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# Analytics from our scholarly closets: the connections between data, information, and knowledge

Anjala S. Krishen[1,3] · Maria Petrescu[2]

In this editorial, we want to delve further into the art of analytics by traversing through our own academic knowledge journeys. From our unique place as co-editors of this journal, we decided to display the power of semantic analytics to explore our research. Our application of analytics will allow us to propose a framework—the *connections between* data, information, and knowledge. We will begin with a guided semantic analysis which will not only lead to a further understanding of our journey but also show the power of analytics.

In an effort to build a coherent message for our journal and become effective yet creative co-editors, we often find ourselves exploring ways to work together as researchers. Even though our research and knowledge paths are not obviously intersectional, we come from similar places in our quests. We are both interdisciplinary researchers who have worked with people of all levels, ethnic backgrounds, and disciplines. Much of our work also overlaps in terms of its substantive focus, including (1) prosocial pieces on health and obesity, marketing to the bottom of the pyramid, and consumer safety and (2) understanding the diverse marketplace such as Hispanic and gay consumers. However, if we were pressed to review some of our previous publications and find common ground, we would have to read through all of our research efforts and propose ideas

to each other for future exploration. In essence, we would be trying to categorize our work, a process that the academic community calls a "literature review." During the literature review process, scholars essentially read scores of knowledge, organize it, and then create emergent frameworks. Instead, we will now show the power of unguided semantic analysis, a marketing analytics tool, as a way to categorize knowledge and produce an exploratory model.

## Exploratory study: analytics from our scholarly closets

### Procedure and analysis

Our first step was to organize our work into the following seven substantive domains: advertising and integrated marketing communication, business-to-business marketing, consumer behavior, cross-cultural marketing, market modeling, internet marketing, and social media marketing. In this qualitative process, our choice of these main categories and the research within each of them was based on our best judgment. We then collected most of our published research from 2013 to 2018 ($n = 44$ published manuscripts stored as files) and placed each manuscript into the most appropriate categorical folder (Berezan et al. 2015, 2017, 2018; Brown et al. 2014; Bui and Krishen 2015; Bui et al. 2012; Fine et al. 2017; Kemp et al. 2017; Kheirandish et al. 2009; Korgaonkar et al. 2016; Krishen et al. 2013, 2014a, b, c, 2015a, b, 2016a, b, c, d, 2017; Krishen and Bui 2015; Krishen and Homer 2012; Krishen and Hu 2014; Krishen and Nakamoto 2009; Krishen and Sirgy 2016; Petrescu 2011; Nicholson et al. 2014; Peltier et al. 2013; Petrescu 2012; Petrescu and Bhatli 2013; Petrescu et al. 2015, 2017, 2018; Petrescu and Korgaonkar

✉ Anjala S. Krishen
anjala.krishen@unlv.edu

Maria Petrescu
mpetresc@nova.edu

1   University of Nevada, Las Vegas, USA

2   Nova Southeastern University, Fort Lauderdale, USA

3   Department of Marketing and International Business, 4505 Maryland Parkway, Las Vegas, NV 89154, USA

**Fig. 1** Our research categorical concepts



2011; Pomirleanu et al. 2016; Korgaonkar et al. 2014; Raschke et al. 2014; Ratan et al. 2014; Verma et al. 2017; Wu et al. 2016; Zahay et al. 2012).

Each of these manuscripts has between 5000 and 15,000 words, so the sheer volume of verbiage is substantial and hand coding of it would be nontrivial. As a tool we currently own and understand, we chose to use an unguided semantic analysis tool called Leximancer (www.leximancer.com) (see Dann 2010; Smith 2011; Rooney 2005).

## Results

The seven folders consisted of categorical comparison markers for the second phase of data analysis. As described in our previous editorial about the 4 I's of analytics, Leximancer provides semantic analysis diagrams which identify main themes and related concepts within them (Krishen and Petrescu 2017). Figure 1 shows the main ideas and their relative weights, mapped in relation to the seven substantive topic folders. Figure 2 displays the most

**Fig. 2** Our main themes and concept weights
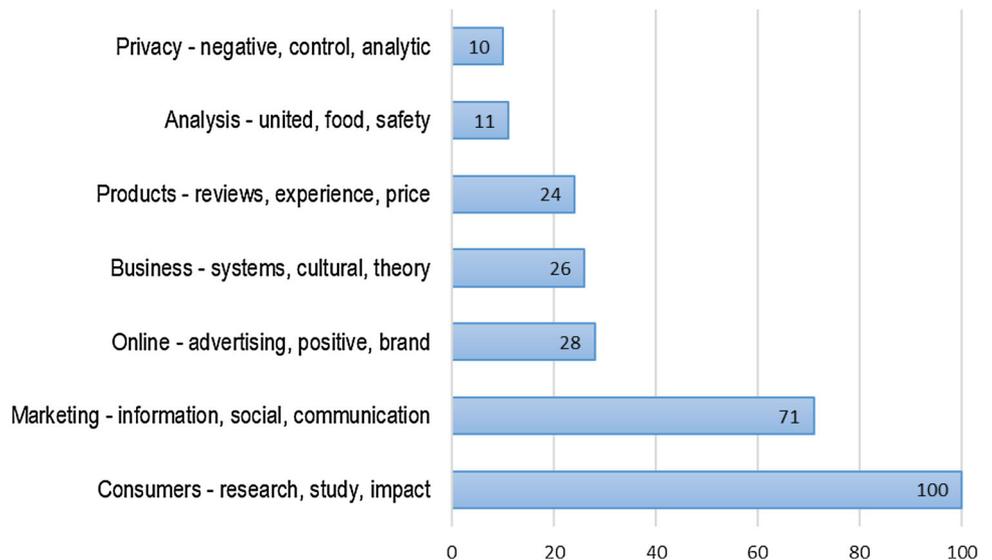
**Fig. 3** Proposed framework: analytics to connect data or knowledge to information
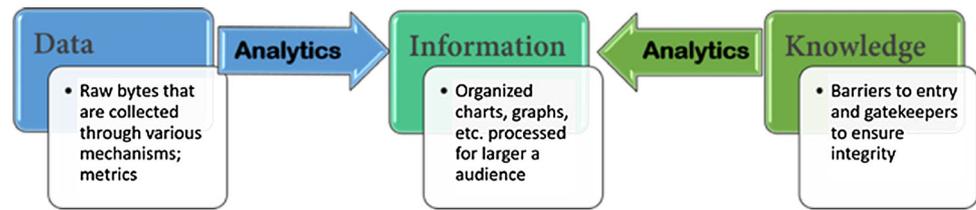


prevalent themes with their concepts listed after them; the themes listed from most to least prevalent are *consumers, marketing, online, business, products, analysis,* and *privacy*. Interestingly, if we ever wanted to show that our research is focused on consumers, marketing, and business, we now have very clear metrics, based on hundreds of pages of our publications.

## Discussion

The point of this analysis was to display the power of analytics in uncovering categories and concepts, even from large amounts of knowledge. However, we want to elaborate a deeper idea and a proposed paradigm based on this process. The data–information–knowledge–wisdom hierarchy (see http://www.systems-thinking.org/dikw/dikw.htm) was originally proposed by Ackoff (1989) and much follow-up research builds, expands, and challenges this model (Delen and Demirkan 2013). In it, information is partially defined as the presentation of data through categorization and organization. Journal publications can be considered knowledge, as there are barriers to entry through the review and credentialing processes. However, to categorize the knowledge contained in our publications, we made use of analytics to display information about them (i.e., Figs 1, 2).

## Conclusion

We conducted the study in this editorial for two main reasons (1) to display a creative way for finding overlap in scores of literature with a powerful semantic analytic tool and (2) to show that hundreds of pages of complex knowledge can be translated into an informational framework with analytics. In the process of completing this analysis, we also want to propose an interesting connection between data, information, and knowledge. The process of converting data to information is a well-known phenomenon; for example, a report of consumer website traffic (information) can be created by summarizing and processing Google Analytics data. However, our exploratory study shows that by taking our knowledge pieces and performing semantic analysis on them, we can create information for a larger audience.

In Fig. 3, we propose a framework which shows how data, information, and knowledge can be connected through analytics. Researchers can transform data to information by creating reports or categories, and knowledge can be analyzed and displayed as information, as shown in Figs. 1 and 2. As such, analytics allow complex data or knowledge to be translated into easy-to-process or functionally fluent information. In the context of our research, we have similar substantive interests, and semantic analysis provides a means by which to readily display them. Regardless of the functional goal of any research project, the core principle is always creativity.

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