Meaningless and Ambiguous Differentiation: Considering Their Relative Value Using Random Utility Theory and Signalling Theory

Paul F. Burke, University of Technology, Sydney

Abstract

Traditional product differentiation occurs when consumers are offered something that is relevant and of perceived value. In contrast, some empirical evidence suggests success is achievable by offering a feature that has ambiguous value or revealed to be of meaningless value. Previous assessments of such strategies only consider the overall rating of a single differentiated product. However, we argue that feature differentiation strategies should be assessed in environments where the relative value of the feature is considered and compared to trade-offs made on competing features (e.g., price). A theoretical model and experimental approach based on random utility theory and signalling theory is offered. We find meaningless differentiation is meaningless; however, ambiguous differentiation may be successful if contextual signals (e.g., premium pricing; uniqueness) are diagnostic and consistent in suggesting its value.
Keywords: ambiguity; meaningless, irrelevant differentiation; choice; signalling theory.

Introduction

Many products have differentiating features with benefits that are unclear to consumers. For example, manufacturers and/or retailers of scanners may know that optical and not interpolated resolution is of relevance in providing benefits to consumers, but consumers may not (Broniarczyk and Gershoff 2003). Similarly, the value of additional ingredients in shampoo (e.g., Pro-Vitamins) may be uncertain. Such features are defined as "ambiguous", with consumers potentially holding several competing beliefs regarding their value (Garnham and Oakhill 1996). Despite uncertainty surrounding the benefits of ambiguous features, several researchers observe that consumers may incorporate these features into their decision-making (e.g., Bronziarczyk and Gershoff 1997; Brown and Carpenter 2000; Carpenter, Glazer and Nakamoto 1994; Meyvis and Janiszewski 2002; Mukherjee and Hoyer 2001).

In some situations consumers may be informed from external sources (e.g., salespersons; online FAQs) that the discrepancies in performance on an ambiguous feature are negligible. For example, *Pantene Pro-V* shampoo differentiates itself with pro-vitamin ingredients but credible sources (e.g., *USA Consumer Reports*) suggest that these offer no beneficial effects (Bronziarczyk and Gershoff 2003). Most intriguing is that, despite being told of the meaningless differentiation, consumers have been observed to maintain a favourable evaluation of these products (Bronziarczyk and Gershoff 1997; Bronziarczyk and Gershoff 2003; Brown and Carpenter 2000; Carpenter, et al 1994; Meyvis and Janiszewski 2002).

While prior literature suggests that ambiguous and meaningless differentiation appears to influence underline overall product choice, the manner in which choices are affected is not well understood from theoretical and experimental perspectives. It is also unclear how much consumers are willing to pay for such features relative to competing, less ambiguous features. To address this, we introduce a theoretical framework embedded in signalling theory (Spence 1974) and random utility theory (RUT) (Thurston 1927). This departs from previous

conceptualisations by suggesting information relating to the ambiguous feature affects the *relative marginal* value of the feature; and, hence, *subsequently* affects overall choice. We propose and experimentally test that the marginal value systematically relates to the content and consistency of contextual signals that may support inferences about the feature's benefits. We now review previous approaches, highlighting the value of this proposed departure.

Literature Review of Meaningless and Ambiguous Differentiation

Traditionally, it is viewed that successful differentiation can only take place if one offers something that is perceived as relevant and of value (Cahill 1996; Lawfer 2003; Porter 1985; Rogers 1995). In turn, the empirical evidence supporting the view that success can be achieved by offering consumers for which its value is difficult to assess (ambiguous differentiation) or is of no value (meaningless differentiation) is intriguing. Various explanations have been offered as to why consumers perceive added-value in products that have supplemented their basic product with additional but poorly understood features. Carpenter et al (1994) conjectures that pragmatic value is contained in the salience of the product offering the unique feature and further able to be supported with premium pricing. Consistent with a reason-based choice framework (Shafir, Simonson, and Tversky 1993), Brown and Carpenter (2000) argue that even though the uniqueness is ambiguous or meaningless, it provides consumers with further reasons to support their original choice.

To empirically examine the value of meaningless differentiation, Carpenter et al (1994) compared the between-subjects evaluation of a single target "down jacket" in four conditions. A 2x2 design manipulated (a) the irrelevance (revealed; subjective) of the target feature ("type of down fill"); and (b) the presence/absence of a unique level (see Table 1).

Table 1: Products Presented in Carpenter et al. (1994)

Feature	I	II	III	IV	V	VI	VII	VIII
Temp. Rating	500	500	500	500	550	550	550	550
Shell Cover	Cotton	Cotton	Synthetic	Synthetic	Cotton	Cotton	Synthetic	Synthetic
Stitching	Regular	Extra Tight	Regular	Extra Tight	Regular	Extra Tight	Regular	Extra Tight
Down Fill	Regular	Regular	Regular†	Regular	Regular	Regular	Regular	Regular

†- Product III presented as "Regular" in the Undifferentiated Condition ; Presented as "Alpine" in the Differentiated Condition

Subjects in the subjective irrelevance condition were informed that "Alpine" is a goose down and "Regular" a mixture of goose and duck. In the revealed condition, subjects were told, in addition, that "while the age of the bird matters, the type of bird it comes from does not make a difference" (Carpenter et al. 1994, p. 34). When the irrelevance was unknown (i.e., subjective irrelevance condition) the mean rating of the target product (Product III) improved from 3.1 to 9 for the undifferentiated and differentiated product, respectively. When irrelevance was revealed, the product's mean rating was 4.3 and 8.4 for the undifferentiated and differentiated conditions respectively. The authors conclude that the improvement in between-subjects ratings supports their hypotheses that a product differentiated by an irrelevant attribute will be more highly valued relative to when it is not differentiated. This was supported when this irrelevance was unknown/subjective (H1) and known/revealed (H2).

The basic experiment has since been replicated with similar findings across a range of product categories (e.g., Brown and Carpenter 2000; Mukherjee and Hoyer 2001; Broniarcyk and Gershoff 1997, 2003). Other variations include supporting the differentiation with premium pricing (Carpenter et al 1994) and manipulating the label of the competing feature (e.g., "Regular" to "Nordic") from which it is differentiated (Broniarcyk and Gershoff 1997; 2003).

The <u>Relative</u> Value of Meaningless/Ambiguous Differentiation

The experimental approach followed by Carpenter et al (1994) and others has several limitations. First, it is unclear whether differentiation will be successful for any product, rather than a <u>single</u> randomly selected target product (e.g., product IV rather than III). A product superior on other attributes (e.g., 550 rating; tight stitching) may be more successful in differentiating its product because consumers may infer that the unknown value of the unique feature may also be superior, similar to inference making strategies observed in the missing information literature (Johnson and Levin 1985; Levin, Johnson and Faraone 1984). Second, ratings tasks were used and respondents were not given the option to choose neither of the products. As a result, the likely outcome of choice deferral (Dhar 1997), induced by the uncertainty of the ambiguous feature, is unknown.

A further drawback of previous methods is that the <u>relative</u> value of the differentiation is unclear. That is, it is uncertain whether to differentiate products based on the unique but ambiguous product feature (e.g., type of down fill) or emphasise performance on less ambiguous features (e.g., type of stitching). In order to do this, however, one must understand the evaluation process in an environment in which trade-offs between competing features are made and using methods by which these trade-offs can be quantified (e.g., RUT combined with choice models; see McFadden 1974). While overall belief and evaluation about the differentiated product is important, it is conjectured that an *a priori* process involving the individual attribute and its consideration with other unambiguous attributes are key components in the conceptual framework of ambiguous differentiation, yet to be accounted for. We argue that consumers must determine the relative value of trading off the ambiguous product feature (e.g., the value of Alpine over Regular down fill) in an environment where competing trade-offs are made on less ambiguous features (e.g., the value of $100 over $200).

Rather than being random in constructing inferences about the importance of ambiguous features, however, consumers may be systematic in making sense of their decision environment (Einhorn and Hogarth 1986). In other contexts, such systematic behaviour is common including consumers use of price information and brand names to infer product quality (Brucks, Zeithaml and Naylor 2000; Janiszewski and Van Osselaer 2000; Ordonez 1998). In order to form beliefs, consumers may perceive and use legitimate pre-purchase signals of manufacturers and/or retailers that they may employ to convey information about the value of a product feature for which imperfect and asymmetric information exists. This is consistent with signalling theory in information economics, which was originally used to describe how existing or potential employees can signal their abilities to employers through education expenditures (Spence 1974). Signalling theory has been adapted to marketing phenomenon to describe how various marketing mix elements reinforce various dimensions of product value, including brand equity (Erdem and Swait 1998), pricing and physical appearance (Dawar and Parker 1994) and warranties (Boulding and Kirmani 1993).

In turn, we propose that marginal utility, representing the value of an ambiguous feature, systematically relates to the content and consistency of various information sources/signals in the marketplace. This framework enables the overall value of the differentiated product to be measured but decomposed into components relating to all its features. It relates the relative value of the ambiguous feature to the various information signals that consumers may use to infer its value. It also permits assessment of interactions between product features (indicated by two-way interactions) and choice deferral (indicated by the intercept term).

Experimental Approach

To assess the relative value of ambiguous features as a function of information signals and external information, a hypothetical choice task involving DVD recorders was undertaken by 248 subjects recruited from an online survey panel. DVD recorders were described by five features, each with two levels of performance (see Table 2). Each subject evaluated 16 choice sets, constructed using a fractional factorial design of resolution V, enabling estimation of main effects and two-way interactions.

An equal number of subjects were randomly assigned to one of eight information conditions. The 2^3 information conditions were formed by the full factorial of (i) external information (ambiguous; meaningless) and contextual information signals relating to the target feature ("Navigation System") in the form of the (ii) feature's occurrence in the market (unique; equal) and (iii) associated price (average; premium)[1]. To manipulate external information, an attribute glossary described all product features. Subjects in the ambiguous information condition were informed that "navigation systems" determine the speed by which one can search and view disc chapters. Subjects assigned to the meaningless information condition were informed that while a navigation system might use different technologies to search disc content they would be unlikely to notice the resulting difference in speed between systems. Subjects evaluated eight hypothetical DVD recorders in each choice set. In the "unique" ("common") information signal condition, one (four) product(s) had the NavQwik[TM] system, while seven (four) other products had an identical level of performance (i.e., "Regular"). To manipulate the price signal, products with the target attribute level (NavQwik[TM]) had a higher (equal) price on average for the premium (average) information signal conditions.

Results and Discussion

Multinomial choice models were fitted for each of the eight information conditions. Consistent with expectations, in each condition the preferences for the non-target product features were significant (Table 2). There were no significant two-way interactions.

**Table 2: Average Estimated Willingness to Pay (WTP) for DVD Recorder Features**

Product Feature/Attribute	Change in Product Performance	WTP ($)
Ease of Use	2 stars to 4 stars	$208.40
Hard Drive Capacity	12 hours to 25 hours	$174.79
Simultaneous Record and Play	Not Available (N/A) to Available	$445.38
Navigation Search System	Regular to NavQwik[TM]	$15.13
Price	$899 to $1099	-

Across all four information signal conditions in which subjects were informed that there is no beneficial difference in the "NavQwik[TM]" and "Regular" navigation systems (i.e., meaningless differentiation), the parameter representing importance of the feature in determining choice probability was positive but insignificant (α=.05). This suggests that while consumers may place some value on a meaningless product feature, the value is negligible when considering it in an environment of choice and where trade-offs are made on competing but less ambiguous features.

---

[1] Similar to Bronziarcyk and Gershoff (1997; 2003) the alternative feature level (Regular) was also manipulated (Rapid[TM]). For brevity, the results of these conditions are not discussed but consistent with those reported.

In contrast, the results suggest that ambiguous differentiation may have some benefits provided contextual information signals are consistent and diagnostic about the value of the feature. Specifically, consumers are willing to pay significantly more for a product with a differentiating feature (NavQwik[TM] rather than Regular Navigation Systems) provided that products with this feature are (a) unique; and/or (b) priced at a premium amount. The perceived value of the NavQwik[TM] system is not significant if there are several products in the market that offer it but do so without a premium pricing strategy. The t-statistics from these models are shown in Figure 1a.

Figure 1a and 1b: Value of Navigation System and Propensity to Defer Product Choice
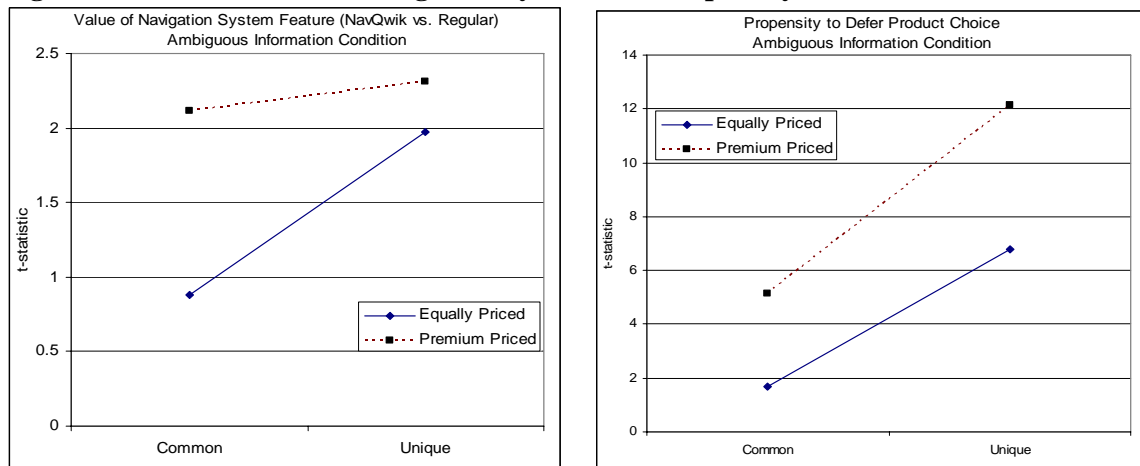
The model also enables investigation of other conditions for and outcomes of ambiguous and meaningless differentiation. Specifically, there were no significant two-way interactions in any condition, suggesting the evaluations of products offering ambiguous features are not conditional upon their performance on other features. The level of choice deferral was significantly higher in conditions where the feature was unique relative to conditions in which it occurred more often (see Figure 1b). This may be a reflection of the potential relationship between uncertainty and choice deferral (Dhar 1997). Specifically, the unique offering may provide an environment by which consumers evaluate options with greater levels of uncertainty, relative to cases in which more manufacturers offer the ambiguous product feature. That is, respondents to infer and strengthen their belief in its value may be used by the number of products offering the ambiguous feature.

<div align="center">

Conclusion

</div>

In summary, we proposed that the role of ambiguous and meaningless differentiation must be assessed by examining (a) the value of such features relative to the trade-offs made on other competing product features; and (b) product choices rather than ratings, including the option to defer product choice. In doing so, we find some empirical support for strategies in which an ambiguous feature is used to differentiate products. This must be supported with specific information signals including the uniqueness and/or the premium pricing of the offering. In contrast, however, consumers aware of the irrelevance of the differentiation do not place any value on the feature in their decision-making. In this regard, we conclude that meaningless differentiation is a meaningless product differentiation strategy.

References

Boulding, W. & Kirmani, A. (1993) A Consumer-Side Experimental Examination of Signaling Theory: Do Consumers Perceive Warranties as Signals of Quality? Journal of Consumer Research, 20, 111-123.

Broniarczyk, S.M. & Gershoff, A.D. (1997) Meaningless differentiation revisited. Advances in Consumer Research, 24, 223-228.

Broniarczyk, S.M. & Gershoff, A.D. (2003) The Reciprocal Effects of Brand Equity and Trivial Attributes. Journal of Marketing Research, 40, 161-175.

Brown, C.L. & Carpenter, G.S. (2000) Why is the trivial important? A reasons-based account for the effects of trivial attributes on choice. Journal of Consumer Research, 26, 372-385.

Brucks, M., Zeithaml, V.A., & Naylor, G. (2000) Price and brand name as indicators of quality dimensions for consumer durables. Journal of the Academy of Marketing Science, 28, 359-374.

Cahill, D.J. (1996) Pioneer advantage: is it real? Does it matter? Marketing Intelligence "& Planning, 14, 5-8.

Carpenter, G.S., Glazer, R., & Nakamoto, K. (1994) Meaningful Brands from Meaningless Differentiation - the Dependence on Irrelevant Attributes. Journal of Marketing Research, 31, 339-350.

Dawar, N. & Parker, P. (1994) Marketing Universals: Consumers' use of brand name, price, physical appearance, and retailer reputation as signals of product quality. Journal of Marketing, 58, 81-106.

Dhar, R. (1997) Consumer Preference for a No-Choice Option. Journal of Consumer Research, 24, 215-231

Einhorn, H.J. & Hogarth, R.M. (1986) Judging Probable Cause. Psychological Bulletin, 99, 3-19.

Erdem, T. & Swait, J. (1998) Brand Equity as a Signaling Phenomenon. Journal of Consumer Psychology, 7, 131-157.

Garnham, A. & Oakhill, M. (1996). The Mental Models of Theory of Language Comprehension. In Models of Understanding Text (eds B.K. Britton & A.C. Graesser), pp. 313-338. Lawrence Erlbaum Associates, Mahwah, NJ.

Janiszewski, C. & Van Osselaer, S.M.J. (2000) A Connectionist Model of Brand-Quality Associations. Journal of Marketing Research, 37, 331-350.

Johnson, R.D. & Levin, I.P. (1985) More than Meets the Eye: The Effect of Missing Information on Purchase Evaluations. Journal of Consumer Research, 12, 169-177.

Lawfer, M.R. (2003) Why Customers Come Back Career Press, Franklin Lakes, NJ, USA.

Levin, I.P., Johnson, R.D., & Faraone, S.V. (1984) Information integration in price-quality tradeoffs: The effect of missing information. Memory and Cognition, 12, 96-102.

McFadden, D. (1974). Conditional logit analysis of qualitative choice behavior. In Frontiers in Econometrics (ed P. Zarembka), pp. 105-142. Academic Press, New York.

Meyvis, T. & Janiszewski, C. (2002) Consumers' beliefs about product benefits: The effect of obviously irrelevant product information. Journal of Consumer Research, 28, 618-635.

Mukherjee, A. & Hoyer, W.D. (2001) The effect of novel attributes on product evaluation. Journal of Consumer Research, 28, 462-472.

Ordonez, L.D. (1998) The effect of correlation between price and quality on consumer choice. Organizational Behavior and Human Decision Processes, 75, 258-273.

Porter, M.E. (1985) Competitive Advantage: Creating and Sustaining Superior Performance The Free Press, New York.

Rogers, E.M. (1995) Diffusion of Innovations, 4th edn. Free Press, New York.

Shafir, E., Simonson, I., & Tversky, A. (1993) Reason-based choice. Cognition, 49, 11-36.

Spence, M. (1974) Market Signaling: Informational Transfer in Hiring and Related Screening Processes Harvard University Press, Cambridge, MA.

Thurston, L. (1927) A Law of Comparative Judgement. Psychological Review, 34, 273-286.