

Testing the Erdem and Swait Brand Equity Framework Using Latent Class Structural Equation Modelling

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Abstract

This paper tests the Erdem and Swait (1998) brand equity framework using latent class structural equation modelling. While there are a number of conceptual and measurement models of brand equity in the literature, we focus on the Erdem and Swait brand equity framework because it is based on formal theory in information economics. The Erdem and Swait framework was originally tested in a structural equation modelling framework without taking into account consumer preference heterogeneity. In this study, we extend the Erdem and Swait framework to incorporate preference heterogeneity via the use of latent class structural equation modelling. Data were collected from the financial services sector and results show two distinct segments of brand equity. The findings have implications for both academics and practitioners in brand management.

Introduction

With the advent of rapid growth of multinational brands and the need for effective branding strategies in today's increasingly competitive business environment, there has been growing interest in the study of brand equity and how to measure it. Several different ways have been proposed to measure brand equity (Keller, 2003). They include using stock price analysis (Simon and Sullivan, 1993), replacement cost and price premiums (Aaker, 1991; Kamakura and Russell, 1993), equalization price (Swait et al., 1993), brand attributes (Lassar et al., 1995), brand loyalty analysis (Feldwick, 1996), and incremental value added by brand name (Srinivasan et al., 2005; Yoo et al., 2000).

In this paper, we adopt the brand equity framework developed by Erdem and Swait (1998) for the following reasons. First, the framework possesses a sound theoretical basis drawn from information economics and signalling theory (Spence, 1974) for explaining how brand equity is created, how it evolves over time, and how it can be managed and transferred. Second, the framework has been applied to a number of research settings, including the study of the impact of brand credibility on consumer price sensitivity (Erdem et al., 2002) and the role of brand credibility on brand consideration and choice (Erdem and Swait, 2004). Third, the Erdem and Swait framework has recently been validated in an extensive cross-cultural study that involved seven countries across the world (Erdem et al., 2006).

Literature Review

A review of extant literature on brand equity indicates three dominant frameworks for understanding brand equity in academic marketing research. They comprise (1) Aaker's (1991) conceptualisation, which is a managerial view of brand equity; (2) Keller's (1993) psychological, memory-based view of brand equity; and (3) Erdem and Swait's (1998) view of brand equity based on information economics and signalling theory. Although there are other views of brand equity (Kapferer, 1992), we focus on the three views mentioned above

as they represent three dominant conceptual frameworks in the study of brand equity. The following sections describe briefly each of these perspectives on brand equity.

Aaker's (1991) View of Brand Equity

Pioneered by Aaker (1991), the managerial perspective views brand equity as consisting of five brand assets, including (1) brand loyalty, (2) brand awareness, (3) perceived quality, (4) brand associations, and (5) other proprietary assets. According to Aaker (1991), brand equity creates value for both the customer and the firm and value for the customer enhances value for the firm. Aaker's (1991) conceptualisation of brand equity provides a useful platform from which brands can be practically managed.

Keller's (1993) View of Brand Equity

Keller's (1993) view of brand equity is based on cognitive psychology, which suggests that brand equity arises from brand associations held in customer memory in the form of images. His customer-based brand equity model holds that the power of a brand lies in what customers have learned, felt, seen, and heard about the brand as a result of their experiences with it over time (Keller, 2003). Brand knowledge comprises brand awareness and brand image (Keller, 1993). As a result, managers can use marketing communications to influence brand equity by increasing a brand's presence in a customer's evoked set (Kotler, 1997). Keller's (1993) view of brand equity has led to considerable further research into brand equity (Keller, 2003; Krishnan, 1996).

Similar to Aaker (1991), Keller (1993) uses the association learning principles to explain brand equity. However, neither Aaker (1991) nor Keller (1993) provides a formal theory of brand equity from first principles (Feldwick, 1996; Jourdan, 2002; McWilliams 1993).

Erdem and Swait (1998) View of Brand Equity

Erdem and Swait (1998) develop a brand equity framework based on Spence's (1974) signalling theory derived from the information economics literature under the condition that the market is characterized by imperfect and asymmetric information (Stigler, 1961). Asymmetric information exists when firms know more about their product than consumers (Erdem and Swait, 1998). Imperfect information refers to consumers having incomplete information when evaluating product attributes (Nelson, 1970).

Unlike Keller's (1993) cognitive view of brand equity, the Erdem and Swait (1998) signalling perspective explicitly considers imperfect and asymmetric information in real markets. When consumers are uncertain about product attributes, firms may use brands to inform consumers of their product positions. According to Erdem and Swait (1998), the clarity and credibility of brands as signals of product positions increase perceived quality, decrease consumer perceived risk and information costs, and hence increase consumer expected utility, as shown in Figure 1.

Aim of This Study

The aim of this study is to extend the Erdem and Swait framework to incorporate preference heterogeneity via the use of latent class structural equation modelling. The Erdem and Swait framework was originally tested in a structural equation modelling framework without taking into account consumer preference heterogeneity. However, it is well known that preference heterogeneity is a common occurrence in marketing research data (Allenby and Ginter, 1995;

Frank et al., 1972). Latent class modelling uses a discrete distribution or a set of classes, to account for preference heterogeneity (Swait, 1994; Boxall and Adamowicz, 2002). To our knowledge, the Erdem and Swait framework has not been tested using a latent class structural equation modelling approach.

Method

Data for our study was collected by a professional marketing research firm from home loan products in the Australian financial services sector. The sample for the study was randomly selected from the marketing research firm's nationwide panel in Australia. The panel was designed to be a representative sample of the Australian population. Respondents had to be the holder of a mortgage for a period of at least 12 months. A total of 356 respondents completed the survey.

Brand equity measures in the survey were based on Erdem and Swait's (1998) seminal work on brand equity. All items were rated by respondents on a 10-point Likert-type scale, ranging from 1 being "*the brand is not very well represented by the statement*" to 10 being "*the brand is extremely well represented by the statement*". Following the approach used in Erdem and Swait (1998, see also Erdem et al., 2006), the structural equation models were estimated using each individual's aggregated rating data across a number of brands.

The overall model was estimated using partial least squares (PLS), a well-established technique for estimating structural equation models (Fornell and Bookstein, 1982). The latent class solutions were estimated using the approach as described in the literature (Swait, 1994; Boxall and Adamowicz, 2002; Vermunt and Magidson, 2003).

Results

Table 1 provides the results of the measurement models and the squared multiple correlations (SMC) for both the overall model and two latent class models. It can be seen from Table 1 that the average variance explained (AVE) and the composite reliability (CR) are all above the recommended cut-off values of 0.5 and 0.7 respectively, thus indicating acceptable validity and reliability of our brand equity measures across our models estimated. Table 2 provides results of both the overall structural equation model and the two latent class solution. The two latent class solution was decided upon based on the values of information criteria of AIC, BIC, CAIC from two to five latent class runs.

The two latent class solution shows that 46.6% of the respondents fall into class 1 and the remaining 53.4% fall into class 2. As shown in Table 2, there are significant differences in the structural path coefficients between the two latent classes. For example, consistency had a much larger impact on credibility in latent class 2 ($t = 60.01$) than in latent class 1 ($t = 3.90$); clarity has a much larger impact on perceived quality in latent class 2 ($t = 16.12$) than in latent class 1 ($t = 7.88$); and perceived quality had a larger impact on expected utility in latent class 2 ($t = 17.44$) than in latent class 1 ($t = 10.09$). Had we run an overall structural equation model alone, we would not have uncovered the preference heterogeneity between the two classes.

In order to build a profile for the two latent classes, we conducted further tests using relevant demographic variables. We found that there were three significant covariates that were linked to latent class membership ($p < 0.05$). The three covariates comprised (1) monies owed to the credit providers; (2) personal income of the respondent; and (3) respondent account balance.

Generally speaking, compared to respondents in latent class 1, those in latent class 2 tend to carry less debt; earn higher income; and have lower account balances. This probably accounts for the higher t-values in latent class 2, as respondents in latent class 2 are more likely to have experiences in dealing with lending institutions than those in latent class 1.

Discussions & Conclusions

The importance of the brand as a fundamental asset of any business is well recognised by both marketing academics and practitioners. Our aim of this study was to extend the Erdem and Swait brand equity framework to incorporate preference heterogeneity via the use of latent class structural equation modelling. We reviewed the three prevailing views of brand equity in the marketing literature and collected data from the Australian financial services sector.

Our results suggest that the application of a latent class solution offered unique insights into consumer preferences with regard to brand equity measures. We found two meaningful latent classes or market segments that can be successfully profiled using relevant sociodemographic covariates.

Our findings have implications for both marketing theory and brand management practice. From a theoretical perspective, our study highlighted the need to account for preference heterogeneity when modelling brand equity. From an applied perspective, our results suggest that it pays to tailor marketing communication strategies to the different needs of heterogeneous consumer segments. In our case, the results suggest that latent class 2 seems to comprise highly experienced borrowers and therefore would be more sensitive to brand signals in terms of signal clarity, credibility, and perceived quality. This would suggest that their preference structures are more developed, and are thus better able to comprehend brand signals.

As the first study of its kind, this paper provides a starting point for further research on using latent class structural equation models to study brand equity. To enhance the generalisability of our research findings, it is worthwhile to replicate the study in various research contexts, such as different product categories and different countries.

It is also worth noting that the current study did not consider the multilevel structure of the data as a result of aggregating individual's rating data across the brands. To better estimate the standard errors of the parameter estimates and control for potentially higher Type I errors, future research might take the multilevel structure of the data into account using a multilevel latent class analysis approach (Patterson et al., 2002; Raudenbush and Bryk, 2002).

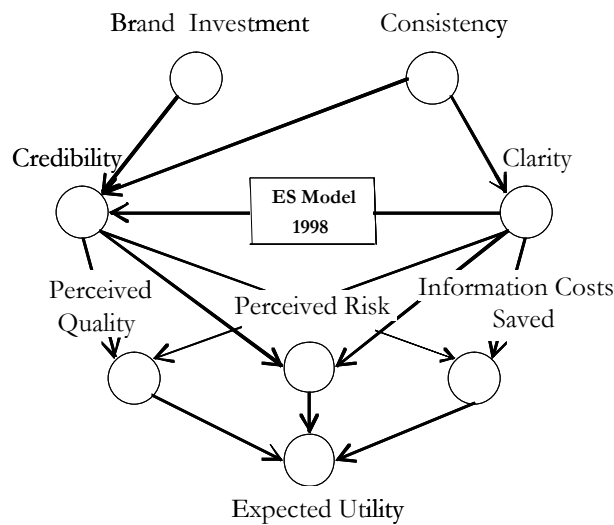


Figure 1: Erdem and Swait (1998) Brand Equity Conceptual Framework

Table 1: Results of Measurement Model and SMC

BE Constructs	Overall Model	Latent Class 1	Latent Class 2	Overall Model	Latent Class 1	Latent Class 2	Overall Model	Latent Class 1	Latent Class 2
	AVE	AVE	AVE	CR	CR	CR	SMC	SMC	SMC
bi	0.74	0.67	0.78	0.89	0.86	0.91	na	na	na
cl	0.85	0.81	0.88	0.94	0.93	0.96	0.28	0.04	0.71
co	0.72	0.65	0.78	0.88	0.85	0.91	na	na	na
cr	0.88	0.85	0.91	0.96	0.95	0.97	0.47	0.22	0.76
eu	0.90	0.88	0.91	0.96	0.96	0.97	0.68	0.47	0.89
ic	0.74	0.66	0.81	0.89	0.85	0.93	0.54	0.25	0.82
pq	0.90	0.86	0.93	0.96	0.95	0.98	0.62	0.35	0.87
pr	0.75	0.66	0.83	0.90	0.85	0.94	0.59	0.34	0.82

Table 2: Results of Structural Model

ID	Structural Path	Overall Model		Latent Class 1		Latent Class 2	
		Coeff	T-value	Coeff	T-value	Coeff	T-value
1	Brand Investment → Credibility	-0.07	1.45	-0.05	0.97	-0.05	1.41
2	Consistency → Credibility	0.19	3.56	0.11	2.26	0.17	3.69
3	Consistency → Clarity	0.53	11.78	0.20	3.90	0.84	60.01
4	Credibility → Perceived Quality	0.37	7.06	0.29	5.84	0.41	11.49
5	Credibility → Perceived Risk	0.43	9.56	0.38	8.55	0.41	10.17
6	Credibility → Info Costs Saved	0.20	3.26	0.13	2.56	0.33	6.74
7	Clarity → Credibility	0.61	11.15	0.46	9.23	0.75	15.70
8	Clarity → Perceived Quality	0.49	9.16	0.40	7.88	0.55	16.12
9	Clarity → Perceived Risk	0.41	8.50	0.30	5.89	0.52	13.09
10	Clarity → Info Costs Saved	0.34	5.73	0.27	5.16	0.39	6.92
11	Perceived Quality → Expected Utility	0.55	8.84	0.48	10.09	0.70	17.44
12	Perceived Risk → Info Costs Saved	0.28	4.25	0.22	3.73	0.23	4.17
13	Perceived Risk → Expected Utility	0.24	4.31	0.25	5.16	0.10	2.74
14	Info Costs Saved → Expected Utility	0.11	2.08	0.08	1.72	0.17	4.60

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