Application of the Semantic Organization Model to the Assessment of Social Media Communication: Assessing the Accuracy and Relevance of On-line Reviews

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Introduction

Although a great deal of literature exists regarding consumers' on-line behavior, little research implicates the semantic nature of that behavior (Haubl and Trifts 2005). On-line posts, reposts, reviews, site visitations, feeds, etc. are all used as behavioral metrics that managers look to as indicants of strategy effectiveness. Thus, managers typically have access to large data bases containing information about consumers' on-line behavior, but, they face a dearth of information that links such data bases to key motivational elements, those thought to spark purchase evaluations and choice. Both choice and on-line behavior frequently serve as bases for managerial evaluation – i.e., managers are frequently evaluated in terms of sales and post-purchase buzz—insofar as they marshal quantitative results and actionable goals. Seldom are managers held accountable for processes that mediate that behavior. Instead, more concrete concepts usually dominate their evaluations – e.g., number of posts, views, likes, sales volume, etc.

The objective of this paper is to present a conceptual model, based on individual semantic organization linking consumers' on-line behavior to their deeper motivations that drive certain behavior. Assessing the effectiveness of strategy on the basis of consumers' on-line behavior requires marketing decision makers not only to estimate the effect of that behavior, but also to develop an attendant set of metrics. Surprisingly, little research or analyses along these lines have been undertaken in that regard. Simply put, measures of the emotional value of consumer responses made in the e-forum of social media demands new, if not innovative, measures. Our work presented is an attempt to do just that. We develop a framework that integrates well known theory regarding cognition with research on values and emotions. Specifically, our work is built on the notion that products and brands can be thought of at different levels of abstraction (see Chattopadhyay and Alba 1988) and that that hierarchy is typically reflected by communication in various social media messages such as reviews and posts. Thus,

we propose that any assessment of social media strategy must establish a link between communication vehicles and deeper levels of meaning and motivation. We discuss below how the construction of brands at multiple levels of abstraction implicates consumer choices as well as their engagement with those brands.

In addition to detailing the nature of our hierarchical framework, we describe methodological aspects pertinent to the measurement of that framework and its motivational basis. The primary method used to assess social media communication is an administered questionnaire, although implicit memory tests would be apropos in many instances. The key output measure of our methodology is a "perseverance score," which reflects the organization of individuals' memory structure and resulting tie to brand.

## The Role of Semantic Structure in Marketing Communication

Semantic structure can be construed in a number of ways (cf., Barsalou 2005), but it is probably most useful to view the concept through the perspective developed by Reynolds and Olson (2001). This perspective, known as a Means-End approach, views communication as having an effect on consumers through a hierarchical structure anchored by product/brand features at one end and motivating values at the other. For instance, a toothpaste ad may link fluoride (feature) to decay avoidance (outcome), which, in turn, may result in feelings of enhanced social well-being and health (motivating values). That is, a feature-value relationship is established in memory and addressable through communication and various other marketing stimuli. If so, any attempt on the part of marketers to measure complex communication effects must include relational metrics relating features to outcomes and values. The generalized framework we present here is an attempt to do just that in the realm of social media. More specifically, we focus on the on-line reviews consumers publish in response to product and service experiences.

The notion that product/brand features mediate values is neither new nor novel. Vinson et al. (1977) first proposed that individual beliefs, which exist at different levels of abstraction, formed the underpinning of attitudes At the most immediate and concrete level are beliefs pertaining to product attributes; at the most abstract level are those related to global values and motivation. Presumably, the former are less centrally held, while the latter are more centrally held and are semantically closer to the individual's self. Given that elements at different levels are typically related to one another, a value orientation can be established which, can be represented in what Reynolds and Craddock (1988) refer to as a hierarchical values map, but, more importantly, employed in the service of marketing strategy. For instance, marketers might initially frame a car offering in terms of the environment, say by mountain scenery, and then follow that prime with information regarding the fuel efficiency and emission control of their particular brand offering. Presumably, this frame would enhance attention to and importance of the more

concrete attribute-level information thereby producing a perceptual orientation anchored by an abstract environmental perspective – as Reynolds and Craddock (1988) note a perceptual orientation entails a unique attribute-consequence-value combination. We suggest that this hierarchical map is a surface representation of an underlying semantic structure relating attributes (fuel efficiency) to more deeply held values (concern for the environment) and pervades the ongoing decision process of consumers. Thus, semantic structure guides decisions and understanding this structure becomes instrumental to the assessment of marketing strategy as well as the development of marketing metrics. Based on the work of Reynolds and Olson 2001), we offer the following propositions to delineate the calculus that underpins what the authors refer to means-end theory, and the relationship of three propositions is depicted in Figure 1.

- *The importance of a product attribute/consequence is directly related to the degree to which it mediates a given value/facilitates goal accomplishment.*

- *The importance of a product attribute/benefit is directly related to the degree of importance placed on the goal/value it mediates.*

- *The importance of a particular brand is directly related to its ability to mediate desired benefits and, therefore, values/goals.*

Figure 1. Hierarchical Semantic Structures
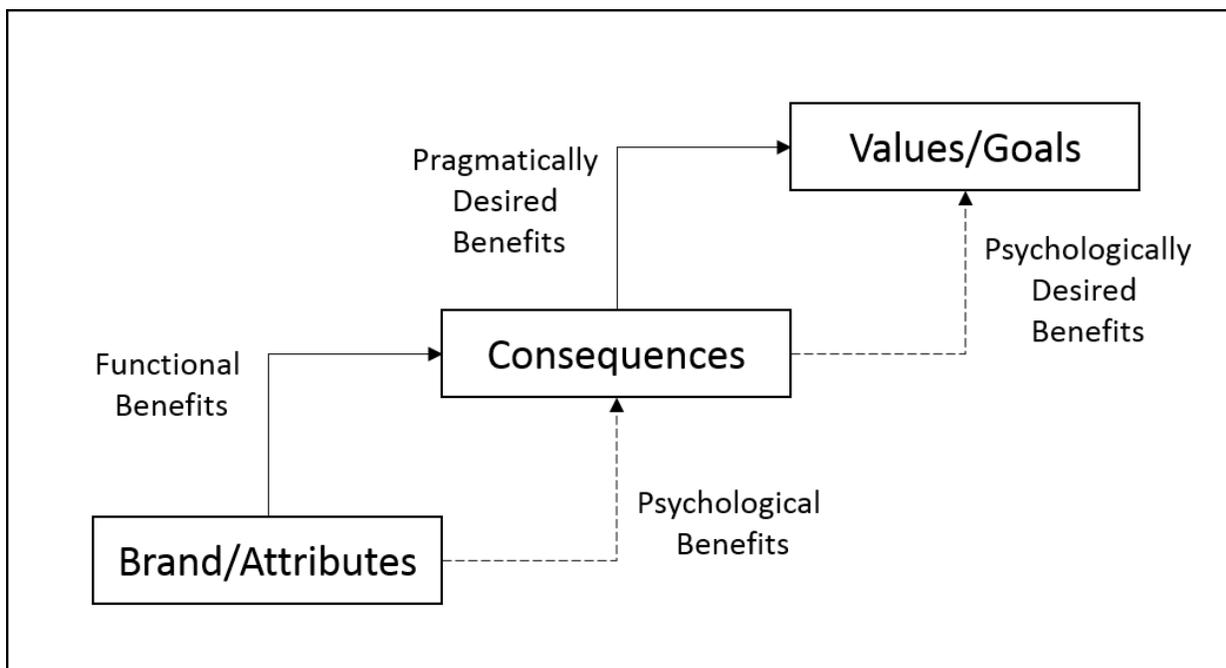
Thus, to uncover the semantic structure, or perceptual orientation, of any segment, or groups of consumers, a multilevel analysis must be performed, first, identifying key attributes, then defining the more abstract consequences and motivations that are mediated by those attributes. The first issue usually involves methodologies such as multidimensional scaling or qualitative studies (e.g., depth interviews and focus group interviews), the second, laddering techniques along with focus group interview.

The above framework is generalizable to a vast array of communication vehicles such as advertising and, more generally, promotion in the online environment. It is also consistent with that suggested by Chattopadhyay and Alba (1988). We attempt to employ it in the analysis of social media, more specifically, to assess the evaluative effects of on-line reviews. Below, we discuss our method and theoretical implications.

The following steps are aimed at uncovering consumers' perceptual orientations as well as estimating the degree to which those orientations are communicated in existing on-line reviews as shown in Figure 2. The general process follows the pioneering work of Reynolds and Olson (2001) which is a comprehensive expose of the means-end perspective.

> **Step 1:** *Obtain the product dimensionality (MDS or Repertory grid). This will involve a small convenience sample of individuals who are representative of the target market.*

As noted above, this stage in our method entails identifying product features that consumers utilize to evaluate and select various decision alternatives (usually from a set of brands). Various procedures can be employed for this purpose –i.e., multidimensional scaling, repertory grid procedures, laddering, focus group interviews, administered questionnaires, or depth interviews (Hair et al. 2006, Reynolds and Olson 2001, ter Hofstede et al. 1998).

In agreement with Reynolds and Olson, we employ laddering techniques because it leads directly to deeper values, relating product features to outcomes and outcomes to more abstract motivations. Thus, at this stage, laddering recruits a set of key distinguishing (diagnostic) features that forms the basis of a hierarchy anchored by core motivating values.

> **Step 2:** *Determine the links from dimensions to deeper values. Here several focus groups interviews should be undertaken in addition to information gleaned from personal interviews.*

Thus, after determining the importance of the various product features in the step 1, the next step requires those features be linked to important consequences and, in turn, more abstract values that underpin consumers' decisions.

This task is the province of laddering techniques (Reynolds and Gutman 2001) and generally results in unified memory structures, which are referred to as perceptual orientations. For instance, friendly restaurant service might translate into a feeling of relaxation, and, therefore greater self-confidence, reflecting an individual perceptual orientation.

Figure 2. Process of Uncovering Perceptual Orientations of Consumers
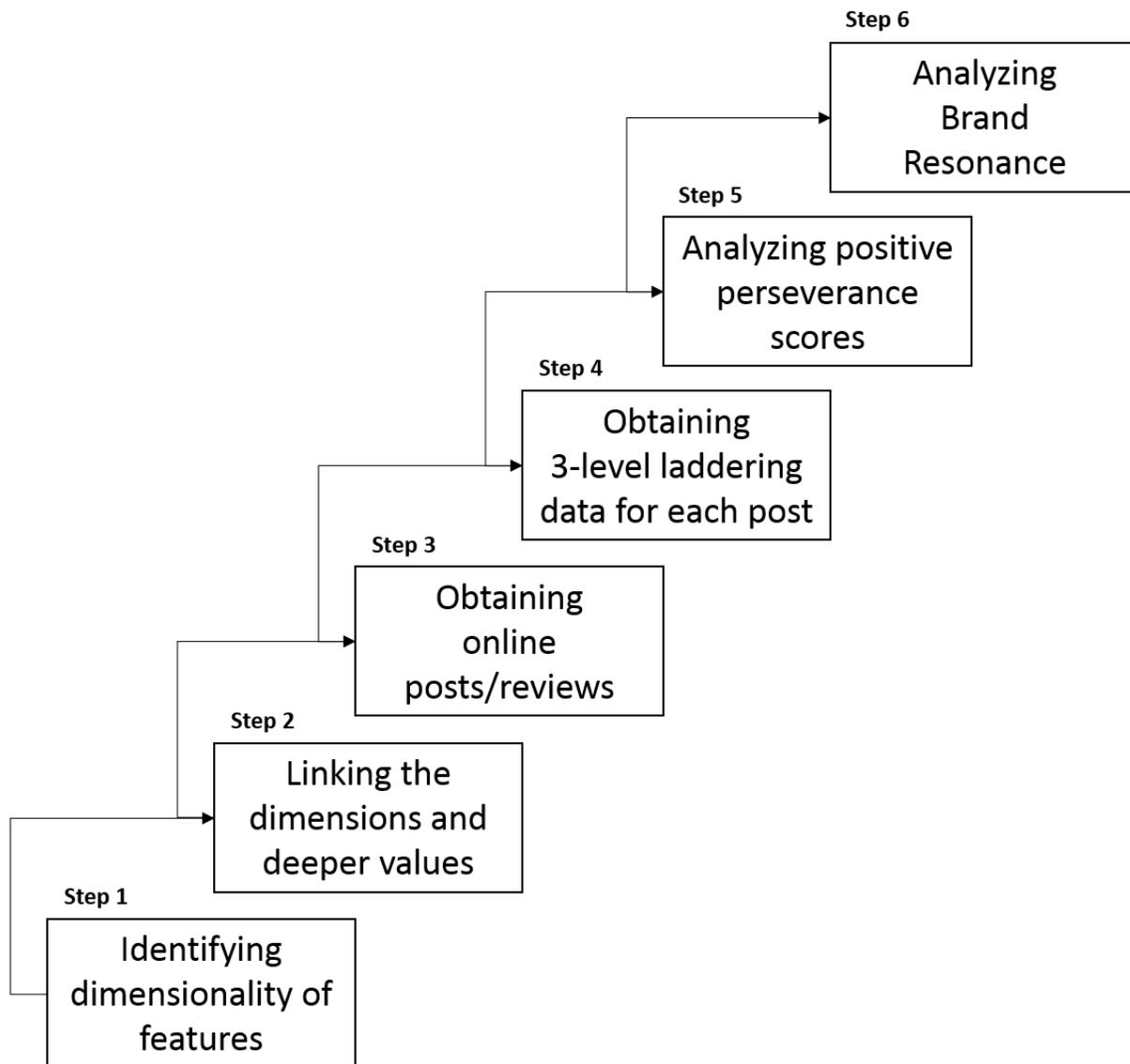
Step 3: Obtain posts and reviews. This would require internet search. Also, these would have to be reproduced for analyses.

Once relevant perceptual orientations are identified, they can be used to assess the semantic meaning of a set of reviews/posts randomly selected from social sites such as Google, Open Table, TripAdvisor, and Yelp. Each post becomes an independent unit of analysis.

Step 4: Submit posts and reviews to analyses with a representative sample. Here, the character of each post is reviewed at all 3 levels – the attribute level, the outcome level, and the deep values level.

Individual posts are presented to a pool of respondents that represent the target audience of interested recipients of the posts/reviews under review. This carries out an examination of appropriateness of an analytical reproduction to allow symmetric experimental design (See Figure 1). In addition, it would take a measurement error into account since any experiment innately entails context effects (e.g., socioeconomic factors). For example, consumers' income level may affect a choice of restaurant (e.g., upscale restaurant vs. averaged restaurant), resulting in different expected levels of consumers (i.e., attribute, outcome, and deep value).

Step 5: Calculate positive perseverance scores.

It is an examination of the level of consumers' engagement in the given post, resulting in determining the probability of brand switching from a brand to another brand. To measure its level, three characteristics are considered in each post/review: communication, attitudinal valence, and importance. Then, the sum of those three characteristics represents perseverance scores.

Step 6: Correlate perseverance scores to intention scores and sales.

This stage is to obtain an ultimate consumers' behavioral tendency (i.e., brand resonance) related to a product/service in the set of posts/reviews. This is a generalizable tendency of consumers to measuring a willingness to buy the posted

product/service, which predicts how much a general consumer is likely to engage in a particular product/service in the post/review.

Discussion and Implications

We present a framework designed to assess the degree to which social media messages such as posts and reviews reveal their semantic nature. In doing so, we pay critical attention to the linkage between message text and deeper motivational elements that underpin consumer decisions rather than focusing on quantitative measures intended to capture audience weight, etc. To a large degree, our methodology is descended from the work of Reynolds and colleagues (Reynolds and Gutman 2001, Reynolds and Olson 2001, Vinson et al. 1977); however, it also incorporates the perceptual perspective Kelly (1955) has developed as well as the cognitive view of Chattopadhyay and Alba (1988). Thus, we attempt to provide marketers with a method that scores social media messages on the basis of semantic meaning rather than past behavior. As such, our method is initialized by uncovering the semantic structure, or perceptual orientation, of consumers regarding decisions in a particular product class or service. This requires the determination of salient product features, or attributes, and their attendant outcomes and motivations. In this regard, our framework calls for a laddering methodology, linking attributes to outcomes, and outcomes to deeper, value-laden motivations. Based on this hierarchical, or semantic structure, we instruct a panel of respondents to assess each review or post for its representation of each level. This review is reflected in what we call Perseverance Score, which are then used to calculate a Resonance Score. The Resonance Score is representative of consumers' emotional brand engagement and, presumably, the weight of brand commitment.

More generally, the framework we have developed reflects much of what is known about semantic information processing (Minsky 1968) and its production. Essentially, we argue that individuals' relevant semantic structure, or perceptual orientation, is activated by a communication, it serves as an organizing structure guiding attention to, interpretation and evaluation of that communication. Thus, our method attempts to track the encoding process of interested consumers in a manner that is actionable on the part of marketing decision makers. Reviews and/or posts are assayed for what they communicate about brand attributes, outcomes, and deeper motivating elements; and thus, marketers are able to compare complex results to positioning objectives, paying particular attention to the emotional engagement of targeted consumers. In that regard, the work we present here amalgamates on-line response and core emotions that underlie lasting relationships between consumer and brand. In sum, our work finalizes the assessment of the consumer-brand trajectory, ending in the linkage between consumers and value.

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Relevance to Marketing Educators, Researchers and Practitioners: This study offers the Semantic Organization Model (SOM) as a means of relating on-line communication to existing brand position by focusing on consumers' social media experience evidenced in their real time on-line behavior. The model employs on-line reviews to portray various levels of brand meaning that reveal the actual position a brand occupies in the marketplace.

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TRACK: Consumer Behavior/Marketing Research