revision	34 (25.6%)	262 (31.3%)
Minor revision/Accept	9 (6.8%)	85 (10.2%)
Total	133 (100%)	837 (100%)

Table 9: Impact of gender on reviewer behavior

Reviewers who are a member of the editorial board of IJRM judge manuscripts less favorably ($\beta_2 = -.26$, p < .01). That is, editorial board members want to safeguard their journal and will be tougher than reviewers who do not belong to the editorial board of the journal. This result is in line with our expectations. Results indicate that reviewers affiliated with lower ranked business schools evaluate manuscripts less favorably ($\beta_3 = -.09$, p < .05). This is a surprising finding as we expected that reviewers affiliated with higher ranked business schools would be tougher. Further research is needed with regard to this finding. Results indicate that reviewers with a larger citation record judge submitted manuscripts more favorably ($\beta_5 = .07$, p < .10). Thus, our hypothesis that reviewers who are cited more than expected will judge manuscripts less favorably is not supported. This finding implies that more successful reviewers feel comfortable in their current position and do not need to prove themselves anymore. We find no significant relationship between publication record and reviewer recommendation ($\beta_4 = -.03$, p > .10).

Next, we found that review characteristics also influence reviewer recommendation. When there are more issues raised in the letter to the authors ($\beta_7 = .17$, p < .10) and when reviewer turnaround increases ($\beta_8 = .14$, p < .05), the chance of receiving a more favorable reviewer recommendation also increases. Apparently, when reviewers list more issues to solve in their comment to the authors, they do so because they think that the manuscript can benefit from their comments and hopefully will get published in the journal later on.

In sum, we can conclude that favoritism is present in editorial review processes in marketing and that reviewer and review characteristics also influence review outcome. Although reviewers are carefully selected (see the number of reviewers who are member of an editorial board in Table 7, an indication of reviewers' high status in academia), some social effects exist in double blind review processes that prevent a pure objective judgment of manuscripts. Our results indicate that science is socially constructed and that other factors may come into play in the editorial review process, besides manuscript characteristics only. We also show that review characteristics, such as the number of issues raised in the reviewer's letter and turnaround time have a significant positive effect on reviewer recommendations.

Robustness checks

We conducted several checks to examine the robustness of our findings. First, as there were two editors of the journal appointed during our observation period 2006-2009, we examine whether our findings remain similar for the two separate sub samples of manuscripts which they were responsible for. There were no agreements among the editors on how to select reviewers, so there should be no biases in reviewer allocation. Results remain highly similar beyond shifts in significance levels (due to the elimination of a large number of observations). No changes in sign were observed. Also, no variable that previously had a non-significant effect on reviewer recommendation becomes now significant.

Second, we estimate the full model again but without the variable 'number of words in reviewer's letter'. Removal of the variable leads to exactly the same results.

Third, instead of using publication and citation record deviations from expected performances we can use the original variables that measure the publication record and citation record of the reviewer in the main model. When we replace publication and citation deviations with the total number of publications and citations reviewer received, we find exactly the same results.

Fourth, our main model contains three variables that measure the extent to which authors cite the reviewer: (1) a dummy that takes the value of 1 if at least one article of the reviewer is cited, (2) a dummy that takes the value of 1 if more than one article of the reviewer is cited and (3) a count variable that measures the total number of times a reviewer is cited. If we exclude the total number of times a reviewer is cited from our model, results remain exactly the same. Next, if we only retain the total number of times

a reviewer is cited and exclude the two dummy variables, the effects of the other explanatory variables remain the same. The total number of times a reviewer is cited becomes significant positive (p < .01).

Fifth, we included random effects to capture differences across manuscripts that may influence review outcome. As a robustness check we also estimated a model without random effects and included the following manuscript characteristics: manuscript method type (dummies for conceptual, empirical, methodological and analytical method type), manuscript orientation (dummies for behavioral and quantitative method type), gender author, editorial board membership author, business school ranking author, publication record author, citation record author, US affiliation author, number of pages of manuscript and length of the title of the submitted manuscript. Results remain highly similar, except for past co-authorship, business school ranking reviewer and number of issues raised. These variables become insignificant (p > .10) in this extended model.

Sixth, if we replace the dummy variable that measures whether or not a reviewer is member of the editorial board of the studied journal by a dummy that captures whether or not a reviewer is member of the editorial board of at least one of the five major journals in marketing (i.e. IJRM, JCR, JM, JMR and MKS), results remain the same. This finding implicates that editorial board members have a tendency to safeguard academic journals they review for.

6. Discussion

6.1. Conclusion

Publishing is very important in academia. Practically every scholar tries to publish his studies in peer reviewed scientific journals. Because of their influence in review outcomes, reviewers are often described as 'the gatekeepers in science' (Hojat, Gonnella and Caelleigh 2003). Peer reviewing has undeniably a lot of merits such as improving the quality of a manuscript (Benos et al. 2007). It is so that reviewers function as experts in the editorial process by judging manuscripts and suggest areas for improvement.

This study therefore accords with the increasing attention to expert judgments in various scientific disciplines and fills the gap in this research area in the scientometric literature in marketing.

This study aimed to clarify drivers of reviewer recommendation behavior and discloses some interesting insights. We find that past co-authorship and citing more than one article published by the reviewer both affect the chance of receiving a more favorable reviewer recommendation. Reviewer characteristics also impact reviewer recommendations. Reviewers who are an editorial board member in IJRM or are affiliated with a lower ranked business school are more likely to recommend a rejection. Gender also affects review outcome, i.e. males judge articles more favorably. We also found that reviewers that are cited to a larger extent by fellow scholars are less tough. Next, the number of issues raised in the comment to the authors and reviewer turnaround also impact reviewer recommendation behavior. When there are more issues raised or when reviewer turnaround time increases, the chance of receiving a more favorable review recommendation also increases.

6.2. Research implications

This paper contributes to academia in various ways. This paper on reviewer recommendation behavior is the first to rigorously develop and test the effects of various explanatory variables, such as the three variables related to favoritism, on reviewer recommendations in the marketing discipline. Second, we aimed to shed more light on the review process as for many scholars this process is still very obscure.

The most important implications of our study are for journal editors. They should stand still with the fact that the peer review process is inevitably characterized by some biases that one cannot avoid. We clearly demonstrated that other factors besides manuscript characteristics affect expert judgments. Second, our results showed that editorial board members tend to judge manuscripts less favorable than other reviewers. This means that editorial board members also play a major role in safeguarding the journal by watching over the quality of submitted manuscripts.

Scholars who submit a manuscript to a journal have to be aware that other factors are also taken into account in editorial review processes, besides manuscripts characteristics only. For example, as citing

articles of a reviewer more than once positively affects reviewer recommendation behavior, scholars can anticipate this to a certain extent by examining the main research domains for which your research is relevant and consider citing relevant studies published by experts in the domain.

6.3. Research limitations and future research

Future research should determine whether differences exist between reviewer biases in broad journals and more specialized journals. Or related to this issue, tracking and mapping differences in how recommendations are made in journals with a higher impact versus a low impact factor. Reviewers will judge articles differently when they have to review a manuscript submitted for a top tier journal than for a lower ranked journals (Bornmann, Weymuth and Daniel 2010).

Secondly, more detailed insights into the confirmatory bias in reviewer recommendation behavior offers potential for future research. Some scholars have already suggested that challenging commonly held beliefs may have a negative effect on the chances of getting through the review process more easily as reviewers tend to accept outcomes that agree with commonly accepted theories and discredit those that do not (see Hojat, Gonella and Caelleigh 2003). Future research is needed to examine if this is really the case or if editors guard such papers through the review process.

Thirdly, author-suggested reviewers may rate manuscripts more favorably than editor-suggested reviewers (Bornmann and Daniel 2010). Although the review process is blind in the journal we study, it is possible that author-suggested reviewers may judge manuscripts more favorable due to the fact that authors have different reasons in the back of their mind to nominate a reviewer (for example, favorable attitude towards the research topic) than editors may have (for example, methodological knowledge).

This leads us to a fourth possible avenue for future research. Namely, more research is needed into the effects of the background characteristics of a reviewer, besides business school ranking and editorial board membership. For example, is a reviewer selected for his conceptual knowledge or methodological knowledge? Or, to what extent play his/her ideological orientation or theoretical persuasion a role in evaluating manuscripts (Hojat, Gonalla and Caelleigh 2003). Also, to what extent plays the nationality of the reviewer a role in evaluating manuscripts submitted to an European based marketing journal?

Fifth, the data sample was limited to reviewer recommendations of manuscripts submitted to IJRM in first round. Future research can also examine drivers of reviewer recommendations in next rounds. Therefore, one should also take into account other drivers of reviewer recommendation behavior such as the extent to which reviewers are pleased with the adaptations made by the authors after receiving earlier reviewer feedback.

Sixth, another area for future research concerns what factors influence editorial decisions. For example, how does agreement across reviewers influence the opinion of the area editor and the final verdict of the journal editor? Which factors do they take into consideration when judging a manuscript previously judged by multiple independent reviewers? Do they evaluate manuscripts in a similar way or do they also pay attention to other factors?
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Appendix A: Correlation Matrix

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	ээіурА	Past co-authorship	onstaib sizeboeD	Reviewer cited once	Reviewer cited twice or more	Number of cites reviewer	Gender reviewer	Editorial board membership reviewer	Business school ranking reviewer	Publication record reviewer	Citation record reviewer	Number of words in reviewer's letter	ni səuzsi 10 rədmuN reviewer's letter	Reviewer turnaround time
Advice	1.00	0.09	-0.02	-0.03	0.15	0.12	0.07	-0.10	0.00	0.07	0.09	-0.01	0.04	0.08
Past co-authorship	0.09	1.00	-0.10	0.04	0.10	0.08	0.02	-0.03	-0.01	0.01	0.00	0.01	0.00	-0.05
Geodesic distance	-0.02	-0.10	1.00	-0.04	0.00	-0.02	-0.10	0.04	0.00	-0.03	0.01	0.00	-0.02	0.01
Reviewer cited once	-0.03	0.04	-0.04	1.00	-0.28	0.24	-0.03	-0.13	0.02	0.05	0.07	0.00	-0.01	0.02
Reviewer cited twice or more	0.15	0.10	0.00	-0.28	1.00	0.65	-0.06	-0.14	0.05	0.16	0.16	0.00	-0.02	0.01
Number of cites reviewer	0.12	0.08	-0.02	0.24	0.65	1.00	-0.01	-0.22	0.05	0.18	0.19	0.00	0.00	0.01
Gender reviewer	0.07	0.02	-0.10	-0.03	-0.06	-0.01	1.00	0.10	-0.02	0.00	0.00	-0.05	-0.08	0.01
Editorial board membership reviewer	-0.10	-0.03	0.04	-0.13	-0.14	-0.22	0.10	1.00	-0.10	0.01	0.02	-0.02	-0.06	-0.01
Business school ranking reviewer	0.00	-0.01	0.00	0.02	0.05	0.05	-0.02	-0.10	1.00	-0.02	-0.02	0.04	0.03	0.02
Publication record reviewer	0.07	0.01	-0.03	0.05	0.16	0.18	0.00	0.01	-0.02	1.00	0.74	-0.03	-0.04	-0.04
Citation record reviewer	0.09	0.00	0.01	0.07	0.16	0.19	0.00	0.02	-0.02	0.74	1.00	0.00	0.00	-0.04
Number of words in reviewer's letter	-0.01	0.01	0.00	0.00	0.00	0.00	-0.05	-0.02	0.04	-0.03	0.00	1.00	0.22	-0.03
Number of issues in reviewer's letter	0.04	0.00	-0.02	-0.01	-0.02	0.00	-0.08	-0.06	0.03	-0.04	0.00	0.22	1.00	-0.02
Reviewer turnaround time	0.08	-0.05	0.01	0.02	0.01	0.01	0.01	-0.01	0.02	-0.04	-0.04	-0.03	-0.02	1.00
Note: Bold correlations are significant	t at $p < .0$	05 (two-	sided te	sts).										

Chapter 4: A Bibliometric Review of Innovation Research in Marketing

1. Abstract

Innovation is a widely studied topic in marketing. Companies that develop new products or services have an advantage over firms that are to a lesser extent engaged with innovation as successful innovation is often closely related to business success. Consumers value innovations as these new products or services can impact their lives significantly. Not surprisingly, innovation is a very important research field in the marketing discipline. It has been extensively studied by various scholars and multiple reviews have been published on studied topics within innovation research. However, studies that provide such a review of the literature are predominantly based on a subjective selection of relevant research topics within the discipline. In this study the authors review the innovation literature in the marketing discipline through a profound content analysis. We studied all articles on innovation in five major marketing journals from 1981 to 2010. We trace research priorities in innovation research, examine how the use of innovation phrases has evolved over time, and define the most important sources of these articles in terms of journals, authors and research institutions. We find that new and more specialized phrases arise in the innovation literature over time. Also, we find that the main research sub domains in innovation research are both research streams that already exist for some time (such as adoption and diffusion models), whereas other important research sub domains only more recently emerged (such as studies on network externalities). We also reveal which journals, authors and institutions are worth considering when scholars or practitioners search the innovation literature. By exploring and mapping the innovation research field within marketing we hope to encourage further research on this topic.

2. Introduction

Innovation has received a lot of attention by many scholars in marketing during the past decades and multiple efforts have been undertaken to review the innovation literature (e.g. Garcia and Calantone 2002; Hauser, Tellis and Griffin 2006; Peres, Muller and Mahajan 2010). In this study, we will focus on innovation research within the marketing discipline and provide a bibliometric review of the literature on this topic. We aim to quantify and map the innovation literature in a more objective manner, i.e. through a content analysis. Content analysis is able to track the evolution of a particular research stream thoroughly. For example, through the count of particular words that authors use to describe innovation research over time. Therefore, this study adds to the existing literature on innovation by providing detailed and well founded insights in the history and evolution of the innovation discipline.

Innovation is a broad term that captures various meanings and has been examined in a variety of scientific disciplines, such as economics and engineering. In marketing, innovation refers to "*the process of bringing new products and services to market*" (Hauser, Tellis and Griffin 2006, p.687). This study wants to accomplish three research objectives: first, to trace research priorities in innovation research from 1981 till 2010 using co-word analysis (i.e. words that are frequently used together in titles, abstracts or keywords); second, to examine how the use of innovation concepts has evolved over time; third, to define the most important sources of these articles in terms of journals, authors and research institutions. Both scholars and practitioners can benefit from detailed insights in which topics are most studied and cited in the innovation literature and in the sources thereof, in terms of relevant journals and authors to look for when searching for information on a particular topic. We also provide an overview of the top publishing research institutions on innovation.

The study is based on a review of all articles on innovation published in five major marketing journals, *International Journal of Research in Marketing* (IJRM), *Journal of Consumer Research* (JCR), *Journal of Marketing* (JM), *Journal of Marketing Research* (JMR), and *Marketing Science* (MKS)

between 1981 and 2010. The most frequently studied innovation concepts and research topics will be identified in this study and the history and evolution of innovation research will be tracked over time. As the identity of research on marketing and innovation is defined by the subject matter it dealt with over time, insightful reviews of the innovation literature in marketing are useful for marketing scholars and practitioners who want to gain more insights in the history and evolution of this research discipline.

Next, we present a literature overview. The third section describes the data and the fourth section contains the results. We end with a discussion of our findings and describe the implications of our research and also state the limitations of our study, along with future research directions.

3. Theory

In this section we provide a brief theoretical background on the importance of innovation research in the marketing discipline and how previous reviews have discussed the state of innovation research. Next, we discuss the use of content analysis in providing a profound bibliographic overview of the innovation discipline in marketing.

3.1. Innovation research

Innovation is a very important aspect of doing business today (Golder, Shacham and Mitra 2009; Hauser, Tellis and Griffin 2006). Each year, companies spend billions of dollars to developing new products and introducing them to the market. Innovation is responsible for dramatically improving consumers' lives through raising the quality and lowering the prices of products and services (Hauser, Tellis and Griffin 2006). Hauser, Tellis and Griffin (2006) state that as a result, successful innovations can have an enormous impact on market structures through the creation of new markets for these new products and services, or through the destruction of existing ones as consumers prefer to buy new products instead of older ones. Therefore, the impact of innovation both on companies and consumers should not be underrated. Hence, innovation is a broad topic and has been studied by a variety of disciplines, such as economics and engineering. According to Hauser, Tellis and Griffin (2006, p. 688), "successful innovation rests on first understanding customer needs and then developing products that meet those needs". The 2005 OECD study on innovation also captures the essence of innovation: "innovation' is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices". Ideas or inventions are not necessarily innovations. An invention only turns into an innovation when it is produced and marketed and subsequently diffused into the marketplace (Garcia and Calantone 2002). The invention of a new product only in laboratory setting does not have any direct economic value for the firm. Garcia and Calantone (2002) note that innovation also includes: product development, manufacturing, marketing, distribution, servicing and later product adaptation and upgrading.

Previous studies have already provided integrative reviews of the research traditions within innovation research. For example, Hauser, Tellis and Griffin (2006) identified sixteen innovation topics relevant to the marketing discipline and subsequently classified them under five research fields: (1) consumer response to innovation, as the success of innovation depends on consumers' evaluation and acceptance of them, (2) organizations and innovation, here, drivers of innovation are discussed, how firms organize for innovation and how new methods and tools for improving new product development are used by firms, (3) strategic market entry, as strategic issues come into play when firm want to innovate, (4) prescriptions for product development, the process that leads to a commercial product, and (5) outcomes from innovation, i.e. market rewards for entry, how incumbents can defend against new entry and how firms must internally reward their employees' innovation effort. Other review studies focus on specific aspects of innovation, such as terminology used in innovation research (e.g. Garcia and Calantone 2002), diffusion modeling and new product growth models (e.g. Chandrasekaran and Tellis 2006; Mahajan, Muller and Srivastava 1990; Peres, Muller, Mahajan 2010), etc. The main difference between this study and previous reviews of the innovation literature is that we provide an in depth content analysis of research on innovation.

3.2. Content analysis

In its broadest sense, "content analysis is a research technique for making replicable and valid inferences from texts (or other meaningful matter) to the contexts of their use" (Krippendorf 2004, p.18). Content analysis on published research is an effective research technique to gain detailed insights in a particular research field. Therefore, it has already been used by multiple authors, in and outside marketing. For example, Brown and Dant (2009) inventoried the theories used in Journal of Retailing articles during the time period 2004-2009 and tracked the trends in the use of those theories over that observation window. In a similar vein, other authors in the marketing discipline have manually content analyzed what has been published in particular academic journals, such as Journal of Public Policy & Marketing (Sprott and Miyazaki 2002), International Marketing Review (Malhotra, Wu and Whitelock 2005), International Journal of Advertising (West 2007) and Journal of Services Marketing (Nel et al. 2011). We believe that new insights, i.e. different insights than those one would obtain through a traditional review of the literature, can be obtained through this method. Authors who write traditional overviews of the literature should know all relevant articles and authors should be able to summarize these articles in a meaningful overview, whereas content analysis is able to track the evolution of a particular research stream more objectively. For example, through the count of particular words that authors use to describe their innovation research over time.

Note that interesting insights can also be obtained by examining more into detail the origins of published studies. West (2007) distinguished between the inputs (e.g. author, number of authors per article, institution, domicile, gender, occupation) and outputs (e.g. content of published articles: topic, sample, method, analysis, keywords) of scholarship. The author points to the fact that interesting insights in science can be obtained by examining the relationship between inputs and outputs. For example, mapping the most productive academics or institutions in a particular research discipline or mapping the authors and institutions responsible for the surge in studies on particular topics can be very insightful. Indeed, various scholars have already examined top publishing authors, author institutions, author

collaborations, domicile, gender and occupation in particular marketing journals (e.g. Goldenberg et al. 2010, Nel et al. 2011, Seggie and Griffith 2009, West 2007). In this study, we also identify which journals, authors and institutions are responsible for the intellectual growth of innovation research.

3.3. *Bibliometric analysis*

The goals of this study, i.e. tracing and mapping the evolution of innovation research, fit within the broader research tradition of bibliometric analysis. This research tradition analyzes trends in science by using quantitative studies on publications (Hood and Wilson 2001, Neff and Corley 2009). One of the methods used in bibliometric studies is co-word analysis, i.e. identifying clusters of words that appear together commonly in the literature (Neff and Corley 2009). Co-word analysis provides deeper insights in the dynamics and the structure of a research discipline (Bhattacharya and Basu 1998, Cahlik 2000). The words used for co-word analysis can come from article titles, abstracts or keyword lists. Researchers can then analyze co-occurrence patterns through factor analysis or hierarchical clustering in order to identify clusters of words that appear together commonly in the literature (Bhattacharya and Basu 1998). Clusters can also be created for successive time periods to examine changes in research disciplines over time. The method has been used in various research disciplines, such as in human communication studies (Stephen 1999), ecology (Neff and Corley 2009), economics (Cahlik 2000), condensed matter physics (Bhattacharya and Basu 1998) and technology foresight (Su and Lee 2010).

Our database allows us to review the connections between the various concepts studied in innovation research and thus allows novel descriptions of this research discipline. This study will provide a detailed overview on which concepts are influential in innovation and examines which institutions and authors innovation research originates from.

4. Data

4.1. Sample

We inventoried all articles published in JCR, JM, and JMR from 1981 to 2010 and in MKS and IJRM from 1987 and 1997 respectively to 2010 as they enter the ISI-SSCI later. We excluded all articles published before 1981, as most journals' coverage starts with the early 1970s (Goldenberg et al. 2010). JM entered the ISI-SSCI already in 1956. JMR entered the database in 1964 and JCR in 1974. MKS entered the ISI-SSCI only in 1987 and IJRM in 1997. Next, we excluded any articles with three pages or fewer (because these are typically editorials, software reviews, book review, etc) (see Stremersch, Verniers and Verhoef 2007). We focus on these five marketing journals, because they are a good representation of major journals in marketing (Tellis, Chandy and Ackermann 1999). Also, given their high impact factor, they are very influential on academic and managerial thoughts (Leonidou et al. 2010). This careful choice of the most important marketing journals provides a good reflection of the knowledge on innovation in the marketing discipline.



Figure 1: Procedure to identify selection words

Next, we set up a list containing 35 selection words and subsequently retained only articles with at least one of these words in their abstract to keep the study sample representative for research on innovation within the marketing discipline. The selection words were selected in four steps. Figure 1 displays the procedure we followed to choose relevant selection words. First, a discussion was held among the authors to identify a preliminary shortlist of five selection words (i.e. innovation, life cycle, new product, adoption, diffusion). Second, a preliminary dataset of innovation research articles was created based upon these five selection words. This dataset was subsequently scanned for phrases starting with the word 'new' to identify other relevant selection words as the word 'new' is very central in new product research. Third, we searched for relevant keywords used by the five major journals that authors can choose from to indicate what their research stands for when submitting their article. We also examined the keywords to describe the 500 most recently published studies in *Journal of Product Innovation Management* (JPIM), as this is a specialized journal and may contain more specific selection words. Fourth, a final follow up brainstorm and discussion session was held among the authors to identify the final list of selection words. Appendix A contains an overview of the 35 selection words.

As a check that the acquired sample of innovation research is truly representative, we performed two verifications. First, a subsample of articles published between 1990 and 2002 has previously been manually content coded on the presence of subject areas (see Stremersch, Verniers and Verhoef 2007). We examined whether all articles previously classified as dealing with new products are also classified as such in our sample. This was the case except for six articles, five which are on country of origin effects and one on trademark strategy. Next, we also examined the extent to which articles on innovation between 1990 and 2002, identified with our selection words, were classified as dealing with new products in the study of Stremersch, Verniers and Verhoef (2007). Whereas Stremersch, Verniers and Verhoef (2007) identify 132 articles on new products between 1990 and 2002, we classified 172 articles as dealing with innovation in the same time period (=30.30% increase). As expected, we have more articles in our sample as innovation captures more than only research on 'new products'. For example, articles on how consumers evaluate innovations are also included in our study sample. As a second verification, one

author thoroughly read the article abstracts of the retained articles and verified whether these articles are really on innovation. Articles that should not belong in the final sample of articles on innovation were removed. This final restricted dataset consists of 409 articles. This means that 7.95% of all articles (409 articles out of a total of 5142) published in the five major marketing journals are on innovation between 1981 and 2010.

4.2. Sample description

We divided the study period into 10 sub-periods (each 3 years) in order to examine changes in the extent to which articles on innovation are published over time. Table 1 indicates that there is an increase in the number of articles on innovation over time. A regression with the time period as explanatory variable and number of published articles on innovation as dependent variable confirms this positive trend (p < .01). However, when we compare the growth of the innovation discipline with the total number of publications across time (which also increases over time), we see that the proportion of articles on innovation displays a peak in the time period 1996-1998 and subsequently decreases slightly in the subsequent time periods. Thus, the proportion of published articles on innovation to the total number of published articles displays an inverted U shaped pattern (p < .10). Particularly interesting is the increase in research interest in innovation between the first two time periods and the time period 1996-1998 compared to 1981-1983 and 1984-1986.

	1981- 1983	1984- 1986	1987- 1989	1990- 1992	1993- 1995	1996- 1998	1999- 2001	2002- 2004	2005- 2007	2008- 2010
Count of articles on innovation	18	16	26	30	31	52	45	55	50	86
Proportion of articles on innovation	4.02%	4.38%	5.99%	7.52%	6.92%	12.41%	9.74%	10.07%	7.00%	9.50%

Table 1: Innovation Research between 1981 and 2010

4.3. Content analysis

In this study we will use abstract words as our unit of analysis because abstracts provide detailed information about the subject of a study. Also, there are some disadvantages associated with using title words and keywords as the unit of analysis. How keywords are selected may vary by journal (Neff and Corley 2009) and titles often do not contain sufficient information about the study.

In order to undertake a content analysis on innovation studies, data cleaning is very important. To reduce the number of irrelevant terms in the word dictionary, a number of filtering tasks are performed. First, items occurring in more than 70 percent of cases are removed, because these words are too common to have any informative or discriminative value (e.g. the words 'a', and 'the'). Next, the software program Wordstat combined plural and singular forms of words into the same word, words with alternative spellings (e.g. American English versus British English), and hyphenated words with non-hyphenated words (see Neff and Corley 2009 for a similar procedure). In order to keep the sample of abstract words relevant and manageable, we retained only the 500 most frequently occurring abstract words. The list of these words is manually checked and irrelevant words are removed from the dictionary. The final dataset contains 151 abstract words. Appendix C contains an overview of the selected abstract words for this study, along with the excluded words from the top 500 most frequently occurring words.

5. Results

In this section we discuss the results we obtained through a content analysis of the innovation literature. We start with mapping the evolution in the use of particular phrases to describe innovation research. Next, we perform a hierarchal cluster analysis to identify the most studied research themes in our full observation period 1981-2010. In the third sub section we discuss the extent to which the five studied journals publish innovation research and map differences in research priorities. In sub section four and five we map the most important authors and institutions in innovation.

5.1. Most frequently occurring phrases within innovation research

Phrases are sequences of words with a specific meaning, and are often also called 'expressions' or 'idioms'. We scanned the entire text database and identified the most frequent phrases and idioms per studied time period. Table 2 displays the most frequently used phrases per time period. We only included phrases that appear in more than 4% of the articles for reasons of clarity. A full table is available from the authors upon request. Column 1 displays the ranking of the phrases. The even columns contain the phrases and the uneven columns (except for the first one which contains the ranking) contain percentages, representing the proportion of articles with the phrase in their abstract compared to the total amount of articles on innovation.

Table 2 shows that the number of phrases that authors use to describe their innovation research increases during our observation window 1981-2010. This means that the research field has become broader over time and that more specialized terms now exist in innovation research. In the first time periods, few phrases are identified in the innovation literature. Most phrases describe innovation research on a very general level, such as 'line extension', 'product development' and 'product introduction'. In the subsequent time periods, we see that more specialized terms are used to describe innovation research, such as 'pioneer advantage', 'product launch' and 'diffusion speed'.

Ranking	1981-1983	Percentage	1984-1986	Percentage	1987-1989	Percentage	1990-1992	Percentage	1993-1995	Percentage
1	Life cycle	56%	New product	38%	New product	42%	New product	63%	New product	55%
7	New product	28%	Market share	19%	Product development	12%	Diffusion model	20%	Diffusion model	19%
3	Product growth	11%	Opinion leadership	6%	Product introduction	12%	Bass model	12%	Market share	19%
4					Marketing strategy	12%	Life cycle	10%	Product development	16%
ŝ					Market share	8%	Brand extension	10%	Repeat purchase	10%
9					Late entrant	8%	Market share	7%	Product introduction	7%
7					Optimal price	8%	Diffusion process	7%	Development process	7%
œ					Price policy	8%	Product attribute	7%	Product quality	7%
6					Switch cost	8%	Social welfare	7%	Brand entry	7%
10					Purchase intention	4%			Market pioneer	7%
11					Pioneer advantage	4%			Premarket forecast	7%
12					Line extension	4%				
13				E	Market maven	4%				
				Tabı	le 2: Top abstract	phrases				

Ranking	1996-1998	Percentage	1999-2001	Percentage	2002-2004	Percentage	2005-2007	Percentage	2008-2010	
1	New product	71%	New product	e9%	New product	e0%	New product	58%	New product	51%
7	Product development	35%	Product development	16%	Diffusion model	13%	Product development	10%	Product development	13%
3	Product introduction	17%	Product quality	9%	Product development	11%	Market orientation	6%	Product introduction	9%
4	Development process	17%	Diffusion model	7%	Market orientation	11%	Marketing strategy	6%	Product innovation	6%
ŝ	Market share	10%	Late entrant	7%	Marketing strategy	9%6	Market share	6%	Development process	6%
9	New product launch	10%	Motion picture	7%	Market share	6%	New technology	6%	New product launch	6%
Г	Diffusion model	8%	Incumbent firm	7%	Diffusion speed	6%	Product innovation	6%	Adoption behavior	6%
œ	Life cycle	8%	Technological innovation	7%	New product success	6%	Diffusion pattern	6%	New drug	6%
6	New product success	8%	Market share	4%	Product attribute	6%	New entrant	6%	Stock market	6%
10	Competitive advantage	8%	Life cycle	4%	Sale data	6%	New market	4%	Brand extension	5%
11	Marketing mix	8%	Cross-functional team	4%	New technology	6%	Life cycle	4%	Customer relationship	5%
12	Late entrant	6%	Slotting allowance	4%	New market	6%	Motion picture	4%	Research and development	5%
13	Motion picture	6%	Product innovation	4%	Hierarchical Bayes	6%	Market entry	4%	Market orientation	4%
14	New product development project	6%	New product performance	4%	Life cycle	4%	Marketing communication	4%	Marketing communication	4%
15	Market	6%	Diffusion speed	4%	International	4%	Marketing effort	4%	Diffusion model	4%

	penetration				market					
16	Price sensitivity	6%	Adoption process	4%	Development process	4%	New product acceptance	4%	New product performance	4%
17	Product entry	6%	Discontinuous innovation	4%	Diffusion process	4%	New product category	4%	Purchase intention	4%
18	Product quality	4%	Indirect network externalities	4%	Financial performance	4%	New product failure	4%	Diffusion process	4%
19	Marketing strategy	4%	New movie	4%	Market potential	4%	New service	4%	Financial performance	4%
20	Market orientation	4%	Product launch	4%	Bass diffusion model	4%	Position and price	4%	Hazard model	4%
21	Cross- functional team	4%	Product mix	4%	Market expansion	4%	Technological evolution	4%	Early adopter	4%
22	Early entrant	4%	Software product	4%	Marketing action	4%			Interpersonal communication	4%
23	Late entry	4%			National culture	4%			Pharmaceutical industry	4%
24	Launch strategy	4%			Price elasticity	4%			Product adoption	4%
25	Market size	4%							Social network	4%
26	New product adoption	4%							Spillover effect	4%
27	Product development cycle time	4%							Stock price	4%
28	Product performance	4%							Stock return	4%
29	Sale growth	4%								
30	Strategic orientation	4%								
				E		1				

Table 2: Continued

We examined whether significant trends exist in the use of particular phrases over time. Therefore we estimated linear regressions with the time period as explanatory variable and the percentage of phrase occurrence as dependent variable. We find a significant positive trend for the use of the following phrases: new product introduction (p < .05), market orientation (p < .05), product innovation (p < .01), firm performance (p < .05), new product performance (p < .05), financial performance (p < .05), market potential (p < .10) and incremental innovation (p < .05). As new phrases emerge and some phrases display significant positive trends in their use over time, we can infer that a number of new research themes has emerged in innovation research in our observation period 1981-2010. For example, scholars now also investigate the impact of business strategy (such as market orientation) on new product activity (Frambach, Prabhu and Verhallen 2003).



Figure 2: Occurrence of phrase 'New Product' over time

Remarkably, for the phrase 'new product' we find an inverted U shaped pattern over time (p < .01), displayed in Figure 2. This means that innovation research within the marketing discipline evolved mainly around new products and even to a larger extent over time up until 1996-1998. However, from the time period 1999-2001 onwards the phrase 'new product' is used to a lesser extent in articles on innovation. We found no significant negative trends in the proportional occurrence of phrases over time.

Although some phrases (such as life cycle) are clearly used to a lesser extent over time, they still get picked up once in a while by scholars in the field and thus do not show a significant negative trend over time.

Whereas this section focused on the evolution in the use of specific phrases to describe innovation research in each studied time period separately, we will focus in the next section on the most studied innovation research sub domains in our overall observation period 1981-2010 to gain insights in the overall importance of particular research sub domains within innovation research in marketing.

5.2. Hierarchical cluster analysis

In this section we examine which words are commonly used together to describe innovation research in our full observation period 1981-2010. We use a hierarchical cluster analysis to classify words in clusters that represent research sub domains within the innovation research discipline in marketing. The primary objective of cluster analysis is to classify words into groups so that each word is very similar to others in the cluster (Hair et al. 1998). The resulting clusters of words should show high internal homogeneity and high external heterogeneity (Hair et al. 1998). Thus, clustering will provide new insights in which words describe major research sub domains within innovation research. We use the Jaccard's similarity coefficient so that the two words with the highest association are agglomerated in the same cluster. Our level of analysis is the extent to which words appear together in the same sentence within article abstracts, as appearing together in the full abstract may lead to distorted results. Words appearing frequently together in the same sentence of an abstract have a higher association index value than words appearing less frequently together in the same sentence. We examined the cluster solution based on criteria such as the number of words within each group and the possibility to typify the groups. 18 clusters were identified that most optimally represent the underlying word co-occurrence structure. Also, when we study the evolution from a one cluster solution to a solution with more clusters we notice that more recently emerged research sub domains become most quickly independent research sub domains (e.g. culture, new drug releases...) versus 'older' research sub domains in innovation (e.g.

adoption and diffusion models, managerial decisions on innovation...). Appendix B contains a dendrogram that displays the arrangement of the clusters obtained through the hierarchical clustering procedure. Three clusters (cluster 8, 14 and 18) contain only two words and will not be discussed into detail in the remainder of this article.

Table 3 shows the cluster solution. Column 2 contains the eighteen clusters and column 3 indicates how many articles fall under each cluster. We categorized an article as falling under a particular research cluster when at least 2 words of the respective cluster appear in the article abstract. Obviously, articles may cover multiple research themes. We manually checked all articles classified under a particular cluster and verified whether these articles really belong to that particular cluster and removed non relevant articles if necessary. Cluster 1 is the largest cluster and contains 124 articles, and is followed by cluster 2 (with 107 articles) and cluster 3 (with 51 articles).

Cluster number	Cluster name	Number of articles	Representative studies
1	Adoption and diffusion models	124	Mahajan, Muller and Bass (JM 1990) Gatignon and Robertson (JCR 1985) Sultan, Farley and Lehmann (JMR 1990)
2	Managerial decisions on innovation	107	Hurley and Hult (JM 1998) Gatignon and Xuereb (JMR 1997) Gupta, Raj and Wilemon (JM 1986)
3	Entry and competition	51	Carpenter and Nakamoto (JMR 1989) Golder and Tellis (JMR 1993) Robinson and Fornell (JMR 1985)
4	New product attributes	50	Aaker and Keller (JM 1990) Park, Milberg and Lawson (JCR 1991) Urban, Weinberg and Hauser (JM 1996)
5	Retailing	31	Dolan and Jeuland (JM 1981) Kirmani and Wright (JCR 1989) Luo, Kannan and Ratchford (MKS 2007)
6	Competing standards	6	Chakravarti and Xie (JMR 2006) Hoeffler (JMR 2003) Lam et al. (JM 2010)
7	Preference measurement techniques	11	Hoeffler (JMR 2003) Ofek and Srinivasan (MKS 2002)

			Kohli and Mahajan (JMR 1991)
8	New product success and failure	4	Song and Perry (JM 1997) Goldenberg et al. (JM 2009) Kumar (JMR 2005)
9	Business-to-business	12	Sivadas and Dwyer (JM 2000) Sorescu, Shankar and Kushwaha (JMR 2007) Lee, Johnson and Grewal (IJRM 2008)
10	New product development	26	Olson, Walker and Ruekert (JM 1995) Moorman and Miner (JMR 1997) Moorman (JMR 1995)
11	Idea generation	5	Griffin and Hauser (MKS 1993) Dahl and Moreau (JMR 2002) Toubia (MKS 2006)
12	Network externalities	7	Goldenberg, Libai and Muller (IJRM 2010) Stremersch et al. (JM 2007) Gupta, Jain and Sawhney (MKS 1999)
13	First purchase and word-of- mouth	16	Meuter et al. (JM 2005) Oliver and Bearden (JCR 1985) Shankar, Carpenter and Krishnamurthi (JMR 1998)
14	Innovativeness scale	2	Vandecasteele and Geuens (IJRM 2010) Tellis and Chandrasekaran (IJRM 2010)
15	Movie releases	10	Elberse and Eliashberg (MKS 2003) Sawhney and Eliashberg (MKS 1996) Eliashberg, Elberse and Leenders (MKS (2006)
16	New drug releases	12	Stremersch and Lemmens (MKS 2009) Manchanda, Pie and Youn (MKS 2008) Narayanan, Manchanda and Chintagunta (JMR 2005)
17	Culture	20	Steenkamp, ter Hofstede and Wedel (JM 1999) Nakata and Sivakumar (JM 1996) Gatignon, Eliashberg and Robertson (MKS 1989)
18	Heterogeneity of the population	2	Van den Bulte and Lilien (MKS 1997) Bemmaor and Lee (MKS 2002)

Table 3: Representative studies for innovation research sub domains

Three representative studies for each cluster are also listed in the fourth column of Table 3. Therefore, we examined the extent to which the articles in each cluster are cited till end 2010 (corrected

for time since publication, see Stremersch, Verniers and Verhoef 2007) and subsequently retain the most cited studies per cluster as representatives for each research cluster. Figure 3 shows the steps we followed. Next, we will briefly explain the meaning of the 18 clusters.



Figure 3: Overview research steps followed for identification research sub domains

The first cluster contains 23 words and captures research modeling the spread of innovations. The Bass model (1969) has become widespread among scholars to model diffusion processes, at first of durable goods. In general, diffusion models can be used to forecast the diffusion of an innovation and assist scholars in examining the spread of innovations through their life cycle. The Bass model has had great appeal and led to the publication of many other studies, building upon and extending Bass' original diffusion model. Recently, more scholars recognize the existence of limitations of diffusion modeling and look for solutions to overcome these limitations, for example by using individual level data. The second cluster contains 19 words and captures managerial decisions (i.e. firm strategic) that have to be made within each firm with regard to innovation, such as the decision whether or not a firm should introduce a new product or new service? What are the effects on financial performance? What is the relationship between market orientation and new product performance? Articles falling within this research domain

study these questions and also form a major portion of published research on innovation within the marketing discipline. Next, the third cluster contains words such as 'pioneer', 'incumbent', and 'entry' and is related to the impact of the entrance of new products/firms in a market on competition. Articles within this research domain study whether being the first in the market really pays off in an enduring market share advantage, the effectiveness of different defense strategies when faced with a new product introduction by a competitor, etc. The fourth cluster focuses on brand extensions and new product attributes. Here, research focuses among others on brand extension evaluations by consumers or which product attributes affect consumers' judgment whether or not to buy a new product. Next, the 'retailing' cluster captures among others the relationship between manufacturers and retailers and slotting allowances. It is the fifth largest cluster and articles falling under this cluster study for example how incumbent manufacturers and retailers alter their pricing behavior when faced with new product introduction or how slotting allowances (i.e. manufacturers paying money to retailers to ensure shelf space) impact competition. Sixth, the 'competing standards' cluster contains articles that examine among others how standards competition affects consumer behavior, for example, the extent to which consumers look for more information when estimating the usefulness of new products when a standards competition is present in the market. Markets with competing technological standards make a consumer's decision to adopt a new product more risky and complex. Cluster seven grasps the important role of conjoint experiments as a measurement technique within innovation research. Conjoint analysis provides useful insights for firms by categorizing consumers prior to purchase and identifying group-specific feature importances (for example, design or pricing). The eight cluster focuses on new product success or failure. For firms it is very important to predict success or failure already early in the diffusion process. Cluster nine captures words related to business-to-business and grasps organizational behavior with regard to innovation. For example, strategic alliances between firms are an important means for obtaining specialized knowledge in new product development processes. Cluster ten contains words that are related to how teams within organizations develop new products. Research falling within this cluster examines among others if functionally diverse members in new product teams have added value or how firms

should set up reward systems to foster new product development processes. The eleventh cluster is closely related to cluster ten and contains articles that examine idea generation, more specifically the relation between idea generation and design of new products. The next cluster captures the influence of network externalities on the spread of innovations. One of the main research questions within this domain is: Do network externalities drive faster market growth or create slowdown effects because for example adopters wait until more people have adopted the innovation? Cluster thirteen captures consumer response to innovations, i.e. buying intention, repeated purchases, word-of-mouth behavior etc. Research falling under this cluster examines among others the factors that affect the trial and repeated purchasing of new products or services. Cluster fourteen grasps research on innovativeness and the development of a scale to examine this construct. Which types of motivations underlie consumer innovativeness? The fifteenth cluster indicates that research on innovations is also often applied in the context of motion pictures, for example, in which order should new movies be released or how can one optimally forecast gross box-office revenues of new motion pictures? In a similar vein, cluster sixteen demonstrates that innovation research is also prevalent when pharmaceutical firms consider launching a new drug. This cluster contains words that are related to drug portfolio management within pharmaceutical firms and prescription drug diffusion. Bayesian learning models have also already proven their use in modeling diffusion behavior in this industry. Cluster seventeen grasps the role of cultural and national differences within innovation research. The growth of new products also depends on cultural and social differences between groups of potential adopters or countries. For example, the relationship between national culture and new product diffusion is an important area for academic research. The final cluster indicates that research on innovations also has to take into account underlying heterogeneity of the population when modeling adoption patterns.

Next, we also examined the extent to which each cluster is studied over the ten time periods. Therefore we estimated linear regressions with the time period as explanatory variable and the proportion of articles published in a particular cluster compared to the total number of articles published on innovation as dependent variable. A significant positive trend was found for innovation research related to competing standards (p < .05), business-to-business (p < .10), network externalities (p< .05), movie releases (p < .10) and new drug releases (p < .01). The extent to which articles on entry and competition are published displays a nonlinear growth over time (p < .10). A peak was observed for time period 1996-1998, thereafter research on entry and competition decreases again. No significant negative trends were present in the extent to which particular research sub domains within innovation are studied.



Figure 4: Overview occurrence of phrases and main research themes

Figure 4 displays an overview of the main findings with regard to the occurrence of particular phrases and research themes in the literature. New and more specialized phrases arise in the innovation literature. Also, some research themes display a significant positive growth pattern over time. This means that in the beginning of our study period they were practically nonexistent, but now they are widely studied. They now belong to the major research themes in innovation in our full observation period and stand now besides some older research traditions (such as innovation and diffusion modeling).

	1981-1990	1991-2000	2001-2010	Total
LIDM		6	40	10
IJKIVI		(6.06%)	(16.15%)	(13.37%)
JCR	12	11	11	34
	(2.80%)	(2.96%)	(1.75%)	(2.38%)
JM	29	30	61	120
	(7.21%)	(9.90%)	(14.09%)	(10.54%)
JMR	17	51	39	107
	(3.64%)	(12.38%)	(7.60%)	(7.69%)
MKS	12	38	50	100
	(13.79%)	(15.26%)	(10.24%)	(12.14%)

5.3. Innovation research across journals

Table 4: Innovation research across journals

Table 4 displays the number of articles on innovation published in each of the studied journals, along with the proportion of articles on innovation compared to the total number of published articles in each journal (between brackets). Given the smaller amount of articles published in IJRM and JCR, we opt to divide the study period in this section of the paper in three time periods (each 10 years) instead of ten time periods for reasons of clarity. Analysis of variance indicates that articles on innovation appear to a lesser extent in JCR compared to all other four studied journals (p < .01). IJRM, JM and MKS publish such articles to a larger extent than JCR and JMR (p < .05). Thus, innovation research appears especially in these three journals and to a lesser extent in JCR and JMR. The table also shows that IJRM, JM and MKS publish more articles on innovation over time. A regression with the time period as explanatory variable and the count of published articles on innovation as dependent variable confirms the presence of a positive trend for IJRM, JM and MKS (p < .05) and a marginally significant upward trend for JMR (p < .05) .10). The table also displays the proportion of articles on innovation published in each of the studied journals, compared to the total number of articles published in each journal. Comparison of the percentages leads to similar conclusions, except for the upward trend in the presence of innovation research in MKS. The table also shows that both IJRM and JM publish innovation research to a greater extent over time, when taking the overall number of publications in each journal into account. A

regression with the time period as explanatory variable and the percentage of innovation research published as dependent variable confirms both positive trends (p < .05).

Next, we examined the extent to which the five journals we study are characterized by different phrases. Table 5 displays the most frequently occurring phrases per journal, along with the percentage of article occurrence. Again, the table only includes phrases that appear in more than 4% of the articles for reasons of clarity. JCR focuses especially on consumer behavior towards new products and brands. The other four journals clearly examine a wider set of research problems in innovation.

Analysis of variance is used to examine differences in the extent to which the five studied journals use particular phrases. Authors that publish in IJRM use the phrase 'market orientation' to a larger extent than authors publishing in the other four journals (p < .05), and JM articles contain this phrase to a larger extent than articles published in JMR and MKS (p < .05). 'Network externalities' are also studied to a larger extent in IJRM than in JCR, JM and JMR (p < .10). IJRM also differentiates itself through the larger use of the phrase 'new service' compared to articles published in JM, JMR and MKS (p < .10). Significant differences also exist for the phrase 'new product performance'. The phrase is significantly used more in IJRM than in the other four studied journals (p < .10). Articles in JCR contain the word 'new product development' to a lesser extent than JM-articles (p < .10) and articles in MKS use this phrase to a lesser extent than articles in JM and JMR (p < .05). JCR differentiates itself from the other four journals by the higher use of the phrase 'opinion leader' (p < .05). MKS articles study 'diffusion models' to a larger extent than JM articles (p < .05). Next, MKS uses the phrase 'Bass model' to a larger extent than JM and JMR (p < .05). Next, MKS uses that JM does (p < .05). No significant differences exist for the use of the phrase 'Hierarchical Bayes' more than JM does (p < .05). No

	IJRM		JCR		JM		JMR		MKS	
_	Market orientation	14.6%	Product category	17.6%	Product development	17.5%	Product development	20.6%	Diffusion model	16.0%
2	New product introduction	10.4%	Product evaluation	11.8%	Life cycle	11.7%	Market share	11.2%	Product introduction	13.0%
3	New product development	10.4%	New brand	11.8%	Firm performance	7.5%	Product introduction	10.3%	Market share	12.0%
4	Diffusion model	8.3%	Category schema	8.8%	Market orientation	6.7%	Development process	9.3%	Sales data	11.0%
w	Survey data	8.3%	Opinion leader	5.9%	Development process	5.8%	Life cycle	8.4%	Product category	11.0%
9	New product performance	6.3%	Brand extension	5.9%	Marketing strategy	5.0%	Late entrant	7.5%	Product development	10.0%
٢	Network externalities	6.3%	Consumer behavior	5.9%	New product introduction	5.0%	Diffusion model	7.5%	Motion picture	8.0%
œ	New service	6.3%	Technological innovation	5.9%	Product innovation	5.0%	Product innovation	5.6%	Marketing strategy	8.0%
6	Market penetration	6.3%	Pioneer brand	5.9%	New technology	5.0%	Market pioneer	5.6%	Marketing mix	7.0%
10	Market potential	6.3%			Longitudinal data	5.0%	Product category	5.6%	Product launch	7.0%
11	New brand	6.3%			New product success	4.2%	Empirical study	4.7%	Empirical analysis	7.0%
12	New entrant	6.3%			Product category	4.2%			Bass model	6.0%
13	Market information	4.2%			Incremental innovation	4.2%			Market entry	6.0%
14	Reward system	4.2%			New brand	4.2%			Hierarchical Bayes	6.0%
			$T_{\mathcal{C}}$	ible 5:Mo	st occurring phra.	ses per jo	urnal			

5.4. Analysis of authorship

In total, 961 authors have co-authored the 409 studied articles in our sample. We ranked the authors in our study sample according to their publication productivity with regard to innovation topics. Table 6 displays the most representative authors for research on innovation in the marketing discipline, as measured by the total count of articles published in the top five marketing journals between 1981 and 2010. The table shows which authors have shaped the innovation field in marketing between 1981 and 2010. All authors have at least 5 papers on innovation. However, the ranking of the authors in this table also captures the seniority of these authors to a certain extent. Older authors have had more time to publish papers on innovation. Therefore, we also included an 'age-adjusted rank' in column 2. This age-adjusted ranking is obtained through dividing the total number of papers published per author by the difference between 2011 (= 1 year after the last year included in our observations) and the year the author obtained his first publication on innovation in the five studied marketing journals (for a similar procedure, see Seggie and Griffith 2009). In the fifth column we also added their major research topics, based on the frequencies of the most occurring phrases in their paper abstracts.

Rank	Age-	Author	Number	Research topics
	adjusted		of	
	rank		papers	
1	16	Gerard J. Tellis	19	New product (23), radical innovation (9), market penetration (7), hazard model (7), time to takeoff (7)
2	6	Eitan Muller	15	New product (17), diffusion model (14), network
				externalities (5), marketing effort (5), supply restriction (5)
3	8	Vijay Mahajan	14	New product (17), diffusion model (15), supply restriction (5)
4	37	Jehoshua Eliashberg	9	New product (15), motion picture (14), new movie (6), marketing plan (6), motion picture industry (5), box office revenue (5)
-	40	Thomas S. Robertson	9	New product (7), defense strategy (3), competitive environment (3)
6	52	Hubert Gatignon	8	Market share (7), new product (5), marketing mix (5), late entrant (5)
7	68	Frank M. Bass	7	Bass model (10), new product (7), diffusion model (6)
-	19	Rajesh K. Chandy	7	Radical innovation (9), new venture (7), radical product innovation (6)
-	41	Donald R. Lehmann	7	New product (6), delay reason (4)
-	4	Stefan Stremersch	7	New product (11), indirect network effect (6), national culture (4), global spillover (4), social contagion (4), growth of new products (3)
11	20	Jacob Goldenberg	6	New product (8), sale data (3), network effect (3), network externalities (3)
-	41	John R. Hauser	6	New product (9), product development (3)
-	8	Barak Libai	6	New product (6), marketing effort (3), network externalities (3) network effect (3)
14	41	Roger J. Calantone	5	New product (24), segment selection (12), new product success (8), new product development (5)
-	65	Peter Golder	5	Hazard model (5), time to takeoff (5), new product (5)
-	75	Gurumurthy Kalvanaram	5	Managerial skill (5), pioneer advantage (4), market share (4), late entrant (4), market entry (4)
-	39	Gary L. Lilien	5	Dominant design (8), technological opportunism (7), new product (4). Bass model (4), viral marketing (4)
-	6	Puneet Manchanda	5	Marketing communication (10), signal quality (6), new drug (5), new product (4)
-	51	Christine Moorman	5	New product (14), financial performance (6), organizational memory (6)
-	76	Jaideep C. Prabhu	5	New venture (7), radical innovation (3)
-	101	William T. Robinson	5	Market pioneer (8), market share (8), early follower (6), survival risk (5) market entry (5)
-	41	X. Michael Song	5	New product (27), new product success (12), new product development (8)
-	65	Glen L. Urban	5	Market entry (4)

Table 6: Top publishing authors on innovation research

5.5. Analysis of research institutions

Next, we examined which research institutions innovation research originates from. For each article we content coded authors' affiliation to research institutions (at the moment of publication). We count the total number of times research institutions appear in the author affiliation list. Thus, if two authors of a particular paper are affiliated with the same research institution, the research institution receives a count of two. Table 7 provides an overview of the top publishing research institutions on innovation.

Rank	Institution	Count of occurrences
1	University of Pennsylvania	44
2	Duke University	27
3	University of Texas at Austin	27
4	University of Southern California	27
5	Tel Aviv University	25
6	North Western University	24
7	Erasmus University	23
8	New York University	23
9	Columbia University	20
10	University of Chicago	20
11	Harvard University	19
12	University of California Los Angeles	18
13	University of Michigan	18
14	Penn State University	16
15	University of Texas at Dallas	16

Table 7: Top publishing institutions on innovation research

Table 7 indicates that University of Pennsylvania publishes innovation research to the largest extent with 44 innovation studies, followed Duke University, University of Texas at Austin and University of Southern California (all 27 studies). Four out of the top ten business schools as listed by the Financial Times in 2010 are present in Table 7. Thus, we can conclude that innovation research is also a research priority in top business schools.

5.6. Most-cited innovation articles between 1981 and 2010

To conclude, we examined which innovation articles in the marketing discipline are most cited. The number of citations an article receives is driven by the age of the article and therefore we controlled for year of publication (for a similar procedure, see Stremersch, Verniers and Verhoef 2007). Table 8 provides an overview of the 20 most-cited innovation articles, corrected for time. The table shows that no less than nine out of the twenty most cited articles are published in *Journal of Marketing*.

Rank	Top 20 Most Cited	Journal (Publication	Number of	Research Cluster
	(Corrected for Time)	Year)	Citations	
			(Absolute	
			Number,	
			December 2010)	
1	Mahajan, Muller and Bass	JM (1990)	456	Adoption and diffusion
				models
2	Hurley and Hult	JM (1998)	365	Managerial decisions on
				innovations
3	Aaker and Keller	JM (1990)	349	New product attributes
4	Han, Kim and Srivastava	JM (1998)	315	Managerial decisions on
				innovation
5	Griffin and Hauser	MKS (1993)	302	Idea generation
6	Gatignon and Xuereb	JMR (1997)	270	Managerial decisions on
				innovations
7	Gatignon and Robertson	JCR (1985)	255	Adoption and diffusion
				models
8	Carpenter and Nakamoto	JMR (1989)	243	Entry and competition
9	Gupta, Raj and Wilemon	JM (1986)	229	Managerial decisions on
				innovation
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10	Johnson and Russo	JCR (1984)	222	New product attributes
11	Olson, Walker and Ruekert	JM (1995)	223	New product development
12	Golder and Telllis	JMR (1993)	218	Entry and competition
13	Li and Calantone	JM (1998)	204	Managerial decisions on
				innovations
14	Robinson and Fornell	JMR (1985)	207	Entry and competition
15	Moorman and Miner	JMR (1997)	206	New product development
16	Moorman	JMR (1995)	200	New product development
17	Henard and Szymanski	JMR (2001)	173	Managerial decisions on
				innovation
18	Madhavan and Grover	JM (1998)	172	New product development
19	Park, Milberg and Lawson	JCR (1991)	180	New product attributes
20	Steenkamp, ter Hofstede and	JM (1999)	165	Culture
	Wedel			

Table 8: The 20 Most-Cited Articles Between 1981 and 2010

6. Discussion

6.1. Conclusion

Innovation is very important for various stakeholders, i.e. consumers, firms and countries (Hauser, Tellis and Griffin 2006). Research on innovation has been published in a variety of scientific disciplines and is an important factor in disseminating academic knowledge. The overall purpose of this paper was to provide an overview of the extent to which innovation topics have been studied in marketing, over time and across journals. We also examined which authors and institutions they originate from. This study provides marketing scholars with a better sense of what has already been published on innovation in their research discipline over the past 30 years.

Several conclusions can be drawn from this study. First, research emphasis has been shifting from studying mainly new products to a more diverse set of research problems in the innovation field, such as strategic issues related to how firms should approach innovation. Second, the largest streams of research within innovation research in the marketing discipline focus on (1) adoption and diffusion models, (2) managerial decisions on innovations and (3) entry and competition. Also, the extent to which articles on entry and competition are published displays a nonlinear growth pattern over time. Third, we find that IJRM and JM publish innovation research to a larger extent than JCR and JMR and publish more articles on innovation over time. We also provided new insights in the different topics the five studied journals focus on in our observation period 1981-2010. Fifth, we mapped which institutions and authors innovation research originates from.

6.2. Research implications

This study makes several contributions to the literature. First, this study is the first to empirically examine which research topics characterize innovation research and more specifically, innovation research published in five major journals in marketing, *International Journal of Research in Marketing* (IJRM), *Journal of Consumer Research* (JCR), *Journal of Marketing* (JM), *Journal of Marketing Research* (JMR) and *Marketing Science* (MKS). We also analyzed changes in these research priorities over time. In previous studies, marketing journals have been compared based on a diverse set of criteria such as citation impact (e.g. Baumgartner and Pieters 2003), reference diversity (e.g. Tellis, Chandy and Ackermann 1999) and subjective impressions (e.g. Kamakura 2001). None of them have addressed the conceptual domain of innovation research.

Second, researchers who are seeking for a suitable publication outlet for their research can use the findings in this study as a guideline which journal is most appropriate to send your research to. This study provides an overview of which innovation topics characterize the five journals.

6.3. Research limitations and future research

This paper suffers from some limitations. First, this study was confined to the five leading mainstream marketing journals. Although we believe that these five journals are broad enough to span the general marketing discipline, future research can also examine research priorities in innovation research in more specialized journals. Second, we only gathered data from 1981 onwards. As we have no publication data before 1981, our research sample is left censored and thus we cannot map the state of the innovation research discipline before the eighties.

Several issues remain to be explored by future research. First, the methodology used to identify research segments within innovation research was exploratory. It is recommended that future work should continue to develop and validate our exploratory findings. For example, future research should examine whether existing methods to review the literature (i.e. a subjective selection of relevant research topics etc.) are compatible with the new, more objective, method developed in this study. Do both methods result in similar findings? Or, if they do not lead to similar conclusions: to what extent do they differ and where lie the differences?

Second, the list of keywords used to select articles on innovation has been worked out by the authors only. We plan to discuss this list with major experts in the field through a survey so they can indicate which keywords they see as missing or which keywords they would remove.

Third, citations data can be gathered to examine the co citation network of published articles and assess which studies are most impactful. Future studies can look at the articles new research builds upon. Also, more detailed insights are necessary in the citations patterns of innovation research. It can be interesting to examine whether research on innovation within the marketing discipline is mainly cited by other marketing journals, or if these studies are also used by scholars outside marketing, for example in management, strategy or even engineering.

Fourth, in a similar vein, we can examine the reference diversity in innovation research to map and explain the main sources of ideas for innovation research within the marketing discipline (for a related example, see Tellis, Chandy and Ackermann 1999).

Fifth, in addition to identifying the authors with the highest research productivity in the innovation research domain, we can also examine the collaboration patterns between authors. Do experts in the innovation domain tend to collaborate mainly with other experts in the field, or do they also co-author studies with non-innovation experts.

Sixth, as already indicated in the research limitations section, it would be fruitful for future research to also examine the publication of research on innovation in a wider set of journals, in and outside marketing. On the one hand, innovation research in more specialized journals (such as *Journal of Product Innovation Management*) can be examined and tested on differences with more general marketing journals, included in this study. On the other hand, the study sample can also be expanded to journals outside marketing, such as management and strategy journals within economics.

Seventh, future research is needed to examine whether the method developed in this study to review existing literature streams, can also be extended to forecast to which direction a particular literature stream is heading to.

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8. Appendix

Appendix A: Selection words

Adoption	Bass model	Commercialization	Development	Development
			cycle time	decision
Development	Development	Development	Development team	Diffusion
program	project	speed		
First entrant	Innovation	Innovativeness	Launch	Life cycle
Market pioneer	New business	New design	New durable product	New entrant
New feature	New product	New service	New technology	Pioneering advantage
Pioneering brands	PLC	Portfolio management	Pre launch	Product development success
Product	Product life cycle	R&D	Research and	Takeoff
introduction			Development	

Appendix B: Dendrogram





Appendix C: Abstract words in study sample

		Words	Number
			of words
Included	> 100	Product, new, market, model, firm, brand, diffusion, process,	28
in study	occurrences	price, consumer, strategy, sale, performance, customer,	
		development, country, information, adoption, decision,	
		advertise, analysis, entry, cost, quality, introduction, category,	
		forecast, manufacturer	
	> 50	Competitive, demand, pioneer, share, manager, growth, launch,	49
	occurrences	relationship, attribute, advantage, entrant, retailer, behavior,	
		extension, pattern, potential, lead, movie, takeoff, orientation,	
		knowledge, response, success, incumbent, technology, segment,	
		profit, purchase, design, stage, dynamic, competition, cycle,	
		benefit, early, strategic, difference, alliance, choice, evaluation,	
		management, network, preference, service, slotting, speed,	
		innovativeness, channel, competitor	
	> 25	Software, allowance, penetration, expectation, signal, bass,	33
	occurrences	feature, investment, uncertainty, life, project, risk, social,	
		integration, position, system, adopter, effectiveness, drug,	
		durable, line, innovative, team, perception, intention, portfolio,	
		standard, late, cross-functional, culture, initial, retail, financial	
	≤ 25	Incentive, revenue, scale, simulation, heterogeneity, picture,	41
	occurrences	spillover, trial, reaction, user, complex, idea, indirect,	
		mechanism, motion, switch, follower, reward, judgment, leader,	
		word-of-mouth, contagious, failure, generation, NPD, trade,	

		conjoint, exhibitor, physician, pharmaceutical, population,	
		supply, cumulative, externalities, member, national,	
		prescription, release, repeat, Bayesian, buy	
Excluded	> 100	Author, abstract, effect, result, study, data, marketing, research,	24
from study	occurrences	develop, influence, consume, examine, increase, estimate,	
		suggest, empirical, test, time, industry, level, analysis, finding,	
		base, impact	
	> 50	Important, implication, factor, change, affect, framework,	46
	occurrences	approach, paper, parameter, learn, variable, focus, support,	
		value, literature, exist, low, method, discuss, set, context,	
		communication, identify, managerial, prior, introduce, strong,	
		investigate, relate, role, great, article, measure, concept, theory,	
		offer, include, structure, condition, demonstrate, organizational,	
		individual, positive, bias, propose, resource	
	> 25	Application, compete, effort, characteristics, prediction,	127
	occurrences	compare, hypothesis, predict, rate, follow, future, survey,	
		optimal, issue, mix, activity, experiment, improve, vary,	
		control, period, relative, negative, procedure, function,	
		question, reduce, significant, address, radical, analyze,	
		estimation, explain, economic, enter, novel, decrease, moderate,	
		sample, available, organization, determine, enhance, major,	
		observe, return, insight, addition, propose, size, ability,	
		contrast, evidence, form, involve, conduct, finally, theoretical,	
		face, practice, researcher, understanding, apply, company,	
		create, elsevier, incorporate, interaction, objective, versus,	

	account, action, alternative, copyright, equilibrium, evaluate,	
	extend, importance, reveal, assess, current, depend, generate,	
	illustrate, help, obtain, occur, previous, various, actual,	
	describe, empirically, explore, integrate, perceive, represent,	
	source, specific, specifically, stock, delay, term, assume,	
	dimension, draw, effective, efficiency, evolution, policy, recent,	
	assumption, capture, critical, multiple, produce, tend, average	
≤25	Collect, conceptual, derive, gain, main, require, similarity, 152	,
occurrences	challenge, establish, probability, target, total, view,	
	consideration, emerge, technique, behavioral, environment,	
	expect, improvement, limit, long-term, methodology, nature,	
	play, selection, successful, achieve, argue, complex, spending,	
	consistent, outcome, past, range, systematic, though, basis,	
	broad, combine, construct, driver, extent, fit, pay, power,	
	remain, review, subject, true, underlying, appropriate,	
	characterize, direction, highly, implementation, link, manage,	
	perspective, plan, significantly, typically, understand, attempt,	
	external, capability, coefficient, component, global,	
	incremental, computer, determinant, due, elasticity, facilitate,	
	five, group, likelihood, maximize, report, search, seek, serve,	
	simulate, situation, tool, season, attitude, internal, unite, variety,	
	acceptance, class, functional, hierarchical, industrial, real,	
	reason, similar, simultaneously, superior, aspect, association,	
	call, directly, exhibit, fail, field, household, independent,	
	observation, opportunity, presence, relevant, sensitivity, single,	

strength, useful, variance, advance, aggregate, attractiveness, conventional, longitudinal, measurement, detail, dominant, imply, memory, normative, phenomenon, planning, six, skill, substantially, chain, commitment, comparison, criterion, error, event, exit, influential, intensity, magnitude, marketplace, partner, profitability, responsiveness, science, specification, test **Chapter 5: Discussion**

1. Summary of findings

In this section I discuss the main findings for each of the papers in this dissertation. Table 1 provides an overview of the main findings in each of these papers. Chapter 2 deals with the extent to which scholars challenge commonly held beliefs in the marketing discipline and on the impact outcome of doing so. Chapter 3 deals with reviewer recommendation behavior in a major marketing journal. Chapter 4 deals with the state of innovation research in the marketing discipline and the origins thereof in terms of journals, authors and institutions.

Chapter	Title	Main findings
2	The Citation Rewards from	Challenging commonly held beliefs has a curvilinear effect on citations
	Challenging Commonly Held	one receives. There are marked differences in how such articles are cited
	Beliefs: A Study of Publishing	by scholars. Also, challenging articles receive to a lesser extent the first
	Counterintuitive Research in	position in the journal issue. The extent to which articles in marketing
	Marketing	challenge commonly held beliefs varies over time and journals.
3	Assessing scientific studies:	Past co-authorship between the authors and the reviewer and citing more
	Uncovering the drivers of reviewer	than one article of the reviewer has a positive effect on reviewer
	recommendation behavior	recommendation, besides reviewer and review characteristics.
4	A Bibliometric Review of	We find that new and more specialized phrases are used in the
	Innovation Research in Marketing	innovation literature over time. The main research sub domains in
		innovation research are both research domains that already exist for
		some time and research domains that only recently emerged. The origins
		of innovation research in terms of journals, authors and institutions are
		mapped.

Table 1: Summary key findings

Chapter 2 examines the impact of being challenging in academic research. I show that articles that challenge commonly held beliefs are cited to larger extent than other articles. However, if they are too challenging, they are treated with misbelieve among the audience and cited less by other scholars. Next, results indicate that challenging articles are not rewarded by journal editors with a lead article position in the journal issue, although journal editors state that they welcome such research. Third, I also examined the nature of citations that challenging versus less challenging articles receive. There I find that challenging articles are used more for review of the literature by citing articles, rather than for use/application and thus do not always contribute to future research in a substantial way. Fourth, marked differences exist in the extent to which articles challenge commonly held beliefs over time and journals. *International Journal of Research in Marketing* and *Journal of Marketing* publish challenging articles to a larger extent over time, whereas the extent to which articles in marketing (as measured by five major marketing journals) do so has remained stable during our observation window.

The paper contributes to the marketing and scientometrics literature in the following ways: first, a new measure was developed which captures the extent to which a paper challenges commonly held beliefs; second, to the best of our knowledge, I tested for the first time empirically the effect of challenging commonly held beliefs on the number of citations these articles receive; third, I investigated the nature of the citations challenging articles receive; and fourth, I examined the extent to which articles challenge commonly held beliefs over time and across journals. Although Chapter 2 focuses on the marketing discipline, the scale and the conceptual framework can be used to explore the extent and impact of challenging commonly held beliefs in other research disciplines.

Chapter 3 deals with reviewer recommendation behavior in a major marketing journal, the *International Journal of Research in Marketing*. Publishing is very important in academia. Practically every scholar tries to publish his studies in peer reviewed scientific journals. Because of their influence in the editorial review process, reviewers are often seen as 'the gatekeepers in science' (Hojat, Gonnella and Caelleigh 2003). Peer reviewing has undeniably a lot of advantages such as improving the quality of a

manuscript (Benos et al. 2007). However, social constructivist variables may also influence a reviewer's judgment (e.g. past co-authorship between author and reviewer). The literature also indicates that many scholars still see the peer review process as a remote business and that scholars only have limited insights in how this process works (Bailar and Patterson 1985; Hojat, Gonnella and Caelleigh 2003). Chapter 3 therefore aimed to clarify drivers of reviewing behavior and discloses some interesting insights in this process. Results indicate that past co-authorship between the authors and reviewer and citing more than one article of the reviewer both affect the chance of a receiving a more favorable reviewer recommendation. This finding implies that science is socially constructed, i.e. social effects do influence reviewer recommendation. Reviewers who are an editorial board member of IJRM or are affiliated with a lower ranked business school are more likely to recommend a rejection. Gender also affects review outcome, i.e. males are less likely to advice to reject a manuscript. Next, the number of issues raised in the reviewer's letter to the authors also impacts reviewer recommendation. When there are more issues raised, the chance of receiving a more favorable reviewer recommendation increases. Reviewer turnaround time also positively impacts reviewer recommendation.

This paper contributes to academia in various ways. This paper on reviewing behavior is the first to rigorously develop and test the effects of various explanatory variables, such as three variables related to reviewer favoritism, on reviewer recommendations in the marketing discipline. Second, I aimed to shed more light on the review process as for many scholars this process is still very obscure. Third, by focusing on reviewer recommendations to study expert opinions of manuscripts that are under review, I fill a gap in the scientometric literature that has given the role of expert opinions only limited attention thus far.

In **chapter 4**, I traced research priorities in innovation research in the marketing discipline and examined the origins of such research in terms of journals, authors and institutions. Innovation is a very important research field within marketing and although extensive reviews of research domains within this domain exist, we decided to investigate the state of marketing research from an alternative point of view,

i.e. through a bibliometric analysis. The results indicate that innovation research is indeed expanding over time in the marketing discipline. More articles on innovation are published, especially when compared with the eighties. More words are used to describe the research field, and shifts in use of words were mapped. Through a hierarchical cluster analysis I distinguished 18 sub domains of research within the innovation domain in marketing. Next, I also examined the origins of innovation research published between 1981 and 2010 in terms of journals, authors and institutions. *International Journal of Research in Marketing* and *Journal of Marketing* publish innovation research to a greater extent over time, when taking the overall number of publications in each journal into account. Next, I also mapped the most productive scholars and institutions in innovation.

This study contributes to the literature mainly through the new angle of incidence it provides to review the innovation literature in marketing. Whereas previous reviews have been limited to a subjective overview of the literature, I trace the history and origins of innovation research through a content analysis of the used abstract words to describe research articles. Hence, I believe, that this study offers interesting new insights into the innovation research discipline, although the results are still exploratory for now.

2. Relevance of implications

Overall, my main goal in this dissertation was to provide more detailed insights in a set of relevant scientometric issues in the marketing discipline to scholars, who are confronted every day with the scientometric outcomes of their own research. Every scholar dedicates a large amount of energy and intellectual effort to each of his studies and wants his work to be approved by fellow scholars. Chapter 2 therefore focused on how colleagues evaluate your research through the number of times (and how) they cite your work when you challenge commonly held beliefs and Chapter 3 focused on expert evaluations of your research in the editorial review process. The approval of your research by experts and other fellow colleagues is a necessary condition to become a successful scholar as publications and citations reflect the

extent to which your research circulates in science (Hoffman and Holbrook 1993). Through interactions among fellow scholars (i.e. (dis)approving and citing others' work) scientific disciplines evolve over time (Kuhn 1996). Through an accumulation of such processes, science develops and we also see that more specialized sub disciplines emerge over time (see Wilkie and Moore 2003 for an example in marketing). Chapter 3 focused on the development of an important research sub domain (i.e. innovation research) within the marketing discipline and describes among others the role certain scholars play in the development of innovation research.

This dissertation points to the importance of career management of scholars. Science revolves around scholars. Every scholar, or at least the majority of them, aspires at the beginning of his academic career to have a significant impact on the research discipline they belong to. As already indicated in the introduction of this dissertation, academics are only viewed as successful when their research has impact on the discipline at large. In this dissertation I showed that challenging commonly held beliefs in your article may pay off in a higher citation count, unless you contradict too much prior beliefs of fellow scholars. Importantly, articles first have to pass the editorial review process and editors are expected to play an important role in safeguarding such papers. However, I showed that science is socially constructed, i.e. other factors may also come into play besides the intrinsic characteristics of a paper (such as citing reviewers). Rejection decisions can be tough to cope with at first, but through the issues they raise they lift the contribution of a paper to a higher level and contribute as such to the development of science. Ultimately, I believe that scholars should investigate research questions that fascinate them, examine them into depth and trust that other scholars will also see the strengths of your work.

3. Further research

Even though I believe that the studies in this dissertation contribute to the marketing literature in various ways, future research is needed to deal with the limitations of these studies and to further our

understanding in the scientometric literature, also in marketing. Figure 1 displays possible directions for future research.



Figure 1: Future Research

For Chapter 2 it would be interesting to see whether similar observations can be reached in other disciplines, outside marketing. Now the study sample was limited to articles published in *International Journal of Research in Marketing, Journal of Consumer Research, Journal of Marketing, Journal of Marketing Research* and *Marketing Science*. Also, to what extent is challenging research published in more specialized journals and what is the impact of such articles in the discipline? Third, it can be interesting to examine the reference diversity of challenging research to map the source of their ideas more into detail. Tellis, Chandy and Ackermann (1999) already indicated that reference diversity information is a very interesting source of data to map the origin of knowledge.

For Chapter 3 several issues remain to be explored. Future research should determine whether differences exist between how reviewer judgments are formed in broad journals and specialized journals. Tracking and mapping differences in how recommendations are made in journals with a high impact versus a low impact factor also provides a fruitful area for future research. Reviewers will judge articles differently when they have to review a manuscript submitted for a top tier journal than for a lower ranked journals (Bornmann, Weymuth and Daniel 2010). I would expect that the thresholds to reject or suggest a major revision will increase and reviewers will be less tough in lower ranked journals. Secondly, more detailed insights into the confirmatory bias in reviewer recommendation behavior are needed (Campanario 2008). Previous studies on reviewer biases have already suggested that challenging commonly held beliefs may have a negative effect on the chances of getting through the review process more easily as reviewers tend to accept outcomes that agree with commonly held beliefs and discredit those that do not (e.g. Benos et al. 2007; Hojat, Gonella and Caelleigh 2003). Future research is needed to examine if this is really the case or if editors guard such papers through the review process. Thirdly, author-suggested reviewers may rate manuscripts more favorably than editor-suggested reviewers (Bornmann and Daniel 2010). Although the review process is blind in the journal we study, it is possible that author-suggested reviewers may judge manuscripts more favorable due to the fact that authors have different reasons in the back of their mind to nominate a reviewer (for example, favorable attitude towards the research subject) than editors may have (for example, methodological expertise). This leads us to a fourth possible avenue for future research. Namely, more research is needed into the effects of the how reviewers are selected. For example, is a reviewer selected for his conceptual knowledge or methodological knowledge? Or, to what extent play reviewers' ideological orientations or theoretical persuasions a role in evaluating manuscripts (Hojat, Gonalla and Caelleigh 2003)?

The findings in **chapter 4** may also raise some new research questions that should be answered by future research. First, as the sample of innovation research was limited to articles published in *International Journal of Research in Marketing, Journal of Consumer Research, Journal of Marketing,*

Journal of Marketing Research and *Marketing Science*, future research should also examine research priorities in innovation research in more specialized journals (for example, *Journal of Product Innovation Management*). Secondly, more detailed insights are necessary in the citations patterns of innovation research. It can be interesting to examine whether research on innovation within the marketing discipline is mainly cited by other marketing journals, or if these studies are also used by scholars outside marketing. Thirdly, it would be fruitful for future research to examine the reference diversity in innovation research to trace the main sources of ideas for innovation research within the marketing discipline (see Tellis, Chandy and Ackermann 1999). Fourth, co- author networks in the innovation discipline store a wealth of information. In this study we already identified which authors have the highest research productivity in the innovation discipline within marketing, but which authors tend to collaborate with each other? And are there changes in these patterns over time? Also, do experts in the innovation domain tend to collaborate mainly with other experts in the field, or do they also co-author studies with scholars having a lower reputation in the domain? Goldenberg et al. (2010) already pointed to the use of collaboration networks among scholars in the marketing discipline.

To conclude, several research areas provide fruitful avenues for future research in the scientometric research discipline (in marketing). The relatively scant attention to scientometric issues in science is remarkable and indicates that most scholars in academia do not occasionally stand still where they are heading to. Only by taking a step back once in a while and by carefully examining opportunities (e.g. research, career ... opportunities), one can become a better scientist over time. Therefore, I highly encourage more scientometric research on the individual (i.e. researcher) level. Which factors drive scholar's success and how come some scholars' have an inherent drive to publish scientific breakthroughs in science, whereas other scholars don't? How do scholars 'move' in scientific collaboration networks and what is their strategy to become successful? The marketing discipline can also benefit from such an bottom-up approach to map its history and evolution. Ultimately, science evolves through scientific revolutions of particular scholars.

This brings me to a final comment I would like to make. That is, many scholars have already debated whether or not science should have practical consequences. Often it is proposed that academic research should also be relevant for (business) practice. I believe that scholars with more links to practice can more easily bridge the gap between science and practice and that having more ties to practice is not necessarily a bad thing in science. Future research (in marketing) can examine whether more practically oriented scholars truly benefit from their links to practice in the academic world, e.g. by becoming a better teacher or becoming more impactful (e.g. in terms of citations).

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