



Uncovering the message from the mess of big data



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Abstract User-generated content, such as online product reviews, is a valuable source of consumer insight. Such unstructured big data is generated in real-time, is easily accessed, and contains messages consumers want managers to hear. Analyzing such data has potential to revolutionize market research and competitive analysis, but how can the messages be extracted? How can the vast amount of data be condensed into insights to help steer businesses' strategy? We describe a non-proprietary technique that can be applied by anyone with statistical training. Latent Dirichlet Allocation (LDA) can analyze huge amounts of text and describe the content as focusing on unseen attributes in a specific weighting. For example, a review of a graphic novel might be analyzed to focus 70% on the storyline and 30% on the graphics. Aggregating the content from numerous consumers allows us to understand what is, collectively, on consumers' minds, and from this we can infer what consumers care about. We can even highlight which attributes are seen positively or negatively. The value of this technique extends well beyond the CMO's office as LDA can map the relative strategic positions of competitors where they matter most: in the minds of consumers.

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1. Consumers and the world of big data

Understanding what consumers want is a fundamental business problem that is being radically changed by new technology. It used to be that consumers

whispered and the challenge facing managers was to try and get them to speak up. Now, consumers shout and the challenge facing managers is to uncover the messages hidden among the crescendo of overlapping voices.

1.1. Listening to the market

Traditional listening techniques (e.g., focus groups, surveys) can be very useful but are typically expensive, are limited in scope, and require great skill to

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run effectively. Because these exercises are formally scheduled, the voice of the market tends to only emerge in short bursts and infrequently. Even when investing heavily in research, a firm only gets feedback on a modest number of attributes. If the market researcher doesn't ask the right questions, a firm may not uncover what matters to consumers. Finally, there are also significant problems if the consumer finds it hard to fully verbalize the answers when put on the spot.

The world has changed and big data is transforming many elements of business, from analytics (LaValle, Lesser, Shockley, Hopkins, & Kruschwitz, 2011) to talent management (Russell & Bennett, 2015). Analysts have uncovered gems of wisdom about their customers by integrating data from different parts of the organization (Thelen, Mottner, & Berman, 2004). Integrating data held in your organization is an excellent way of improving knowledge of your customers but gives a limited picture. Most of the information about your customers isn't held anywhere on the company servers; it is housed on various websites that are typically as visible to your competitors as they are to you.

Furthermore, many of the key insights that managers wish to uncover are about potential customers. These consumers aren't currently purchasing from your firm but could be enticed to do so. When approaching potential customers, your firm doesn't have any proprietary insight into their needs. No crunching of internal data will allow you to better understand what they want. In such a world, insight comes from being able to look outside your organization for information.

The recent proliferation of user-generated content—such as product reviews, tweets, and blogs—has provided numerous ways for consumers to share their opinions. Rather than subscribing to any dystopian vision of firms spying on consumers, we believe the big data revolution can produce firms that better respond to consumers' wishes. Consumers want to be heard. They post about the successes and failures of products, brands, and firms precisely because they feel that their views should be listened to. Well-managed organizations agree and want to listen to what consumers have to say.

In this new world of social media, opinion sites, and comment threads, consumers have, collectively, not been shy about expressing themselves. Your firm's analysts, and analysts working for your competitors, can find out what consumers think about your firm—often in brutally frank detail. One only need look at Amazon.com to understand just how extensive is the trove of data hidden in plain sight. Consumers share their thoughts about every type of product, from the artistic (decorative garden water

features) to the fun (children's Halloween costumes) to the insightful (marketing analytics reference books). While all firms can benefit, the new technology presents an especially valuable opportunity regarding consumer marketing for firms involved in high volume business. Historically, the sheer volume of current and potential customers has presented managers with great difficulties in understanding what consumers collectively want. Now, though, the wide range of people who use the product and then share their opinions produces a massive online, real-time comments box.

The strategic benefits of accessing large amounts of feedback are easy to imagine. For example, firms launching new products now have a significant opportunity to learn from the feedback of early adopters. The firm might consider a soft launch: a limited rollout with little fanfare. The product can then be tweaked upon gaining initial reactions. Online brand communities have great potential to tell us how selected groups of consumers see the brand. Marketers involved in the field of Online to Offline (O2O) sales also have a growing opportunity to trace the relationship between offline sales and online postings (e.g., tweets) about the product. Indeed, online postings may prove to be a leading indicator of sales, meaning consumer comments can assist firms well beyond the marketing function. Earlier and more accurate sales predictions will help logistics, production scheduling, and financial planning. The value of improved demand forecasting should be especially significant in industries with long lead times and/or where consumer tastes are hard to predict, such as fashion retailing and vacation planning.

1.2. A taxonomy of big data

Big data can be divided into two types: structured and unstructured data. *Structured data* comes in a defined form and offers clear answers. In user-generated content, structured data typically includes things such as ratings (e.g., 1–5 stars), questions with binary answers (e.g., “I would recommend Yes/No”), or questions with a limited range of responses (e.g., “Do you think the firm should do more, do less, or is the level of service about right?”). This data is similar to what marketers have been employing for generations and remains useful. It is generally relatively easy to extract the message from such data; for example, an average rating of 8.5 on an increasing scale from zero to ten is better than a rating of 7.5 in response to “How happy are you with our service?” This makes structured data especially useful when setting and monitoring performance against targets. It is easier to rally a team

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