Image Measurement and the Problem of Usage Bias

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The relationship between brand perceptions and usage (brand share) is not well known, although the mainstream marketing literature is replete with untested assumptions about the relationship between brand image perceptions and buying behaviour. Andrew Ehrenberg, along with several colleagues, has studied patterns of correlation between consumer's brand perceptions and their brand choice behaviour, both at the individual level and aggregate market level, for fast moving consumer goods. These researchers seemingly are the only people to have examined empirically any systematic relationship between the brand image and brand share.

Ehrenberg with colleagues Bird and Barwise (Bird et al., 1970, Bird and Ehrenberg, 1970, Barwise and Ehrenberg, 1985) has shown that for all "evaluative" perceptions there is a very direct and constant relationship with brand share, that is brands with high (low) shares are viewed by many (few) buyers to possess this attribute. Perceptions of "descriptive" attributes do not tend to show this relationship. These aggregate patterns are explained by the observance that users and non-users of the brand show high levels of agreement for descriptive attributes but not for evaluative attributes, ie for evaluative attributes users perceive that the brand has the attribute and non-users do not. This paper replicates and extends this research.

An implication of these relationships is that current perceptual mapping approaches are biased by market share, that is evaluative perceptions result in brands being distinguished from one another on a perceptual map when really this is simply reflecting that some brands have more (less) users/respondents than other brands. This is a problem in that much of the information that the perceptual map is supposed to be conveying could simply be information about market share differential, information that in all likelihood was known prior to the mapping exercise.

To investigate this potential problem we examine perceptual responses and brand usage for financial services (banks) and compare three approaches to analysing the data - Bird and Ehrenberg's tables of response by users and non-users, perceptual mapping utilising correspondence analysis, and a squared summed difference (perception/usage) equation. The purpose of undertaking this comparison is to evaluate the implications of the relationship between usage and perceptions for the commonly used market research technique of perceptual mapping.

The results show that the correspondence analysis perceptual map is very sensitive to descriptive attributes. Thus correspondence analysis' approach being based on expected frequencies does appear to overcome some of the "usage bias". However, due to the large number of evaluative

attributes (normal in such studies) a Y axis is still produced which is dominated by market share differentials.

1. The Perceptions & Usage Relationship

The proportion of people who hold/express a favourable evaluative perception (a favourable attitude) of a brand is generally higher among its current users than among its former users and lowest amongst those who have never used it at all (Bird et al., 1970). In other words a person's likelihood of expressing a positive attitudinal response about a brand depends upon how recently they used the brand.

The nature of the relationship found is defined via the following equation.

$$\log(1-A_c) = F\log(1-A_f) = N\log(1-A_n)$$

A_c = the proportion of current users of brand X who hold attitude A about it,
A_f = the proportion of former users of brand X who hold attitude A about it,
A_n = the proportion of never trieds of brand X who hold attitude A about it,

F and N represent two numerical coefficients. Coefficients are the same for other attitudes on this brand, and for other brands in the same product field. Deviations are generally small and degree of fit was found to be extremely high (Bird et al., 1970). Coefficients are calculated thus,

$$F = \Sigma\log(1-A_c)/\ \Sigma\log(1-A_f)$$
$$N = \Sigma\log(1-A_c)/\ \Sigma\log(1-A_n)$$

allowing values to be averaged across all attitudes and brands for a particular product category. That is, creating a single generalisable relationship which holds for different brands in the category and for different attitudes.

In general, N is approximately twice as large as F, with the difference varying between product categories. Hence the equation states that in most cases the proportion of former users of a brand who think highly of it tends to be twice the number of never trieds who think highly of it.

2. Descriptive versus Evaluative Variables

Bird et. al. (1970) noted that deviations from this generalised law were mostly fairly small (average deviations being less than +/- 5%) but are of potential interest. Such deviations can potentially, of course, occur for perceptions or for brands. For example a particular perception, such as *tastes nice* might deviate for all brands in the category, or a particular brand such as *Weet-Bix* might consistently deviate for all perceptions about it. Both types of deviations have been reported (see Bird et al., 1970, Bird and Ehrenberg, 1970, Barwise and Ehrenberg, 1985 for empirical data).

Attitude/perception deviations are the more common and it is in analysing these deviations that the distinction was made between *evaluative* (attitudinal) and *descriptive* perceptions by Bird and Ehrenberg (1970) and later Barwise and Ehrenberg (1985). For purely evaluative (attitudinal) perceptions the relationship with usage (brand share) is captured by the simple linear equation:

$$A = RU$$

Where A is the percentage of the population holding the perception, U is the percentage using the brand, and R is a number which is the same for different brands in the product field but varies between different perceptions (Bird and Ehrenberg, 1970). For such perceptions the model tends

to hold very closely (eg. correlations of between .89 and .99). However, for descriptive perceptions it tends to fail (Bird and Ehrenberg, 1970).

A descriptive response arises where a perceptual measure primarily reflects a highly specific characteristic of the given brand. This may exist either in terms of product formulation, or in terms of a concept which has been leant on heavily in the brands promotion (Bird and Ehrenberg, 1970).

Examples of descriptive perceptions abound. Several illustrations follow:

- Weetbix do not stay crisp in milk
- Volvo is Swedish

Evaluative perceptions, in comparison, tend not to appear to reflect any major physical or promotional differences between brands but rather indicate an overall underlying attitude towards the brand (Bird and Ehrenberg, 1970). Evaluative measures include - reliable, tastes nice, high quality, and good value.

The key reason particular brands receive higher ratings for evaluative measures than others appears to be the usage level (market share) of that brand. When there is no descriptive difference between the brands, usage level turns out to be the dominant factor (Bird and Ehrenberg, 1970).

Data analysis techniques such as factor analysis, correspondence analysis and scale analysis all have the common aim of creating factors from questions used in the research. These techniques seem complicated when compared with this single relationship (attitude/usage) which can explain almost all variance in attitudinal data.

3. Implications for Perceptual Mapping

This finding raises questions regarding the relevance of state-of-the-art perceptual mapping methods of measuring/ascertaining brand image/position. This approach encompasses the following steps.

1. Qualitative techniques (association and repertory grid tests) to ascertain image attributes.
2. Gathering of quantitative data using pick any (or alternative) techniques.
3. Compression of the quantitative data into a two or three dimensional plot of image perceptions utilising correspondence analysis or multi-dimensional scaling.

It is postulated that such a technique for ascertaining brand image could suffer dramatically from brand share influences. Interpretation of resultant perceptual plots may in actuality be an interpretation of market shares. That is, one axis may simply represent brand shares rather than any difference in image positioning.

4. Research Questions

Specifically, this research poses the following questions:

- Do the image attributes used in a perceptual mapping study in a service industry in South Australia behave in accordance to Ehrenberg's evaluative/descriptive classifications?
- If so, can the nature of image attributes be ascertained via interpretation of a perceptual map plot or is further analysis required?

- Are brand image perceptual map plots biased by the nature of image attributes?
- What type (descriptive, evaluative or both) of attributes should be used for brand image market research?

5. South Australian Financial Institutions (SAFI)

A state of the art brand image perceptual mapping study was used as the basis for this research. The product/service category examined was financial institutions (banks) in South Australia.

A quantitative self-completion survey was administered to small and medium size businesses in South Australia. The sample was designed to match ASIC (Australian Standard Industry Classification) codes with the representation from the previous Australian census.

Potential respondents (randomly derived from the electronic telephone directory) were first recruited by telephone. Once they had agreed and were deemed appropriate to partake in the study they were mailed a questionnaire containing a pick any based brand image measurement device in addition to many other questions aimed at establishing awareness, market share and other factors. The pick any device contained 28 attributes devised from previous qualitative research in addition to researcher input.

A reply paid envelope was included with the questionnaire and the incentive to return the survey was a $500 department store voucher sweepstake entry. One thousand questionnaires were sent out and 560 were returned completed and useable. Some respondents were reminded up to three times by telephone to return questionnaires.

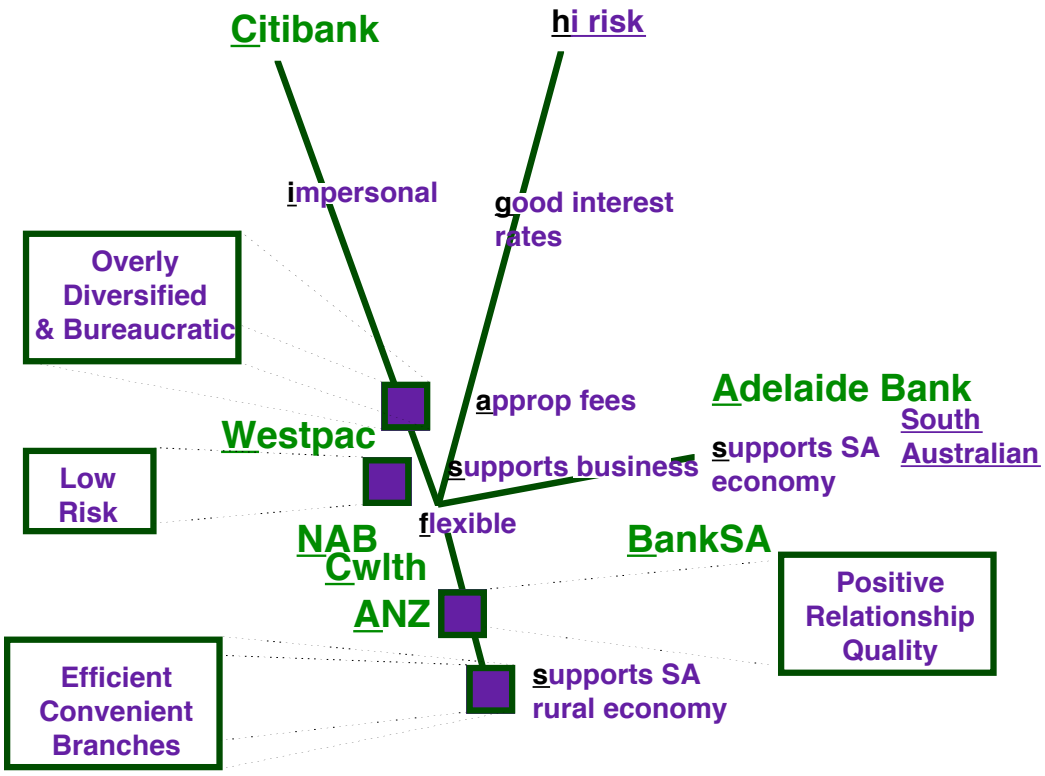
Data was coded, cleaned and entered into SPSS. MCA+ was used for correspondence analysis. A table (1) of the *raw* contingency data collected follows.

Table 1 - Contingency Data

	ANZ	NAB	Bank SA	Cwlth	Westpac	Adelaide Bank	Citibank
MARKET SHARES	**25**	**21**	**19**	**16**	**13**	**3**	**1**
EVALUATIVE							
Has conveniently located branches	211	188	219	185	148	84	9
Fast, efficient tellers	151	113	103	70	70	37	12
Supports the business community	140	151	167	121	109	73	48
Good client relationships	108	111	80	70	56	42	16
Responds quickly to our needs	92	76	59	55	41	21	4
Understands our specific bkg needs	76	88	49	47	35	18	10
Is flexible	64	76	45	47	47	34	16
A business partner	52	49	21	28	21	9	7
An impersonal bank	49	45	32	57	64	23	40
Gives high quality advice	48	52	28	33	26	17	6
Appropriate fees and charges	35	46	23	26	23	31	11
Good interest rates	35	58	40	31	29	41	31
Superior service	34	38	27	18	18	15	5
Provides unbiased information	30	26	17	21	12	11	6
Guaranteed investment growth	19	31	11	15	15	11	7
Bank is too diversified	11	13	14	16	12	4	6
EVALUATIVE/DESCRIPTIVE							
Business minded	160	209	110	144	136	70	85
A safe bank	142	178	86	164	99	61	48
Knowledgeable staff	130	142	111	103	80	58	45
A responsible bank	116	148	62	115	73	61	38
High level of expertise	92	117	53	71	58	31	30
DESCRIPTIVE							
Competent in financial management	126	175	62	112	83	60	55
Is bureaucratic	70	70	75	117	88	42	33
Helps SA rural community	52	70	121	84	44	27	5
Helps SA economy	42	48	141	45	36	107	18
Is old fashioned	22	29	29	54	25	18	3
Is South Australian	11	3	201	5	3	198	2
A high risk bank	8	6	39	3	13	19	32

The data in table 1 has been sorted into main financial institution market share order. In addition, some attempt has been made to order attributes into the descriptive and evaluative classifications of Ehrenberg. This was done via face value comparison of attitudinal response levels with market share.

Perceptual Map of Pick Any Data



The above display is a correspondence map using a CGS plot after Varimax rotation of the pick any data. The CGS plot allows distances between variables to be read directly, rather than in terms of an X and Y axis (Carroll et al., 1986, Carroll et al., 1987). The analysis did an excellent job at capturing what is a large amount of data on a 2-dimensional plot (r^2= 0.849).

The above plot was redrawn from the original plot created by MCA+ to increase legibility and improve presentation. In the original map many attributes tended to bunch together. The significance of this clustering is empirically tested using the equation:

$$r_i = \sqrt{\frac{5.991}{k f_i}}$$

where:

r_i = 95% confidence radius of row (or column) i

k = total frequency of all cells in contingency table

f_i = mass or weight of row (or column) i

5.991 = Chi-square value for 2 degrees of freedom and p = 0.05

The above test identified several attribute clusters. These clusters are summarised in the following table (2). In all cases, logical interpretation also purports that they may be regarded as indicating a single construct (hence, naming of the attribute clusters).

Table 2 - Attribute Clusters

Attribute Cluster	Constituent Attributes
Efficient Convenient Branches	Fast tellers Convenient branches Responds quickly to our needs
Positive Relationship Quality	Understand our banking needs Good client relationships Give high quality advice Provides unbiased information Superior service A business partner
Overly Diversified and Bureaucratic	Too diversified Bureaucratic Old fashioned
Low Risk	Safe Guaranteed investment Knowledgeable staff Responsible High level of expertise Business minded Competent in financial management

5.1 Interpretation of the Perceptual Map

The following interpretation focuses predominantly on consideration of the nature of the attributes used in the pick any survey instrument. To consider these attributes in light of the findings postulated by the Ehrenberg, the usage figures (market shares) in table 3 are considered. These figures were generated in the same research study from a question asking respondents which bank was their main financial institution (MFI). This was the institution with which respondents (organisations) conducted the majority of their day to day and ongoing banking. It should be noted that the banks in table 2 account for 98% of respondents. The other 2% constitutes rounding effects and several smaller financial institutions (excluded from this research).

Table 3 - Financial Institution Market Shares

Financial Institution	Market Share (MFI)
Citibank	1
Adelaide Bank	3
Westpac	13
Cwlth	16
Bank SA	19
NAB	21
ANZ	25

Evaluative variables which we assume to reflect only market share should cluster near the bank(s) with the highest usage levels. Assumed evaluative attributes are as follows:

- Attributes constituting attribute clusters "positive relationship quality" and "efficient convenient branches" due to their proximity to ANZ. The attribute *supports the rural community* would also appear to behave evaluatively for the same reason.
- Correspondence analysis suggests that attributes which tend toward the centre of a plot are descriptive of all brands included in a study (Greenacre, 1984). Combined with the proximity of other large share brands near the centre of the plot it would appear that attributes constituting the attribute clusters "low risk" and "overly diversified and bureaucratic" and the attributes *flexible*, *supports business* and *appropriate fees* are behaving evaluatively.

Assumed descriptive attributes:

- Attributes and brands which lie further toward the edges of a correspondence plot are more differentiated in terms of image (Greenacre, 1984). The plot suggests that the attributes *impersonal*, *high risk* and *good interest rates* are behaving descriptively for Citibank. The attribute *South Australian* behaves descriptively for Adelaide Bank while the attribute *supports the SA economy* appears to behave descriptively for both Adelaide Bank and BankSA.

6. Quantitative Analysis of the Pick Any Data

Although interpretation of the correspondence plot reveals what could be described as evaluative or descriptive variables, the evidence could not be considered conclusive. Further in-depth analysis of the contingency table data was conducted to shed light on the questions posed by this research. To ascertain whether any attributes used in the perceptual mapping study act as evaluative, descriptive or otherwise, three potential techniques were tested on the contingency table of pick any data.

6.1 The Chi Square Test of Significance

$$\sum(O-E)^2/E$$

This test was designed to ascertain whether statistically significant differences exist in data gathered for two or more groups. The chi-square analysis technique uses the squared difference between the observed frequency (O) and the theoretical frequency (E) in each cell of a table (or for each brand). If there is no difference in the proportion between two groups, then the squared difference between the observed and theoretical frequencies should be small. In this case we are not comparing results for two different populations but rather comparing results for a particular brand image attribute against usage values for brands in the study. Where proportions for the two groups are significantly different, the squared difference between observed and theoretical frequencies should be large. Large being relative to the number of observations recorded.

In essence the hypotheses for this particular analysis are as follows:

H_0: There is independence (no relationship) between market share (usage) of various brands and share of a particular brand image attribute.

H_1: There is a relationship (dependence) between market share (usage) of various brands and share of a particular brand image attribute.

The chi square test of significance was conducted for each brand image attribute included in the SAFI study. Calculations were executed using an Excel spreadsheet and involved the following steps.

Firstly, input of the *pick any* contingency table into Excel format. Secondly, rescaling the usage data for each individual row analysis. Rather than rescale rows down to a percentage level which would provide much lower values for the purpose of the analysis, the usage level (U) was rescaled individually (for each row - A) using the following formula:

$$E = U_{B1} \sum A_B / \sum U_B$$

The output of this formula is an expected value for the purposes of the chi-square test. Finally, calculation of chi square test of significance. Calculation results achieved for each attribute are indicated in the following table (4).

Table 4 - Chi Square Test

Attributes	Test Statistic
Supports business	5.26E-88
Supports SA economy	6.36E-177
Supports SA rural economy	1.03E-14
Business minded	3.30E-222
Competent in financial management	3.41E-136
Knowledgeable staff	2.24E-86
High level of expertise	1.01E-53
Fast, efficient tellers	8.34E-08
Appropriate fees and charges	3.02E-36
Is flexible	6.47E-29
Good interest rates	3.20E-125
Has conveniently located branches	1.80E-20
Good client relationships	2.63E-19
Is old fashioned	8.89E-13
Understands our specific banking needs	2.04E-07
Responds quickly to our needs	5.64E-02
Give high quality advice	2.74E-06
South Australian	0.00E+00
Is bureaucratic	3.50E-74
Guaranteed investment growth	1.67E-14
A responsible bank	2.20E-81
Superior service	7.02E-07
An impersonal bank	3.59E-148
Bank is too diversified	2.44E-11
A safe bank	1.25E-90
Provides unbiased information	2.73E-08
A high risk bank	1.11E-263
A business partner	4.98E-06

As can be seen in table 4, all test statistics calculated were extremely small. The observed values for any particular row of attributes is significantly different from the expected values (rescaled usage values).

The chi-square test does identify that a difference exists. It is, however, the size of this difference and the pattern of responses to an attribute for each brand that is of particular interest in this research. The chi square test does not identify whether such a pattern exists.

When the chi-square formula was used unsummed to create a table of values for all brands for all attributes, some progress was made in terms of identifying patterns in the data. It was felt, however, that a more descriptive method of analysing the data would be the only way to truly identify any underlying patterns.

6.2 Summed Difference Between Rescaled Brand Attribute Percent and Usage Percent

$$\sum(Ap_1\text{-}Up_1)$$

The above formula was devised to create an arbitrary value for each attribute which would identify its distance (difference) to (from) the usage value (DFU). Although arbitrary the DFU value will show which attributes reflect similar patterns of response to the usage distribution. Examination of the unsummed values will identify which brands have significant deviations and the directions of these deviations for each attribute. This will hence enable the identification of any potential evaluative or descriptive attributes based on Ehrenberg's definitions. Calculation results are presented in table 5. Note: in the summation process absolute values were used.

Table 5 - Equation Two Results

Attributes	DFU	Westpac	NAB	Bank SA	Cwlth	Adelaide Bank	Citibank	ANZ
Supports business	24	0.8	-2.2	1.7	-0.5	6.0	5.2	-7.7
Supports SA economy	73	-4.5	-9.9	13.4	-5.2	21.5	3.4	-15.4
Supports SA rural economy	38	-1.8	-3.5	11.1	5.3	3.7	0.5	-12.1
Business minded	32	2.2	2.0	-6.9	0.3	4.7	8.6	-7.5
Competent in financial m'gment	36	-0.4	5.1	-9.7	1.1	5.9	7.5	-6.3
Knowledgeable staff	21	-0.7	0.3	-2.3	-0.1	5.7	6.0	-5.6
High level of expertise	27	0.1	5.0	-7.2	0.2	3.9	5.9	-4.6
Fast, efficient tellers	11	-0.1	-0.6	-0.4	-2.9	3.7	1.5	2.2
Appropriate fees and charges	38	-0.9	2.7	-7.1	-2.2	12.9	4.9	-7.1
Is flexible	27	1.6	2.2	-5.2	-1.2	7.3	4.2	-5.5
Good interest rates	46	-1.8	1.0	-3.8	-3.8	12.5	11.0	-11.8
Has conveniently located branches	19	1.5	-2.9	2.1	2.2	5.0	0.2	-4.8
Good client relationships	17	-1.1	2.1	-2.3	-1.0	5.7	2.6	-2.6
Is old fashioned	44	1.2	-4.8	-2.8	14.5	7.0	1.0	-12.8
Understands our banking needs	19	-1.9	6.3	-3.7	-0.9	2.6	2.4	-1.5
Responds quickly to our needs	9	-0.9	0.9	-1.9	0.3	3.0	0.4	1.4
Give high quality advice	19	-0.3	3.9	-5.6	0.2	5.1	2.2	-2.1
South Australian	142	-12.0	-20.2	28.6	-14.3	43.8	-0.2	-22.4
Is bureaucratic	46	5.1	-6.8	-3.7	8.1	5.5	6.0	-10.9
Guaranteed investment growth	40	1.1	7.5	-8.8	-1.7	7.1	5.7	-7.6
A responsible bank	35	-0.8	3.2	-8.8	3.3	7.0	5.5	-6.1
Superior service	22	-1.1	3.6	-1.5	-3.9	6.7	2.5	-3.1
An impersonal bank	52	7.9	-6.4	-8.6	2.9	4.4	12.2	-9.2
Bank is too diversified	33	3.1	-3.8	-0.5	5.6	2.3	7.2	-10.5
A safe bank	32	0.0	2.0	-7.8	5.6	4.8	5.5	-6.7
Provides unbiased information	21	-2.9	0.2	-5.1	1.6	5.9	4.2	-0.6
A high risk bank	102	-1.9	-15.9	13.6	-13.0	12.8	26.0	-18.3
A business partner	23	-1.5	5.3	-7.7	-0.5	1.8	3.0	2.8

Although a brief analysis of the distance from usage figures achieved reveals some similarities with results presented via correspondence analysis for the SAFI data, the distortions created by seemingly descriptive attributes such as *South Australian* are not accentuated. It was deemed that better representation of the data may be made via a slight modification to the equation.

6.3 Squared Summed Difference Between Rescaled Brand Attribute Percent and Usage Percent

$$\sum(Ap_1-Up_1)^2$$

Equation three is the squared version of equation two. Differences between actual responses for attributes and the rescaled usage figures are squared before summation occurs. This modification allows better identification of deviation to expected outcomes and potentially the identification of descriptive and evaluative attributes. Although results achieved will be absolute values in nature, reference can be made to the table of equation two to identify the polarity of particular deviations. Table 6 provides results of the administration of equation three.

Table 6 - Equation Three Results

	DFU	Westpac	NAB	Bank SA	Cwlth	Adelaide Bank	Citibank	ANZ
Supports business	131.8	0.6	5.0	3.0	0.3	36.3	27.4	59.2
Supports SA economy	**1034.1**	19.9	98.3	178.6	27.1	**+461.6**	11.7	236.8
Supports SA rural economy	328.3	3.2	12.5	*+123.8*	28.6	13.7	0.3	*-146.3*
Business minded	207.6	4.8	3.9	47.1	0.1	21.7	*+74.0*	56.2
Competent in financial management	251.6	0.1	26.0	*-93.8*	1.3	35.0	*+55.8*	39.4
Knowledgeable staff	105.5	0.6	0.1	5.3	0.0	32.1	36.3	31.0
High level of expertise	148.1	0.0	24.8	51.5	0.0	14.9	35.2	21.6
Fast, efficient tellers	29.1	0.0	0.3	0.1	8.5	13.4	2.1	4.7
Appropriate fees and charges	*303.7*	0.8	7.2	*-50.5*	4.7	*+166.3*	24.4	*-49.7*
Is flexible	138.0	2.5	4.8	27.3	1.5	53.8	17.3	30.8
Good interest rates	*448.6*	3.1	1.0	14.5	14.5	*+155.5*	*+121.0*	*-139.1*
Has conveniently located branches	68.2	2.2	8.4	4.3	4.9	25.5	0.0	22.9
Good client relationships	58.3	1.2	4.3	5.5	1.0	32.4	6.8	7.0
Is old fashioned	*455.6*	1.4	22.9	7.8	*+210.3*	49.0	0.9	*-163.3*
Understands our banking needs	73.1	3.5	40.3	13.9	0.9	6.6	5.7	2.2
Responds quickly to our needs	17.1	0.8	0.9	3.8	0.1	9.2	0.2	2.1
Give high quality advice	81.3	0.1	14.9	31.0	0.0	26.0	4.7	4.6
South Australian	**3996.4**	143.8	407.7	819.0	205.0	**+1919.2**	0.1	501.7
Is bureaucratic	*335.3*	25.8	45.7	14.1	*+66.2*	30.1	35.6	*-117.9*
Guaranteed investment growth	*278.9*	1.1	*+56.9*	*-77.6*	3.0	50.3	32.7	*-57.3*
A responsible bank	*214.4*	0.6	10.5	*-77.2*	10.6	*+48.3*	30.2	36.9
Superior service	91.9	1.2	13.1	2.2	15.1	44.6	6.4	9.4
An impersonal bank	*438.8*	63.1	40.8	73.6	8.3	19.5	*+148.9*	84.5
Bank is too diversified	*222.7*	9.5	14.4	0.2	30.8	5.1	51.8	*-110.8*
A safe bank	*195.5*	0.0	3.9	*-61.6*	31.1	23.4	29.9	45.5
Provides unbiased information	90.1	8.7	0.1	25.8	2.5	35.3	17.5	0.4
A high risk bank	**1785.3**	3.5	252.8	185.0	169.0	164.7	**+674.3**	336.1
A business partner	109.8	2.2	28.1	58.8	0.3	3.3	9.3	7.9

Legend

Evaluative Attribute	**Descriptive Attribute**	*Evaluative/Descriptive*

For descriptive and evaluative/descriptive attributes the actual brand(s) where the deviation occurs is italicised. The direction of the deviation (as taken from table 5) is also indicated.

7. Discussion

The figures achieved in table 6 have no meaning in their own right, their purpose is intercomparison between attributes. Despite the arbitrary property of the distance from usage (DFU) figures achieved, they are extremely useful in classifying brand image attributes.

Three categories of brand image attributes (consistent with Ehrenberg's classifications) were identified in table 6 - evaluative attributes, descriptive attributes and those attributes which act as evaluative for most brands while being descriptive for a few.

Three extremely high DFU figures occurred. These were for the attributes *helps the SA economy, South Australian* and *is a high risk bank*. All recorded DFU's greater than 1000. The attributes *helps the SA economy* and *South Australian* were clearly descriptive of the Adelaide Bank which is the only locally owned and operated South Australian bank. BankSA was recently purchased by an interstate company. Hence these attributes could be said to act descriptively of BankSA due to the nature of its ownership. Marketing communications of Adelaide Bank reflect its positioning as South Australian.

Eight low (<100) figures were achieved. Logical interpretation of the attributes recording these figures suggests they could be evaluative in nature. The product offering and marketing communications of brands included in the study appeared to in no way be particularly associated with these attributes. Rather the attributes would logically and now empirically appear to be representative of all brands, or in fact, the product category in question. The eight attributes are as follows; provides unbiased information, superior service, understands our specific banking needs, responds quickly to our needs, gives high quality advice, has conveniently located branches, good client relationships and fast/efficient tellers. At face value, these attributes would appear to provide very general *evaluations* of a financial institution.

Other seemingly evaluative attributes recording scores slightly above 100 were; a business partner, is flexible, knowledgeable staff, high level of expertise and supports business. Once again these attributes at face value could appear to be descriptive of all SA financial institutions. Hence these attributes were also classified as evaluative.

Twelve attributes remained which could not be described specifically as either evaluative or descriptive. Their DFU's range from 195.5 to 455.6. In terms of practical significance these figures are different from DFU's which we regard as descriptive and those which we regard as evaluative.

Unlike the descriptive and evaluative attributes the DFU figure provides little information for these attributes. The real story with regard to these attributes is told via the figures for individual banks.

Revealed in table 6 is a pattern of evaluative attributes behaving as descriptive for one or several brands. Several of these attributes are analysed individually to provide an example of the pattern.

Supports SA rural economy:

This brand image attribute recorded a DFU score of 328.3. Two brands accounted for the majority of this large deviation. This would suggest that the attribute is acting somewhat, but not overly descriptive for these two brands. The two brands in question were BankSA (123.8) and ANZ (146.3). Their combined DFU's total 270.1 which in essence accounts for 83.3% of the

deviation from usage for the attribute for all brands included in the study. The remaining 5 brands account for only 16.7% of the deviation.

Examined in greater detail, the two major deviations are consistent with their logical interpretations. BankSA's deviation was positive with regard to the attribute while ANZ's was negative. BankSA, the traditional South Australian bank (although recently sold interstate) is seen to be the bank most supportive of the rural community. This also reflects its branch structure and presence in the rural community in South Australia. On the other hand, the ANZ is not seen to be supportive. Reasoning behind this would likely stem from the ANZ's absorption of the now defunct Bank of Adelaide which gave it a strong presence in South Australia but not necessarily positive (as the bank did not really support the needs of its newfound rural clients).

Is old fashioned

Distance from usage was 455.6 for this attribute. 82% of this variation was captured by only two banks for this attribute. The Commonwealth recorded a positive deviation of 210.3 indicating it is seen to be particularly old fashioned while the ANZ is seen to be less old fashioned with a negative deviation of 163.3. These findings correlate well with logical interpretation. The Commonwealth Bank was seen to be the somewhat staid government owned bank which moved rather slowly while ANZ is one of the more progressive of the newer privately owned banks.

Each attribute could be examined individually to identify and logically interpret such deviations, however, there are several key points which should be made with regard to all of these so called descriptive/evaluative attributes.

- They do not deviate to nearly the same extent as do the purely descriptive attributes which reflect marketing communications or product attributes of one particular brand.
- Although having much lower DFU's than descriptive attributes they may not be regarded as evaluative due to the practically significant size of the deviation.
- When examined individually it is seen that the attributes act as evaluative for the majority of brands and yet descriptive (but not overly) for other brands. In most cases, one or a few brands will account for the majority of the DFU deviation.

Table 7 - Comparison of Equation Three with Perceptual Map Classification

Attributes	Perceptual Map Classification	Equation Three Classification
Supports business	Evaluative	Evaluative
Supports SA economy	Descriptive	Descriptive
Supports SA rural economy	*Evaluative*	*Evaluative/descriptive*
Business minded	*Evaluative*	*Evaluative/descriptive*
Competent in financial m'gment	*Evaluative*	*Evaluative/descriptive*
Knowledgeable staff	Evaluative	Evaluative
High level of expertise	Evaluative	Evaluative
Fast, efficient tellers	Evaluative	Evaluative
Appropriate fees and charges	*Evaluative*	*Evaluative/descriptive*
Is flexible	Evaluative	Evaluative
Good interest rates	*Descriptive*	*Evaluative/descriptive*
Has conveniently located branches	Evaluative	Evaluative
Good client relationships	Evaluative	Evaluative
Is old fashioned	*Evaluative*	*Evaluative/descriptive*
Understands our banking needs	Evaluative	Evaluative
Responds quickly to our needs	Evaluative	Evaluative
Give high quality advice	Evaluative	Evaluative
South Australian	Descriptive	Descriptive
Is bureaucratic	*Evaluative*	*Evaluative/descriptive*
Guaranteed investment growth	*Evaluative*	*Evaluative/descriptive*
A responsible bank	*Evaluative*	*Evaluative/descriptive*
Superior service	Evaluative	Evaluative
An impersonal bank	*Descriptive*	*Evaluative/descriptive*
Bank is too diversified	*Evaluative*	*Evaluative/descriptive*
A safe bank	*Evaluative*	*Evaluative/descriptive*
Provides unbiased information	Evaluative	Evaluative
A high risk bank	Descriptive	Descriptive
A business partner	Evaluative	Evaluative

Table 7 compares attribute classification made via interpretation of the correspondence analysis perceptual map plot with the attribute classifications made via equation three. Importantly, no differences between evaluative and descriptive classifications occur. However, many attributes which were classified as either evaluative or descriptive were, according to equation three, acting evaluative with some minor descriptive deviations. Several of these discrepancies are examined with reference to the correspondence plot and table 6 (equation three).

- *Supports SA rural economy*. This attribute was thought to be evaluative due to its proximity to ANZ (highest usage) on the correspondence plot. Table 6, however, shows minor deviation for two brands. A positive deviation from usage occurs for BankSA while a negative deviation occurs for ANZ. This negative deviation for ANZ is contradictory to correspondence plot positioning and suggests that the plot is not truly representing image if one uses the attribute classifications of Ehrenberg.
- *Appropriate fees and charges*. If descriptive attributes are the true image positioning differentiators for brands the correspondence plot does not identify the descriptive (positive) deviation of this attribute toward Adelaide Bank. The attribute is actually positioned closer to the centre of the map and Westpac.
- *Good interest rates*. As for the previous attribute, this attribute is not identified on the correspondence plot as having a descriptive (positive) deviation toward Adelaide Bank.

The examples listed above, when considered in light of Ehrenberg's attribute classifications suggest the correspondence plot is not a true representation of the perceived image of the brands it represents. Further support of this claim is provided via the following examples.

- The attribute *supports SA economy* is positioned equidistant between Adelaide Bank and BankSA on the correspondence plot while equation three suggests a much greater descriptive deviation for Adelaide Bank than BankSA.
- Brands such as ANZ appear to be clearly positioned with regard to attributes such as those in the cluster "positive relationship quality", yet these attributes are purely reflecting the market shares of the brands included in the study.

The worth of brand image perceptual mapping using evaluative attributes is severely questioned by such findings.

8. Implications of the Research

Results of this research identify that correspondence analysis based perceptual mapping is particularly sensitive to descriptive attributes. Despite correspondence analysis being based on expected frequencies, the problem of usage bias does not appear to be entirely overcome. The perceptual map produced in this research was still dominated by a Y-axis created due to the presence of evaluative image attributes. In effect the Y-axis is a market share axis.

If descriptive attributes are to be adopted as the true image differentiators of brands and evaluative variables are dismissed as representing little more than market share, future image research will encounter the problem of predicting attribute behaviour prior to the research, that is, is an attribute likely to be evaluative or descriptive. There are two (and possibly more) potential techniques for pre-classifying image attributes. Firstly, conduct of a perceptual mapping exercise and analysis similar to that presented in this paper or secondly, use of an expert panel to prescribe classifications to potential attributes. Although Ehrenberg and colleagues have had some success (in terms of agreement) in conducting expert panels to classify attributes (Barwise and Ehrenberg, 1987, Castleberry et al., 1987), a recent study by the Marketing Science Centre had difficulty in replicating their findings (Riquier et al., 1996). Barwise and Ehrenberg (1985) also cite a similar circumstance that is unpublished and therefore has not been scrutinised by other in the field. It would thus appear that initial benchmarking image studies which conduct similar analysis to that presented in this paper are required for the classification of image attributes.

A limitation of this research was the descriptive method for categorising attributes as either evaluative, descriptive, or both. Future research to be conducted by the Marketing Science Centre will involve multiple replications of such analysis in a wide variety of product and service fields. These analyses will attempt to establish benchmarks for the assignment of attributes to particular categorisations.

References

Barwise, P.T. and A.S.C. Ehrenberg, 1987. The liking and viewing of regular TV channels. International Journal of Research in Marketing 1, 37-49.

Barwise, T.P. and A.S.C. Ehrenberg, 1985. Consumer Beliefs and Brand Usage. Journal of the Market Research Society 27 (April), 81-93.

Bird, M., C. Channon and A.S.C. Ehrenberg, 1970. Brand Image and Brand Usage. Journal of Marketing Research 7 (August), 307-314.

Bird, M. and A. Ehrenberg, 1970. Consumer Attitudes and Brand Usage. Journal of the Market Research Society 12 (4), 233-247.

Carroll, J.D., P.E. Green and C.M. Schaffer, 1986. Interpoint Distance Comparisons in Correspondence Analysis. Journal of Marketing Research 23 (August), 271-280.

Carroll, J.D., P.E. Green and C.M. Schaffer, 1987. Comparing Interpoint Distances in Correspondence Analysis: A Clarification. Journal of Marketing Research 24 (November), 445-450.

Castleberry, S.B., A.S.C. Ehrenberg and W.H. Motes, 1987. Extended Sales Tests of Product Quality. Journal of the Market Research Society 29 (1), 3-14.

Greenacre, M.J., 1984. Theory and Applications of Correspondence Analysis, (London: Academic Press Inc).

Riquier, C., N. Hockley and B. Sharp, 1996. Usage Bias in Image Measurement. In: ANZMEC Auckland, N.Z.: University of Auckland.