Consumer Perceptions of Brand Extensions:

Generalising Aaker & Keller's Model

Joanna Barrett, Ashley Lye & P. Venkateswarlu*

University of Canterbury

ABSTRACT:

Documenting the process of consumer attitude formation toward brand extensions has proved elusive, with variations in results between Aaker & Keller's original study and subsequent replications. This study moves beyond the student sample and adjusts for multicollinearity, providing a robust empirical foundation for generalising components of the original model. It provides general support for the model at the individual brand level.

* Joanna Barrett works in the Marketing Department of Power New Zealand Limited.

Ashley Lye lectures in Marketing at the University of Canterbury.

P. Venkateswarlu lecturers in Management Science at the University of Canterbury.

Consumer Perceptions of Brand Extensions: Generalising Aaker & Keller's Model

INTRODUCTION:

The escalating cost of establishing brands in a competitive market as consumers become more immune to promotional activities creates greater pressure to leverage existing brands into new product categories. The cash flow premium enjoyed by a successful brand ultimately depends on the purchase behaviour of consumers and ability to stretch consumers' acceptance of a brand across the categories.

Aaker & Keller's (1990) model of consumer brand extension attitude formation has triggered additional brand extension research in various countries. Their exploratory research provided valuable insight into which extension constructs influence the attitude of consumers toward the extended brand. Subsequent replications (Sunde & Brodie, 1993; Nijssen & Hartman, 1994; Bottomley & Doyle, 1996) have yielded inconsistent results, indicating that attitude formation constructs remain elusive. Related studies (Park, Milberg & Lawson, 1991; Brozniarczyk & Alba, 1994; Roux, 1995) incorporated additional concepts into brand extension research, but have failed to clarify which constructs are important to consumer attitude formation.

The inability to generalise the inconsistent results of the above studies is compounded by the use of student samples which may not represent the general population and distortions created by multicollinearity (Bottomley & Doyle, 1996). The difficulties of relying on student samples is reflected in the findings of Stafford (1998), "The study demonstrates that student

samples are not strong surrogates to use in experimental research ... If researchers rely solely on results provided by student samples when students are not consumers of all the products tested, erroneous findings may be reported, ultimately resulting in invalid generalizations."

The purpose of this article is to report results of research designed to test the robustness of the Aaker & Keller (1990) model in a sample representative of a national population, while replicating the recent analytical techniques of Bottomley & Doyle (1996) to control for multicollinearity and thus facilitate comparison of results.

BRAND EXTENSION MODEL:

Brand extension is the "... use of an established brand name to enter a new product category" (Aaker & Keller, 1990, p. 27). Leveraging existing brand equity into new product categories attempts to avoid the risk associated with establishing a new brand, through convincing consumers that the positive attributes associated with the original brand are relevant to the new product and/or simply benefiting from the awareness of the original brand. Aaker & Keller (1990) proposed a attitude-based brand extension model where factors influencing the success of the extension were the:

> "... attitude toward the original brand", labelled QUALITY (p. 29);
> " ... fit between the original and extension product classes" (p. 29); and, the
> " ... perceived difficulty of making the extension", labelled as DIFFICULTY.

The three dimensions of 'fit' were:

COMPLEMENT - "...the extent to which consumers view two product classes as complements" (p. 30);

SUBSTITUTE - "...the extent to which consumers view two product classes as substitutes" (p. 30); and,

TRANSFER - "... how consumers view relationships (design or making) in product manufacture" (p. 30).

The dependent variable was "... attitude toward the extension, operationalised by the average of the perceived quality of the extension and the likelihood of trying the extension measures" (p. 34).

Four hypotheses were proposed and tested:

"H_1: Higher quality perceptions toward the original brand (ie. higher QUALITY) are associated with more favourable attitudes toward the extension." (p. 29).

"H_2: The transfer of a brand's perceived quality is enhanced when the two product classes in some way fit together. When the fit is weak, the transfer is inhibited." (p. 30)

"H_3: The fit between the two involved product classes has a direct positive association with the attitude toward the extension" (p. 30).

"H_4: The relationship between the difficulty of making the product class of the extension, DIFFICULT, and the attitude toward the extension is positive." (p. 30).

REPLICATION STUDIES:

Aaker & Keller's exploratory study utilised qualitative, correlational and experimental research methods using data from consumer (student) evaluations of brand extensions. The correlational aspect of the study has been replicated by Sunde & Brodie (1993) in New Zealand, Nijssen & Hartman (1994) in Netherlands and Bottomley & Doyle (1996) in UK. A summary of their findings, plus the results of this study, is provided in Figure 1.

Figure 1: Summary of Brand Extension M

	A & K	**S & B (Origina**	**N & H**	**B & D**	**S & B (restate**	**B, L &**
Multicollinearit Adjusted	No	No	Yes	Yes	Yes	Yes
H1	Fails to Support	Supports	Supports	Supports	Supports	Supports
H2	Supports	Fails to Support	Supports	Weak Support	Weak Support	Weak Supports
Significant Interactions	Q*C & Q*S	Q*S	Q*T & Q*S	Q*T & Q*C	Q*T & Q*C	Q*T
H3	Supports	Supports	Supports	Supports	Supports	Supports
Significant Variables *	T, C & S	T, C & S	T & S	T, C & S	T, C & S	T, C & S
H4	Supports	Fails to Support	n/a	Fails to Support	Fails to Support	Fails to Support
R^2 (Main effec	0.26	0.48	0.48	0.47	0.43	0.47
R^2 (Full effect	0.26	0.48	0.49	0.48	0.43	0.50
Sample	Student	Student	Student	Student	Student	Non-Stude
Sample Size	2140	1413	693	1358	1558	2130

* Significant at 5% level of signif

The initial replication by Sunde & Brodie yielded different results to the original Aaker & Keller study, prompting Aaker & Keller (1993) to propose that differences in stimuli and culture may explain the lack of agreement. Further replication by Nijssen & Hartman, and Bottomley & Doyle have not resolved the differences in findings:

- Aaker & Keller fails to support hypothesis 1, whereas all the replications support the positive effect of perceived quality of the original brand.
- Aaker & Keller supports hypothesis 4, however all the replications fail to support the effect of DIFFICULT on extension attitudes.
- Both Aaker & Keller and Nijssen & Hartman support hypothesis 2, while Sunde & Brodie and Bottomley & Doyle provide weak or no support.
- All agree on support for hypothesis 3, however there is disagreement on which of the three fit variables are significant.

The inconsistency in results may be influenced by the presence of high degrees of multicollinearity between the main effects and cross-product or interaction terms. Bottomley & Doyle corrected for multicollinearity using the Lance (1988) 'residual centering' method in analysing their data. They also restated a variant of the Sunde & Brodie data, finding different results after adjusting for multicollinearity. Bottomley & Doyle's analysis yielded similar regression results from both data sets, but failed to substantiate the findings of the earlier studies.

Bottomley & Doyle also explored the potential to generalise the results to other product classes (brand extensions) by analysing at an individual brand extension level. They concluded that the four hypotheses can be generalised across the majority of brand extensions and rejected Aaker & Keller's proposition that differences in stimuli (both parent brand and

extension effects) and cross-cultural effects may have contributed to the differences in findings.

Aaker & Keller's original study, plus all the replications, have been based on student samples with three of the four studies using similar products, brands and extensions. The many noticeably different statistical findings in the replication studies lead to a need for more empirically grounded research which would be generalisable as a basis for marketing strategy decisions (Leone & Schultz, 1980; Hubbard & Armstrong, 1991). "Only by extending research findings to other data sets do we perceive the generality of marketing relationships" (Leone & Schultz, 1980, p.15).

The research question underlying this study is, "Can we generalise the conclusions regarding Aaker & Keller's (1990) four hypotheses to the general population?". The formation of consumer attitudes is a complex process involving many variables which are not included in the current model. However, Aaker & Keller did not intend to include all relevant variables in their exploratory model and we have designed this study to include the same constructs as the previous research, recognising the limitations in our replication work. We believe that, given the existing model, it is important to verify the generalisability of these results prior to including new variables into the research. Thus, we have chosen to replicate the work to enhance generalisability and have adopted the previous research restrictions.

METHODOLOGY:

The current study included six existing brand names recognised in the market (Rolex watches, Dom Perignon champagne, Harley Davidson motor cycles, Swatch watch, Marque Vue sparkling wine, and Vespa scooters) and sixteen hypothetical extensions. These brands were

selected to include variations in the quality of the products and extensions to provide a robust test of the generalisability of the results. Brand extensions evaluations were measured relative to the consumers' perception of the perceived quality of the original brand, the product category fit and the perceived difficulty to design and manufacture the extension.

A mailing list was prepared using a systematic sampling approach based on every 2400th New Zealand resident, eighteen years and over, drawn from the 1996 New Zealand electoral roles. A mail survey was sent to 1000 people, with 319 useable responses received. The respondents were slightly more educated (18% held university degrees), earned slightly higher average incomes and included 53% females. A comparison with the 1996 National Summary Census Statistics[1] revealed that the respondents were representative of the wider New Zealand population.

The original brands were selected to meet Aaker & Keller's selection criteria. The initial list of brands were subject to focus group testing and a pilot test of 67 students and business professionals to select generally recognisable brands, to confirm conformity of the brands to the selection criteria, and avoid eliciting immaterial associations. The brand extensions were selected to avoid existing branded products and satisfy the three fit criteria. The only information provided to the respondents regarding the hypothetical extensions was the brand name and the product category.

To reduce respondent fatigue two questionnaires containing eight hypothetical extensions for three brands were prepared. The initial mailing included a letter and a questionnaire, with a follow-up letter and replacement questionnaire mailed ten days later to non-respondents. The

---

[1] Statistics New Zealand, 1996.

overall response rates for the two questionnaires (after adjusting for undelivered letters) were 36.9% and 35.7%.

The dependent variable was ATTITUDE, the attitude toward the extension, operationalised as the average of QUALEXT (the perceived quality of the extension) and TRY (the likelihood of trying the extension), each measured using a seven-point scale[2]. Independent variables and measures were: QUALITY (1 = inferior, 7 = superior); SUBSTITUTE (1 = extremely unlikely, 7 = extremely likely); COMPLEMENT (1 = extremely unlikely, 7 = extremely likely); TRANSFER (1 = extremely unhelpful, 7 = extremely helpful); and, DIFFICULT (1 = extremely easy, 7 = extremely difficult).

To ensure consistency with previous analysis, two regression models were analysed, namely the 'main effect' and 'full effects' models. The main effects model included QUALITY, TRANSFER, COMPLEMENT, SUBSTITUTE, and DIFFICULT independent variables with ATTITUDE as the dependent variable. The full effects model included these plus the interaction terms QUALITY*TRANSFER, QUALITY*COMPLEMENT, and QUALITY*SUBSTITUTE. Following Bottomley & Doyle (1996), the Lance (1988) 'residual centering' regression approach was used to address the multicollinearity between the main and interaction effects when calculating the full effects model. Finally, the regression models were calculated at both the aggregate and brand extension level. These results are compared with both the residual centered and original study results.

RESULTS:

[2] 1 = inferior, 7 = superior; and, 1 = extremely unlikely, 7 = extremely likely, respectively

Aggregate Level Analysis:

The results of the main effects models of all the replication studies are presented in Figure 2, while Figure 3 includes the results of the full effects models (with residual centering) for Sunde & Brodie (restated), Bottomley & Doyle and this study. Overall the regression results of the present study were consistent and display a remarkable level of agreement with the Bottomley & Doyle and the restated Sunde & Brodie results, for both the main effects and full effects models.

Figure 2: Summary of 'Main Effects' Model: Beta Coefficients[a]

	Not Adjusted		Adjusted for Multicollinearity			
Variables	Aaker & Keller (1990)	Sunde & Brodie (original) (1993)	Nijssen & Hartman (1994)	Bottomley & Doyle (1996)	Sunde & Brodie (restated) (1993)	Barrett, Lye & Venkateswarlu
QUALITY	n/a	0.38 *	0.25 *	0.22 *	0.25 *	0.37 *
TRANSFER	0.24 *	0.21 *	0.58 *	0.31 *	0.26 *	0.25 *
COMPLEMENT	0.17 *	0.29 *	0.01	0.31 *	0.30 *	0.34 *
SUBSTITUTE	0.08 *	0.13	0.08 *	0.18 *	0.19 *	0.19 *
DIFFICULT	n/a	0.00	OFR	0.02	0.03	0.00
Adjusted R^2	0.26	0.48	0.49	0.47	0.43	0.47
Sample Size[b]	2140	1413	693	1358	1558	2130

* Significant at 5% level.
[a] Standardised regression coefficients.
[b] Sample size based on number of responses x number of extensions.
n/a = not available, OFR = omitted from research

Figure 3: Summary of 'Full Effects' Model with Residual Centering: Beta Coefficients[a]			
Variables	Sunde & Brodie (restated) (1993)	Bottomley & Doyle (1996)	Barrett, Lye & Venkateswarlu
QUALITY	0.25 *	0.22 *	0.33*
TRANSFER	0.26 *	0.31 *	0.21*
COMPLEMENT	0.30 *	0.31 *	0.28*
SUBSTITUTE	0.18 *	0.18 *	0.15*
QUALITY * TRANSFER	0.08 *	0.08 *	0.06*
QUALITY * COMPLEMENT	0.05 *	0.05 *	-0.01
QUALITY * SUBSTITUTE	-001	0.03	0.01
DIFFICULT	0.03	0.01	0.00
Adjusted R^2	0.43	0.48	0.50
Sample Size[b]	1558	1358	2130

***** Significant at 5% level.
a Standardised regression coefficients.
b Sample size based on number of responses x number of extensions.

The values of the beta coefficients of QUALITY and 'fit' variables (TRANSFER, COMPLEMENT and SUBSTITUTE) are similar and highly significant for both main effects and full effects models in all three studies and thus provide strong support for Aaker & Keller's hypotheses 1 and 3. That is, consumers' perceptions of higher quality towards the parent brand are associated with more favourable attitudes towards the brand extension and the 'fit' between the two product classes has a direct positive association with consumers' attitude toward the extension.

The beta coefficients of the interaction effects were also similar and relatively small, ranging from -0.01 to 0.08. The increase in explained variation due to the interaction terms was very little (almost zero for Sunde & Brodie (restated), 1% for Bottomley & Doyle and 3% for this study). Negligible contribution of the interaction factors to the variance, together with small

values of beta coefficients lead to the same conclusion as Bottomley & Doyle (1996), that the influence of the brand's perceived quality is enhanced when the two product categories fit together, but this effect is secondary to the main effects in determining consumers' overall attitude towards the brand extension. Thus, customer evaluation of brand extensions appears to be primarily driven by the main effects. Therefore, there is a weak support for Aaker & Keller's hypothesis 2.

The beta coefficients for the DIFFICULT variable are close to zero and not statistically significant in all the three data sets thus providing little support for Aaker & Keller's hypothesis 4. This result is consistent with all the replication studies and raises questions regarding Aaker and Keller's original findings.

Thus, in summary, Bottomley & Doyle and the current study are in close agreement in their conclusions regarding Aaker & Keller's four hypotheses. There is strong support for hypothesis 1 and 3, weak support for hypothesis 2 and no support for hypothesis 4. Consumers' evaluations of brand extensions appear to be primarily driven by the main effects and by the QUALITY, COMPLEMENT and TRANSFER variables. SUBSTITUTE is relatively less important than the other three main effects, but this may be due to the limited number of brand extensions of substitute nature (Bottomley & Doyle, 1996). DIFFICULT is not a factor in determining ATTITUDE. These conclusions are similarly supported by Nijssen & Hartman (1994).

Brand Level Analysis:

The average ratings of the sixteen brand extensions are reported in Figure 4. This figure includes the components of ATTITUDE (QUALEXT, TRY), a composite FIT statistic and a

calculation of the percentage change in perceived quality between the original and the extension brand.

Figure 4: Average Rating By Brand Extension

Brand Extension	QUALITY	ATTITUDE	QUALEXT	TRY	TRANSFER	COMPLEMENT	SUBSTITUTE	DIFFICULT	FIT [1]	%Δ QUALITY [2]
Marque Vue Chocolate Truffles	3.65	3.33	3.46	3.19	2.89	3.22	2.13	3.43	2.75	2.3
Rolex Pocket Watch	6.58	4.48	5.80	3.16	6.09	1.54	3.83	5.59	3.82	11.9
Marque Vue Still Wine	3.77	3.27	3.31	3.22	5.08	2.68	3.71	4.23	3.82	12.1
Marque Vue Orange Juice	3.66	3.23	3.17	3.28	3.45	3.00	2.74	2.92	3.06	13.5
Swatch Pocket Watch	4.64	3.26	3.88	2.64	5.69	1.75	3.28	4.51	3.57	16.4
Swatch Wallets	4.65	3.42	3.85	2.98	3.48	3.32	2.03	2.84	2.94	17.3
Dom Perignon Chocolate Truffles	6.24	4.42	4.87	3.97	3.60	3.81	2.11	3.75	3.17	21.9
Swatch Jetskis	4.59	2.93	3.58	2.27	2.97	2.00	1.55	5.25	2.18	21.9
Dom Perignon Still Wine	6.23	4.30	4.74	3.85	5.34	2.57	3.46	5.12	3.79	23.8
Vespa Bicycles	4.74	3.15	3.56	2.73	4.61	1.81	2.64	4.50	3.02	24.9
Rolex Wallet	6.50	4.12	4.83	3.40	3.70	3.71	1.73	3.49	3.04	25.6
Harley Davidson Bicycles	6.19	3.70	4.28	3.12	4.51	1.81	2.33	4.16	2.88	30.9
Vespa Cars	4.70	2.92	3.24	2.60	4.21	1.87	3.01	5.51	3.03	30.9
Dom Perignon Orange Juice	6.22	3.68	4.10	3.25	3.56	2.76	2.17	3.24	2.83	34.0
Rolex Jetskis	6.52	3.40	4.29	2.49	3.27	2.12	1.56	5.28	2.32	34.2
Harley Davidson Cars	6.19	3.52	3.95	3.09	4.03	2.07	3.04	5.64	3.05	36.2
Overall	**5.34**	**3.58**	**4.07**	**3.08**	**4.16**	**2.50**	**2.58**	**4.35**	**3.08**	

1. FIT = (TRANSFER + COMPLEMENT + SUBSTITUTE)/3
2. $\%\Delta QUALITY = \left(\frac{QUALITY - QUALEXT}{QUALITY}\right) * 100$

The brand level mean scores allow us to make the following observations regarding model components:

- The quality of the parent brand appears to have the greatest influence on the quality of the extension (correlation coefficient = 0.52).

•. The quality of the extension is consistently perceived to be lower than the quality of the original product, indicating a 'falling off' of brand perceptions when extending the brand.

- Brands with a higher initial quality perception experience a greater reduction in brand perception in the extension, perhaps suggesting consumer scepticism towards the ability of the business to maintain the high quality in the extended product.

- The mean scores reveal the risk associated with brand extensions. They indicate the relatively narrow brand extension potential for higher quality brands and wider potential for lower quality brands. However, the high quality original brand can result in high quality extension perceptions when the extension is correctly aligned (Rolex pocket watch).

- The willingness to try the brand extension is relatively low across all product categories with only Dom Perignon chocolate truffles and Dom Perignon still wine receiving an average rating above the scale mid-point.

- Consumers appear slightly more inclined to try extension products associated with higher original brand perceptions, for example, Harley Davidson bicycles are more likely to be tried than Vespa bicycles; Dom Perignon still wine is more likely to be tried than Marque Vue still wine.

In addition to the mean score analysis we replicated Bottomley & Doyle's (1996) brand extension analysis to examine the generalisability of the aggregate results to the brand level. The remarkable consistency between the results of the Bottomley & Doyle and current

replication studies, even though these studies were conducted in different countries using over 50 extensions with different categories of respondents, is sufficient to indicate that the aggregate results can be generalised to other brand extensions.

To determine if the aggregate results are applicable at the brand level, the first step is to determine whether the interaction terms had any effect on the consumers' attitude towards the brand extensions. This was determined by carrying out a brand extension level moderator analysis (Lance, 1988). In the first stage, the interaction terms residuals were constructed separately for each interaction term, QUALITY*TRANSFER, QUALITY*COMPLEMENT and QUALITY*SUBSTITUTE, as required by the residual centering technique. In stage two, the three sets of residuals Q*T (Resid), Q*C (Resid) and Q*S(Resid) were regressed together on consumers' attitude towards the brand extension (ATTITUDE). The interaction hypothesis is supported only if the beta coefficients on the interaction terms' residuals are statistically significant (Bottomley & Doyle, 1996). Results of the present study with that of Sunde & Brodie (restated) and Bottomley & Doyle are summarised in Figure 5.

Figure 5: Number of Significant Interaction Terms (two-tailed, 5% significance level) and their overall contribution

Variables	Sunde & Brodie (restated) (1993)	Bottomley & Doyle (1996)	Barrett, Lye & Venkateswarlu	Overall
Q*T (Resid)	3 / 18	1 / 18	1 / 16	5 / 52
Q*C (Resid)	1 / 18	1 / 18	1 / 16	3 / 52
Q*S (Resid)	0 / 18	0 / 18	2 / 16	2 / 52
R^2: Average	0.04	0.04	0.02	0.03
R^2: Range	0.00 - 0.18	0.00 - 0.10	0.00 - 0.05	0.00 - 0.18

The results of this study are once again consistent with that of Bottomley & Doyle. Overall, including the three replications studies, only 10 out of 156 interactions have been significant

(2-tailed, 5% significance level) indicating that the interaction terms did not appear to be significantly contributing to the explanatory power of Aaker & Keller's model. Our current study therefore reinforces Bottomley & Doyle's conclusion that, although from a theoretical perspective the transfer of the parent brand's perceived quality should be enhanced when the two product classes fit together, from an empirical perspective the contribution of this to explaining consumers' attitudes towards the extension appears minimal.

Since interaction factors have been negligible, following Bottomley & Doyle the main effects models at the brand extension level was also regressed. A summary of the number of significant coefficients in all the three replication studies is shown in Figure 6.

Figure 6: Number of Significant Beta Coefficients (two-tailed, 5% significance level)

Variables	Sunde & Brodie (restated) (1993)	Bottomley & Doyle (1996)	Barrett, Lye & Venkateswarlu	Overall
QUALITY	13 / 18	9/18	14/16	36 / 52
TRANSFER	12 / 18	12/18	11 / 16	35 / 52
COMPLEMENT	12 / 18	15/18	12/16	39 / 52
SUBSTITUTE	5 / 18	7 / 18	11 / 16	23 / 52
DIFFICULT	1 / 18	1 / 18	2/16	4 / 52

Inspecting the beta coefficients and the number of significant beta coefficients (14/16, QUALITY; 11/16, TRANSFER; 12/16 , COMPLEMENT; 11/16, SUBSTITUTE; and, 2/16, DIFFICULT) our study provides stronger support for Bottomley & Doyle's conclusions that the main effects model is present in the majority of the individual brand extensions.

QUALITY, TRANSFER and COMPLEMENT are the most important variables in forming the consumers' attitude toward individual brand extensions. SUBSTITUTE appears relatively

less important and the degree of difficulty (DIFFICULT) associated with making the brand extension has very little impact on consumers' attitude towards the extension.

Thus, this study also confirms Bottomley & Doyle's conclusions that Aaker & Keller's contention that different stimuli and cross-cultural differences might have caused the discrepancies between Aaker & Keller's and Sunde & Brodie's findings is difficult to support.

SUMMARY AND CONCLUSIONS:

While the brand extension studies carried out so far have provided important exploratory results, their generalisability has been hindered due to inconsistencies in their findings, use of similar brand extensions and utilisation of only student samples. The purpose of this research was to assess the generalisability of the variables influencing the attitudes of consumers towards the extension brand using a representative sample.

This replication study moved beyond student samples to a country-wide sample, considered different brands and brand extensions, and provided remarkably consistent results with a recent brand extension study (Bottomley & Doyle, 1996), thus providing more reliable and generalisable results. This representative sample allows us to safely conclude that there is strong support for Aaker & Keller's hypotheses 1 and 3, weak support for hypothesis 2 and no support for hypothesis 4. Consumer evaluations of brand extensions appear to be primarily driven by main effects (QUALITY, TRANSFER, COMPLEMENT and SUBSTITUTE). DIFFICULT is not a factor in determining consumer attitudes towards the extension. All the replication studies had greater explaining power with an adjusted R^2 ranging from 0.43 to 0.50, compared to 0.26 for the original study.

The brand extension level analysis carried out in this paper and in Bottomley & Doyle, confirmed that the conclusions drawn at aggregate level are indeed generalisable and are applicable to other brand extensions. These results lead to the conclusion that different stimuli or cross-cultural differences are not the reasons for discrepancies in earlier findings and are primarily due to not correcting for multicollinearity.

We concur with Sunde & Brodie's (1993) comments that the differences in regression results do not reveal the overall picture. Aaker & Keller's statistical test did not support the role of original brand quality (Figure 1), however their qualitative responses supported the influence of the original brand quality. Subsequent studies all confirm Aaker & Keller's qualitative results. Thus, while there are important differences in the previous statistical results, the convenience sample and effects of multicollinearity reduce the relevance of these differences. There remains general agreement for the basic relationships in Aaker & Keller's model and for the broad conclusions, among all studies.

There are some limitations to this study. Although the model provides explanatory power, half the variability in the dependent variable remains unexplained indicating that additional variables should be identified and included in future models. We suggest that initial candidates include the consumers' knowledge of the product category, the consumers use experience of the product category, and, the credibility of the selling organisation (brand owner).

Measuring consumers perceptions is complex and the current two item (TRY, QUALEXT), seven point scale for the dependent variable creates analysis restrictions which are unnecessary. We recommend a multi-item measure using a continuous scale to provide greater statistical accuracy in the analysis. Further, the low correlation between the two dependent variables (0.67 for Aaker & Keller, 0.49 for Sunde & Brodie, 0.50 for Bottomley

& Doyle, 0.35 for this study) indicates a potential to confound statistical analysis by smoothing the changes to the dependent variables.[3]

In summary, consumer perceptions of the quality of the original brand and the relationship or 'fit' between the original and extension product were found to have an effect on the attitude towards the extension. The perceptions of the overall quality of the extension and consumers' willingness to try the extension were positively and significantly related to their perceptions of the original brand, the extension complementarity, substitutability and transfer of skills. Consistent with all replication studies, our results do not support a relationship between 'difficulty' and consumer attitudes towards the extension.

Our analysis also supported the generalisability of Aaker & Keller's main effects model at an aggregate and brand level, however brand level analysis does not support the interactions effects in the full effects model.

These results, based on a country-wide representative sample provide strong empirical evidence for the explanatory power of the current model and its generalisability in different environments and product categories.

---

[3] To check if this influenced the results, we ran separate regressions on each dependent variable, without finding a significant change in the results.

REFERENCES

Aaker, D.A.; Keller, K.L. (1990) *Consumer Evaluations of Brand Extensions*, Journal of Marketing, Vol. 54, No. 1, pp. 27-41.

Aaker, D.A; Keller, K.L. (1993) *Interpreting Cross-Cultural Replications of Brand Extension Research*, International Journal of Research in Marketing, Vol. 10, No. 1, pp. 55-59.

Bottomley, P.A.; Doyle, J.R. (1996) *The Formation of Attitudes Towards Brand Extensions: Testing and Generalising Aaker and Keller's Model*, International Journal of Research in Marketing, Vol. 13, No. 4, pp. 365-377.

Brozniarczyk, S.M.; Alba, J.W. (1994) *The Importance of the Brand in Brand Extensions*, Journal of Marketing Research, Vol. 31, pp. 214-228.

Hubbard, R.; Armstrong, J.S. (1994) *Replications and Extensions in Marketing: Rarely Published But Quite Contrary*, International Journal of Research in Marketing, Vol. 11, No. 3, pp. 233-248.

Lance, C.E. (1988) *Residual Centering, Exploratory and Confirmatory Moderator Analysis, and Decomposition of Effects in Path Models Containing Interactions*, Applied Psychology Measurement, Vol. 12, No. 2, pp. 163-175.

Leone, R.P.; Schultz, R.L. (1980) *A Study of Marketing Generalisations*, Journal of Marketing, Vol. 44, No. 1, pp. 10-18.

Nijssen, E.J.; Hartman, D. (1994) *Consumer Evaluations of Brand Extensions: An Integration of Previous Research*, in Bloemer, J., Lemmick, J. and Kasper, H. (eds.), Proceedings of 23rd European Marketing Academy Conference, Maasticht: European Marketing Academy Conference, pp. 673-683.

Park, C.W.; Milberg, S.; Lawson, R. (1991) *Evaluation of Brand Extensions: The Role of Product Feature Similarity and Brand Concept Consistency*, Journal of Consumer Research, Vol. 18, September, pp. 185-193.

Roux. E. (1995) *Consumer Evaluation of Luxury Brand Extensions*, in Proceedings of the European Marketing Academy, ESSEC: Cergy-Pontoise, France, pp. 1971-1980.

Stafford, M.R. (1998) *Advertising Sex-Typed Services: The Effects Of Sex, Service Type, And Employee Type On Consumer Attitudes*, Journal of Advertising, Vol. 27, No. 2, pp. 65-82.

Sunde, L.; Brodie, R.J. (1993) *Consumer Evaluations of Brand Extensions: Further Empirical Results*, International Journal of Research in Marketing, Vol. 10, No. 1, pp. 47-53.