A Thematic Exploration of Digital, Social Media, and Mobile Marketing: Research Evolution from 2000 to 2015 and an Agenda for Future Inquiry

Author(s): Cait Lamberton and Andrew T. Stephen

Source: *Journal of Marketing*, November 2016, Vol. 80, No. 6, AMA and MSI Special Issue of "Journal of Marketing" | Mapping the Boundaries of Marketing: What Needs to Be Known (November 2016), pp. 146-172

Published by: Sage Publications, Inc. on behalf of American Marketing Association

Stable URL: https://www.jstor.org/stable/44134977

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A Thematic Exploration of Digital, Social Media, and Mobile Marketing: Research Evolution from 2000 to 2015 and an Agenda for Future Inquiry

Over the past 15 years, digital media platforms have revolutionized marketing, offering new ways to reach, inform, engage, sell to, learn about, and provide service to customers. As a means of taking stock of academic work's ability to contribute to this revolution, this article tracks the changes in scholarly researchers' perspectives on three major digital, social media, and mobile (DSMM) marketing themes from 2000 to 2015. The authors first use keyword counts from the premier general marketing journals to gain a macro-level view of the shifting importance of various DSMM topics since 2000. They then identify key themes emerging in five-year time frames during this period: (1) DSMM as a facilitator of individual expression, (2) DSMM as decision support tool, and (3) DSMM as a market intelligence source. In both academic research to date and corresponding practitioner discussion, there is much to appreciate. However, there are also several shortcomings of extant research that have limited its relevance and created points of disconnect between academia and practice. Finally, in light of this, an agenda for future research based on emerging research topics is advanced.

Keywords: digital marketing, social media, mobile marketing, research agenda, marketing practice

Over the past decade and a half, marketing academics and practitioners have witnessed a major transformation of marketing. The growth in the prominence of digital, social media, and mobile (DSMM) marketing 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 innovation has also influenced the ways that consumers behave across all types of market settings. For example, just as the rapid growth in mobile adoption has opened new marketing communications and targeting possibilities, the ubiquity of social media has changed how buyers share information with each other and interact with brands. Thus, the "digital transformation of marketing" over the past 15 years is reflected in the ways that firms and customers have embraced new technologies and, most interestingly, how technology has facilitated novel market behaviors, interactions, and experiences.

Accordingly, a substantial body of research published in marketing journals has developed over the same time frame, attempting to make sense of this sea change. This work ranges from early studies on digital marketing as decision aids to more recent topics such as social media and mobile marketing. At this point, a backward look at the way that major themes have emerged and evolved in the DSMM marketing domain is warranted. This will then allow us to adopt a forward-looking, future-research-oriented perspective to help chart the next phase of interesting, rigorous, and relevant research in this domain.

The present article takes this as its goal. It should be noted from the outset that the purpose is *not* to provide a comprehensive literature review of the growing body of DSMM marketing work or to cite every article in this domain. The breadth of DSMM topics that now exist make such an undertaking infeasible in a single article. Readers interested in more comprehensive literature reviews may refer to recent articles that take such an approach within particular topic areas. For example, Berger (2014) provides a detailed review of word of mouth (WOM) research, including recent work related to online forms of WOM. Yadav and Pavlou (2014) broadly review research related to marketing in "computer-mediated environments." Grewal et al. (2016) offer an up-to-date treatment of mobile marketing research. Humphreys (2016) documents research related to social media across a variety of disciplines (including marketing). Stephen (2016)

Cait Lamberton is Ben Fryrear Chair and Associate Professor of Marketing, Joseph M. Katz Graduate School of Business, University of Pittsburgh (e-mail: clamberton@katz.pitt.edu). Andrew T. Stephen is L'Oréal Professor of Marketing, Saïd Business School, University of Oxford (e-mail: andrew.stephen@sbs.ox.ac.uk). Authors' names are listed in alphabetical order, and both contributed equally to this work. The authors thank John Deighton, Yaniv Dover, Kevin Keller, Juliano Laran, Ross Rizley, participants at the MSI "Frontiers of Marketing" conference in July 2015, and the anonymous *JM* editorial team for their ideas and feedback, as well as David Weiner and Zhenziang Zhao for research assistance.

ISSN: 0022-2429 (print)
1547-7185 (electronic)

Journal of Marketing: AMA/MSI Special Issue
Vol. 80 (November 2016), 146–172
DOI: 10.1509/jm.15.0415

reviews recent DSMM work in consumer behavior and consumer psychology.

In contrast to these efforts, the present article offers a macro-level and thematic discussion of DSMM topics as they have evolved between 2000 and 2015. This analysis suggests that the field has evolved from considering DSMM in a static and utilitarian sense, as a new "tool" marketers and customers can use, toward a conceptualization of transformative DSMM marketing, wherein markets and actors (marketers, customers) both shape and are shaped by technology. Importantly, we use our analysis of marketing work and a consideration of related conversations in the world of practice to advance a research agenda that we hope will push the DSMM marketing literature forward in relevant and meaningful ways. Thus, our contribution lies in helping researchers first understand how the DSMM marketing research domain has evolved in the major general marketing journals from a broad perspective, and, most importantly, developing new research directions to advance the literature and offer relevant insights for marketing practice.

Overview of This Article

We begin with an analysis of the evolution of DSMM research published in *Journal of Marketing*, *Journal of Marketing Research*, *Journal of Consumer Research*, *Marketing Science*, and the marketing section of *Management Science* between 2000 and 2015. Specifically, we examine keyword and citation aggregations to understand the ways that various subfields within DSMM have gained or lost prominence. These five premier journals are considered for two reasons. First, our focus is on marketing. Other fields (e.g., information systems, computer science) cover topics related to DSMM, but we consider work in those fields to be beyond the scope of this undertaking. Second, other marketing journals (e.g., *International Journal of Research in Marketing*, *Journal of Interactive Marketing*) also publish DSMM work, but for practical reasons we had to limit the scope. Highly cited work from those journals is included later when we discuss key research themes over time.

We then discuss the most highly cited papers in each of three successive five-year research "eras," as well as the most recent work in the current era. The field has evolved over time with regard to its perspective on three recurring themes: (1) the influence of DSMM technologies on consumer self-expression and communication, (2) the use of DSMM technologies as decision support tools, and (3) the ways that DSMM technologies can be used as sources of market intelligence. By examining the ways in which these themes have shifted over time, we can discern the progressively complex and interactive conceptualization of the relationship between firms, consumers, and DSMM technologies. We can also observe that in some cases, work in top specialized journals led the work that appeared in the general outlets. Also, we provide a snapshot of practitioner discussion in order to show the degree to which research diverged or converged with practitioners' issues.

Finally, we advance a set of recommendations for future research that draws on both an understanding of important emerging topics and an examination of the ways that academic- and practice-related conversations have converged or diverged over the 15 years of our analysis. We close by discussing potential threats to DSMM's ability to inform research progress and practice in light of certain shortcomings we have identified in extant research. Our hope is that we do not repeat some of the patterns that led to an extant body of research that we and others (e.g., Yadav and Pavlou 2014) believe is overly fragmented and, in parts, at risk of rapid obsolescence.

Methodology

Identifying Relevant Articles

We begin by presenting a macro-level analysis of the keywords and citations of academic research on DSMM-related topics published between 2000 and 2015.[1] Throughout 2015 we conducted keyword searches on EBSCO to identify relevant DSMM articles in the five premier journals listed previously. We started our search using general keywords ("Internet marketing," "online retailing," "digital marketing," "social media," "mobile marketing") and considered articles published in the 2000–2015 period. Next, we examined these articles' references to identify other relevant articles published in these journals during the same time frame. Following that, we continued this snowball procedure by searching the Web of Science Social Sciences Citation Index to identify other articles published in these journals that cited the existing set of identified papers during the 2000–2015 time frame. As we collected relevant articles matching the described criteria, we also expanded our keyword searches to include more-specific terms (e.g., "search advertising," "banner advertising," "social networks," "Facebook," "Twitter"). We then repeated the process of reviewing reference lists to identify additional articles to include. Overall, this process resulted in a set of 160 articles published in the five premier marketing journals that were theoretical and/or substantive (but not *purely* methodological in the sense that they were methods studies that simply used DSMM as an application; for studies in our data set that are not cited directly in this article, see the Web Appendix). While methodological work is clearly important as a means of identifying new ways to mine or model new types of online data such as data from Twitter (e.g., Tirunillai and Tellis 2014), we do not focus on methodological work here since it is beyond the scope of the present work (a solely methodological article focusing on new types of data, however, would be interesting; see Wedel and Kannan 2016).

Classifying Articles and Data Collection

Each of the 160 articles was classified according to its broad DSMM topic (e.g., digital decision aids, social networks, mobile marketing, search advertising). For each article, we also collected 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

[1] Articles accepted or published in 2015 were excluded because they have no citations. They are covered later.

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."

We next collected citation counts for these articles using the Web of Science Social Sciences Citation Index.[2] 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 the five journals included in our sampling frame). In addition, 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 frequently cited articles in each journal in each year from 2000 to 2014 (excluding 2015 because it was too soon for those articles to accumulate citations). We then calculated, for each year in our time frame, the proportion of these most-cited articles that were on DSMM topics, to obtain an indication of the impact-based prominence of DSMM research relative to non-DSMM topics in the marketing literature.

Sometimes specialized journals can lead the more general journals in exploring fast-evolving domains like DSMM. Because specialized journals are more open to preliminary or speculative work, they might publish new insights before the ideas are developed further in work published in more general journals. With this possibility in mind, we also identified the most-cited papers in three relevant premier specialized marketing journals—*Journal of Interactive Marketing, Journal of Retailing,* and *International Journal of Research in Marketing*—to see if this work mirrored or, in some cases, led the thematic emphases in the more general outlets.

Finally, we collected data that we could use to measure the prominence of DSMM topics outside the academic literature in outlets that reasonably reflect interest in business/marketing practice. We first searched for white papers, industry reports, and research priorities published by the Marketing Science Institute (MSI) for each of the five-year time frames. Next, we converted the set of academic article keywords that we used to classify articles into equivalent keywords that would be likely to appear in the 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 according to 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*.

[2]An alternative to this source of citation count data is Google Scholar. We used the SSCI because it tends to provide more conservative citation counts than Google Scholar since it does not include citations in unpublished work (e.g., working papers on SSRN).

Macro-Level Keyword Analysis to Identify Overall Patterns and Research Trajectories

We first examined the keywords used to categorize the DSMM articles in our set. We compiled our keyword set from keywords given by editors and/or authors for the articles. We also combined keywords that referred to the same thing. Figure 1 shows the occurrences of each keyword across the set to give a general sense of the prominence of topics in this body of research. A number of observations can be made.

First, we identified approximately 200 *distinct* keywords in the surveyed articles, 167 (83.5%) of which are used only once. Even after we combined keywords that were alike, it was apparent that DSMM researchers define their work in myriad ways and that a fair amount of fragmentation is present.

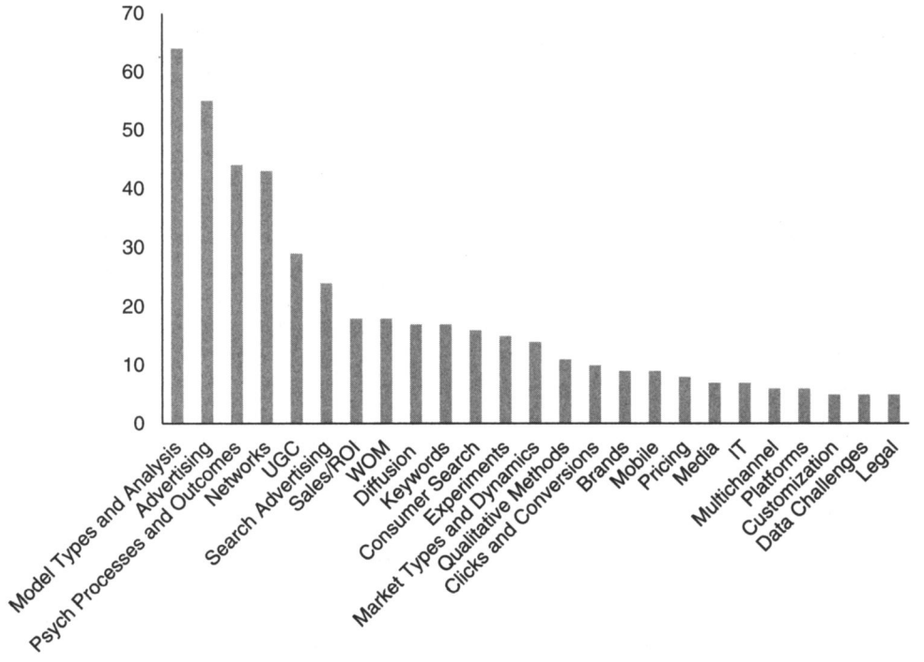
Second, the two most common keyword types are related to data analysis methods and empirical model types (both of which we consider to be primarily methodological), as well as advertising, which is a substantive topic. For the former, it is important to note that keywords related to a modeling or data-analytic techniques are usually only assigned to an article if the study's approach is nonstandard in some way. Their dominance in our data set suggests that DSMM research may include a high level of methodological innovation, particularly with respect to advanced empirical modeling techniques developed to handle new data types (e.g., clickstream, social network, search advertising datasets) that have emerged as marketing practice has been digitally transformed. In the latter case—advertising—the prevalence of this keyword reflects the (1) general prominence of paid media within the DSMM space, (2) ongoing digital transformation of advertising, (3) emergence of new advertising channels such as social media and mobile, and (4) digitally enabled advertising techniques such as retargeting.

Third, DSMM research related to social networks was fairly uncommon in the early years of our time frame, but it has quickly risen to prominence as platforms such as Friendster, Myspace, and, in particular, Facebook and Twitter, have risen in popularity.

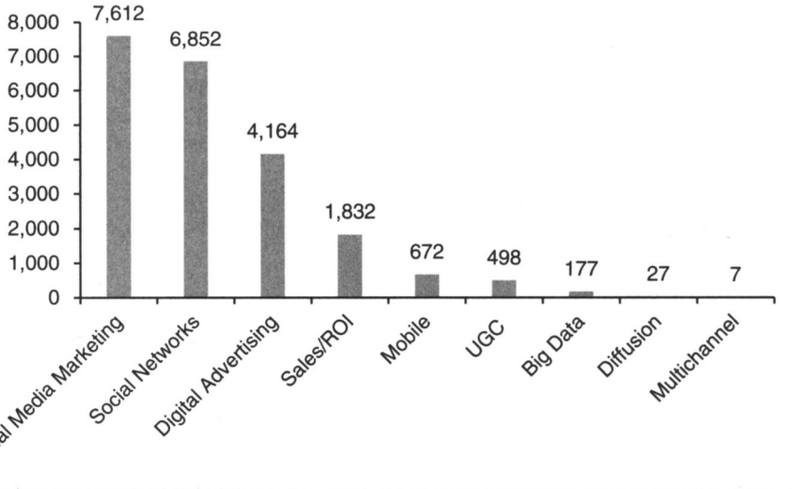
Fourth, we note the focus on psychological processes and behavioral topics, for which we note 33 distinct terms. In this category we include terms such as "self-esteem," "learning," "memory," and "emotions," which differ from those in, for example, the diffusion literature, in that they often draw on very broad psychological theories. The frequency of such keywords underscores the broad importance of understanding the consumer's role in DSMM marketing—as individuals and as interdependent actors embedded in social systems or networks. However, reliance on such a wide range of fairly generic psychological processes also suggests that more focused theories related to consumers' psychological experiences in the DSMM domain may be lacking in extant literature. Instead, work thus far may be more focused on replicating basic

FIGURE 1
Total Keyword Count in Academic and Business Press, 2001–2015

A: Number of Articles per Keyword



B: Factiva Mentions per Major Topic in Popular Business Press



psychological phenomena in DSMM domains or using extant "off the shelf" theories to explain effects, rather than advancing our knowledge of psychology by examining truly novel digital phenomena.

Fifth, DSMM work has a "long tail" that includes many other types of keywords. Note that Figure 1, Panel A, does not include the entire "long tail" of topics but only ones that appeared at least five times. Fifty other words appeared five times or fewer. Many of these words are related to topics that were important at some time because they reflected an intriguing phenomenon of substantive interest (e.g., "crowdfunding," "direct marketing," "freemium") or were more general or methodological and cut across many topic areas (e.g., "market dynamics," "optimization," "complex systems").

Finally, we also examined the prevalence of DSMM topics/keywords in the popular business press over our 15-year time frame. This is depicted in Figure 1, Panel B. A comparison of the prevalence of topics in academic journals and practitioner-focused press is mostly encouraging when considered in the aggregate. While it is not surprising to see that practitioners have been less focused on the development of analytical methods than have academics, some of the more strongly

represented topics in the academic world (advertising/search advertising, networks, return on investment [ROI], and user-generated content [UGC]) parallel topics of substantial discussion in the practitioner world (digital advertising, social media and networks, ROI, and UGC), although the ordering diverges to some extent. Furthermore, newer, emerging topics such as mobile and multichannel remained fairly minor matters for both practitioner discussion and research through 2014. However, despite the fairly high degree of correspondence of prevalent topics between the two sides, there may still be some temporal lags between academic work and practice in particular areas. We return to this concern later when we reflect on practitioners' views for each "era" of research in our analysis.

Research Impact According to Citation Analysis

We next examined article citation data. Citation counts by article topic and year are reported in Table 1. In Figure 2 we plot the cumulative citation counts for the top four most popular topics. In general, we see that over time, the overall impact and influence of DSMM marketing research has skyrocketed. The two most cited topics were WOM, with 2,528 cites, and social networks. with 1,143 cites.[3] The least cited topic was mobile, with 10 cites as of the present's article's submission date; however, this is obviously because of the relative newness of mobile marketing as a research topic.

In addition to WOM and social networks, other topics with relatively high citation counts are (1) decision aids, which refers to articles that describe how DSMM 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); (2) consumer-focused topics, which encompasses research into buyer/consumer behavior in DSMM contexts; (3) community, referring to studies about online communities and their various impacts on both buyers and marketing outcomes; and (4) UGC, 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 and persists in influence. Consumer-focused topics yield citations both because of their breadth, which covers 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. Work on UGC has been cited heavily given the continued ubiquity of consumer-generated online reviews and their increasingly natural use by consumers when making decisions. Given these overall 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, because such an outcome has been largely absent.

[3]We did not include Lynch and Ariely (2000) because it has more than 8,300 citations, making it an extreme outlier.

Another interesting observation from our citation analysis is that some topics have been covered in the literature for many years but have not achieved high levels of citation-based impact. This is the case for research related to search engine marketing (paid search, keyword advertising). This research has been around for some time (e.g., has been cited since 2002), though it has attracted relatively few cites over the years (mean cites per year: 3.4 for "search engines," 4.73 for "keyword," and 13.93 for "paid search"). This is intriguing given that search engine advertising is typically very important in marketing practice. It may be that these areas simply lend themselves to narrow-in-scope, data set–specific studies instead of more theory-driven work (which tends to be more generalizable and thus potentially highly cited). It could also be that knowledge on this particular topic quickly becomes dated because search advertising technology (e.g., how Google's algorithms work) evolves rapidly.

Another way to characterize the growth in the impact of DSMM research is to compare similar statistics for other research domains. We compared the impact of DSMM research with the impact of other research types in the marketing literature in the following way. We identified the ten most highly cited papers per year from the five premier marketing journals for 2000–2014. This produced a set of 50 highly cited articles per year. Interestingly, 13.43% of all highly cited articles in these journals were DSMM articles. This percentage varies across journals: for *Marketing Science*, 25% of the annual most cited articles over this period were DSMM; for *Journal of Marketing Research*, 18.57%; for *Journal of Marketing*, 11.43%; for *Management Science*, 6.43%; and for *Journal of Consumer Research*, only 5.71%. Furthermore, by year and across journals, we observe a steady increase in the percentage of highly cited papers related to 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 most impactful papers were on 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. This increase broadly mirrors the rise in importance of digital marketing channels and approaches in practice and reflects how the digital transformation of marketing has touched both academia and practice.

Three Research Eras, Three Themes

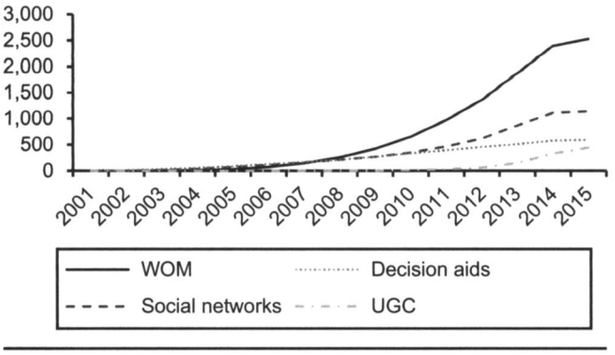
While the prior analysis sheds descriptive light on DSMM marketing research at a high level, it does not tell us much how specific topics have been discussed and how they have evolved, and it does not speak to whether newer work has in fact built on earlier work in ways that advance our understanding. We now turn our attention to these issues.

Interesting shifts in priorities appear at approximately five-year intervals during our 2000–2015 time frame. We thus divide our time frame into periods, or "eras," according to these intervals, and we use these eras as a basis for a closer examination of the recurrent themes and advances in DSMM research over time. We begin by considering the groundwork laid in the initial phase of DSMM research in era 1, identifying three

TABLE 1
Citation Counts by Topic and Year

Topic	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total Citations	Average Citations per Year
WOM	0	0	6	4	17	49	69	115	163	225	321	391	512	524	132	2528	168.5
Social networks	0	4	19	23	30	42	47	52	59	74	122	147	253	239	32	1143	76.20
Decision aids	2	11	32	27	31	40	37	45	56	69	53	66	54	66	14	603	40.20
UGC	0	0	0	0	0	0	0	1	2	11	14	33	92	178	110	441	29.40
Community	0	0	2	7	11	17	24	23	36	50	50	56	57	55	13	401	26.73
Consumer-focused	0	0	0	1	6	9	23	22	38	36	39	38	67	84	20	383	25.53
Sales-focused	0	0	0	4	9	15	15	21	30	27	29	28	49	50	13	290	19.33
Legal/regulation	0	0	0	0	0	0	0	0	0	0	8	23	48	107	73	259	17.27
Paid search	0	0	0	0	0	0	0	0	0	1	16	31	36	64	61	209	13.93
Retailing	0	0	0	1	4	14	9	13	22	30	19	25	18	36	10	201	13.40
Pricing	0	2	4	7	12	15	9	13	13	15	14	15	12	17	10	158	10.53
Display/banner	0	0	0	0	0	0	0	5	11	10	15	14	12	31	9	107	7.13
Diffusion	0	0	0	0	0	0	0	0	0	0	0	7	35	55	3	100	6.67
Keyword	0	0	0	0	0	0	0	0	0	4	4	11	15	32	5	71	4.73
Search engines	0	1	0	4	0	5	2	3	6	6	6	3	4	10	1	51	3.40
Mobile	0	0	0	0	0	0	0	0	0	0	0	0	0	3	7	10	.67

FIGURE 2
Cumulative Citation Counts over Time for Four Most-Cited Topics



fundamental themes that emerged in these early years. We then analyze the changes in the ways in which high-impact academic research in marketing has revisited these themes during eras 2 and 3. Then, we discuss the way that these themes have changed in the currently emerging era 4. A summary of the eras, key themes and topics within each one, and the most highly-cited papers in the major journals is presented in Table 2.

Era 1: Digital Media Shapes and Facilitates Buyer Behavior, 2000–2004

We begin our study in 2000 for a number of reasons. First, at that time, academic research was beginning to amass a body of literature focused on digital interactions; the *Journal of Interactive Marketing* launched in 1998, as a successor to the *Journal of Direct Marketing*. By 1999, *Journal of Interactive Marketing* argued (with perhaps premature, but nonetheless prescient, vision) that "all marketing is, or soon will be, interactive marketing," but at the same time, it lamented the paucity of "high-quality case studies that would offer enduring, generalizable findings about this context" (Glazer 1999, p. 3). Second, early insights into the potential of DSMM were already being considered, largely from a conceptual level, as authors such as Iacobucci (1998) were arguing for network analyses, suggesting the use of marketing information, and highlighting the potential for customization and high responsiveness. Third, 2000 brought the burst of the "dot-com bubble," validating concerns that strategies for interactive tools should be based on observations and data rather than unbridled enthusiasm or recommendations of self-styled Internet marketing gurus (Lohse, Bellman, and Johnson 2000). The *New York Times* (2000) suggested that reliance on such excitement and its mouthpieces had led to an expansion and subsequent plunge in the market, as the lack of a "sensible business plan" highlighted the fact that despite brisk online sales, the Internet "may not be an indiscriminate, magical new means of making money." These events underscored the importance of scientific understandings of DSMM phenomena and called for increasingly rigorous scientific approaches to data and theory in this domain that emerged beyond the first-mover journals such as *Journal of Interactive Marketing*.

Theme 1: The Internet as a Platform for Individual Expression

It was recognized early in this period that the Internet could help individuals by providing access to other consumers, either as audience members or as information sources. Qualitative researchers drew attention to the fact that consumers sought 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 over the next decade and a half. Along similar lines, Kozinets (2002) 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 sources for researchers seeking to understand online consumer expression. Importantly, Kozinets's work on netnography (using ethnographic techniques on the Internet) 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 articles 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 work, with nearly 39 average annual cites in each of the next 12 years. As important to the field of marketing as a whole was Godes and Mayzlin's study of how online WOM in online discussion forums connected to television show ratings. Godes and Mayzlin found that online WOM had an effect on television consumption, which spurred substantial research into the effects of various forms of online WOM on a wide array of marketing outcomes. Such research also legitimized the use of online conversation data in research, establishing that online WOM, in this case in discussion forums, could be a source of unobtrusive observational consumer WOM data. Legitimizing the use of such data was important because prior to the Internet, WOM was almost exclusively private (and offline) and thus difficult to study without relying on questionably accurate self-report data.

As much as it provided new answers, this work raised 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 influence be captured or modeled? 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

TABLE 2
Key Articles and Topics Through the Evolution of Core DSMM Themes from 2000 to 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 through 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 through WOM: • Chevalier and Mayzlin (2006) • Godes and Mayzlin (2004) • Trusov, Bucklin and Pauwels (2009)	Benefits both the consumer and the firm through viral transmission and content creation: • Berger and Milkman (2012) • Toubia and Stephen (2013)	Benefits the firm differently with regard to volume vs. valence: • You, Vadakkepatt, and Joshi (2015)
The Internet as a tool	For consumers to raise choice quality without higher price/effort: • Brynjolfsson and Smith (2000) • Häubl and Trifts (2000) • Lynch and Ariely (2000)	For firms and consumers to gain information from network position: • Chen, Liu, and Whinston (2009) • Ghose and Yang (2009) • Goldenberg, Oestreicher-Singer, and Reichman (2009) • Trusov, Bodapati, and Bucklin (2010) • Katona and Sarvary (2008) • Katona, Zubcsek, and Sarvary (2011) • Stephen and Toubia (2010) • Villanueva, Yoo, and Hanssens (2008) • Watts and Dodds (2007)	For marketers, who can benefit from UGC: • Albuquerque et al. (2012) • Ghose and Han (2011) • Ghose, Ipeirotis, and Li (2012) • Goldenberg, Oestreicher-Singer, and Reichman (2012) • Moe and Trusov (2011) • Shriver, Nair, and Hofstetter (2013) • Stephen and Galak (2012) • Tirunillai and Tellis (2012) • Wang, Mai, and Chiang (2014)	For firms and consumers, who can benefit by using or buying search terms: • Narayanan and Kalyanam (2015)
Marketing intelligence source	For observing, analyzing and predicting behavior: • Ansari, Essegaier, and Kohli (2000) • Bradlow and Schmittlein (2000) • Bucklin and Sismeiro (2003) • Chatterjee, Hoffman, and Novak (2003) • Montgomery et al. (2004)	• Wilbur and Zhu (2009)	From specific social media platforms: • Naylor, Lamberton, and West (2012) • Toubia and Stephen (2013) • Wilcox and Stephen (2012)	At lower cost than other methods: • Du, Hu, and Damangir (2015) • Kim and Krishnan (2015)

given? These questions foreshadowed work that continues to the present.

Theme 2: Internet as Search and Decision Support Tool

A second way that the Internet could help consumers was by making search easier and choice better. At the same time that psychology was recognizing perils of choice overload and the downsides of self-determination (e.g., Iyengar and Lepper 2000; Schwartz 2000) and retailers were struggling with assortment decisions (e.g., Broniarczyk, Hoyer, and McAlister 1998, e-commerce presented essentially endless virtual store shelves. Given that choosing from 32 types of jam left consumers exhausted and degraded choice quality (Iyengar and Lepper 2000), how would consumers navigate huge online choice sets?

In considering the Internet as a decision tool, Häubl and Trifts's (2000) study formed an important bridge between consumer behavior research and this new shopping setting. The authors explored two decision tools: recommendation agents and comparison matrices, tools that roughly paralleled the two-stage decision process previously outlined by Payne (1982) and Payne, Bettman, and Johnson (1988). Recommendation agents perform a screening function, weeding through a huge number of alternatives, and comparison matrices facilitate the choice process by comparing and evaluating a smaller number of items before a choice is made. The bulk of the article reports a controlled experiment in which 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 with shopping without decision aids.

While in retrospect this finding seems unsurprising, it remains important: in contrast to past work that argued for the inescapability of effort–accuracy trade-offs (e.g., Payne, Bettman, and Johnson 1993), Häubl and Trifts's findings suggested that decreased effort and increased accuracy could exist simultaneously online. Brynjolfsson, Hu, and Smith (2003) extended this thinking to argue that the vast variety available online was a boon to consumer well-being, in part, but not only, 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 firm profits? Even before the dot-com bubble burst, some analytical modeling work had begun to consider the effects of Internet retailing on price-based competition (Lal and Sarvary 1999). On one hand, if consumers had all price information presented to them, researchers could predict 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, Brynjolfsson and Smith (2000) found that prices from online retailers were indeed 9%–16% lower than those from offline retailers, suggesting that perhaps online retailers were responding to strong price competition. However, they found that consumer trust and brand power still mattered online, suggesting that attention to quality was not overwhelmed by easy price search. Fortunately, lower search costs appeared to allow consumers to differentiate among products: Lynch and Ariely (2000) found that only when different 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, Kornish, and Lynch (2003) argued that search agents that ordered options in terms of quality could increase price sensitivity in many cases because well-sorted lists presented consumers with a group of items that was fairly homogeneous with regard to its ability to match their preferences. Furthermore, they showed that for quality-focused consumers, sorting options in terms of quality led to the choice of higher-priced, better-quality options, 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 understandings 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 e-mail 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 generate 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. Moreover, firms could decide whether or not to share information about price and quality in ways that helped either themselves of consumers (see, e.g., Clemons, Hann, and Hitt 2002, for a discussion of this decision in online travel). Second, while the Internet continued to aid in consumer decision making as time continued, 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 progressively shifted to consumers, networks, and social media.

Theme 3: Internet as a Marketing Intelligence Tool

A third way that the Internet could be of utility was in its ability to anticipate consumers' preferences and customer

behavior, that is, as a marketing intelligence tool for marketers. Using the internet as a marketing tool could conceivably benefit both customers, who might receive products that better matched their preferences (e.g., Ansari and Mela 2003), and firms, who might be able to generate higher levels of customer satisfaction and loyalty. Consideration of this potential began with the research note of Ansari, Essegaier, and Kohli (2000) on intelligent recommendation agents. By this time, some work had already introduced collaborative filtering as a mechanism for offering recommendations (see Breese, Heckerman, and Kadie 1998) but had 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 in terms of empirical methodology, in large part because the then-new digital sources (e.g., Internet recommendation systems on websites) provided researchers with new types of data. This is perhaps best summed up by Ansari, Essegaier, and Kohli (2000), 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 modeled the performance of the six dominant search engines in use at that time (AltaVista, Northern Light, HotBot, Infoseek, Excite, and Lycos) and dealt with novel data characteristics and, thus, modeling challenges. In this research the authors sought to identify the search engines that managers should use to find marketing information. While the 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 interact to drive sales (e.g., Bucklin and Sismeiro 2003; Chatterjee, Hoffman, and Novak 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 provide vast amounts of information about markets and, in particular, consumers—it could be argued that our ability to approach such data was rooted in these early efforts to gain marketing intelligence from consumer behavior online.

The Perspective from Practice

During this time, practitioners took somewhat divergent perspectives on these three themes. First, while academics were applauding the potential of the Internet as a means of deriving insights about and selling to consumers, marketers remained concerned about the wisdom of relying on digital methods for data collection, which seemed particularly vulnerable to spam, privacy, and fraud (Jakobson 2005). Helene Velenge, the head of digital marketing for Levi's Europe, attributed the low spending on digital marketing (approximately 2% of budgets as of 2005) to a "lack of knowledge about digital media and channels' capabilities as a through-the-line marketing vehicle and, as a consequence, lack of insight on how to use digital strategically and long-term" (Jakobson 2005). Thus, although consumers might have been forming active brand communities and sharing WOM online, as academic research had addressed, marketers did not seem to have a strong sense that these actions offered reliable routes for communication or long-term growth. Rather, this situation generated calls for deeper psychological examinations. Velenge argued, "As always, the future lies in consumer insight and consumer behavior, not in the media, channels and technology themselves" (*Campaign* 2005).

Despite this sense that insight was lacking, practitioners—like their academic counterparts—did perceive the Internet as a marketing tool with a great deal of potential. Rapid growth was predicted for spending on online advertising, for which expansion estimates for 2004 hovered around 25% (Case 2004). While some cautioned against excessive optimism, others argued that this growth estimate could be supported by the pace of growth in search, which had jumped 170% in 2003 and was estimated to grow 35%–40% in 2004 (Case 2004). With the growth of search, experts predicted continued growth in online advertising, which offered a competitive price relative to traditional media channels such as television, superior trackability, and potentially better targeting technology. Thus, it could be argued that academia's emphasis on DSMM as a means of facilitating search and decision making was fairly consistent with practitioner discussion during this era.

However, academic findings emerging during this time frame did not appear to strongly influence practitioners or affect their understanding of DSMM opportunities. For example, by the last year of this era (2004), a study reported that while 92% of marketing executives felt that digital technology was transforming their business, only 43% felt that they had a strong understanding of online marketing, and only 41% saw the dedication of corporate resources to keeping pace with new technologies. While academic work was producing insights, a sizable chunk of practitioners did not appear to feel well-informed, suggesting missed opportunities for marketing academics to help practitioners in closing this understanding gap. This is a theme we will continue to see in subsequent eras.

Era 2: Consumers Shape DSMM: WOM and Networks, 2005–2010

In contrast to Era 1's conceptualization of the Internet as a promising but separate *tool* for consumers and marketers, 2005–2010 saw mainstream consumers taking a more active role in their online social interactions through online WOM and social networking. This shift was likely promoted by a number of events. First, by 2005, Internet use had passed 50% penetration, up from approximately 40% in 2000 (Pew Research Center 2014). In part because Internet use was becoming an increasingly common part of life, its role as a forum for online expression and a repository for valuable

peer-to-peer or socially sourced information about products, services, and brands expanded.

In addition, UGC, often in the form of online reviews, became increasingly commonplace during this time. For example, Yelp, founded in 2004, took off in 2005. Between 2005 and 2006, the number of reviewers skyrocketed from 12,000 to 100,000, and in 2006 the site reported 1 million monthly visitors. By 2010, the company was reporting revenues of approximately $30 million. Era 2 also saw the platforms eventually referred to as "social media" moving from niche markets to mainstream use, as Friendster (founded in 2002), Myspace (founded in 2003) and, of course, Facebook (founded in 2004) vied for marketplace dominance. A key development for social media marketing occurred in this era, with everyone from global brands (e.g., McDonalds) to musicians (e.g., Bon Jovi) to local dentists starting to use Facebook (then Twitter and others) as a digital marketing content channel.

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 these social processes and systems than had been developed in Era 1. As new platforms, particularly social media, began to allow advertising, marketers were faced with questions related to ROI for this type of spending. Likely as a result, the three themes identified in Era 2 now took on a different emphasis. Whereas in Era 1, DSMM was a tool to be used by marketers and buyers, in Era 2, marketers and buyers actively contributed to and shaped DSMM.

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 offer tools for individual expression. In Era 2, the tendency to express one's opinions became more directly connected to marketing practice. Earlier work on online WOM, in particular Godes and Mayzlin (2004), had demonstrated that online discussion forums could be used to measure WOM activity and that such activity was associated with marketing outcomes. In the days of the Usenet forums studied by Godes and Mayzlin, individuals having conversations about things such as products (or, in the case of Godes and Mayzlin, television shows) was uncommon and limited to a niche segment of consumers. That changed when e-commerce sites allowed users to post product reviews online (i.e., to provide UGC). The rise of UGC in Era 2 spurred more research into online WOM and a drive to understand of the impact of online reviews specifically, as a particular form of online WOM, on outcomes such as sales and new customer acquisition.

This challenge was taken up by numerous research teams using a wide range of methods and data sources. 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 positive links between user-generated ratings (1–5) and reviews (text) and sales, thus demonstrating that the then-novel forms of online WOM (product ratings and reviews) had measurable impacts on sales. Their study has been extremely important, generating on average approximately 54 cites per year and, like Godes and Mayzlin's (2004) study before it, encouraging more research into the effects of online WOM on sales as well as moderators of those effects. Work in high-quality specialized journals also considered product reviews and their link with sales. A noteworthy example is Dellarocas, Zhang, and Awad (2007), who developed forecasting models based on diffusion models that used online review metrics to predict movie sales.

Trusov, Bucklin, and Pauwels (2009) 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 examined 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" e-mails from existing customers to potential new customers. 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 the authors compared online WOM with traditional marketing (in this case, in the form of both media/PR and offline events), a comparison that would then be repeated 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, Bucklin, and Pauwels (2009) found that in general, the long-term effects of online WOM referrals on customer acquisition were greater than those from traditional marketing activities, thus providing an important justification for investment in the development of online WOM. Similar findings were provided by Villanueva, Yoo, and Hanssens (2008), who tested an empirical model using data from a web hosting company, finding that traditional marketing customers created greater short-term but less long-term value than those acquired through WOM. These findings have major implications for optimal allocation of marketing spending.

On the less-quantitative side, work by Schlosser (2005) and Kozinets et al. (2010) delved into understanding online WOM from consumer behavior and culture perspectives. Schlosser conducted seminal experimental work into the way that "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. (2010) 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 quantitative 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 consumers' production and response to information in online communities. High-quality specialized journals also contributed to the analysis of UGC: Sen and Lerman (2007) reported observational and experimental work related to negative UGC, a topic that would gain more attention in the coming two eras. Dhar and Chang (2009) considered the amount of UGC (i.e., WOM volume) as an additional predictor of sales, alongside traditional indicators, to show the importance of online "chatter" in the context of music sales. Finally, qualitative work by Brown, Broderick, and Lee (2007) conceptualized websites as "primary actors" in a consumer's online experience and argued that the consumer–website relationship is a key element in online community behavior.

Perhaps unsurprisingly, given industry's lack of clear direction about DSMM technology in Era 1, Era 2 also brought attention to the way that firms managed UGC and online WOM. Theoretically, Dellarocas (2006) considered firms' opportunities to strategically manipulate online WOM in opinion forums and how this both generates firm profits and consumer surplus. Empirically, Godes and Mayzlin (2009) examined "firm-created WOM" and considered 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 for which there were initially low levels of awareness. This article was a precursor to the work on firm-created or firm-seeded online WOM that emerged in Era 3 (e.g., Libai, Muller, and Peres 2013) and that is still emerging in 2015–2016 (e.g., Chae et al. 2016).

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

In Era 1, academics suggested both that the Internet could help consumers and that it could be a vital source of marketing intelligence. In Era 2, these themes converged as inquiry into the Internet took on a distinct networks flavor, following the lead of earlier work by Goldenberg, Libai, and Muller (2001) and Van den Bulte and Lilien (2001). Importantly, network representations were shown to be useful for capturing the interconnectivity among various types of marketplace actors, which enabled researchers to study the extent to which different kinds of interconnectivity and different network positions mattered.

The growing interest in networks was a function of at least three factors. First, as mentioned, the emergence of online social networks provided scholars with new inspiration for research and practitioners with new dilemmas that could be addressed. 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 best-selling "pop science" books (e.g., Gladwell 2000; Watts 2003), meant that scholars were already interested in networks and successfully sharing this interest broadly in the population.[4] Third, marketing scholars who were familiar with network concepts now had a mainstream context in which these concepts could be applied to interesting *new* phenomena in the digital space. One of the phenomena on the horizon was mobile, which was gaining early attention in high-quality specialized journals (e.g., Shankar and Balasubramanian 2009).

One of the key questions during this era had to do with *who* was driving diffusion in networks. On one hand, Watts and Dodds's (2007) simulation-based work 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 due to characteristics of its audience, how susceptible to social influence the mass audience happens to be. This work is highly cited in part because of its provocative nature, given that it suggests that the idea that influencers or social hubs drive information diffusion (and corresponding product adoption) may not be the whole story and that the other side—the audience—might also be important to consider (cf. Coleman, Katz, and Menzel 1957; Van den Bulte and Lilien 2001).

This paper certainly did not settle this question, however, as other researchers still sought to identify "influential" people. In this work, influencers were identified in terms of network-structure (positional) properties as opposed to, for example, individual differences such as expertise or personality traits. Identification in such terms was possible because social network position lent itself to relatively easy measurement. With this knowledge, 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 et al. (2009) used online social networking data from a Korean website to show that adoption by social hubs—people with disproportionately high numbers of connections (i.e., "degree" in network terminology)—speeds 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 by having significant effects on the online activities of others. Katona, Zubcsek, and Sarvary (2011) took a similar approach by examining adoption data in an online social network (in their case, a Hungarian site) and showed that individual customers' network positions (degree and clustering) were predictive of their ability to influence others to join. This delineation between individual roles and influence provided hinted that the high degree of consumer empowerment might radically challenge prior business models, as discussed in high-quality specialized journals (Deighton and Kornfield 2009). Conceptual work in such outlets also set up the field to push its focus beyond isolated individuals and toward complex phenomena embedded in the virtual world (Hoffman and Novak 2009; Nambisam and Baron 2007).

Network concepts were also used to understand how firms could maximize utility. Katona and Sarvary (2008) modeled the commercial Internet as a network graph that linked websites according to purchased advertising links that

[4]There was also nondigital social networks research in the marketing literature, such as Goldenberg, Libai, and Muller (2001) and Frenzen and Nakamoto (2003), as well as books such as Van den Bulte and Wuyts (2007), and Iacobucci (1998).

allowed traffic to move between websites. This was the first analytical modeling study 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 that used digital advertising to purchase traffic from each other. A few years later, Stephen and Toubia (2010) modeled a digital marketplace's structure as a network of sellers in which links between sellers facilitated flows of potential revenue (customers) between sellers' sites. Data for this study came from a French e-commerce company that allowed individuals to set up their own online stores (as websites) and, interestingly, to link their stores to others' stores in the marketplace (to engage in "social commerce"). They found that greater interconnectedness among sellers—structures that facilitate easier browsing between stores—increases total marketplace revenues. By contrast, structures that "trap" customers in browsing "dead ends" hurt revenues, presumably because the lack of browsing ease makes it more likely for customers to leave the marketplace. This work also showed that online stores that were more centrally located in the network—that is, more accessible from other stores—earned higher revenues over time.

Together, these articles did three important things. First, they provided some response to the practitioner concern about converting digital strategy to quantifiable firm outcomes, suggesting the importance of participation in a network of businesses as a means of creating economic value. Second, to some extent, this work would form a basis for research into present-day systems. For example, Stephen and Toubia's social commerce setting allowed individuals to behave as firms (sellers) to benefit other individuals (buyers), themselves (as beneficiaries of sales), and a marketplace that profited from economic activity on its platform. This concept is arguably a precursor to the platform-based business models present in today's economy, in which individuals can participate as buyers or sellers and the facilitating platform benefits from all exchanges (e.g., Airbnb, eBay, Uber). We return to this discussion later. Third, the use of network-analytic methodologies during Era 2 constituted an important advance. A strength of this approach was that data sets that might be considered somewhat idiosyncratic, given their international origins and specific purposes (e.g., Korean, Hungarian, or French networks and e-commerce websites), were effective in collectively demonstrating the practically generalizable usefulness of network perspectives and the importance of connectivity and network position.

But echoing practitioner concerns about fraud that were expressed in Era 1, researchers also saw that danger might exist in this highly networked scheme. 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, a 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 could impact a search engine's revenue and showed under which conditions click fraud may benefit or harm advertisers. It is worth nothing that the topic of advertising fraud has received relatively little attention since Wilbur and Zhu (2009), although this may change due to recent practitioner concerns about online ad fraud related to advertisers wasting money (estimated to be $7.2 billion in 2016) on online ad impressions that are never seen due to "bot fraud" (e.g., Vizard 2016). Somewhat related to this work, Ghose and Yang (2009) studied sponsored search advertising on Google, seeking to model the complex system of Adwords as a two-sided market, that is, a market that responds to and relies on both consumer and firm actions.

The Perspective from Practice

In some ways, academic research in Era 2 did respond to the needs that practitioners had expressed in Era 1. Research was developing better understandings on topics that practitioners had indicated were of critical importance to them, for example, search/keyword advertising, and capturing the ways that online marketing and consumer expression/UGC activities could be directly related to revenue and profit.

However, some of the concerns from practice in Era 1 were not as focal for academics in Era 2. This may be because practice-oriented researchers were working on non-DSMM topics of high priority. For example, at the end of Era 1 and the start of Era 2, MSI's 2004–2006 research priorities placed very little emphasis on DSMM. In fact, of all first- and second-tier MSI research priorities for 2004–2006, the only topic of potential relevance to DSMM was "incorporating non-traditional media ... in marketing mix models." Words such as "digital," "online," and "Internet" were not mentioned. Over the course of Era 2, however, marketing practitioners turned their attention to then-emergent phenomena such as online social networks and social media, looking for ways to use these digital platforms as marketing channels. Indeed, MSI's 2006–2008 research priorities were summarized by the theme "the connected consumer," and one of the six first-tier priorities for 2008–2010 was referred to as "new media." Thus, it seems that in Era 2, a solid bridge between practice and academics was forming such that research work was becoming more aligned with practice-relevant topics and concerns.

Notwithstanding this closer alignment, we argue that there was still a lag in some respects in between academics' efforts to argue that social media and UGC created value for firms and practitioners' willingness to raise their budgets accordingly. Recall that articles such as Chevalier and Mayzlin (2006); Goldenberg et al. (2009); Katona and Sarvary (2008); Stephen and Toubia (2010); Trusov, Bucklin, and Pauwels (2009); and Villanueva, Yoo, and Hanssens (2008) were offering perspectives on how "connected consumers" and social media–related concepts such as networking and UGC were related to marketing outcomes such as customer acquisition, adoption, sales, and profitability. However, a practitioner survey in 2007, for example, indicated widespread recognition that social media could be used to build a competitive edge, but at that time it only received 8% of total marketing spend (PR Newswire 2007). Articles later in this era reiterated that marketers remained largely uncertain about how to effectively use social media for marketing purposes (e.g., *Business Wire* 2009), despite research indicating the value-relevant impacts of social media–related concepts such as UGC.

In contrast, industry sources reported that during Era 2, search engine optimization (SEO) was marketers' top priority. Academia was not wholly unresponsive to this; a number of articles considered the firm's capacity to facilitate search and optimize search engine marketing campaigns. The study of online search keyword auctions garnered some attention, primarily from an analytical perspective (Chen, Liu, and Whinston 2009). Similarly, sponsored search also emerged as a research topic (e.g., Ghose and Yang 2009). But the quantity of research produced by academics did not match its position as marketers' top priority, possibly because SEO is a mostly tactical and operational activity that offers little potential for theory development.

Era 3: The Age of Social Media, 2011–2014

As mentioned earlier, MSI's theme for its 2006–2008 research priorities was "the connected consumer." This had a significant carryover influence on research in Era 3. Additionally, it is worth noting that 2008–2010, 2010–2012, and 2012–2014, MSI research priorities also featured many DSMM-related topics/questions. This makes sense, given the insights from the network-related research in Era 2 that consumers were not only connected but also empowered by their online connections to others. Note too that by 2010–2011, Internet usage penetration had reached 80% in the United States. Meanwhile, social networking sites were consolidating: while in 2011, Myspace was essentially liquidated, in the same year, 250 million Facebook users logged in every day—representing 1 in every 13 people on earth. Furthermore, during this era, we observed the emergence of contemporary platforms that, rather than competing with Facebook, extended its reach into other aspects of consumers' online and offline lives (e.g., Instagram, Pinterest, Snapchat, Twitter). Thus, increasingly, people both were shaped by marketing and actively shaped markets; there was no part of many consumers' lives in which they were not "always on" and "constantly connected"—particularly due to widespread adoption of Internet-connected mobile phones such as the iPhone. It was also 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 expanded in Era 3.

Interestingly, however, because it seemed that all consumers were now empowered, at least in terms of having a "voice" through DSMM technologies, Era 3 reduced its focus on differentiating among consumers according to their positions in a network. Rather, as individuals' online social networks grew denser and social media platforms moved from their prior focus on having users amass social ties to being more about places for interactivity and content-delivery channels, it seemed that all consumers' actions had potential to influence. Thus, this era continued to explore online WOM as a focal topic, but it more squarely placed the "typical" consumers—not necessarily "hubs" or "influencers" or "experts"—at the heart of the most groundbreaking effects, such as virality and consumer-to-consumer interactivity. As a result, the theories that were developed were intended to apply to consumers in general, not simply to special subpopulations with unique network positions, individual traits, or knowledge. Furthermore, researchers wanted to understand how they could harness consumer power in social media by trying to work out how UGC that spread through social media could best be harnessed for marketing purposes. Finally, researchers began to examine the use (i.e., consumption) of social media itself by studying consumer behavior on specific social media platforms—particularly Facebook and Twitter, which had come to dominate the market and therefore offered the possibility of novel theoretical development in themselves.

Theme 1: Individual Self-Expression as a Means of Amplifying or Dulling Marketing Actions

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 UGC spread 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 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 and likely permanent marketing medium. 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 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 precisely targeted digital advertising that leveraged the personal information consumers were voluntarily providing both in their public social media profiles and through their actions on social media.

These realizations raised a number of questions. First, what factors would drive people to disseminate content to their contacts online, either through more conventional online WOM (e.g., e-mail) or through social media, by "sharing" or "retweeting" posts? A body of literature emerged that attempted to study the drivers of online social-sharing behaviors, led by scholars such as Jonah Berger. An impactful article in this area is Berger and Milkman (2012), which reports a study of *New York Times* articles to see which characteristics of the articles were correlated with "e-mail a friend" sharing behaviors. They found that high-arousal content 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 indicates the need to address many remaining open questions, not only with respect to content-related drivers of social transmission but also in terms of a

wider variety of factors that could influence the decision about whether to socially share a piece of information (opinion or news article or branded social media post).

A second question that emerged in Era 3 was how consumers used social media to meet their own goals. In general, this stream of literature considered drivers of social media use instead of drivers of specific social transmissions. 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* people tweet (i.e., use Twitter). 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 field experiment, they observed how regular Twitter users' posting activity changed as a result of increases in their number 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 (vs. intrinsic utility) of posting activity in most cases. Importantly, Toubia and Stephen showed that as the number of followers a consumer had changed, so too did the consumer's behavior. This insight made it possible for firms to customize their approach to various consumers according to observable information and to behave in a way that was dynamically appropriate, given 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. Use of experimental methods allowed researchers to make more direct causal inferences about consumers' roles as transmitters of information than did prior purely quantitative or analytical methods.

Theme 2: User-Generated Content as Marketing Tool

In Era 1 and to some extent in Era 2, digital technology had been seen as a tool—a way to facilitate search, push out advertising messages, or learn about network effects. In Era 3, consumers' online activity and content generation itself became a tool for marketers. For example, Ghose, Ipeirotis, and Li (2012) used crowdsourced content to design ranking systems for hotels that would help consumers find the best alternatives, and Albuquerque et al. (2012) and Wang, Mai, and Chiang (2014) explored the dynamics of markets after introduction of UGC, both in theory and in practice.

A number of articles also attempted to demonstrate the value of UGC 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) examined whether UGC affected 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, although positive did not. Finally, Stephen and Galak's (2012) analysis of data from a popular microlending marketplace showed 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 a somewhat muddy picture of the way that UGC works, however. For example, Ghose and Han's (2011) empirical analysis of UGC and usage behavior in the mobile context found that when individuals consume more content, they tend to produce less content, and vice versa. This insight is important, albeit somewhat unsurprising, because it suggests that people make trade-offs 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. Another important and fairly intuitive finding is that when people travel, they tend to consume rather than generate content. In addition to this work, Shriver, Nair, and Hofstetter (2013) examined the dynamics of UGC production. They showed that surfers who posted information for others in an online community for surfers benefited by attracting more social ties and that this spurred them to generate more content. They also found that having UGC raises overall browsing activity and advertising revenue for a website. Compared with Ghose and Han (2011), who suggested a possible inverse relationship between content creation and consumption at an individual level, the findings of Shriver, Nair, and Hofstetter (2013) indicate a complementary relationship between content generation and consumption when they are considered at a more aggregate (website) level.

Also related to this work, Goldenberg, Oestreicher-Singer, and Reichman (2012) explored another role played by consumers in the UGC space, namely, 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 YouTube experiments in which consumers received two different sources of recommendation for videos to watch: an algorithm (i.e., a recommendation agent, akin to those studied in Era 1), and other consumers who curated links to videos. In this landscape of enormous choice sets, the authors found that consumers effectively brokered 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 we note in particular 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 by 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 in Specific Social Media Platforms

By Era 3, researchers started to focus on studying particular social media platforms that 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's (2013) work on Twitter and Wilcox and Stephen's (2012) and Naylor, Lamberton, and West'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, thus moving beyond the observational methods that, while offering interesting insights, make causal inferences challenging (e.g., De Vries, Gensler, and Leeflang 2012).

Additionally, and arguably more importantly, these articles sought to understand some psychological aspects about how people behave on social media platforms and why they do what they do (Toubia and Stephen 2013; Naylor, Lamberton, and West 2012) or how using a social media platform affects seemingly unrelated psychology such as self-control (Wilcox and Stephen 2012). Each of the three aforementioned articles focused on the psychological characteristics and needs of consumers as determinants of marketing outcomes. Anchoring research in aspects of consumers rather than aspects of specific platforms may be justified; because the platforms themselves are notoriously dynamic, connecting research to consumers' traits, inference-making strategies, and needs may allow us to revise predictions as the forums evolve.

The Perspective from Practice

By 2010, there was little question in practice that digital marketing was a crucial part of the landscape; 66% of senior management were "very interested" in digital marketing, a 10% increase over the prior year. Furthermore, 70% of North American marketers were using SEO, a bump of 56% from 2008 (Beer 2010).

Given the high hopes of the period and the increasing amount of relevant research, however, Era 3 was a surprisingly fallow period in terms of social media marketing's actual growth. At the beginning of this era, expectations were very high: In February 2011, practitioners reported that 5.6% of their marketing budget was devoted to social media, but they predicted that by 2015, the proportion of their budget dedicated to social media spending would more than triple, to about 18% (Moorman 2011). On a scale from 1 to 7, where a 1 indicated a "not at all effective" integration of social media with overall marketing strategy at their firms, respondents reported a mean value of 3.8 at that time. However, by February 2014, social media spending had grown by only about half, to 7.4% of total marketing budget. More concerning, estimates of integration of social media within marketing strategy had not changed at all, still averaging a 3.8 on the same scale (Moorman 2014). Thus, Era 2's work on the relationships between WOM, customer acquisition, and profitability, though timely and highly relevant, had yet to make a large impact on how marketers thought about social media as part of their marketing mixes.

Similarly, "social listening"—the observation of digital behaviors, particularly in social media channels, as a means of gathering market intelligence—was gaining popularity in practice. However, despite valuable academic efforts to understand the ways that UGC could be used by marketers as part of a social listening or monitoring process (e.g., Schweidel and Moe 2014), experts said that firms still had little idea how to convert data gathered from observing customers and competitors in social media into actionable insights. Simply because firms *could* capture a vast amount of data did not mean that they were collecting the most important data, designing appropriate analyses, and connecting findings to tactics that motivated consumers (Grimes 2013). Again, it seemed that academic research was leading practice in this regard. However, much of the academic work in this area was not adopted by marketers as much as it should have been.

Perhaps because integrating social media into a comprehensive marketing strategy was an ongoing challenge, firms continued to search for ways to extract value from their DSMM channels and actions. For example, in 2012, Steve Boese of Oracle stated that managers primarily wanted to "extract business values from social technologies" (Roberts 2012). Because social media alone seemed unable to achieve this goal, marketers began to place great hope in mobile and multichannel options. Despite the fact that one of the field's first conceptual pieces on mobile had been published in 2009, practitioners still had little guidance about whether they should self-develop apps, place ads in existing apps, use ad networks for placements, or adopt flat-rate or impression-based payment schemes—the potential appeared vast, but strategies did not yet exist (Sullivan 2010). In spring of 2010, Ogilvy & Mather held their first "Mobile Battle," wherein practitioners discussed the potential of mobile media to behaviorally and geographically target consumers, provide time-sensitive promotions, build relationships, and provide "fun" experiences (Ogilvy & Mather 2010). When asked who should advertise on tablets in 2011, Darren Pereira, president of Indusblue, simply answered, "Everyone" (Androich 2011). Furthermore, the convergence of e-mail, mobile, social, and cross-channel marketing opportunities was increasing by 2013, with 78% of marketers saying that cross-channel campaigns were important or very important to their business—but 35% of them also ranked it as one of their greatest challenges (*Business Wire* 2012). By the end of this era, challenges were also appearing on the horizon, as consumers began to use ad-blocking software, for instance. Whether behavioral targeting and "precision advertising" (i.e., programmatic buying with precise targeting) could overcome this backlash in a cost-effective way was unclear (Wheaton 2015).

These facts all point to somewhat of a disconnect between practice and academia in Era 3. This could have been due to a seemingly disproportionate focus on both sides on some older topics at the expense of newer, potentially important topics. For example, researchers continued to investigate online WOM and cite prior WOM research heavily, and there was very strong interest in UGC in the form of consumers' ratings of products and services (as indicated by the *Marketing Science* special issue on UGC in 2012). While these topics are important, with the rise of social media during this era, there were now other forms of online WOM and UGC, which firms were experimenting with but academics were paying less

attention to. For example, the rise of Facebook led most firms to focus heavily on generating user engagement with brand posts in the form of "likes," assuming that this type of engagement might translate into outcomes such as increased awareness or even sales. Only a few academic pieces were exploring these actions and assumptions by the end of Era 3.

Instead, to a large extent, extant marketing literature conflated WOM and UGC, in some cases using these terms interchangeably. During Era 3, research also focused disproportionately on a few "legacy" forms of online WOM and UGC (e.g., product ratings and reviews) while paying less attention to newer forms such as the engagement actions taken in relation to content on social media platforms (e.g., likes, comments, shares, retweets, favorites). User-generated ratings/reviews on websites are merely one type of online WOM, and the emphasis on user-generated ratings in particular (perhaps because they are numeric and thus easier to manage as data instead of unstructured text) has led the literature in a particular direction. This is unfortunate because one of the most interesting aspects of the rise of social media has been the emergence of new ways for consumers to engage with brands and interact with other consumers on these platforms. The marketing value-relevance of these new forms of online WOM and UGC, however, has not been extensively explored or linked with stages in the path to purchase (as a recent noteworthy exception, see Srinivasan, Rutz, and Pauwels 2016). From a practitioner perspective, this has meant that the extant literature related to social media and online WOM speaks often to a special case and not to broader notions of online social behavior in social media channels. An important attempt to broaden the scope of this literature was a special issue of the *Journal of Interactive Marketing* on social media in 2013, but more would yet need to be done to help practitioners best manage these sources of information and potentially, value.

The New Era: The Rise of DSMM Culture and the Postdigital World

In 2015 and early 2016, more than 20 articles in A-level marketing journals (published or forthcoming) have explored DSMM topics. While we cannot yet quantify the impact or long-run relevance of these papers, the sheer number suggests that we have entered into a "boom" era for DSMM research. Consideration of these articles not only allows us to see how our focal themes are continuing to evolve but also gives us some idea of where the field may be headed, in terms of advances in data, research approach, and substantive domains.

Themes 1 and 2 Combined: Revisiting Consumer Expression and Internet as a Tool

New research in this era revisits earlier ideas and concepts in a number of ways. First, how consumers express themselves online—a major theme in all previous eras, particularly in the online WOM literature—continues to be examined. An important example of this is You, Vadakkepatt, and Joshi (2015), who report one of the first meta-analyses in the DSMM space, focusing on online WOM volume and valence. They review 51 studies on WOM volume and valence elasticities and concluded that WOM volume elasticity is lower (.236) than valence elasticity (.416) but that it depends on various product, industry, and platform characteristics (i.e., moderators). A second meta-analysis (Rosario et al. 2016) also suggests that we are beginning to accumulate enough knowledge to offer robust and nuanced findings to practice; these authors also explore the effect of electronic WOM on sales. Here, the authors find that, consistent with previous findings, electronic WOM generally has a positive impact on sales, but its effects vary widely by platform, product, and metric. For example, tangible goods that are novel show a strong positive effect of electronic WOM, but services do not show similar sensitivity to their tenure in the market. Furthermore, Rosario et al. (2016) conclude that WOM volume has a stronger, rather than a weaker, effect on sales compared with WOM valence, implicating high variability rather than negative valence as the largest threat to sales. Thus, this meta-analysis provides both useful insights for managers and an interesting counterpoint to You et al. (2015).

Another example of new research that has reexamined consumer-expression topics from previous eras is Chae et al. (2016). These authors link to prior work on online WOM and, in particular, firm-encouraged WOM approaches such as "viral" or "seeding" campaigns (e.g., Godes and Mayzlin 2009; Libai, Muller, and Peres 2013). However, in contrast to prior work, they empirically examine the effects of seeding campaigns intended to generate UGC for a specific focal product on other products from competitors or from the same brand but in other categories (i.e., online WOM "spillover" effects). They are able to show, in the context of beauty/cosmetics products discussed by consumers on a major Korean social media platform, that seeding a product does indeed spur more online conversation about that product. However, doing so also reduces the amounts of conversation about competing products in the same category (a desirable spillover) and reduces conversation about products in other categories from the focal brand (an undesirable spillover).

Recent work has also revisited the earlier concept of the Internet as a marketing tool, particularly in the context of new forms of digital advertising. As earlier noted, display and search advertising have been explored in the DSMM literature, but articles on these topics never achieved high levels of impact. More recently, due to the rise of social media marketing, research has explored firm-generated or firm-branded content in social channels (e.g., a brand's post on its own Facebook page or Twitter feed). In practice, this is often called "content marketing," and it is now used as a complement to (or sometimes as a substitute for) traditional advertising. Some work in Era 3 started looking at this idea (e.g., De Vries, Gensler, and Leeflang 2012), although purely from a customer engagement perspective. Importantly, recent work by Kumar et al. (2016) also considers how firm-generated content in social media affects sales.

Work on more conventional forms of advertising is also emerging currently, particularly with respect to the mobile advertising space. For example, Bart, Stephen, and Sarvary (2014) study mobile display advertising using field 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 brand attitudes and purchase intent. Other recent articles have also examined topics related to mobile advertising. For example, Danaher et al. (2015) study the effectiveness of location-based mobile coupons delivered to customers' devices as they walk around a shopping mall, and Fong, Fang, and Luo (2015) consider location-based targeting of offers sent to mobile devices according to proximities to competitors' physical locations. Even more research on mobile marketing is expected in the near future, including 2017 special issues on mobile in *Marketing Science* and the *Journal of Interactive Marketing* and a 2017 special issue on connected and always-on consumers in the *Journal of the Association for Consumer Research.*

Search advertising has also been revisited in recent work. Importantly, new analytic approaches continue to challenge our conceptualization of search advertising. For example, prior work was inconclusive regarding the importance of search order: some work concluded that top positions in search advertising were generally preferable (Chen and He 2011), whereas other work had identified situations in which clicks might not follow ranks (Jerath et al. 2011; Katona and Sarvary 2010). However, Narayanan and Kalyanam's (2015) work points out that main effects of position may be contingent on characteristics of the brand or of the consumer. Specifically, by analyzing online advertising data from competing companies, the authors find that in the aggregate, the first position is preferable to the second, consistent with prior research. The importance of order effects may primarily hold for smaller or less-familiar advertisers. However, as consumers' familiarity with a specific brand or desire for an exact match to their preference increases, position effects become substantially smaller and often disappear. Recent work by Li et al. (2016) also contributes to the literature on search/keyword advertising by addressing the important problem of attribution in the context of understanding the value of specific keywords in search advertising.

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

The idea that search 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 that foundational work by Ansari et al. (2000) 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 Damangir (2015) argue that marketers can infer shifts in consumer preferences by analyzing the popularity of the words for which consumers search. In turn, marketers can adjust their marketing mix to leverage this knowledge.

Our ability to advance on this topic comes in part from a number of differences between the data available in the early 2000s and data available today. Whereas Ansari and Mela (2003) faced numerous data shortcomings, Du, Hu, and Damangir (2015) combined Google Trends data, which provide 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. In a similarly creative manner, Schweidel and Moe (2014) combined social media posts from firms in two industries across multiple platforms with performance measures taken from stock prices and offline brand-tracking studies. Because they link these sources, Schweidel and Moe develop a nuanced sentiment measure that predicts the way that chatter in the online world predicts important outcomes in the offline world. Indeed, combining multiple 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 from a large Korean online retailer to observe learning among consumers. Results show that as consumers gain online shopping experience, they become more willing to buy products of uncertain quality. However, this effect occurs only for less-expensive products. Again, this study combines transaction data with information about brands' auxiliary communications and offline characteristics, such as digitized video commercials and brand equity. In combining these data, 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 in which various factors were promoted or withheld; Kim and Krishnan's study suggests that observation and combined data reduce this reliance.

Era 4, Thus Far

Although this era is still unfolding, we have reason to have some optimism about its perspectives. First, we are gaining understanding of some topics, such as online WOM. Although new work should certainly be done, two meta-analyses allows us to offer some of the first few empirical generalizations in DSMM. Second, we are returning to the now-established uses of the Internet as a tool for consumer expression and marketing intelligence, but now with greater methodological and analytic capacities.

Interestingly, the work of 2015–2016 also marks 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 conduct a meta-analysis. Second, strong interest remains in understanding how digital (and particularly social and mobile) activity generates quantifiable marketing outcomes of value. Finally, we are improving our ability to gain marketing insights by observing the ways that consumers search and learn in new DSMM contexts.

Our newest revisits to these topics have a number of features that provide a snapshot of the field's progress since its genesis. First, the articles in this space now not only describe patterns in data or report equilibria from analytic

models but also connect findings to psychological theory. Thus, DSMM increasingly helps to extend prior general frameworks for studying human behavior. 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 approach allows researchers to pinpoint moderators that would not be included in a single-source data set. Perhaps more importantly for marketers, as in Era 3, we see that quasi-experimental approaches, observation, and combined data sets can be analyzed in ways that offer insights that previously required large expenditures of time and money. Thus, this new work not only extends our knowledge but also extends our knowledge-gathering ability.

Emerging Future Research Topics: Insights from Academia and Practice

We next discuss the areas that appear to be gaining attention in this present period and highlight important areas for future research. A summary of these areas, early seed articles, and potentially interesting research questions is presented in Table 3. We then suggest broader approaches to research that may allow us to take more of a leading role in exploring DSMM topics, rather than lagging behind practice, as has sometimes been the case, or addressing issues that are not of immediate relevance to practice. In general, by taking active steps to work with industry in the areas discussed next, we may be able to correct the asynchrony between academia and practice that has been observed in our period of analysis, thus allowing DSMM work to develop in ways that are more fruitful for all involved.

Collective Behavior and New Business Models

Researchers in the DSMM space have often focused on buyers' volitional participation in communities, most of which are based in friendships or shared affinities. However, little work has directly tied these social networks to marketing outcomes. At this point, 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 innovations offers one means to exploit collective behavior for marketing gains. This topic has been examined by Bayus (2013), in the context of Dell's Ideastorm.com idea crowdsourcing community, and in recent work by Stephen, Zubcsek, and Goldenberg (2016), which examines the role of online 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 "sharing economy" due to the growth of services such as Uber. As collaborative consumption firms increasingly seek to differentiate themselves from traditional market competitors while raising standards for quality and safety, understanding the psychological experience unique to technology-enabled exchange will also increase in importance.

Firm Use of Consumer Data and Privacy Considerations

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. Other articles had explored the importance of trust and privacy but had not yet gained large volumes of citations: for example, Bart et al. (2005) analyzed the drivers of online trust in different websites and consumer segments, and Urban, Amyx, and Lorenzo (2009) conceptualized consumer trust and privacy. Citations for these articles hit their peaks in 2014 and 2015, as issues related to trust and privacy online once again became prominent among firms, consumers, and policy makers. Some researchers, notably Catherine Tucker, have been working on developing research based on issues pertaining to consumer data privacy and regulation in online advertising. For example, Tucker (2014) considers the trade-offs between well-targeted ads (that exploit often highly personal consumer data available to firms) and consumer-perceived privacy invasion. But many questions remain: 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? How do consumers feel about their information being used by firms for marketing purposes? These questions are likely to warrant additional, multimethod research as consumer protection groups, industry organizations, and lawmakers increasingly debate their importance.

Multichannel and Multitasking Behavior

Some researchers have sought to bridge the online and offline world, considering the ways that digital and nondigital marketing activities interact (e.g., Danaher, Wilson, and Davis 2003; Naik and Peters 2009; Stephen and Galak 2012; Trusov, Bucklin, and Pauwels 2009; Zhang et al. 2010). However, as noted, practitioners in Era 3 struggled with ways to integrate "digital" with "traditional" or ways to incorporate "new media" into existing marketing mix models in ways that indisputably create value. The emerging era appears to be somewhat responsive to this need (e.g., Joo et al. 2014), but we believe the crossover between the online and offline worlds warrants deeper exploration. Or, rather, the omnichannel worlds in which consumers search for products, interact with brands, share information and experiences, and buy products should be understood more thoroughly and deeply.

Recently, Liaukonyte, Teixeira, and Wilbur (2015) used a quasi-experimental design that found that firms that advertise on television create higher sales levels in the two-hour widows around the time of their ad broadcasts, compared with firms that do not advertise on television. The authors apply constructs from consumer psychology to further untangle these effects, differentiating between action-, emotion-, information-, and imagery-focused ads. While all types raise the number of consumer transactions, they do so through different combinations of direct visits and search engine referrals. By using a difference-in-difference approach and regression

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 DSMM technologies facilitate, and how can they be used to both consumers' and firms' advantage?
Regulation and digital consumer privacy issues	Tucker (2014)	• How do consumers respond to firms' acquisition of their DSMM data? • What are the optimal limits on the use of DSMM data for marketing activities, from firm, consumer, and policy perspectives? • How should marketers use consumer data to target ads, and how does regulation affect these practices?
Online and offline crossover	Joo et al. (2014); Liaukonyte, Teixeira, and Wilbur (2015)	• When, how, and why do consumers multitask across DSMM technologies? • How does such multitasking affect the efficacy of marketing actions? • How does the use of multiple DSMM technologies affect consumers and shape their actions in the marketplace? • How do consumers decide whether to acquire or consume online vs. offline? • How do online and offline marketing activities affect one another? • What do consumers' omnichannel experiences look like, and how should these experiences be designed and managed?
Mobile marketing theory development	Andrews et al. (2015); Danaher et al. (2015)	• How does mobile differ from other tools in the DSMM domain? • What are consumers' goals and practices with regard to mobile? • When is mobile a better means of reaching consumers than other DSMM or offline methods? • What frameworks can we construct to help us understand mobile opportunities as technology advances? • How can unique aspects of mobile technology (including wearables) be used effectively by marketers?

discontinuity analysis, the authors are able to present causal arguments without conducting costly field experiments. It is likely that new analytic techniques, coupled with relevant behavioral theory, multiple data sources, and creative methods, will help us to further understand the immersive experience that consumers have with DSMM technologies across multiple channels and goals and, therefore, to identify the best stand-alone or combined uses of channels of both communication and sales available to marketers. New work that considers "social TV"—how consumers use social media while watching television—and how this multitasking behavior affects advertising effectiveness (Fossen and Schweidel 2016) is a good example of this approach that will become increasingly important moving forward.

Toward a Theory of Mobile Marketing

Relatedly, mobile use represents a domain of online–offline convergence that warrants independent consideration—and, importantly, will require the development of a data-driven theory. There are good reasons to push at this point for a comprehensive theory of mobile marketing. This is not to say that no theories of mobile use have been offered. In fact, conceptualizations of mobile marketing were described five to six years ago in specialized journals (e.g., Shankar and Balasubramanian 2009; Shankar et al. 2010). A recent review and agenda-setting article by Grewal et al. (201) is also an important development in this literature. However, we can still benefit from testing these theories comprehensively and developing a better understanding of how the mobile and nonmobile DSMM contexts relate to each other (e.g., Ghose and Han 2011; Shriver, Nair, and Hofstetter 2013). As noted in Ghose and Han (2011) and Shriver, Nair, and Hofstetter (2013), results from the mobile domain appear to be a bit different from those found in the nonmobile context. It may be that these findings can be reconciled by recognizing that mobile may present a more task-oriented focus for consumers, while nonmobile Internet use lends itself more to network building and relationship development. At present, though, such explanations are only speculative. That said, as the world becomes heavily "mobile first" with respect to how consumers use the Internet, mobile versus nonmobile comparative research might lose relevance rapidly. Thus, we advocate that researchers focus on understanding the marketing value of aspects of mobile technology that allow marketers and/or consumers to do things that cannot be done with nonmobile technology (e.g., geo-located ad targeting; making use of sensors in mobile devices that measure ambient contextual attributes, or even user biometrics, in the case of wearable devices).

Arguably the best way to develop a more comprehensive understanding and more generalizable theory of mobile consumer behavior and mobile marketing will be to combine big data with field experiments that enable consumer-level

insights. For example, Andrews et al. (2015) combine data from one of China's largest mobile providers on nearly 15,000 consumers with a follow-up survey that explores consumer motivations. The researchers find evidence that in highly crowded spaces (e.g., crowded commuter trains), people turn inward, seeing their mobile phones as a "welcome relief" to the anxiety-producing crush around them, and that when in this state they are more receptive to mobile advertising. This is a good example of how a combination of empirical insights from large data sets and psychology-based explanations can be used to move the mobile marketing literature forward.

The mobile domain also introduces the importance of both geographic and temporal proximity in determining the effectiveness of marketing promotions, which are, in essence, contextual factors that reflect real-world environments. In many ways, this thinking revisits some of the earliest DSMM qualitative work but inverts its perspective. For example, recall that early work (Schau and Gilly 2003) highlighted the way that online experiences could shape consumers' offline lives. In comparison, the research of Andrews et al. (2015) is entirely about how an offline contextual factor (physical crowdedness) affects online behavior. Similar examples can be found in Danaher et al. (2015) and Fong et al. (2015), who use location-based targeting for mobile coupon delivery and thus consider how physical proximity or geographic factors affect both online and offline behavior because their studies involve mobile delivery of coupons for offline products/services (see also Luo et al. 2014). Yet another example comes in Hui et al. (2013), whose work considers the offline effects (i.e., travel distance in stores) of coupons delivered in online (mobile) formats on in-store spending. As such, mobile research offers a unique opportunity to build new theories of behavior in digitized or digitally enhanced environments where both virtual and real contextual factors are important.

Not Only What, but How: Recommended Future Approaches for DSMM

We close by discussing some concerns suggested by the first 15 years of work in this area. We offer suggestions for overcoming the threats that these tendencies may pose to scientific inquiry.

Addressing the Fragmentation Problem: Rewards for Breadth, Not Depth or Complexity

First, while we are able to outline recurrent themes across the 15 years of our analysis, we note from our macro-level analysis that the level of fragmentation in DSMM research in the top journals is high, and many interesting articles do not clearly speak to or build on one another. Generally, the pattern has been for high-quality specialized journals to offer conceptual pieces or single-study observational models on broad topics but to do little to offer comprehensive tests. Work in the more general journals then tends to bite off single pieces of such theory or segments of a model, as allowed by their data or experimental design. What we seem to lack is research that offers deep or comprehensive tests of previously offered theory or that substantiates or refutes earlier conceptualizations with nuance.

This fragmentation may be a natural by-product of research programs that tend to be data-driven rather than theoretically programmatic. After all, incentives exist for maximizing every data set as a stand-alone study. However, our fragmented approach may also be due to divergence in nomenclature, reflected in the previously discussed proliferation of keywords, with little understanding of whether these terms reflect the same or different phenomena. This level of precision may be a positive, in that researchers are not attempting to conflate distinct ideas, but it may also pose a barrier to researchers who wish to gain comprehensive knowledge on a given topic.

The biggest problem that arises because of this fragmentation is that while we may be able to make statements about many discrete topics, we remain curiously mute with regard to many of the fundamental questions that practitioners may have about DSMM. For example, as yet we have only one meta-analysis, and despite the evolution and breadth of the field, the literature lacks comprehensive answers drawn from amassed knowledge from multiple studies to questions such as the following:

- Why do people use social media? How has it affected their lives?
- When is social media marketing preferable to traditional marketing?
- 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?
- 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 for firms or consumers? Are there metrics beyond ROI that matter?
- How has the consumer's fundamental decision-making process changed due to digital experiences and environments?
- What is the optimal balance between online and offline marketing?
- What is the optimal balance between human and technologically enabled interaction?

How can this lack of answers be rectified? Of course, truly novel contributions will continue to be highly valued by the field, particularly given the fast-paced nature of technological innovation that underpins much of the DSMM marketing space. In addition, however, we recommend that research that directly builds on prior work in meaningful, relevant, and constructive ways should be considered valuable contributions. Thus, our definition of "contribution" has to expand to include new inquiries into and extensions of prior work. Following calls in the behavioral literature (e.g., Lynch et al. 2015), replication work is also needed to learn whether DSMM effects are stable over time and across methods. It is not necessarily a concern if prior effects fail to replicate; in fact, this may be a likely outcome in this dynamic domain. However, finding out which effects are more or less stable will

be crucial in building more timely and helpful paths to practitioners. 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. One example of new work that does this is Saini and Lynch's (2016) work. This study provides a conceptual replication of prior econometric findings that brand familiarity effects are more important for purchases made online than offline (e.g., Danaher, Wilson, and Davis 2003), using experimental methods. Saini and Lynch also extend these findings to show that the advantage of offline settings for unfamiliar brands lies in the brick-and-mortar environment's ability to provide sensory information.

Another way to make progress is for researchers to join forces to work on common data sets that help them address big questions. This has not tended to be the norm in marketing, although it has in other fields. For example, in computer science, many common data sets are available for researchers to use. Interestingly, some of these data sets are provided by companies (e.g., Netflix, Yelp). To some extent, the infrastructure for such an endeavor is already in place. For example, the Wharton Customer Analytics Initiative regularly obtains data sets from companies and makes them available to teams of researchers who qualify for access; MSI has also been involved in these types of initiatives. Thus, having multiple teams of researchers working on common data sets (and, thus, related—but not necessarily identical—questions) is not without precedent and should be encouraged.

A third recommendation is for researchers to employ multiple methodological approaches, a tactic that has increased in use in the last two eras of our discussion. For example, an empirical analysis of a large real-world data set might identify a particular effect of interest and establish its relevance. This might be followed by experiments that try to pinpoint causal mechanisms. 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 whereby we find evidence for the existence of a particular effect but do not understand why it occurs (e.g., from an empirical analysis of a large, real-world data set from a company), or vice versa, that is, whereby we understand an effect but do not know whether it occurs in the real world (e.g., on the basis of small-scale experiments).

Fostering a Broader Focus: Avoiding Myopic Methods and Overconcentrated Concepts

A second concern is one of article-internal focus. As indicated by our initial keyword analysis, a large number of articles specify methodological advances as a major part of their contribution. Clearly, for any given author team, methods are important. Of course, it might be the case that very specific data characteristics call 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.

Another issue is the tendency to herd toward a narrow conceptual emphasis: WOM. While understanding "buzz" and social transmission behavior in online environments is certainly important, and it is good to have two meta-analyses on this topic, it is not the only goal with which marketers approach DSMM. These technologies are used by marketers to do many things such as build brand communities, foster consumer engagement, nurture consumer–brand relationships, gather market intelligence, service customers, procure and test new product ideas, drive traffic to websites, generate leads, source content, and instigate offline behaviors such as increasing customer traffic to brick-and-mortar retail outlets. In short, WOM (and then sales, or some other revenue-related outcome) is not the only reason why marketers use DSMM technologies. Therefore, the extent to which the DSMM marketing literature has honed in on WOM is somewhat of a concern. Moreover, as we remarked earlier, much of the online WOM (and UGC) work focuses on special cases of WOM, such as online reviews/ratings.

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 the WOM literature does not regularly and conclusively demonstrate that online WOM is in fact different from offline WOM in ways that matter for marketing (a notable exception is Lovett, Peres, and Shachar [2013]). 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 such as refrigerators "over the backyard fence" in the 1950s). However, the important question is not so much whether online and offline forms of WOM are different but, rather, whether these differences are important for marketers to know about. For example, WOM can travel more quickly and have a greater reach online than offline, but is the underlying mechanism through which the information influences consumers' attitudes and behaviors markedly different?

These two issues of focus (exclusive focus on one's own data and overconcentration on WOM) will be difficult to address. Solutions to the former, as with the problem of fragmentation, will likely rely on cooperation among scholars, who may be able to show that new methodologies that address their own data deficiencies may also help mine new insights from previously explored data sets. The second issue will require at least two things: first, more careful listening to the world of practice to understand the many uses of DSMM and outcomes researchers would like to capture as effects of WOM; and second, an attention to past literature that pushes us to define our contributions in terms not of our novel domain but in terms of existing theory. We hope that the two meta-analyses presented in this area thus far offer good starting places for this work, as will the development of new techniques to identify causal relationships between online and offline behaviors.

Time Problems: Topic Transience and Technological Pace

While academia and practice are not always out of step, our comparison between the two realms tends to suggest that a frustrating asynchrony may persist. Part of our tendency to fall out of step with practice may be our fascination with transient topics without much regard to their likelihood of enduring relevance. New technologies and novel data seem to draw considerable interest among researchers, often due to convenience or opportunity (e.g., when a researcher has a nice data set "fall into their lap" from a company) or driven by idiosyncratic attraction to a particular platform that might not reflect broad relevance among marketers (e.g., interest in now-obsolete virtual worlds such as Second Life). Reliance on these approaches can lead to disproportionate amounts of effort going into the study of phenomena that are not immediately or enduringly relevant to important stakeholder groups and that are ultimately not cited by later researchers. In addition, given the time it takes to complete the publication process, by the time an article is published, the phenomenon or digital platform under study may no longer be particularly relevant (e.g., research on group buying or daily deals platforms such as Groupon).

Again, this concern makes it even more crucial that DSMM researchers work to close the academic–practitioner gap. We have noted that in the past, MSI has played a role in creating a bridge between these two sides of marketing, and some researchers (such as Christine Moorman, in her annual CMO survey, and the Wharton Customer Analytics Initiative, as discussed earlier) provide useful data; thus, inventing an additional bridge is not what we advocate. Rather, we want to see the bridge and information used by more researchers (particularly early-career researchers), more frequently, and for more than data acquisition. Some researchers do this already, either on their own (e.g., through relationships with companies, consulting work, and executive education) or through organized efforts (e.g., MSI's roundtable initiatives that bring together marketers from noncompeting companies on a regular basis to talk about issues facing them, accompanied by a senior marketing academic). However, this tends to favor the better-established senior academics who have developed industry relationships over the years. Researchers at all career stages will avoid chasing potentially transient topics with better access to practitioner experience and insight.

Finally, we propose that the issues of pace may be addressed by adopting longitudinal perspectives. With the exception of DSMM research that has used time-series data to look for short- versus long-term effects (e.g., Moe and Trusov 2011; Stephen and Galak 2012; Tirunillai and Tellis 2012; Trusov, Bucklin, and Pauwels 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 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. Alternatively, if they are robust to changes in time, then that is also important to know.

Conclusion

There is much to like about the way that academic research has approached DSMM in the past 15 years, and there is a great deal of opportunity moving forward. We have seen a proliferation of topics, an evolution of methods, and continued enthusiasm for this domain. From its roots on the fringe of marketing research and practice, DSMM is now represents a mainstream subfield within marketing on the academic side, drawing interest across methodological and philosophical boundaries. In practice, we are rapidly entering a "postdigital" world in marketing, where the siloed thinking that divided marketing into "digital" and "traditional" (or everything else) is being replaced. Instead, we are at a point in practice where digital marketing is *just marketing*, simply because almost all marketing activities a firm might consider now can have some kind of digital aspect.

Our hope is that this article provides insights about the way this domain has developed, as our perspective on DSMM has increasingly highlighted its transformational power in business and consumer life. As these transformations continue, we hope that recognizing the key ideas on which we've gained—and failed to gain—ground can help researchers contribute in meaningful and relevant ways while avoiding pitfalls that can threaten scientific progress. Many challenges certainly lie ahead, but collaboration, the application of the wide range of methods used by marketing academics, and strong relationships with practice can help create an exciting future for DSMM research in marketing.

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