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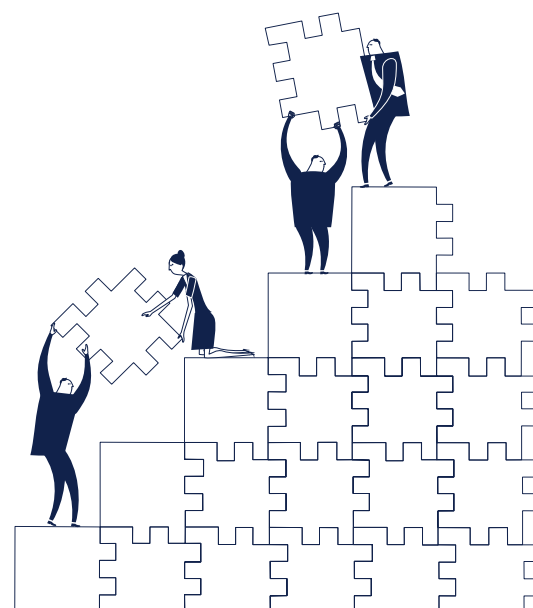
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Taking Stock of the Digital Revolution: A Critical Analysis and Agenda for Digital, Social Media, and Mobile Marketing Research

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Abstract

Marketing has been revolutionized due to the rise of digital media and new forms of electronic communication. In response, academic researchers have attempted to explain consumer- and firm-related phenomena related to digital, social media, and mobile marketing (DSMM). This paper presents a critical historical analysis of, and forward-looking agenda for, this work. First, we assess marketing's contribution to understanding DSMM since 2000. Extant research falls under three eras, and a fourth era currently underway. Era 1 focused on digital tools and platforms as consumer and marketer decision aids. Era 2 studied online communications channels (e.g., online forums) as word of mouth marketing "laboratories," capturing the potential of DSMM for social information transmission. Era 3 embraced the notion of "connected consumers" by considering various antecedents and consequences of socially interconnected consumers in marketplaces. Era 4, currently starting, considers mobile marketing and brings psychological and social theories to bear on emergent DSMM issues. Second, we critique the DSMM literature and advance a series of recommendations for future research. While we find much to applaud, we argue that several problems limit the relevance of this research moving forward and suggest ways to alleviate these concerns moving forward.

INTRODUCTION

The growth in the prominence of digital, social media, and mobile marketing (DSMM), both in academic research and practice, has paralleled technological innovations such as the increasing penetration of home internet and affordable high-speed broadband connections, the development of social media platforms such as Facebook, and widespread consumer adoption of "smart" mobile devices such as the iPhone. Such technological innovation has also influenced the ways that buyers[1] behave across all types of market settings. For example, just as the rapid growth in mobile smartphone adoption has opened new marketing communications and targeting possibilities, the ubiquity of social media has fundamentally changed how buyers share information with each other and interact with brands. Thus, the story of the "digital marketing revolution" over the last 15 years is about how technology has changed marketers' and buyers' behaviors and, most interestingly, facilitated behaviors and experiences that were previously not possible (e.g., mining consumer sentiment towards a brand in real time through social media monitoring tools, or targeting advertising at individual consumers based on rich data on their interests and behaviors).

But how well has academic research kept pace with, captured, studied, and, most importantly, understood, the digital revolution? The DSMM domain has certainly been fruitful: the emergence of new domains such as online search advertising, social media, and mobile marketing have afforded a generation of marketing scientists and consumer psychologists with a rich set of novel phenomena to study. Like marketing practitioners, marketing academicians have increasingly lent focus to these domains. As a result, a substantial body of research has developed over the last 15 years, ranging from early work on digital marketing as consumer (and marketer) decision aids to more recent topics such as social media and mobile marketing and questions about their use and effectiveness.

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[1] For convenience, throughout this paper we use "buyer" as a general term for consumer, customer, and buyer in any context, either business-to-business or business-to-consumer.

This paper presents a critical analysis of academic research on DSMM topics published in the premier marketing journals between 2000 and 2015.[2] Our undertaking has two objectives. First, using a data-driven approach, we attempt to synthesize what academic research has revealed about DSMM over time. Our analysis led us to identify four distinct research "eras," each of which builds on the groundwork laid in the previous timeframe (except for the first era), as well as advances novel theoretical perspectives and insights for practice. In each era, we trace the development of our thinking with regard to three general themes that recur throughout the literature, across the eras: (i) the influence of DSM technologies on consumer expression and communication, (ii) the use of DSM technologies as decision and buyer support tools, and (iii) the contributions DSM technologies can make to understanding markets and as sources of market intelligence. Our analysis of the most recent (fourth) era also highlights the most fruitful and promising research directions on our collective horizon.

Second, moving beyond merely describing extant literature, we offer a critique of DSMM research's development over time. Specifically, we suggest four ways in which DSMM has (unfortunately) earned an "F" grade due to a general failure to build a cumulative body of knowledge that meaningfully informs research progress and practice. In response to these critiques, we also propose a framework that could reduce the prevalence of these tendencies moving forward; i.e., by shifting to a set of principles that can help DSMM research earn an "A" grade, and thus will be helpful as researchers continue to work in the ever-expanding DSMM domain. Our hope is that rather than repeating the patterns that have led to a body of research that in some respects is non-cumulative, fragmented, quickly obsolete, and difficult to generalize, holding our research to these standards may help generate novel insights of theoretical and substantive value to both marketing academicians and practitioners.

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[2] The journals considered are *Journal of Marketing*, *Journal of Marketing Research*, *Journal of Consumer Research*, and *Marketing Science*. Relevant papers from the marketing section of *Management Science* are also included. We realize that journals in other fields (e.g., information systems, computer science) have published some research that has some relevance to marketing, however chose to exclude publications from non-marketing journals in order to limit our analysis to what *marketing* scholars have learned, based on the assumption that marketing scholars are more likely to publish their work in one of the aforementioned marketing journals than in other fields' journals.

WHERE HAVE WE BEEN? DIGITAL, SOCIAL MEDIA, AND MOBILE MARKETING

RESEARCH BETWEEN 2000 AND 2015

We begin by presenting a summary and analysis of the academic research on DSMM-related topics published between 2000 and 2015.[3] It should be noted from the outset that we do not offer a comprehensive literature review or annotated bibliographies in this paper; recent articles have done this for specific domains within or related to DSMM (e.g., Berger 2014; Grewal et al. 2015; Yadav and Pavlou 2014; Stephen 2016), and the breadth of topic domains that now exist in DSMM make it infeasible to review multiple domains in a single article. Instead, our goal is to take a "big picture" perspective on DSMM research in the premier marketing journals and distill the literature into a series of important insights. We make use of keyword and citation data to understand the trends over time, identify distinct thematic eras of research, and identify the most impactful studies and insights in each. This analytical approach allows us to then delve more deeply into the research that has been the most highly cited and/or awarded in order to understand the way the field's understanding of DSMM has evolved over time.

Methodology

Although DSMM research has been published across a large number of journals, for the purposes of our analysis we only considered work published in one of the following premier academic journals: (i) *Journal of Marketing Research,* (ii) *Journal of Marketing,* (iii) *Journal of Consumer Research,* (iv) *Marketing Science*, and (v) *Management Science.* We considered articles published in the 2000-2015 period (and those that were accepted for publication in 2015). Those that were purely methodological were excluded from our analysis since typically the empirical domain in such papers is merely for illustrative purposes only.

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[3] Papers published in 2015 or that were accepted for publication in 2015 were not included in this set because they had no citations. They are instead covered later in the paper.

Throughout 2015 we conducted keyword searches on EBSCO to identify relevant articles in these journals, starting with general keywords (internet marketing, online retailing, digital marketing, social media, mobile marketing). This provided a core set of papers. We next examined the reference lists of these papers to find other relevant papers published in these journals. Following that, we conducted a search on the Web of Science Social Sciences Citation Index to identify other articles published in these journals that cited the existing set of identified papers. As we collected relevant articles matching the above-described criteria through this snowball procedure, we also expanded our keyword searches to include more specific terms such as search advertising, banner advertising, social networks, and mentions of specific social media platforms (e.g., Facebook, Twitter). This yielded more relevant articles. We then repeated the process of looking over their reference lists and finding articles citing those articles to identify additional articles to include. This iterative process resulted in a set 138 articles published in one of the five premier marketing journals between 2000 and 2014 that were theoretical and/or substantive (but not *purely* methodological). We also captured papers published in 2015 or listed as forthcoming; as of August 2015, this amounted to 22 additional papers. Thus, we base our critical analysis on 160 articles from the 2000-2015 period.

Next, we classified each paper based on its broad DSMM topic (e.g., digital decision aids, social networks, mobile marketing, search advertising). For each paper we also had the published keywords (usually determined by authors, though sometimes also with input from editors and/or reviewers). Neither authors nor editors select articles' keywords from a standardized "master list" and therefore keywords tend to be fairly idiosyncratic. Thus, we coded each article's keywords into a set of common keyword categories for the purposes of our analysis. For example, keywords related to "diffusion," "diffusion of innovation," "contagion" and "diffusion models" were assigned to the category "diffusion." Keywords such as "consumer generated content," "user generated content," and "online consumer reviews" were classified as "user generated content." Organizing and aggregating keywords across articles allowed us to identify the topic areas within DSMM that had higher versus lower "density" of research.

We next compiled citation count data for the base set of articles using the Web of Science Social Sciences Citation Index.[4] Citation counts over time allowed us to examine the extent to which the themes or ideas in the articles had "caught on" over time and shaped subsequent research. For each of the articles we obtained a time-series record of annual citation counts covering all journals (i.e., not only within the five journals included in our sampling frame). Additionally, we used our classifications of the papers to aggregate citation counts across articles into topics. This allowed us to see how various DSMM themes rose and declined in academic popularity over time. Finally, we identified the ten most highly cited articles in each journal in each year from 2000-2014 (excluding 2015 because, for obvious reasons, it was too soon for those papers to accumulate citations). We then calculated the proportions of these highly cited articles that were on DSMM topics, in order to obtain an indication of the impact-based prominence of DSMM research relative to non-DSMM topics.

As a final input into our analysis, we sought data that would allow us to identify the general prominence of DSMM topics *not* in the academic marketing literature but instead within marketing practice. For this, we took the set of academic article keywords that we used to classify each article and converted them into equivalent keywords that would be likely to appear in the popular business press. For example, the academic keyword "diffusion" was converted into the following set of layperson keywords: "social contagion," "social diffusion," "information spreading," and "information diffusion." Similarly, the academic keyword "digital advertising" was converted into "online advertising," "digital advertising," "search advertising," "online ads," "digital ads," and "search ads." For each set of layperson keywords that corresponded to an academic keyword we queried the Dow Jones Factiva database to compile keyword prevalence data (i.e., counts) on an annual basis from 2000 to 2014 based on appearance of these keyword strings in the following popular business press outlets: *Bloomberg Businessweek*, *The Economist*, *The New York Times*, and *The Wall Street Journal*. This data allowed us to compare the

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[4] An alternative to this source of citation count data is Google Scholar (http://scholar.google.com). We used the Social Sciences Citation Index because it tends to provide more conservative citation counts than Google Scholar since it does not include citations in unpublished works such as working papers posted on SSRN.

prevalence of the main DSMM topics/themes in the academic literature to their reflection in the popular business press.

Analysis and Results

Keyword occurrence. We first examined the keywords used to categorize the DSMM articles in our set of articles. Figure 1 shows the number of occurrences of each keyword across the articles in our analysis. The set of keywords was compiled from the keywords given by editors and/or authors for the articles, after combining keywords that referred to the same thing. A number of observations can be made.

[INSERT FIGURE 1 ABOUT HERE]

First, the keywords are highly varied, which suggests that there is a relatively high degree of fragmentation of topics within the DSMM literature. We identified approximately 200 distinct keywords in the surveyed papers, 167 (83.5%) of which are used only once. Even after combining keywords that were alike (or highly overlapping), it was apparent that DSMM researchers defined their work in a wide variety of ways, both in terms of methods and substantive areas.

Second, the two most commonly occurring keyword types related to methods of data analysis or empirical model types, both of which we consider to be methodological, and advertising (a substantive topic). For the former, it is important to note that keywords related to a modeling or data analytic-technique are usually only assigned if the approach is non-standard and thus novel in some way. Their dominance suggests that DSMM research may include a disproportionately high level of methodological innovation, particularly with respect to advanced empirical modeling techniques. Likely, this has been driven by the frequent emergence of challenges presented by new types of data (e.g., clickstream data, social network data, search advertising data). In the latter case—advertising—the prevalence of this keyword simply reflects the prominence of paid media within the DSMM space and the importance of DSMM as a new means of reaching customers through advertising.

Third, social networks have clear prominence. DSMM research related to networks was fairly uncommon in the early years of our timeframe, but quickly rose to dominance as online social networking platforms such as Friendster, MySpace, and, of course, Facebook, rose in popularity and, importantly, as marketers began to consider the viability of these online networks as marketing channels.

Fourth, we note the prevalence of various psychological processes and behavioral topics, of which we note 33 distinct terms. In this category we include terms such as "self-esteem," "learning," "memory" and "emotions," which differ from those in, for example, the diffusion literature, in that they often draw of very broad psychological theories. The frequency of such keywords signals the central importance placed by researchers on understanding the buyer's role in DSMM as an individual and, given the importance of social networks in this literature, as interdependent actors embedded in social systems. However, reliance on such a wide range of generic psychological processes and outcomes also suggests that more specific, focused theories related to consumers' psychological experience in the DSMM domain may be absent.

Finally, as Figure 1 shows, DSMM work has a substantial "long tail" that includes many other types of keywords. Note that Figure 1 does not include the entire "long tail," but only words that appeared at least five times in the literature. There are 50 other words that appear five times or less. Many of these are related to specific topics that were important at some time because they reflected an intriguing specific phenomenon of substantive interest (e.g., crowdfunding, direct marketing, freemium communities) or were more general or methodological and therefore cut across many substantive topic areas (e.g., market dynamics, optimization, complex systems).

Citations and impact. We next examined article citation data. Citation counts by article topic and year are reported in Table 1, and in Figure 2 we plot the cumulative citation counts for the top-four most-popular topics to illustrate how these topics emerged. In general, we see that, over time, the overall impact and influence of DSMM research on the field has skyrocketed. The two most highly-cited topics

were word of mouth (WOM) (2,430 cites) and social networks (1,143 cites).[5] The least cited topic was mobile (10 cites), however, this is obviously because of the newness of mobile marketing as a research topic compared to, for example, WOM (indeed, we expect citation counts for mobile marketing articles to grow rapidly over the next few years).

[INSERT TABLE 1 & FIGURE 2 ABOUT HERE]

In addition to WOM and social networks, other topics with relatively high citation counts are (i) decision aids, which refers to articles that describe how DSM is used by either managers or buyers to support decision making (e.g., how internet search can lower consumers' search costs or how online social commerce marketplaces can help consumers discover new retailers or products), (ii) consumer-focused topics, which encompasses research into buyer/consumer behavior in DSMM contexts, (iii) community, referring to studies about online communities and their various impacts on both buyers and marketing outcomes, and (iv) user-generated content, referring to studies about content contributed to online platforms by consumers, most typically online reviews. Decision aids research has been highly cited in part because of its longevity; this work was among the earliest in the DSMM domain. Consumer-focused topics yield citations both because of their breadth, covering various aspects of decision-making, consumer experience, and psychology, and because this work can be exported to other journals quite easily. Online communities likely warrant citation because of the novelty of such communities as phenomena and their role as sources of rich data. User-generated content work is cited a lot given the continued ubiquity of consumer-generated online reviews and their increasingly natural use by consumers when making decisions. Given these citation counts, it follows that we should see strong, cumulative frameworks emerging in these domains – an expectation that we will return to in our critique of the field's progress over time.

Another interesting observation from our citation analysis is that some topics have been covered in the literature for many years but that have not, in general, become highly impactful. This is the case for

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[5] We did not include Lynch and Ariely (2000) in this analysis, which alone has over 8,300 citations, making it an extreme outlier.

research on paid search (or keyword) marketing on search engines such as Google. This research has been cited since 2002 but has only attracted relatively few cites (mean cites per year: 3.4 for "search engines"; 4.73 for "keyword"; 13.93 for "paid search"). This is surprising given that paid search or keyword advertising and search engine optimization are very important in digital marketing practice. Likely, these areas are lacking in deep development, and may lend themselves to fairly narrow, dataset-specific inquiries – another concern to which we will later return. Another possibility is that the technology side of search advertising (e.g., how Google's algorithms work) evolves so rapidly that older work on this topic may not be that informative to newer work.

Another way to characterize the growth in the impact of DSMM research is to compare with similar statistics for other research domains. Despite a domain-by-domain analysis being beyond this paper's scope, we did seek to compare the impact of DSMM research to everything else in the marketing literature in the following way. We looked at the five journals in our analysis and identified the ten most highly cited papers in each journal for each year, which gave us a set of fifty highly cited articles per year. We did this for 2000 to 2014 (excluding 2015 as it was too soon for meaningful citation counts). Over this timeframe, 13.43% of all highly cited articles in these five journals were DSMM articles. This number varies across journals. For *Marketing Science*, 25% of the annual top-cited articles over this period were DSMM, 18.57% for *Journal of Marketing Research*, 11.43% for *Journal of Marketing*, 6.43% for *Management Science*, and only 5.71% for *Journal of Consumer Research*. And, by year and across journals, we find that there has been a steady increase in the percentage of highly cited papers that are DSMM. For instance, none of the most impactful papers published in these journals in 2000 or 2001 were about DSMM topics, but between 2010 and 2013 at least 20% of the high-impact papers have been DSMM (20% in 2010, 40% in 2011, 26% in 2012, and 20% in 2013). Thus, despite the heterogeneity in the impact of specific DSMM topics, the importance of the domain as a whole is considerable.

Research eras. It is clear that DSMM research in the top academic marketing journals has rapidly grown both in terms of the sheer prevalence of work in this area and, arguably more importantly, impact and influence. As we examined the citation data we began to see some distinct themes emerge that tended

to cluster in certain time periods. We refer to these clustered time periods as "eras," and use these as a basis for exploring the recurrent themes and advances in the DSMM space in later sections of this paper. We therefore only briefly summarize the eras here.

The first era, which covers the first five years of our analysis (2000 to 2004), is characterized by DSMM research that centered on understanding the way that new DSM tools and platforms (in fact, at that time, really only digital in terms of activity on websites) could be of use to marketers, buyers, or both. Specifically, research focused on understanding how the vast amount of information presented in online sources could be searched, interpreted, and used, and considered the potential of internet search engines, collaborative filtering on websites for recommendations, and other digital decision aids. We refer to this era as the era where *digital media facilitates expression and decision making*.

The second era, which covers 2005 to 2010, focused strongly on online WOM. Importantly, this is also the period in which studying networks rose in popularity. Despite this, research in this era predominantly built on the idea from the first era that internet-based digital tools and platforms (including online WOM conversations) could be decision aids. However, attention shifted to examining how other buyers could be used as *social* sources of decision assistance through online WOM and user-generated content/reviews. Network perspectives were also used to "map" the ways that individuals were linked to each other, so that the flows of information throughout marketplaces via social exchanges could be better understood. Additionally, much of the research in this era attempted to exploit the richness of observational data in online environments to understand a variety of WOM-related phenomena. We refer to this era as *primetime for WOM and the rise of networks*.

The third era, which emerged in the final few years of our analysis (2011 to 2014), took the prior era's focus on WOM and networks and more thoroughly considered the role of digital social networks in marketplaces. Research thus considered the consumer not only as a source of or audience for information communicated via WOM, but also as part of interconnected social networks and communities. Importantly, research also more broadly considered the role of consumers as social influencers in DSM contexts. This represented a point of departure from purely WOM-focused research because researchers

started to consider other types of information or influence that could flow over social networks. The popularization of social networks due to the emergence of social media played a major role in driving research in this era, because now consumers could create, share, and shape content. We refer to this era as the time where *everyone is connected and social media is everywhere*.

Finally, we consider an emerging fourth era, which encompasses work published in or forthcoming in 2015 or later. Articles published in 2015 or forthcoming build on the three prior eras by examining now-familiar topics such as online WOM, networks, and social media, but now reflect changes in how people use the internet, particularly with respect to the ubiquity of smart mobile devices. We refer to this emerging era as *boom time for digital, social media, and mobile marketing*.

We next delve into these eras of DSMM research. Instead of reviewing every relevant article in each era, our approach is to focus on the most highly cited and influential articles in these eras that epitomize work of that time on the eras' hallmark topics, and hence made important advances and spurred more research. We first identify the groundwork laid in the initial years of DSMM research in era 1. We then analyze the changes in the ways in which the most high-impact academic research has cast and re-cast buyers, the internet, and firms during eras 2 and 3. Then, we discuss the emerging era 4 and the most promising directions that appear to lie ahead for DSMM research. A summary of the eras, key themes and topics within each one, and the most influential or impactful papers is presented in Table 2.

[INSERT TABLE 2 ABOUT HERE]

ERA 1: DIGITAL MEDIA FACILITIES INDIVIDUAL EXPRESSION AND INFORMS BUYER DECISION MAKING, 2000-2004

At the same time that consumer research was recognizing the perils of choice overload (e.g., Iyengar and Lepper 2001; Schwartz 2000) and retailers were struggling with assortment decisions in new ways (e.g., Broniarczyk, Hoyer, and MacInnes 2000), digital commerce presented us with virtually endless store shelves. Given that we had learned that choosing from 32 jams apparently left consumers

exhausted and degraded choice quality (Iyengar and Lepper 2000), how would consumers navigate such huge online sets? What did retailers stand to gain from the ability to access products and information in new ways? In this first era of internet research, understanding ways to help buyers and marketers understand and navigate this new space took center stage. In addition to introducing themes that would lay the foundation for the future in terms of substantive content, the work done during this timeframe provided some important basic conclusions about the role of the internet in shaping buyer and marketer behavior. However, it also laid the basis for the fragmentation that would follow and foreshadowed the methodological challenges that would continue to draw researchers' focus over the coming eras.

Theme 1: The Internet as a Platform for Individual Expression

One way it seemed that the internet could help individuals would be by providing access to others, either as audience members or as information sources. Qualitative researchers drew attention to the fact that consumers would seek self-definition through expression in both personal portals and online communities (Schau and Gilly 2003). In this work, online experiences augmented and influenced consumers' offline lives – a theme that would be revisited using experimental and quantitative methods further over the next decade and a half. Along similar lines, work by Kozinets (2002) also qualitatively examined consumers' communication interactions in online communities and showed how these online domains—precursors to the more sophisticated social media platforms such as Facebook and Twitter— could be rich and meaningful sources for researchers seeking to understand how people express themselves online. Importantly, Kozinets' work on netnography (using ethnographic techniques on the internet) also helped show marketing practitioners how online communities could be viable sources of information from which to derive consumer insights.

While qualitative researchers were identifying digital platforms as informative research settings, quantitative researchers were also exploring online WOM and communities. Two major seed papers for this literature stream were Dellarocas (2003) and Godes and Mayzlin (2004). Dellarocas discussed the idea that online WOM offered both promises and challenges, focusing on how online feedback

mechanisms affect individuals' behaviors in online communities. This research spurred a substantial amount of research, with nearly 39 average annual cites for each of the following 12 years. Arguably more important to the field of marketing as a whole was Godes and Mayzlin's study of how online WOM in online discussion forums was linked to television show ratings. Godes and Mayzlin found that online WOM had an effect on television consumption, which spurred substantial amounts of research into the effects of various forms of online WOM on a wide array of marketing outcomes. This research also legitimized the use of online conversation data in research, i.e., establishing that online WOM in the form of online forums (at that time) could be a rich source of observational, unobtrusive consumer WOM data. This was important because, prior to the internet, WOM was exclusively private (and obviously offline), and thus obviously very difficult to study without relying on self-report data of questionable accuracy.

This research was also an important driver of future DSMM work because it raised many questions for later scholars to explore. For example, could causality truly be inferred from analyses of online WOM and marketing performance data observed over time? How good is online WOM as a predictor of offline behavior? How does offline behavior influence online behavior and how can that be captured or modeled? And finally, is it ethical to capture individuals' conversations as data sources, given that explicit approval for data to be used in this manner is typically not given? These questions foreshadowed work that continues until the present.

Theme 2: Internet as Buyer Search and Decision Support Tool

A second way that the internet might help buyers manage huge assortments would be by making search easier and choice better. In testing whether this could occur, Häubl and Trifts' (2000) paper formed an important bridge between consumer behavior research and this new means of shopping. The authors explored two interactive decision tools: recommendation agents and comparison matrices – tools that roughly paralleled the two-stage decision process previously outlined by Payne (1982) and Payne et al. (1988). Recommendation agents would perform the screening function, weeding through a huge number of alternatives, and comparison matrices would facilitate the choice process, where a smaller number of

items were evaluated en route to choice. The bulk of the paper reports a controlled experiment where 80

participants shopped for a number of products either with or without these decision aids. Results indicated

that the decision aids promoted search of higher-quality alternatives, lower search costs, and better

choices, compared to shopping without decision aids. While in retrospect this finding seems unsurprising,

at the time it was quite important. In contrast to past work that argued for the inescapability of effort-

accuracy tradeoffs (e.g., Payne et al. 1993), Häubl and Trifts' findings suggested that decreased effort and

increased accuracy could exist simultaneously in the online world. Brynolfsson et al. (2003) would then

extend such thinking to argue that the vast variety available online was a boon to consumer well-being, in

part because online markets created greater price competition: "the increased product variety of online

bookstores enhanced consumer welfare by $731 million to $1.03 billion in the year 2000, which is

between 7 and 10 times as large as the consumer welfare gain from increased competition and lower

prices in this market" (p. 1580).

But did such "frictionless commerce" and easy search mean that the internet's low search costs

would erode all chance at firm profit? On one hand, if the consumer had all price information presented to

them, researchers could predict the emergence of very strong price-based competition. On the other hand,

though, low search costs could also exist for quality information. If quality were easy to determine,

consumers would be able to differentiate among products, pushing price sensitivity down. These possible

countervailing effects proved to be rich ground for researchers. For example, Brynolfsson and Smith

(2000) found that prices from online retailers were indeed 9-16% lower than from offline retailers,

suggesting that perhaps online retailers were responding to strong price competition. Still, they found that

consumer trust and brand power still mattered online, suggesting that all attention to quality was not

overwhelmed by easy search. Fortunately, lower search costs appeared to allow consumers to differentiate

among products: Lynch and Ariely (2000) found that only when firms offered the same exact product

would low search costs lead to strong price-based competition; making it easy for consumers to see a

firm's unique items could turn ease of search into a boon rather than a danger. Diehl et al. (2003) argued

that search agents that ordered options in terms of quality could increase price sensitivity in many cases,

because well-sorted lists presented the consumer with a group of items that was fairly homogeneous with regard to its ability to match their preference. Further, they showed that for quality-focused consumers, sorting options in terms of quality led to the choice of a higher-priced, better-quality option, but for price-focused consumers, sorting options in terms of quality led to the choice of lower-priced, but also lower-quality items.

Researchers also went on to develop more nuanced understanding of the non-price-based outcomes of the internet as a decision tool. For example, Ansari and Mela (2003) considered how customized electronic communications (now considered commonplace in personalization of marketers' customer email campaigns) could be used to aid customer decisions and reduce information overload. Other work noted that despite the fact that recommendations from intelligent agents could ease consumer decision-making, they could also generate psychological reactance in electronic settings (Fitzsimons and Lehmann 2004). Other research noted that rather than providing additive benefits, the use of simultaneous search-facilitating tools might degrade consumers' choice quality (Diehl 2005).

Note that while this work was very important in era 1, citation levels for work on decision aids have remained essentially constant over time. This stability suggests two things. First, the survival and growth of the internet itself signaled that easy search would not constitute a price-war apocalypse for marketers or unmanageable choice overload for consumers. While price sensitivity might move up or down in different contexts, on the whole, it did not appear to be crippling, and moreover, firms could decide whether or not to share information about price and quality in ways that helped either themselves of consumers (see Clemons et al. 2002 for a discussion of this strategic decision in the online travel market). Second, while the internet continued to generally aid in consumer decision-making, search engines, marketer-provided screening tools, and strategies related to search costs were no longer the critical means of doing so, as power to facilitate search and choice would shift to consumers, networks, and social media.

Theme 3: Emergence of the Internet as a Marketing Intelligence Source

A third way that the internet could be of utility would be in its ability to anticipate buyers' preferences; i.e., as a marketing intelligence tool or decision support system for marketers. If such utility could be tapped, it would be beneficial both to buyers, who might receive products that better-matched their preferences (e.g., Ansari and Mela 2003), and to firms, who might be able to generate higher levels of customer satisfaction and loyalty. Consideration of this potential began with Ansari et al. (2000), which was a research note focused on the potential of intelligent recommendation agents. By this time, some work had already introduced collaborative filtering as a mechanism for offering recommendations (see Breese, Heckermand and Kadie 1998), but had been acknowledged to have fairly disappointing predictive results: sparse data, product heterogeneity, ad-hoc algorithms, indirect accounting for attribute preferences, and the limitations of correlational data all presented challenges for marketing researchers.

The prevailing approach in the early DSMM research within this theme was to innovate on empirical methodology, in large part because the then new digital sources of data (e.g., internet recommendation systems on websites) provided researchers with new types of data. This is perhaps best summed up by Ansari et al. who suggested that "the new applications of information agents will…require advances in data collection and analysis procedures; marketing researchers are eminently posed to contribute significantly in those areas." (p. 373). A similar perspective was taken by Bradlow and Schmittlein (2000), who sought to model the performance of the six dominant search engines in use at that time (AltaVista, Northern Light, HotBot, Infoseek, Excite and Lycos) and dealt with previously unencountered data characteristics and, hence, modeling challenges. In this research the authors sought to identify which search engines managers should use to find marketing information. While these specific findings were important at the time, given that these search engines would soon become obsolete, the more lasting contribution of this work lay in its modeling approach and correct prediction: that future search engines would evolve with the internet and continue to be a rich source of marketing intelligence. Other work focused on clickstream data, with the goal of understanding the way that advertising and consumer browsing patterns might interact to drive sales (e.g., Chatterjee et al. 2003; Bucklin and Sismeiro 2003, Montgomery et al. 2004). In the present, of course, in addition to search engines as

sources of marketing intelligence, we now have social media data that provides vast amounts of information about markets and, in particular, consumers – it could be argued that our ability to analyze this data was rooted in these early efforts to gain marketing intelligence from consumer behavior online.

Summary of Era 1

The early years of DSMM research are best characterized in terms of exploration of the potential for the internet to be a useful tool for marketers and buyers. As we discussed, three specific themes emerged in this era, which laid the groundwork for research in subsequent eras. First, qualitative and quantitative research found that individuals used the internet both to express their own opinions and to learn from others, suggesting that the internet and online communities (as precursors to social media) would transform WOM in profound ways. Second, studies of the internet as a way to reduce buyers' search costs and as a mechanism through which marketers could make more customized or personalized offers (thus also reducing choice overload) demonstrated that digital marketing could make shopping easier and more efficient. However, research within this theme also explored the potential downsides and challenges to using recommendation agents and other search-cost-reduction approaches on the internet. Finally, researchers embraced new opportunities for data collection and, in particular, the ability to unobtrusively observe buyers' choices, as potential new sources of marketing intelligence. At the same time, however, these new sources of data presented modeling challenges that needed to be grappled with and, as we will see, continue to be dealt with in more methodology-focused research to the present day.

In this first era, we also observe that researchers from different methodologies tended to work in their individual silos. The qualitative community was producing highly generative work discussing the richness of consumer experience in the online world, the experimental community used methods that could help us understand causal relationships between marketing variables, and the quantitative community wrangled with the best methods by which online information could be used to predict behavior. However, these groups did not "cross fertilize" each other's research, nor did they attempt to build on each other's findings in substantial ways.

ERA 2: PRIMETIME FOR WORD OF MOUTH AND THE RISE OF NETWORKS, 2005-2010

By 2005 the internet was well-established as a platform for online social interactions and as repository for seemingly valuable peer-to-peer or socially sourced information about products, services, and brands. User-generated content, often in the form of online reviews of products on ecommerce sites such as Amazon.com or of service providers such as restaurants on sites such as Yelp.com, was increasingly commonplace. Around this time we also began to see the beginnings of what would eventually be called social media, with the launches and growing popularity of early social networking sites such as Friendster (founded in 2002) and MySpace (founded in 2003) and, of course, Facebook (founded in 2004). The period from 2005 to 2010, which is the time of era 2, is perhaps best characterized as one in which online WOM matured as a part of mainstream life, and social networks began to take off. For marketing academics and practitioners alike, these trends raised a number of questions about how to best use online WOM and social networks for marketing purposes, which invariably required a more detailed understanding of the way that these social processes and systems operated.

Theme 1: Online WOM as Individual Expression *That Matters To Marketing*

Recall that in era 1, academic research had shown the potential for online forums to promote individual expression. In era 2, this theme was further developed and connected to marketing practice. Earlier work on online WOM, in particular Godes and Mayzlin (2004), had helped to demonstrate that online discussion forums and communities on the internet were relevant sources of measures of WOM activity and that such activity could be associated with marketing outcomes. This article had a profound impact on subsequent research on online WOM and, importantly, its impact on marketing outcomes. In the days of the USENET forums studied by Godes and Mayzlin, however, individuals having conversations about things such as products (or in their case, television shows) was not all that common, or at least was relegated to a more niche segment of consumers. That changed when ecommerce sites, led

by Amazon.com, allowed users to post product reviews online. The rise of online user-generated content spurred more research into online WOM and a need for a greater understanding of the impact of online reviews, as one form of online WOM, on important outcomes such as sales or new customer acquisition.

This challenge was taken up by numerous research teams using a wide range of methods. The most impactful research in this area was quantitative work by Chevalier and Mayzlin (2006) and Trusov, Bucklin, and Pauwels (2009), behavioral work by Schlosser (2005), and qualitative work by Kozinets et al. (2010). Chevalier and Mayzlin examined how online ratings/reviews of books on two prominent online booksellers (Amazon.com, Barnesandnoble.com) affected relative sales of books on those sites (i.e., sales ranks). They found clear positive links between user-generated ratings (1-5) and reviews (text) and sales, thus demonstrating that this now-ubiquitous form of online WOM had a measurable impact on marketing performance as indicated by a book's sales. This has been extremely impactful, generating on average approximately 54 cites per year and, like Godes and Mayzlin (2004) before it, encouraging even more research into the effects of online WOM on sales and moderators of those effects.

Trusov et al. considered a different indicator of marketing performance and a different type of online WOM. In their study of a then-popular online social networking site, they considered new customer acquisitions (i.e., membership growth) as a marketing consequence of WOM, and focused on online WOM in the form of "refer a friend" email-based referrals from existing customers to potential new customers. Just as the form of online WOM considered by Chevalier and Mayzlin—online reviews— is ubiquitous, so is the online WOM "email a friend" referral examined by Trusov et al. Importantly, this study also considered non-WOM drivers of customer acquisition, which is important methodologically (to control for omitted variables or to account for other potential mechanisms through which customers can be acquired). It is also theoretically interesting because they compared online WOM to traditional marketing (in this case in the form of both media/PR and offline events), a theme echoed in other research, as we discuss later (e.g., in Stephen and Galak's [2012] comparison of traditional and social earned media as sales drivers). Trusov et al. in general found that the long-term effects of online WOM

referrals on customer acquisition were greater than those from traditional marketing activities, which further justified the importance of online WOM as a valuable marketing tool.

On the less-quantitative side, work by Schlosser (2005) and Kozinets et al. (2010) delved deeper into understanding online WOM from consumer behavior and culture perspectives. Schlosser conducted seminal work into how "posters" (people who share online opinions) and "lurkers" (people who read but do not post their opinions) are differentially-affected by the opinions of others. Kozinets et al. argued that when marketers use WOM they face a situation of "networked coproduction of narratives" with consumers in the roles of, for instance, bloggers. Thus, whereas the two previous articles focused on how online WOM affects some indicator of marketing performance, this work considered what happens when marketers involve consumers in the construction of WOM in the form of stories or narratives. This led to the development of a framework of online WOM marketing communication strategies based on observations of how consumers produce and respond to information in online communities.

Finally, we also saw the emergence of some important work on how firms manage online WOM. First, Dellarocas (2006) theoretically analyzed how firms could strategically manipulate online WOM in opinion forums and how this both firm profits and consumer surplus. Second, empirical work by Godes and Mayzlin (2009) examined "firm-created WOM," considering whether firms should try to exogenously generate WOM where it otherwise would not exist (e.g., through viral seeding campaigns). They found that this could be a useful strategy for products with initially low levels of awareness. Importantly, this article was a precursor to the larger volume of work on firm-created or seeded online WOM that emerged in era 3.

Themes 2 and 3 Converge: Digital Networks as Tools for Information and Value

In era 1, academics had suggested both that the internet could help consumers and that it could be a vital source of marketing intelligence. In era 2, these themes exhibited a great deal of overlap, as inquiry into the internet as a decision tool took on a distinct networks flavor, following earlier seminal work by, for example, Goldenberg, Libai, and Muller (2001) and Van den Bulte and Lilien (2001). Importantly,

network representations were useful for capturing the interconnectivity among actors in marketplaces due to the rise of online social networking platforms, which enabled researchers to study the extent to which that interconnectivity (and different kinds of interconnectivity) mattered.

The growing interest in networks in the digital marketing literature was a function of at least three factors. First, as mentioned, the emergence of online social networks in practice provided scholars with new inspiration for research questions, and practitioners with new dilemmas that could be addressed by research. Second, the popularity of social networks due to work in sociology by Duncan Watts and colleagues (e.g., Watts and Strogatz 1998), including concepts popularized by bestselling "pop-sci" books (e.g., Gladwell 2000; Watts 2003), meant that scholars were already interested in networks.[6] Third, marketing scholars, who were familiar with network concepts now had a context in which these concepts could be brought to bear on interesting *new* phenomena in the digital space.

The research in this era on this theme built on more general work on diffusion and social contagion modeling. For example, in a highly-cited simulation-based article in *JCR*, Watts and Dodds (2007) combined network- and contagion-related concepts to argue that information spreads not necessarily because an initial transmitter ("seed") has a disproportionately large number of social contacts (i.e., is a social hub), but instead it depends on how susceptible to social influence the mass audience happens to be. This work continues to be provocative because it suggests that the well-established idea that influencers or social hubs drive information diffusion (and corresponding product adoption) may not be fully accurate (cf. Coleman, Katz, and Menzel 1957; Van den Bulte and Lilien 2001).

The theme of *who* drives social contagion processes over networks in digital marketing contexts was popular in this era, and the seed papers following from Watts and Dodds (2007) primarily focused on this topic. In particular, this stream of research considered how to identify "influential" people in online social networks, based primarily on network-structure (positional) properties as opposed to, for example, individual differences such as expertise or personality traits. This identification was possible because

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[6] There was also non-digital social networks research over the years in the marketing literature, such as Goldenberg et al. (2001) and Frenzen and Nakamoto (2003), and books such as Van den Bulte and Wuyts (2007), and Iacobucci (1996).

social network position lent itself to relatively easy measurement and within the types of large scales of interest to marketers. This was important because firms could then target potentially influential individuals as part of their WOM/viral/influencer marketing programs. Three articles were particularly important in this regard. Goldenberg, Han, Lehmann, and Hong (2009) used online social networking data from a Korean website to show that social hubs—people with disproportionately high numbers of connections (i.e., "degree" in network terminology)—speed up diffusion/adoption processes, in their case for virtual goods shared between users of the network. Trusov, Bodapati, and Bucklin (2010) also made an important contribution to this literature by developing a method for identifying influential users in online social networks, where influence is defined based on having significant effects on the online activities of others. Katona, Zubcsek, and Sarvary (2011) took a similar approach by looking at adoption data in an online social network (in their case, a Hungarian site) and showed how individual customers' network positions (specifically: degree and clustering) are predictive of their ability to influence others to join the network.

Departing from the diffusion- or contagion-related theme, another way that networks were used was in thinking about marketplace structures as networks and to study various issues that arise in large digital marketplace networks such as search engine advertising. With respect to the former, Katona and Sarvary (2008) modeled the commercial internet as a network graph linking websites based on those websites purchasing advertising links from one another that allow traffic (i.e., people) to move between websites. This was the first paper in marketing to propose a network structure as an equilibrium outcome of a market-based process, in this case a game between utility-maximizing websites who use digital advertising to purchase traffic from each other. Complementary to this work, Wilbur and Zhu (2009) analyzed a phenomenon called click fraud, which occurs when search ads are deceptively clicked on by someone (e.g., a competitor, third-party website who receives traffic-based revenue from the ads) with the intention to spend an advertiser's budget or to drive up a third party's traffic revenues. They considered how this theoretically can impact a search engine's revenue and showed when they are better or worse off when there is click fraud. Another search engine-related paper is Ghose and Yang (2009), who used a

large dataset of search keywords from a retailer who conducted sponsored search advertising on Google, and sought to understand the complex system of Google search advertising from both the consumer and firm sides (i.e., as a two-sided market). In particular, they examined how keyword attributes affect consumer clicking and purchasing behavior, as well as firms' decisions related to keyword bids.

Also from a network view and not about diffusion, Stephen and Toubia (2010) empirically examined digital marketplace structures as a network where links facilitate flows of potential revenue (customers) between webpages. They used data from a French ecommerce company that allowed individuals to set up their own online stores (as websites) and, interestingly, to link their stores to other's stores in the marketplace (this is termed "social commerce"). They showed that certain aggregate properties of the network of sellers that emerged predicted changes in overall marketplace revenues, in particular that greater interconnectedness—structures that facilitate customers easily browsing from website-based store to store—increase total marketplace revenues but that structures that "trap" customers in browsing "dead ends" hurt revenues, presumably because the lack of ease of browsing makes it more likely for customers to leave the marketplace. They also showed that website-based stores that are more centrally located in the network—i.e., more accessible from other stores—earned higher revenues over time. Thus, this research showed how an ecommerce marketplace could be represented as a network, and then associated graph-theoretic measures with marketing performance outcomes, in this case revenue at the marketplace and individual seller levels.

Summary of Era 2

Era 2 took a number of major leaps forward from Era 1. First, individual consumer expression in digital and social media was more directly related to marketing objectives. Further, the consumer as the beneficiary of internet capabilities and provider of marketing information became embedded in networks – a quantification of the types of communities discussed by the highly-impactful qualitative work done during this era. Indeed, the use of network-analytic methodologies during Era 2 constituted an important addition to the methods used by marketing scholars. A strength of this approach was that datasets that

might be considered somewhat idiosyncratic, given their international origins and specific purposes (e.g., Korean, Hungarian, or French networks and ecommerce cites), were effective in collectively demonstrating the usefulness of quantitative network perspectives and the general importance of connections and network position as predictors of marketing-related outcomes in these diverse settings.

Further, in Era 2 we recognized that not all consumers played the same role: some posted, some lurked, some influenced, and some were influenced. Teasing apart these various consumer roles could be of use both in improving their experience and promoting desirable outcomes. Future work then had the opportunity to begin to understand consumers' individual roles within networks, which was a rich ground for consumer behavior research in Era 3. We also observed an interesting convergence related to the roles of firms and consumers in networks. While Kozinets et al. used a qualitative approach to argue that consumers co-produced narratives with firms, Stephen and Toubia were arguing that firms themselves were beneficiaries or victims of networks. Such convergence across methods was hopeful – perhaps theories and findings from one method could be tested and furthered by later researchers.

Though less broadly-impactful in terms of citations, we observed a transformation of research interest in search-related topics. Whereas in era 1, academic research primarily considered the internet's role as a means of lowering search costs for consumers, in era 2, a few papers began to consider the firm's capacity to facilitate search for its products. The study of online search keyword auctions garnered some attention, primarily from an analytical perspective (Chen, De, and Whinston 2009). Similarly, sponsored search also emerged as a research topic (e.g., Katona and Sarvary 2008; Ghose and Yang 2009; Wilbur and Zhu 2009). This pattern reinforces the idea that the firm and consumer-related themes from era 1 had converged, with papers considering the way that by helping consumers search, DSMM could also help firms be more profitable.

ERA 3: EVERYONE IS CONNECTED AND SOCIAL MEDIA IS EVERYWHERE, 2011-2014

In 2007, MSI declared that "the connected consumer" was a top research priority. Indeed, given the insights from social network-related research in era 2, buyers were not only connected, but also enormously empowered by their connections to others online. Social media platforms, starting with the earlier versions (Friendster, mySpace), and progressing to today's dominant options (Facebook and Twitter) and newer entrants (Instagram and Pinterest), enabled people to interact easily and instantly with other people as well as brands in all parts of their lives. It was now recognized that social media allowed any consumer to act as both advertiser/promoter and consumer for a given brand at any time. Thus, the respective roles of the consumer, marketer, and internet platform as defined in eras 1 and 2 were further developed and expanded in era 3, giving us a more nuanced understanding of the role each one plays in creating marketing outcomes.

Interestingly, however, because it seemed that all consumers were now highly empowered, at least in terms of having a "voice" through DSM technologies, era 3 reduced its focus on differentiating among consumers based on their positions in a network. Rather, as individuals' online social networks grew denser, it seemed that *all* consumers' actions had greater potential to lead to influence. Thus, this era continued to explore WOM as a focal topic, but more squarely placed the generic consumer – not the hub or influencer or expert - at the heart of the most groundbreaking effects, such as virality and consumer-to-consumer interactivity. Thus, the theories that were developed intended to apply to consumers *in general*, not simply to special sub-populations such as social hubs or influencers. Further, researchers wanted to understand how they could harness consumer power by trying to work out how user-generated content transmitted online through social channels could best be harnessed for marketing purposes. Finally, researchers began to examine the use (i.e., consumption) of social media by studying consumer behavior on specific social media platforms, namely Facebook and Twitter. In these investigations, we found that while consumers were shaping the DSMM sphere, their actions there were also shaping them.

Theme 1: The Rise of Individuals as Viral Transmitters and Content Creators

Recall that prior eras laid the groundwork to explore novel ways that the internet allowed consumers to express their opinions, showed the marketing relevance of online WOM (e.g., because it can affect sales), and pointed out how information or user-generated content spread was via online social networks and social media platforms. In this third era, the consumers came to be seen as more than contributors to WOM streams, but rather as potentially powerful agents who could amplify or undermine the effect of marketing actions. Arguably this recognition of the consumer's social influence power was due to the mainstream acceptance of social media as a ubiquitous form of digital media that was "here to stay" rather than, as some previously thought, "just a passing fad." Its penetration among the mass of consumers lent it clear potency as a persistent, and therefore important, new media channel. Because consumers had embraced social media and made it part of their means of meeting goals, constructing identities, socially interacting, seeking information, and learning about the world, their actions in these domains could have far-reaching consequences. In combination with this trend, researchers and practitioners were also inspired by rapidly advancing technological innovation that turned purely social online channels into exciting new marketing platforms. In theory at least, such platforms could be used for large-scale online WOM marketing, viral campaigns, and very precisely targeted digital advertising that leveraged the unprecedented levels of personal information consumers were voluntarily providing in both their public social media profiles and through their actions on social media (e.g., what they share with others).

These realizations raised a number of questions. First, what could make content go "viral" or, more precisely, what factors would drive people to disseminate content to their contacts online, either through more conventional online WOM (e.g., email) or through social media by "sharing" or "retweeting" posts? Put differently, a body of literature emerged that attempted to study the drivers of online social sharing behaviors, led in large part by Jonah Berger and his collaborators. For example, an impactful seed paper in this area is Berger and Milkman (2012), which reports a study of three months of *New York Times* articles to see which characteristics of the articles were correlated with being shared more via email. Using this secondary dataset and an experiment, they found that high-arousal content

(e.g., funny items) was more likely to be shared than low-arousal content. Though still relatively new, this work has already captured an average of 16 citations per year, suggesting the importance of research on content-related drivers of social transmission. This also suggests that research continues in this area, indicating that there are still many open questions that need to be addressed, not only with respect to content-related drivers of social transmission but also in terms of a wider variety of factors that could potentially influence a consumer's decision about whether or not they should socially share a piece of information (or opinion or news article or branded social media post).

A second general question that emerged related to social media in era 3 was how consumers used social media to meet their own goals. In general, this stream of literature began to look at drivers of social media use instead of looking at drivers of specific social transmission actions made on social media platforms. For instance, Toubia and Stephen (2013) considered drivers of social media posting activity irrespective of the *type* of post (i.e., not considering content characteristics), starting with the broad question of *why* do people tweet? They considered individual drivers (instead of Berger and Milkman's content drivers) and focused on intrinsic and image-related sources of utility from posting. Using a novel field experiment on Twitter whereby they observed how regular Twitter users' posting activity changed as a result of increases in their numbers of followers over a period of time (i.e., an increase in social status on Twitter), Toubia and Stephen concluded that image-related utility is a dominant driver (versus intrinsic utility) of posting activity in most cases. Importantly, Toubia and Stephen showed changes in Twitter users' behavior over time; i.e., as the number of followers a consumer had changed, so too did their behavior. This insight made it possible for firms to customize their approach to various consumers based on observable information, and to behave in a way that was dynamically appropriate, based on the consumer's status. Note that both Berger and Milkman (2012) and Toubia and Stephen (2013) included experimental components, whether in the lab or in a field study. In contrast to the quantitative approaches taken in era 2, consumers' roles as transmitters of information were now subject to direct causal observation.

Theme 2: User-Generated Content as Marketing Tool

Our second theme, that of the use of DSMM as a marketing tool, also developed further in the third era of research. Specifically, era 3 reflects increasing interest in the way that user-generated content can be used by marketers. For example, Ghose et al. (2012) used crowdsourced content to design ranking systems for hotels that would help consumers find the best alternative for them, and Albuquerque et al. (2012) and Wang et al. (2014) explored the dynamics of markets when user generated content is introduced, either in theory or in practice. A number of articles also attempted to identify ways to demonstrate the value of user-generated content or social media-based WOM. Moe and Trusov (2011) examined this from the perspective of social dynamics in online review forums, linking review rating dynamics to subsequent ratings and product sales as a way to understand the value of such platforms. From a different perspective, Tirunillai and Tellis (2012) considered whether user-generated content can impact a firm's stock performance in terms of abnormal stock returns, trading volume, and idiosyncratic risk. They found, for instance, that the amount of "chatter" affected returns and trading volume the most, and negative-valenced WOM also had an effect, though positive did not. Finally, Stephen and Galak (2012) considered how much value a firm's or brand's online community—which is a form of "earned" social media (as opposed to paid, such as advertising, or owned, such as posts by a brand itself)—contributes to sales vis-à-vis traditional earned media (e.g., publicity, press mentions). They used data from a popular micro-lending marketplace, and found that earned social media (online WOM generated by "fans" in an online forum) had a stronger long-run positive impact on sales than traditional earned media did, even though the traditional earned media (e.g., mentions in national newspapers) likely reached more people.

Some of this work presents somewhat muddy pictures of the way that user-generated content works, however. For example, Ghose and Han (2011) reported an empirical analysis of user content generation and usage behavior on the mobile Internet. They found that when individuals consume online content, they tend to produce less content, and vice versa. This is an important insight, albeit somewhat unsurprising, because it suggests that people make tradeoffs between creating and consuming content in

DSM settings and, thus, content creation and content consumption may be substitutes for each other at any given point in time. Further, they contribute the interesting insight that when people travel, they tend to consume rather than generate content. In addition to this work, other research considered the dynamics of user-generated content production. For example, Shriver et al (2012), showed that surfers who posted information for others in an online community for surfers benefitted by attracting more social ties, and that this spurred additional content generation activity. Shriver et al. also demonstrated that user-generated content raised overall browsing activity and advertising revenue for the website. Compared to Ghose and Han, who suggest a possible inverse relationship between content creation and consumption, an implication of Shriver et al.'s findings if that maybe these activities are positively related. Given this difference—albeit in very different contexts—more work is needed to understand the complexities of user-generated content creation and consumption, in large part because individual consumers often take on both roles.

Also related to this work, Goldenberg et al. (2014) explored another role played by consumers in the user-generated content space, namely the the consumer's role as content curator. In a way that brings us back to many of the initial search-related questions raised in era 1, this work reported seven studies run on YouTube where consumers receive two different sources of recommendation for videos to watch: from an algorithm (i.e., a recommendation agent, akin to those studied in era 1), and from other consumers who have curated links to videos. In this landscape of enormous choice sets, they found that consumers effectively broker content between one another, allowing them to reach good outcomes more quickly than they would through search. Again, we note the recurrent theme of consumer search, but note the advances made by these authors: people can search for content or information through their social networks, as opposed to through algorithm-driven tools such as search engines or recommendation agents. Practically, this finding has important implications for the growing trend of consumers curating content in the form of product recommendations using popular social media sites such as Pinterest that make it easy to pull together information from across the internet into a single place.

Theme 3: Capturing Marketing Intelligence and Potential in Specific Social Media Platforms

By era 3, researchers started to focus on studying particular social media platforms that seemed to have staying power and were widely used by consumers, thus warranting research in their own right. Perhaps because this work has such high significance both to the firms who are using these platforms and to the billions of consumers who have made them part of their daily lives, it has tended to quickly generate citations and capture popular press notice. For example, Toubia and Stephen (2013)'s work on Twitter, and Wilcox and Stephen's (2013) and Naylor et al.'s (2012) work on Facebook have been rapidly gaining citations. In part, this may be because such efforts present methods that allow other researchers to explore these platforms, in the lab, in the field, and as reflected in complex data. Additionally, and arguably more importantly, these articles each sought to understand some psychological aspects about how people behave on social media platforms and why they do what they do (Toubia and Stephen; Naylor et al.) or how using a social media platform affects seemingly unrelated psychology such as self control in subsequent behaviors (Wilcox and Stephen).

Interestingly, each of the three papers noted above focus on the psychological characteristics and needs of consumers as determinants of marketing outcomes. Anchoring our work in aspects of consumers rather than aspects of specific platforms may be justified; since the platforms themselves are notoriously dynamic, connecting their effects to consumers' traits, inference-making strategies and needs may allow us to revise predictions as the forums evolve.

Summary of Era 3

Era 3 built on the prior era's themes in a number of important ways. First, extremely high use of social media meant that the consumer was empowered in ways that were important to marketers. Second, by creating content, consumers were offering a new kind of marketing tool to marketers. Third, researchers were devoting concentrated to study to the way that specific social media platforms worked, altered marketing's effects, and changed consumers' lives.

We also note that with these advances, we begin to see the DSMM domain explode in size, but also to fragment. Researchers continue to cite WOM research heavily, and social network papers grow even more in their influence. However, we also begin to concentrate efforts on user-generated content specifically, consider DSMM effects on sales, persist in our research on paid search and decision aids, cite papers that explore consumers' psychological processes and communities, and offer a scattering of work on display or banner ads and keywords.

THE NEXT ERA: THE 2015 AND 2016 OUTPUT BOOM

In the first half of 2015 alone, over 20 A-level marketing journal articles have explored DSMM topics. While we cannot yet quantify the impact of these papers, the sheer number suggests that we are at the start of another era. Consideration of these papers gives us some idea of where the field may be headed, in terms of advances in data, methods, and substantive domains. In particular, the relative proportion of papers devoted to topics related to mobile marketing suggests that this is an area that is now taking off in a very big way. Interestingly, though, 2015's work also brings a return to some of the topics that sparked the initial growth of DSMM. First, we are revisiting topics related to individual expression online, a domain that has matured to the point that we are able to consider a meta-analysis. Second, relatedly, strong interest remains in understanding how digital (and particularly social and mobile) activity generates quantifiable marketing outcomes of value. Finally,, we are identifying advances in our ability to gain marketing insights by observing the ways that consumers search and learn in new DSM contexts.

Our newest re-visits to these topics have a number of features that provide a snapshot of the field's progress since its genesis. First, the nascent papers in this space do not only describe patterns in data or report equilibria from analytic models, but connect findings to psychological theory. Thus, DSMM increasingly seeks to extend prior general frameworks for studying human behavior. Further, the perpetuation of this pattern increasingly suggests that the methods used to study DSMM topics may

enrich base theory in marketing in ways beyond the reach of experimental or qualitative approaches alone. Second, the newest work combines multiple data sources and methods in creative ways. In the first half of 2015 alone, we see combinations of, for example, field and lab experiments, transaction data, coded characteristics of studies, and Google Trends data. This multi-method combinatory approach allows researchers to pinpoint moderators that would not be included in a single-source dataset. Perhaps more importantly for marketers, as in era 3, we see that quasi-experimental approaches, observation, and combined datasets can be analyzed in ways that offer insights that previously required large expenditures of time and money. As such, this new work not only extends our knowledge, it extends our knowledge-gathering ability. Finally, we can identify areas briefly introduced in prior eras, but that seem to offer particularly promising domains for new investigations. We discuss these topics at the end of this section.

Theme 1: Consumer Expression, Collected: Meta-analysis

Given that consumer expression was a recurrent theme in all three prior eras and the density of work conducted related to WOM, by 2015 it became possible to conduct a meta-analysis related to online WOM. You et al. (2015) present one of the first meta-analyses in the DSMM space. Beyond the findings of this paper, there are three characteristics of the work that are common in the most novel work. First, the authors build a theoretical framework based on work in consumer behavior, notably, past work on consumers' information search (e.g., Moorthy, Ratchford, and Talukdar 1997). Second, the authors combine multiple data sources in ways that provide insights beyond simple effects: as in a traditional meta-analysis, the authors review 51 studies on WOM volume and valence elasticities. From this analysis, they conclude that word-of-mouth volume elasticity is lower (.236) than is word of mouth valence elasticity (.416). Second, however, they combine this data with coded product, industry and platform characteristics – often data that was not available in the original articles themselves. By adding this data, they are to show that the effect of online WOM is dependent on these coded values.

Theme 2: Internet as Tool Revisited: Challenging Assumptions about Display and Search Advertising

As earlier noted, display and search advertising had been explored in DSMM research, but papers on this topic had never gained high levels of impact. In the most current work, online display advertising is given new life: Though this form of marketing communications is almost as old as the internet, it gains novel focus as "old" digital advertising formats are being repurposed for new digital channels, particularly mobile. For example, Bart, Stephen, and Sarvary (2014) study mobile display advertising using field experiment data from a large number of mobile advertising campaigns. In doing so, they are able to determine for which types of products mobile display ads are more effective. They find that mobile display ads seem to be best suited to high involvement, utilitarian products, in terms of being able to lift favorable brand attitudes and purchase intent.

Search advertising has also been revisited. Importantly, new analytic approaches continue to challenge our conceptualization of search advertising. For example, prior analytic work had been inconclusive regarding the importance of search order: some work concluded that top positions in search advertising were preferable (Chen and He 2011), while other work had suggested situations where clicks might not follow ranks (Katona and Sarvary 2010; Jerath et al. 2011). However, Narayanan and Kalyanam's (2015) new empirical work points out that main effects of position may be contingent on characteristics of the brand or of the consumer. Specifically, by analyzing 414,301 real observations, the authors find that in the aggregate, the 1st position is preferable to the 2nd, consistent with prior research. However, this main effect does not tell the whole story. Rather, the importance of order effects may primarily hold for smaller or less-familiar advertisers. However, as consumers' familiarity with a specific brand or search for an exact match to their preference increases, position effects are substantially smaller and often completely disappear. The authors point out that randomized experiments would have previously have been necessary to make such conclusions, but note that a regression-discontinuity approach may allow firms to understand their own position effects without undertaking such efforts.

Theme 3: Internet as Market Intelligence Source Revisited: Improved Tools for Data Analysis

The idea that search is not an end in itself, but can be a valuable source of marketing knowledge persists in the newest work. Happily, we can see clear advances over early efforts in this domain. Recall foundational work by Ansari et al. (2000), which attempted to develop collaborative filters that would accurately predict consumer preferences. Interestingly, the same goal persists 15 years later – but with arguably more convincing results. Specifically, Du, Hu, and Damagir (2015) argue that marketers can infer shifts in consumer preferences based on the popularity of the words for which they search. In turn, marketers can adjust their marketing mix to leverage this knowledge.

Our ability to advance on this topic comes from a number of differences between the research approaches of the early 2000's and today. Whereas Ansari et al. faced numerous data shortcomings, Du et al's paper involves a combination of Google Trends data, which provides information about consumers' actual search terms, with marketing mix data related to various brand expenditures and characteristics. This creative combination of data, the authors argue, makes it less necessary to perform costly repeated conjoint analyses or struggle with low-response surveys. Rather, combining these two sources of data can unobtrusively capture consumer preferences in ways that optimize marketing spending.

A similar approach is taken by Kim and Krishnan (2015), who use individual purchase data to observe learning effects among consumers. These authors use data from a large Korean online retailer. Results show that as consumers gain in online shopping experience, they become more willing to buy products of uncertain quality. However, this effect only occurs for less-expensive products. Again, this paper combines transaction data with information about brands' auxiliary communications and offline characteristics, such as digitized video commercials and brand equity. In making this combination, the authors show that these auxiliary elements of a brand's marketing mix can substitute for learning, overcoming consumers' uncertainty about product quality. Again, one may argue that such substitution effects could previously have been contingent on experiments where various factors are promoted or withheld; this paper suggests that observation and combined data reduces this reliance.

Emerging Topics

While the forthcoming boom does revisit prior themes, it is also important that new topics are being explored as well. We next discuss the areas that appear to be gaining attention in this present period. A summary of these areas, early seed articles, and potentially interesting research questions is presented in Table 3.

[INSERT TABLE 3 ABOUT HERE]

Collective behavior. Whereas in era 3, researchers focused on buyers' volitional participation in communities, most of which were based in friendships or shared affinities, little work directly tied these social networks to valuable marketing outcomes. However, marketers have found ways to more directly take advantage of consumers' tendency to act in groups. For example, the rise of consumer-focused crowdsourcing of new innovations or product ideas in the practitioner world is one way in which collective behavior can potentially be exploited for marketing gains. This topic has been examined by Bayus (2013) in the context of Dell's Ideastorm.com idea crowdsourcing community, and recent work by Stephen, Zubcsek, and Goldenberg (2016) examines the role of social networks in driving the innovativeness of consumers' ideas in "interdependent product ideation" tasks online. It is also likely that we will see more research into the so-called "sharing economy" due to the present popularity of services such as Uber.

Consumer and firm acquisition without permission. Certainly, it is a positive development that we are getting better at gleaning information from digital sources. However, recall that in era 1, Godes and Mayzlin (2004) questioned the ethicality of acquiring data from consumers' online behavior without their explicit permission. While this question receded in prominence during the second and third eras, presumably because the richness of the data and need to address its deficiencies proved more interesting than ethical concerns, such issues are gaining attention again, from the perspective of firms, consumers and policymakers. Is it ethical for firms to acquire as much information as possible about consumers, even without permission? How should firms respond if consumers become similarly acquisitive with regard to their products, again, without permission?

Researchers are considering privacy and intellectual property concerns using both analytic and empirical methods. Guo and Meng (2015) use an analytic modeling method to explain some firms' decisions to use relatively lax anti-piracy policies. They find that stringent copyright protection exerts a main effect on the perceived value of a licensed product, but also raise product prices. These higher product prices decrease consumers' interest in searching, as they see little relative benefit to incurring larger search costs. Further, when copyright protection is strong, firms may lower quality. Interestingly, this work connects to classic theory in consumer behavior, most notably, work on search costs (Hauser and Wernerfelt 1990), but also extends prior findings by considering factors such as quality observability and recognizing that there may be relationships between search, prices and quality that unfold over time, rather than remaining static during a given consumer's search process. Tucker (e.g., 2014) has also begun a line of inquiry related to regulation in general, privacy controls, and advertising that promises to provide important insights into the trade-offs between well-targeted ads and privacy invasion that online advertising will continue to deal with in the coming years.

Online and offline multitasking. The relationship between online and more traditional forms of advertising had been explored in a few papers prior to 2015 (e.g., Joo, Wilber, Gowgill and Zhu 2014) but appears ripe for deeper exploration (Liaukonyte et al. 2015). Using a quasi-experimental design, Liaukonyte et al. find that compared to firms that do not advertise on television, firms that do create higher sales levels in the two-hour widows around the time of TV ads. Again, the authors apply constructs from consumer psychology to further untangle these effects, differentiating between action-focused, emotion-focused, informationally-focused, and imagery-focused ads. While all types raise the number of consumer transactions, they do so via different combinations of direct visits and search engine referrals. By using a difference-in-difference approach and regression discontinuity analysis, the authors are able to present causal arguments without conducting costly field experiments.

Toward a theory of mobile marketing. In era 3, mobile was explored primarily as a means of examining the relationship between user-generated content creation and content use (Ghose and Han 2011; Shriver et al. 2012). We noted that results from the mobile domain appeared to be a bit different

from those that had been found in the non-mobile context. It may be that these findings can be harmonized by recognizing the difference between consumers' approaches to mobile as opposed to internet usage – mobile may present a more task-oriented focus for consumers, while non-mobile internet use lends itself more to network building and relationship development. In general, the differences between mobile and more traditional online use thus offers fertile ground for future exploration.

Developing a theory of mobile use will not be a simple task. Our ability to build generalizable theory related to mobile marketing is reliant on combining big data with consumer-level insights. For example, Andrews et al. (2015) mobile advertising research combined data from one of the world's largest telecom providers on nearly 15,000 consumers with a follow-up survey that explored consumer motivation. In this work, the researchers found evidence that in highly-crowded spaces, consumers turn inward, seeing their mobile phones as a "welcome relief" to the anxiety-producing crush around them. While this finding is very interesting, it also highlights the challenge inherent in exploring such domains – massive datasets may be necessary to understand the broad, lived patterns of mobile use. However, given such datasets, many researchers may be able to contribute to understanding the psychological drivers of mobile behavior, using more universally-available experimental and survey methods.

The mobile domain also introduces the dual importance of both geographic and temporal proximity in determining the effectiveness of marketing promotions, which are, in essence, contextual factors reflecting real-world environments. As such, mobile research offers the opportunity to build completely new theories of buyer behavior in *digitized* (as opposed to completely digital or completely non-digital) environments where both virtual and real contextual factors can be important. For example, it could be that just as shortening the distance between coupon receipt and opportunity to use raises the likelihood of redemption, shortening both the physical and temporal distance between coupon receipt and usage opportunity optimizes mobile coupons (Danaher et al. 2015). On the other hand, it may be that when consumers are not physically proximal to a retailer, time lags become valuable: allowing one day of lead time between SMS delivery and redemption timeframe raises consumer purchases by 9.5 times over the provision of same-day SMS, and also outperforms SMS with two days of lead-time (Luo, Andrews,

Fang and Phang 2014). Perhaps more interesting, targeting mobile users who are close to a competitor has been shown to provide substantial bonuses, raising returns to promotions more than does targeting proximal users (Fong, Fang, and Luo 2015).

COMPARISON TO PRACTICE

There is much to like about the way that academic research has approached DSMM topics in the last 15 years, and a great deal to be excited about in the most current work. Beginning with concentrated explorations of the internet as a tool for consumers and marketers, we have seen a proliferation of topics, evolution of methods, and a continued enthusiasm about the possibilities of this domain. We have seen returns to core DSMM themes, particularly as related to consumers' roles as beneficiaries and creators in online spaces and the possibilities of DSMM as a marketer intelligence and sales tool. We appear to see evolution in our methodological approach, from silos defined by methods to more integrative, multi-method inquiries and the combination of multiple data sources and analytical approaches in ways that help address challenges in prior eras. We have vast opportunities to build new theories, as mobile technologies revolutionize the roles that DSMM plays in consumer life and marketer promotion.

But how well have we kept pace with the world of practice? To answer this question, we converted the keywords in our analysis to layperson versions of the same. Using the Factiva database, we searched for frequencies of mentions of these keywords over time in major business press outlets (*New York Times*, *Wall Street Journal*, *Bloomberg Businessweek* and *The Economist*). This analysis allows us to see if the topics of focus in academic articles correspondent to the discussions in the practitioner world and popular business press.

A side-by-side comparison of these patterns is mostly encouraging. The take-off in discussion of many DSMM topics occurred at about the same time (2005), and both academics and practitioners have devoted a lot of conversation to understanding these topics since that time, particularly social media. However, there are also some informative divergences between the academic and researcher trajectories.

First, the business press has tended to focus more on macroeconomic conditions impacting marketing, likely due to reductions in firms' marketing budgets during and after the 2008 recession. To our knowledge, no marketing literature addressed the interplay of DSMM tools and macroeconomic conditions, reflecting an unsurprising but perhaps unfortunate tunnel vision within the academy. Likely, macroeconomic conditions offer natural experiments that may provide interesting insights about the importance of DSMM tools for both consumers and marketers. Relatedly, the business press has discussed the growth of DSMM and noted how major companies' marketing budgets are shifting from traditional media to combinations of DSM media. An interesting implication of this, which has not emerged as a major research topic, is how the marketing organization within a firm adapts to such shifts and how existing marketing capabilities are—or probably more realistically, are not—designed for the new "digital" reality within firms' marketing organizations..

Second, mobile is replacing social media as a dominant topic much faster on the practitioner side than on the academic side, where only a few papers have been published to-date. If researchers cannot identify tractable means of studying mobile topics, we may find ourselves unable to make meaningful contributions to practice in this domain. Further, we observe a lot of discussion on new business models in practice, some of which relate to topics such as access-based ownership platforms (i.e., music streaming and collaborative consumption). Academics are slow to consider emerging platforms and their associated business models. In the past, when we have turned our attention to specific platforms, we have worked only in the most dominant spaces (i.e., Facebook and Twitter) but otherwise, have been too far behind the curve to provide meaningful knowledge (e.g., papers about Groupon).

RECOMMENDATIONS FOR ADVANCING DIGITAL, SOCIAL MEDIA, AND MOBILE MARKETING RESEARCH

How can we better keep pace with the needs of practice in the next era, while at the same time building new scientific knowledge using rigorous research approaches? Based on our analysis and the

divergence from practitioner discussion we observe, we see a few areas where academic research has earned an "F" grade. We begin by describing those in the next section. Then, following that, we propose things that can be done for academic research in DSMM to instead earn an "A."

Three Problematic Issues: Where Does The DSMM Literature Earn an "F"?

1. Fragmentation. First, the level of fragmentation in DSMM research is very high. Instead of showing clear programmatic progression in a number of big, important topic areas, the literature covers a lot of ground (i.e., breadth) but has not delved into the details in many of these areas across papers (i.e., depth). Arguably this is because of the nascent nature of DSMM relative to other topics in the marketing and consumer research literatures. Perhaps the field has needed to explore a wide array of topic areas before it begins to consolidate and deepen knowledge in some particularly important areas. Other reasons for fragmentation are as follows. First, it may be a natural by-product of the desire for relevance; as researchers obtain real-world data and technological advances offer novel contexts of study, researchers respond by shifting their focus to the most current topic of interest. While reasonable, this phenomenon-driven, reactive research agenda can lead to a lack of programmatic progress. Second, our fragmented approach may also be due to divergence in nomenclature, reflected in a proliferation of keywords, with little understanding of how, specifically, these terms are intended to reflect the same or different phenomena. This makes literature review somewhat challenging, and will pose a barrier to researchers who wish to gain comprehensive knowledge on a given topic.

The biggest problem arising because of this fragmentation is that while we may be able to make statements about many discrete topics, we are curiously mute with regard to being able to provide solid answers to many of the fundamental questions of DSMM. For example, the literature lacks comprehensive answers (i.e., based on amassed knowledge from multiple studies) to the following questions:

- Why do people use social media? How has it impacted their lives?
- When is social media marketing preferable to traditional marketing?

- Why do consumers use social media to share information?

- What are the key elements in a successful social media strategy?

- Should marketers still be differentiating among consumers (i.e., doing work to identify influencers and hubs) or is this segmentation irrelevant? If identifying influencers and hubs is important, how should marketers do this and does the context or platform influence how it should be done?

- How important is viral content in driving sales? What is the sales elasticity of social transmission vis-à-vis (for example) advertising?

- What makes a digital marketing initiative a success?

- What is the optimal balance between online and offline marketing?

To be truly relevant, in the sense that we can offer answers to these types of fundamental questions, the field needs to reduce fragmentation of DSMM research topics, combine efforts into programmatic research initiatives built around big—and probably messy—research questions that are important both theoretically and substantively, and find better ways for disparate pieces of research to coalesce. Without a definitive decision to do so, we risk endless proliferation of efforts that may or may not speak to one another, as well as a great deal of inefficiency throughout the research enterprise.

2. Focus. A second concern we diagnose based on our analysis is one of focus. One concern about our past focus is that researchers have been more concerned with focusing on their own data challenges than on offering tools and frameworks for future research to expand upon. As indicated by our initial keyword analysis, a large number of papers specify methodological advances as a major part of their contribution: we identified 44 distinct keywords related to various methodological approaches. Clearly, for any given author team, methods are important. Interestingly, however, it is very difficult to trace specific advances in DSMM-specific methodologies over time, such that a researcher might be able to identify generalizable best practices in modeling the kinds of data that researchers tend to encounter in DSMM work. Thus, this paper-internal methodological focus may not help us advance across the field as

well as it serves a single paper. This is particularly the case for empirical modeling papers. Of course, it might be the case that very specific data characteristics called for very specific model applications (which is entirely appropriate for empirical marketing science research more generally). Nevertheless, it is surprising to see a proliferation of idiosyncratic data-analytic approaches instead of the emergence of certain norms for certain types of DSMM data and/or research settings.

Second, academic research has placed huge amounts of focus on online WOM. While understanding buzz and social transmission behavior in online environments is certainly an important endeavor, it is not the only goal with which marketers approach DSMM in practice. Marketers use DSM technologies for a variety of objectives, covering all parts of the marketing funnel from generating brand awareness through to purchase conversions and then to advocacy and repeat behavior. Moreover, technologies such as social media are used by marketers to build brand communities, foster consumer engagement, nurture consumer-brand relationships, gather market intelligence, service customers, procure and test new product ideas, and instigate offline behaviors such as increasing customer traffic to bricks-and-mortar retail outlets. The focus on online WOM—in terms of antecedents and consequences—has been too narrow given that social transmission (and its apparent sales-related consequence) is not the only thing that marketers care about when crafting their DSMM strategies or considering broad, almost existential questions related to the digitization of the marketing function. The disproportionate representation of WOM in the DSMM literature and the very high impact of WOM-related articles may have squeezed out research on other marketing objectives that can be addressed using DSM technologies.

Of course, if our use of DSMM as a laboratory for WOM were yielding massive quantities of truly novel insights, we might justify this disproportionate focus. However, another reason that our disproportionate focus on WOM is problematic is because much work in this area tends to be fairly incremental. More problematically, the WOM literature has been largely silent on whether and how online WOM is in fact *different* from offline WOM (a notable exception is Lovett, Peres, and Shachar [2013]). The latter has been studied in marketing for decades. Online WOM, particularly in the age of social media, is probably different in a number of important ways because it can take on many more

forms (e.g., sharing a photo of oneself using a product on Instagram is unlikely to be *the same* as consumers talking about durable goods "over the backyard fence" in the 1950s). However, the important question is not so much what the differences are in online and offline forms of WOM, but rather whether these differences are in fact important for marketers to know about. For example, while it is true that WOM can travel more quickly and have a greater reach online than offline, is the underlying mechanism through which the information influences consumers' attitudes and behaviors markedly different? In general, while we certainly do not disparage any of the DSMM research on WOM and social transmission, we caution that the scope may need to expand for continued work in this area to not only be impactful in the academic sense but also contribute meaningful and actionable insights to marketing practice.

   3. Fascination and floundering. A third area in which we have failed is in avoiding to be fascinated with the wrong topics or phenomena. New technologies and novel, readily accessible data seem to draw considerable interest among researchers, though often merely due to convenience or opportunity (e.g., a researcher has a nice dataset "fall into their lap" from a company), or driven by idiosyncratic fascination with a particular platform that might not reflect broader relevance among marketers (e.g., interest in now-defunct virtual worlds such as SecondLife). Perhaps unsurprisingly, researchers may have fallen subject to the "shiny new toy" syndrome in this sense. Unfortunately, for research to be relevant in a field such as marketing it must speak to questions of interest not only to the academics conducting the research but also to one or more sets of non-academic stakeholders (e.g., marketing practitioners, policymakers). Following idiosyncratic interests or taking advantage of convenient opportunities unfortunately can lead to disproportionate amounts of effort going into the study of phenomena that are not immediately relevant to important stakeholder groups. Additionally, given the time it takes to conduct research and go through the publication process, sometimes by the time a paper is published the phenomenon or digital platform under study no longer exists or is no longer highly prominent (e.g., research on group buying mechanisms, such as those popularized by Groupon and Livingsocial).

Of course, it is often impossible at the time of embarking on new research in the DSMM space to know if the phenomenon or business model being focused on will still be relevant or around by the time the work is completed and published. Although there is no easy solution, we suggest that researchers avoid jumping on new phenomena too early and rather take a "wait and see" approach whereby they see if things take off and continue to grow (which would be a good sign that something is worth researching). It would also be prudent for researchers to talk to stakeholders—practitioners or policymakers, for instance—to see if they deem such topics to be relevant as a "reality check" against idiosyncratic biases in research topic selection. Organizations such as MSI already serve a key role in this area through the publication of research priorities that are generated through consultation with senior marketing executives, as well as regular surveys of executives such as the CMO survey conducted by Christine Moorman each year.

Three Promising Approaches: What Can The DSMM Literature Do To Earn an "A"?

Given the rapid growth of DSM research and the current publication boom, we are hopeful that the field can address the concerns laid out in the previous section. Specifically, we propose that we can convert these three F's into areas of strength by doing the following four things.

1. Attitude toward novelty needs rethinking. A consequence of the fragmentation problem described earlier is that there is a lack of programmatic research (except for WOM, perhaps) that consolidates findings, identifies empirical generalizations for key DSMM phenomena, and provides robust answers to critical research questions. If the body of literature was less fragmented it would be easier to consolidate findings because, across articles, there would be a degree of compatibility that enables, for instance, meta analyses. DSMM research has provided enough data for one meta-analysis in 15 years (on WOM volume and valence, no less), for instance.

We contend that this is the result of how the field, including journal editors and reviewers, has defined and rewarded novelty in research contributions. In the race to publish a "novel contribution," DSMM research has fragmented because a premium has been placed on "unique datasets" in empirical

modeling research and "novel effects or observations" in the consumer behavior and qualitative literatures. Doing something unique, therefore, has been a priority for researchers, as opposed to doing something that builds on prior work on important topics. This criticism applies not only to DSMM research, of course, but in our view it is as endemic in DSMM as it is in other areas of marketing as well as other social sciences such as psychology.

How can this be rectified? We recommend that truly novel contributions that are innovative and move the field forward continue to be highly valued by the field, particularly given the fast-paced nature of technological innovation that underpins much of what we study in the DSMM space. It is important that DSMM research continues to be innovative by grappling with interesting new phenomena. In addition, we recommend that research that directly builds on prior work in meaningful, relevant, and constructive ways should be considered equally highly valuable in contribution terms. Thus, our attitude towards novelty has to shift to one that also allows for new and meaningful *extensions* of prior work to be considered novel. For this to occur, mechanisms need to be in place that encourage more collaboration between groups of researchers. Also, given that things can change quickly in the DSMM space, replication work is needed so that we can learn how stable effects are over time. Effects not replicating a number of years later is not a concern (and in fact may be a likely outcome). Instead, finding out which effects are more or less stable over time is a valuable addition to knowledge. Moreover, for those findings that appear to be less stable over time, understanding this variation (e.g., identifying new boundary conditions) will help move the field forward in useful ways.

Another way for the attitude towards novelty to change is for researchers to join forces to work on common datasets that help them address big questions in different ways. This has tended to not be the norm in marketing because of a "one dataset, one paper" mentality, but we see in other fields where this has value. For example, in computer science many common datasets are available for researchers to use. Interestingly, a number of these datasets are provided by companies (e.g., Netflix, Yelp). To some extent the infrastructure for such an endeavor is already in place (at least partially). For example, the Wharton Customer Analytics Initiative (WCAI) regularly obtains datasets from companies that are then made

available to teams of researchers who successfully apply for access. MSI has also been involved in these types of initiatives from time to time. Thus, having multiple teams of researchers working on common datasets (and thus, related questions, though not necessarily identical questions) is not without precedent in marketing. We would like to see much more of this.

  2. Attack big and messy problems using multiple approaches. A second recommendation is for researchers to be comfortable with complexity and, in fact, to chase problems that are big and messy. In doing so, we urge researchers to employ multiple methodological approaches. Complex phenomena are likely to be better understood as a result. For example, an empirical analysis of a large real-world dataset might identify a particular effect of interest and establish its relevance, and this might be followed up by experiments that try to understand the underlying mechanisms that cause this effect. The article by Berger and Milkman (2012) is a good example of combining field data with experiments. Using multiple types of approaches to attack big and messy problems can help avoid the fragmentation described earlier. It will also help overcome shortcomings in the literature where find evidence for the existence of a particular effect but do not understand it (e.g., from an empirical analysis of a large, real-world dataset from a company), or vice versa, i.e., where we understand an effect but do not know if it occurs in the real world (e.g., based on small-scale experiments).

  We also contend that attacking big and messy problems using multiple approaches will help alleviate the focus problem. We recommend that researchers avoid working on research projects that have extremely narrow foci. Instead, we encourage bigger-picture thinking and the recognition that very broad, fundamental questions remain open. Although many papers have bitten off pieces of such questions, it is challenging to formulate clear empirical generalizations that give us practically useful answers. Tackling big problems head on, however, could lead us to more useful insights.

  This will necessarily entail an approach to research that is both more programmatic and theory-driven than what has largely been the case to date. The bigger and messier the problem, the greater the need for theoretical frameworks to help identify what is and is not important as one approaches research. For this, we suggest that researchers look to the consumer psychology literature more than they presently

do. Existing theories that explain and predict certain types of human behavior may be useful. A solid theoretical grounding is also important because, when the DSMM landscape shifts as it inevitably will, theories should also be flexible enough to accommodate resulting changes in behavior. Rather than being made obsolete by new technology, DSMM theory can be tested and enriched by it – but the theory first needs to exist for that to occur.

3. Always approach industry. Third, we recommend that DSMM researchers work hard (or in some cases, *harder*) to further close the academic-practitioner gap. Organizations such as MSI do an excellent job at bridging these two sides of marketing, so building a better bridge is not what we advocate. Rather, we want to see the bridge used by more researchers, more frequently. In other words, we want to see a more heavily trafficked bridge. A lot of the DSMM research over the last 15 years would not have been possible without industry involvement in one way or another, and many of the most-cited papers involved some form of collaboration between academics and practitioners. Often this involves data provision, which is necessary, but perhaps not enough. Instead, we would like academics to have greater exposure to industry so that they can learn which issues marketers (or policymakers) are struggling with in the DSMM space. Dissemination of knowledge from academics to practitioners is undeniably important, but we feel that academics also have a lot to learn from practitioners. Some researchers do this already, either on their own (e.g., through relationships with companies, consulting work, and executive education) or through more organized efforts (e.g., MSI's roundtable initiatives that bring together marketers from non-competing companies on a regular basis to talk about issues facing them, accompanied by a senior marketing academic). We contend, however, that this is not enough and tends to favor the better-established senior academics who have developed industry relationships over the years that they can tap into as needed. The fascination and floundering problem discussed earlier could be alleviated if researchers *at all career stages* had better access to information about what marketers are thinking about, challenges they are dealing with, and burning questions they have in the DSMM space.

How could this be done? A number of mechanisms are already in place that can enable these types of conversations. Of course, MSI is one organization that helps in this regard. Similarly, the

previously mentioned WCAI also helps with this through research proposal competitions that reflect industry needs and conferences. Research centers in other schools also provide this type of access, though usually only to faculty in their schools. We hope to see these types of organizations continue to promote academic-industry partnerships, and encourage this to happen at the earlier stages of research, ideally before academics get started on a project so that they can hear what practitioners are thinking first. In addition to these more formal approaches, we encourage researchers, particularly more junior ones without established networks, to take time to attend practitioner conferences related to DSMM. This could help generate research ideas that are connected to practice (i.e., relevant) and enable the building of networks that cross the academic-practitioner divide. Closer collaboration with industry will help draw attention to not only pressing questions in the present, but identify forward-looking concerns. If academics can offer insights that help address forward-looking concerns, we may be able to foster sustainable innovation.

4. Adopt a longitudinal perspective. With the exception of DSMM research that has used time-series data to study phenomena longitudinally and look for short- versus long-run effects (e.g., Moe and Trusov 2011; Stephen and Galak 2012; Tirunillai and Tellis 2012; Trusov et al. 2009), most studies in the DSMM literature represent single points in time. That said, in many cases time series data exist because data points are spread across some observation window, but researchers do not (or perhaps cannot) exploit the time-series nature of their data to examine effects over time. A longitudinal perspective is important due to all of the problems outlined earlier. Longitudinal studies would allow us to see how things change over time, which is particularly important in a fast-paced environment such as DSMM. If phenomena change over time then understanding why they change is important. On the other hand, if they are robust to changes in time, then that is also important to know.

Conclusion

Over the past 15 years we have witnessed the emergence of a major sub-field within marketing—on both the academic and practice sides—due to digital, social media, and mobile technologies being

developed, improved, and widely adopted and used. The rapid pace of innovation in the DSM technology space is unlikely to slow, and the appetite for marketers to make use of these technologies in practice will only increase. Much high-quality and important research has been done in a relatively short period of time in the DSMM space, and much more needs to be done. We hope that the critical analysis and recommendations offered here serve as a rallying cry for many more years of fascinating, relevant, and impactful DSMM research.

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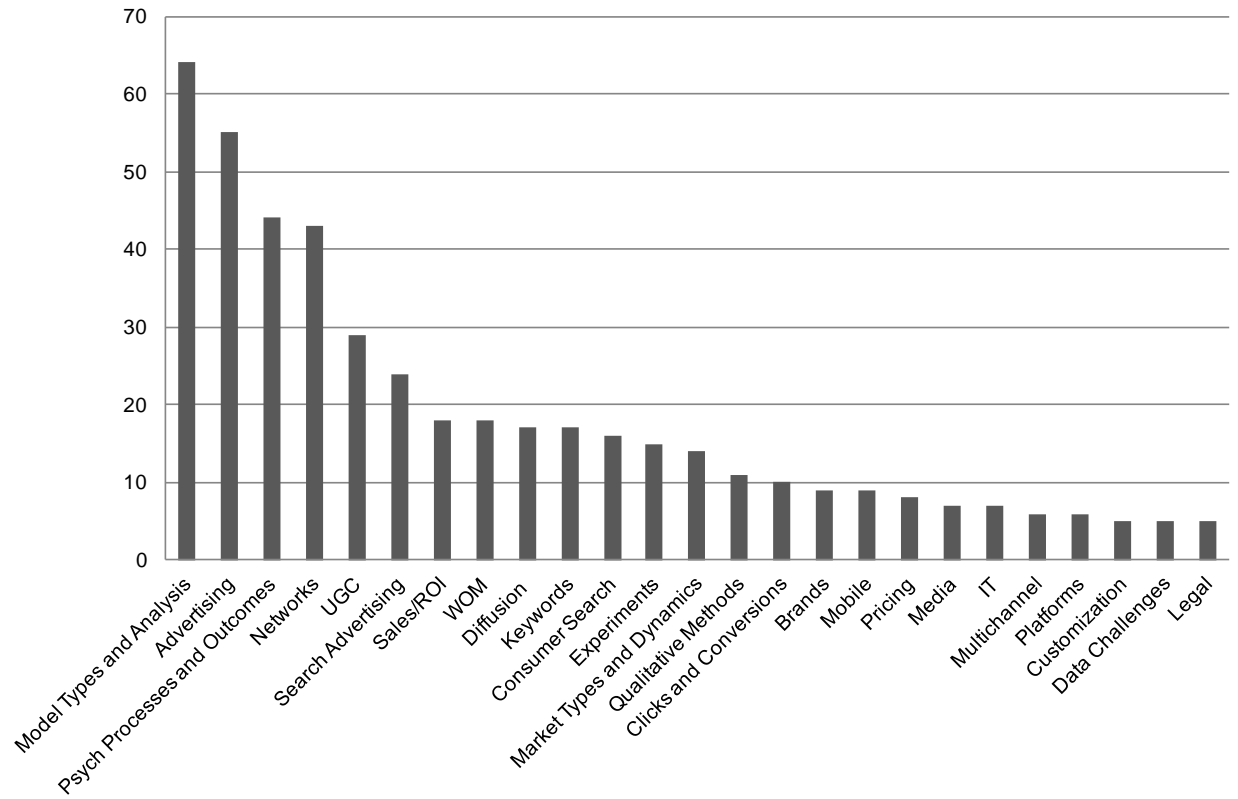**FIGURE 1**

NUMBER OF ARTICLES PER KEYWORD

FIGURE 2

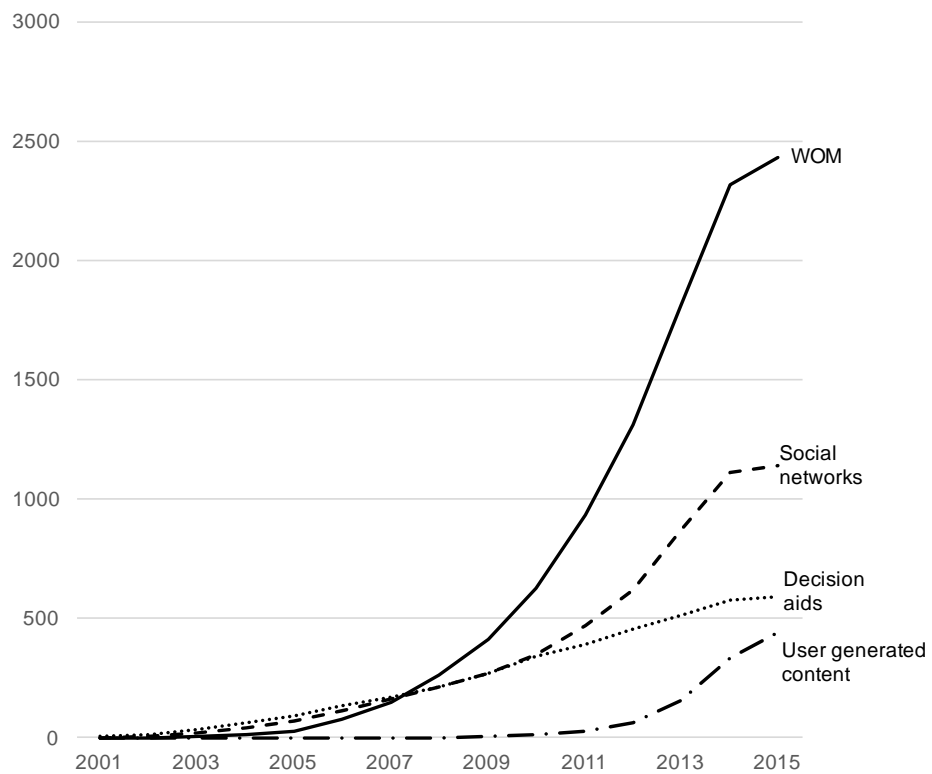**CUMULATIVE CITATION COUNTS OVER TIME FOR FOUR MOST-CITED TOPICS**

TABLE 1

CITATION COUNTS BY TOPIC AND YEAR

	2001	2002	2003	2004	2005	2006	2007	2008	2009
WOM	0	0	6	4	17	49	69	115	153
Social Networks	0	4	19	23	30	42	47	52	59
Decision Aids	2	11	32	27	31	40	37	45	56
User Generated Content	0	0	0	0	0	0	0	1	2
Community	0	0	2	7	11	17	24	23	36
Consumer-Focused	0	0	0	1	6	9	23	22	38
Sales-Focused	0	0	0	4	9	15	15	21	30
Legal/Regulation	0	0	0	0	0	0	0	0	0
Paid Search	0	0	0	0	0	0	0	0	0
Retailing	0	0	0	1	4	14	9	13	22
Pricing	0	2	4	7	12	15	9	13	13
Display/Banner	0	0	0	0	0	0	0	5	11
Diffusion	0	0	0	0	0	0	0	0	0
Keyword	0	0	0	0	0	0	0	0	0
Search Engines	0	1	0	4	0	5	2	3	6
Mobile	0	0	0	0	0	0	0	0	0

	2010	2011	2012	2013	2014	2015	Total Cites	Av. Cites Per Year
WOM	213	309	376	500	505	114	2430	162.00
Social Networks	74	122	147	253	239	32	1143	76.20
Decision Aids	69	53	66	54	66	14	603	40.20
User Generated Content	11	14	33	92	178	110	441	29.40
Community	50	50	56	57	55	13	401	26.73
Consumer-Focused	36	39	38	67	84	20	383	25.53
Sales-Focused	27	29	28	49	50	13	290	19.33
Legal/Regulation	0	8	23	48	107	73	259	17.27
Paid Search	1	16	31	36	64	61	209	13.93
Retailing	30	19	25	18	36	10	201	13.40
Pricing	15	14	15	12	17	10	158	10.53
Display/Banner	10	15	14	12	31	9	107	7.13
Diffusion	0	0	7	35	55	3	100	6.67
Keyword	4	4	11	15	32	5	71	4.73
Search Engines	6	6	3	4	10	1	51	3.40
Mobile	0	0	0	0	3	7	10	0.67

TABLE 2

KEY ARTICLES AND TOPICS THROUGH THE EVOLUTION OF CORE DSMM THEMES FROM 2000-2015

Topic	Era 1	Era 2	Era 3	Current
Individual expression	*Benefits the consumer by augmenting offline life:* Kozinets 2002 Schau and Gilly 2003 *Benefits the firm via WOM:* Dellarocas 2003 Godes and Mayzlin 2004	*Benefits the consumer via sharing of opinions and narratives:* Kozinets et al. 2010 Schlosser 2005 *Benefits the firm via WOM:* Chevalier and Mayzlin 2006 Godes and Mayzlin 2004 Trusov, Bucklin and Pauwels 2009	*Benefits both the consumer and the firm via viral transmission and content creation:* Berger and Milkman 2012 Toubia and Stephen 2013	*Benefits the firm differently with regard to volume v. valence:* You, Vadakkepat and Joshi 2015
The internet as a tool	*For consumers to raise choice quality without higher price/effort:* Brynolfsson and Smith 2000 Häubl and Trifts 2000 Lynch and Ariely 2000	*For firms and consumers to gain information, based on network position:* Chen, De and Whinston 2009. Watts and Dodds 2007 Goldenberg et al. 2009 Ghose and Yang 2009 Trusov, Bodapati, and Bucklin 2010 Katona and Sarvary 2008 Katona, Zubcsek, and Sarvary 2011 Stephen and Toubia 2010 Wilbur and Zhu 2009	*For marketers, who can benefit from user-generated content:* Albuquerque et al. 2012 Ghose and Han 2011 Ghose et al. 2012 Goldenberg et al. 2014 Moe and Trusov 2011 Shriver et al. 2012 Stephen and Galak 2012 Tirunillai and Tellis 2012 Wang et al. 2014	*For firms and consumers, by using or buying search terms:* Narayanan and Kalyanam 2015
Marketing intelligence source	*For observing, analyzing and predicting behavior:* Ansari et al. 2000 Bradlow and Schmittlein 2000 Bucklin and Sismeiro 2003 Chatterjee et al. 2003 Montgomery et al. 2004		*From specific social media platforms:* Naylor et al. 2012 Toubia and Stephen 2013 Wilcox and Stephen 2013	*At lower cost than other methods:* Du, Hu and Damagir 2015 Kim and Krishnan 2015

TABLE 3

EMERGING DSMM RESEARCH TOPICS

Topic	Early/Seed Articles	Sample questions
Collective behavior	Bayus 2013 Stephen, Zubcsek and Goldenberg 2016	How does crowdsourcing work? How does the structure of networks affect the way that crowdsourcing proceeds and the products it can create? What other collective activities can DSM technologies facilitate, and how can they be used to both consumers' and firms' advantage?
Regulation and digital consumer privacy issues	Guo and Meng 2015 Tucker 2014	When and why should firms protect vigorously against piracy, and when might they benefit from allowing open access? How do consumers respond to firms' acquisition of their DSM data? What are the optimal limits of the use of DSM data for marketing activities, from a firm, consumer and policy perspective? How should marketers use consumer data to target ads, and how does regulation affect these practices?
Online and offline crossover	Joo, Wilber, Gowgill and Zhu 2014 Liaukonyte et al. 2015	When, how and why do consumers multitask across DSM technologies? How does such multitasking affect the efficacy of marketing actions? How does the use of multiple DSM technologies affect consumers and shape their actions in the marketplace? How do consumers decide whether to acquire or consume online v. offline? How do online and offline marketing activities affect one another?
Mobile marketing theory development	Andrews et al. 2015 Danaher et al. 2015	How does mobile differ from other tools in the DSM domain? What are consumers' goals and practices with regard to mobile? When is mobile a better means of reaching consumers than other DSM or offline methods? What frameworks can we construct to help us understand mobile opportunities as technology advances?