The Accuracy of Strategic Decisions for Brands of Car and ways of Market Segmentation Using Graded Structure of Categories

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Abstract

The purpose of this article is to identify the role of concepts in categorisation with particular reference to brands of car and approaches to segmentation. The relationship between concepts and categories is between category features and exemplars (Hampton et al. 1993). The terms features and exemplars represent the means by which category members are defined, the latter by which they are represented in categories. Brands of car will have features that clearly distinguish them from other brands. Distinctive features define categories. Categories play a key role in defining competitive arenas. The managerial significance of accurate classification is discussed in this paper.

Key words: Brands, Concepts, Categories, Features, Exemplars, Graded structure, Idealness

Track: Product and Brand Management

Introduction

Concepts are the building blocks of knowledge. Categories seek to circumscribe and organize knowledge so that exemplars are clearly defined and different from exemplars in other categories. (Hahn and Chater 1997; Rosch and Mervis 1975). The distinctiveness of category exemplars is displayed in the graded structure of categories. Exemplars range from the most typical to the least typical the former being the best representatives of the category, the last the least representative and seldom classified in a category (Battig and Montague 1969; McCloskey and Glucksberg 1978). (Hampton 1979) proposed that properties possessed by category members define the category.. The importance of this article provides managers with insight into how strategy relies on the interaction between features and exemplars to form categories understandable to the consumer. Important is the relationship between the choice of strategic features and exemplars by which managers develop strategies that are distinctive.

The Phenomenon of Graded Structure of Categories

To achieve a distinctive position in a category a brand must possess features that are common to and defining of a class, and not possess features that overlap features of brands of car in contrasting categories (Barsalou 1987; Rosch and Mervis 1975). The distinctive features will in turn refer to a particular brand, for example a Mercedes Benz CLK 200K Avantgarde C209. The Mercedes Benz CLK 200K Avantgarde C209 might be considered the prototype in its class.. Prototypes are summary representations of categories. Featural similarity to prototypes determines categorisation (Hampton 1979; Medin and Schaffer 1978; Rosch and Mervis 1975). Concepts are the building blocks of knowledge. Categories organize knowledge so that exemplars are clearly defined and different from exemplars in other categories (Hahn and Chater 1997; Rosch and Mervis 1975). Graded structure provides a benchmark by which to assess the accuracy of classification decisions which define the arena in which competition occurs.

The graded structure of categories is a universal phenomenon (Barsalou 1985). Examples of category membership were sampled from responses made by respondents with regard to brands of car, and to ways in which the market for such brands might be segmented. The number of responses per item was compared with the number of responses for the same item within the graded structure for the same category. Graded structure provided a benchmark by which to measure the accuracy of respondents' classification decisions.

(McCloskey and Glucksberg 1978) observed that the graded structure of categories is associated with behavioral outcomes. Typical exemplars are always classified in a category. Exemplars of intermediate typicality are associated with, within and between subject difficulty in deciding what is a category member. Typical exemplars are more readily associated with object categories and less so with abstract categories (Barsalou 1985). Abstract concepts are differentially classified according to difficulty: categories consisting of examples such as 'a work of art' or 'a crime' are more easily classified than examples such as 'a belief', or 'an instinct' (Hampton 1981). (Barsalou 1985) defined the idealness of category exemplars as those that achieved category goals: for example. 'things to take out of a house on fire' reflected a graded structure according to emotional and economic value.

The following section on methodology addresses the process by which the sample frame was selected, the sampling of respondents that classified exemplars in top, middle and bottom ranks, and the matching of features to exemplars in order to identify the featural structure of categories In the process it was possible to contrast the featural structure of categories between rank-levels. It was proposed that features matched with top ranked exemplars identified typical exemplars; features matched with middle-ranked exemplars identified neither typical or atypical exemplars; and features matched with lowest-ranked exemplars identified atypical exemplars. The proposition was tested by comparing respondents' paring of exemplars and features in each rank-level with the pairing of exemplars and features derived from the graded structure of the same categories, based on the sum of feature scores in each rank-level. In doing this it was possible to identify the accuracy of the respondent's classification decisions against a theoretically sound category structure. Such a comparison provides managers with a way of ensuring that their categorisation decisions for brands of car are consistent with theory, that ways to segment markets are similarly consistent, and that given category structures that are theoretically, structurally sound, provide consumers with a way to use salient features in order to locate representative brands within selected categories.

Methodology

The sample frame consisted of 400 managers in a variety of industries, but mostly finance and insurance (N = 36), manufacturing (N = 83), property and business services (N = 24), and retail trade (N = 22). Eighty-six (N = 86) were classified as 'others'.

The questionnaire was compiled and tested using Sensus Sawtooth Technology Version 4.2, (2003). Data was obtained via a Web administered broadcast aimed at business people in marketing and marketing-related occupations. The data was analysed using SPSS software.

The respondents' task involved the classification of brands of passenger car, and examples of ways of segmenting the market. Brands of car were randomly selected within a framework consisting of convertibles, coupes, hatchbacks, sedans, people-movers and four-wheel drive vehicles, to provide a range of typicality.

The Sensus software was programmed to sample exemplars from 'top', 'middle' and 'lowest' levels. Respondents were asked to associate a range of randomised and pre-selected features with exemplars in each of the levels. Exemplars provided stimuli for brands of car, and approaches to segmentation.

Hampton observed that production frequency of property information associated with category exemplars might be used for defining a category (Hampton 1981). A comparison was made between the sum of feature responses per exemplars ranked top, middle and last by respondents with the sum of feature responses for the same exemplars selected from the graded structure for respective categories to test categorisation accuracy.

The sum of feature responses for graded structure was obtained by using the descending sort procedure in the SPSS software. Brands of car used as stimuli are shown in the table below:

Table 1: Exemplar brands of car

Peugeot	**Soft-top cabriolet**
Citroen C5	**Sedan**
MG-ZT	**Sports Sedan**
Nissan Maxima	**Sedan**
Jeep Wrangler	**Off-road 4-wheel drive soft-top**
Honda S2000	**2-seater sports coupe**
Holden Commodore Berlina	**Sedan**
Audi A4 Quattro	**Sports sedan**
Subaru WRX Impreza	**Sports sedan**
Chrysler PT Cruiser	**Metropolitan People Mover**

Source: http://www.drive.com.au

Respondents classified bases of segmentation into top (typical), middle (neither typical nor atypical) or last-rank levels (atypical). The Analysis below is shown for brands of car and approaches to segmentation respectively, associated with the number of respondents selecting exemplars as being typical or not typical of each category. A comparison was then made with the graded structure of each category respectively.

Table 2: Bases of segmentation used to classify exemplar brands of car

Segmentation by….Age, family life-cycle, Gender, Income, Occupation, Education, Generation (E.g. baby-boomers), Social class, Personality, Lifestyle.

Source: (Kotler 2000)

Analysis

Brands of Car

The following section presents the results of analysis of the data in top, middle and last ranked levels for brands of car and bases of segmentation used in classification. For the purpose of textual economy, the bases of segmentation will be referred to as features.

The Holden Commodore Berlina is a prototypical passenger car ranked top, the Honda S2000 is atypical of passenger cars, and ranked last. Cars ranked middle were the Citroen C5, the MG-ZT and the Chrysler PT Cruiser. The pattern of responses between rank-levels indicated no graded structure.

> **H1:** *The rank-order of exemplars is positively associated with the sum of feature responses for brands of car.*

The proposition is accepted. A statistically significant association existed between rank-level of brands of car and the sum of feature scores for each brand of car (Chi-square = 1368.8, df. = 18, p <=0.001).

> **H2:** *The rank order of exemplars is positively associated with the sum of feature responses derived from graded structure for brands of car.*

No exemplars were categorised in the last rank-level. The proposition is rejected (Chi-square = 1.689, df. = 18. This result accords with (McCloskey and Glucksberg 1978) that atypical brands are never classified in a category.

The proposition was accepted when exemplars ranked top and middle only were considered (Chi-square = 369.901, df. = 9, p <= 0.001)

> **H3:** *There is a positive association between classification decisions by respondents and classifications made by reference to graded structure for brands of car.*

Sum of feature responses for top ranked exemplars was statistically significantly associated with sum of feature responses based on graded structure (Chi-square = 237.787, df. = 5, p <= 0.001. The same outcome was obtained for responses for middle-level ranked exemplars, and responses based on graded structure (Chi-square = 55.289, df. = 9, p <= 0.001). There was no relationship between lowest level ranked exemplars based on feature responses generated by respondents and exemplars based on features obtained from graded structure. Graded structure predicted that no exemplars would be classified in lowest rank-level. Hypothesis 3 is accepted for top and middle rank-level exemplars respectively. The hypothesis is not accepted for lowest rank-level exemplars.

The view of graded structure as representing the organization of exemplars toward achieving a category goal is measured as proposed by (Barsalou 1985).

> **H4***: There is a positive association between rank-levels of idealness of brands of car and rank-order of exemplars.*

The difference between top and middle rank-levels of idealness were statistically significantly different in a single-sample t-test (t = -15.997, df = 92, Sig. (2-tailed = 0.000). The difference between top and last rank-levels was similarly statistically different (t = -5.374, df. = 92, Sig. (2-tailed) = 0.000). The differences between middle and last rank-levels were likewise statistically significantly different (t = 13.173, df. = 155, Sig. (2-tailed = 0.000). Idealness, as a measure discriminated among brands of car.

Market Segmentation

There was evidence of a statistically significant relationship between the rank-order of brands of passenger car and the sum of feature scores for each brand.

> **H5:** *There is a positive association between the rank-order of exemplars and the sum of feature responses for approaches to market segmentation.*

A statistically positive association was found between the rank-order of approaches to segmentation and the sum of feature scores associated with exemplars. (Chi-square = 1364.095. df. = 18, p <=0.001).

H6: *There is a positive association between rank-order of exemplars and sum of features obtained from graded structure for approaches to market segmentation.*

The relationship between the sum of feature scores ranked top and the sum of feature scores obtained from graded structure were statistically significantly associated (Chi-square = 234.327, df. = 8, p <= 0.001). A similar result was obtained for the sum of feature scores ranked middle wherein features scores generated by respondents corresponded closely with those obtained from graded structure (Chi-square = 87.059, df. = 9, p <= 0.001). The result for feature scores ranked last, generated by respondents and those derived from graded structure were similarly statistically significant (Chi-square = 77.226, df. = 0.001, p <= 0.001).

H7*: There is a positive association between the rank-order of exemplars and the sum of feature responses derived from graded structure for approaches to segmentation.*

The relationship between the rank-order of exemplars and the sum of feature responses derived from graded structure was statistically significant (Chi-square = 163.557, df. = 18, p <= 0.001).

H8: *There is a positive association between the effectiveness of approaches to segmentation and the rank-level of approaches.*

Mean differences between top and middle-ranked exemplar effectiveness was statistically significantly different (t = 7.617, df. = 97, Sig (2-tailed = 0.000). The mean difference between top and last ranked exemplars was statistically significantly different (t = -4.091, df. = 97, Sig (2-tailed = 0.000). The mean difference with regard to segmentation effectiveness between middle and last ranked exemplars, respectively was statistically significant (t = +17.329, df = 105, Sig (2-tailed) = 0.000).

Discussion

The closer respondent’s classification decisions corresponded to exemplars in an equivalent graded structure, the greater the accuracy of classification resulted. Graded structure represents varying degrees of prototypicality, with features that encompass the category and are defining of the most representative member of the category. Exemplars that share features in the prototype are more likely to be categorised with the prototype. Exemplars that share features in a contrasting category are less likely to be classified with the prototype. Graded structure in representing degrees of typicality provides a benchmark against which managers can gauge the accuracy of strategic categorisation decisions. Such decisions are important. Exemplars that are correctly classified will access features in the prototype and make choice decisions for consumers easier than if exemplars are mistakenly classified in a contrast category. Implications for effective brand, segment and category management are thereby important in assisting the consumer to make rapid and informed choices.

Conclusion

The graded structure of a category represents an array of typical to atypical exemplars. An exemplar with a greater number of features common to the category, and fewer common to exemplars in contrasting categories will be most prototypical of the category

and a criterion which will determine classification. This paper demonstrated that the closer that respondent's classification decisions are to the graded structure of equivalent categories the more accurate is the classification decision. Top, middle and the lowest levels of graded structure portray the most typical, the moderately typical and the least typical exemplars in a category. The implications for managers are clear. Graded structure provides a guide for accurate strategic classification decisions that determine the segments in which competition will take place; identify the features that ensure the identify of distinctive exemplars, and provide a model for category management in any situation in which category structure assists customers in making quick and efficient purchasing decisions.

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