

Copyright is owned by the Author of the thesis. Permission is given for a copy to be downloaded by an individual for the purpose of research and private study only. The thesis may not be reproduced elsewhere without the permission of the Author.

**THE INTERACTIVE SYSTEM IN THE ADOPTION  
PROCESS OF NEW ZEALAND GROCERY RETAILING :  
A STUDY OF THE ACCEPTANCE OF NEW  
FOOD AND NON-FOOD ITEMS  
BY MAJOR GROCERY RETAILERS**

**A Thesis presented in partial fulfilment  
of the requirements**

**for the degree**

**of Doctor of Philosophy in Marketing**

**at Massey University**

**William Arthur Thomas**

**1996**

## ABSTRACT

It is evident from a review of the extant literature that retailer's evaluations and processes applied to the adoption of new products not only plays a vital role in determining the movement of product between supplier and end-users, but also has received very little attention. Low margin, high volume grocery products sold through supermarkets compete for limited shelf space. Very few studies have examined this area. Those that have are both dated and overseas in nature. No study examining the acceptance (or rejection) of grocery products by buyers and buying committee members in New Zealand was seen to exist.

Qualitative research with buyers and management laid the foundation for the study. Over four years of staged research activities virtually the same respondent base was drawn from a limited pool of buyers and committee members. The initial research grounded the study on New Zealand criteria, whilst subsequent stages aimed to reduce criteria to a salient list of attributes suitable for application in a full profile, conjoint analysis study. This final phase involved two new products, a food (Health Bar) and non-food (Laundry Detergent) item, each categorised as me-too products.

Both products featured as a separate conjoint study separated by a two month interval. Using a balanced block design, 3 versions from each of 3 sets of 18 full profiles (drawn from a pool of 27 profiles) were actioned. The balanced block design was commissioned due to management imposed time restrictions. Respondents were required to indicate on a 10-point scale, how likely they would be to accept the products described by the profiles. Data reduction techniques were used to determine a salient list of decision factors. In addition, the importance, centrality and interconnection of decision criteria were determined using a new, graphical measurement device, a decision tree.

A large mix of criteria exists amongst New Zealand grocery chain buyers and committee members. These, when grouped, extend beyond the simple confines of either product or supplier headings identified in the extant literature to include input from the sales representative (enthusiasm, knowledge, decision ability) and the buying organisation (policy and requirements). Importance of decision criteria, without the application of the notion of

centrality, is seen as an inflated artifact. Amongst the 7 salient attributes tested, Demand, Conditions and Supplier Information dominate considerations for both products, however, variations amongst organisations due to operating philosophies is likely to eventuate.

## ACKNOWLEDGEMENTS

I would like to acknowledge and thank the following people for their continued assistance and encouragement in completing this thesis. In particular, I wish to thank:

1. My Chief Supervisor, Professor Norman E Marr, for his support, guidance and encouragement on this thesis through its various research and writing stages, particularly during some personal ordeals. I am grateful for his example of research and publications, always striving for and encouraging a research culture. His personal ethos was paramount in establishing a publications stream from research undertaken for this thesis.
2. My wife Robyne and my son Paul for their unending support, reassurance and love. The quiet background of family was a haven and a well for solace during difficult times.
3. My mother and posthumously, my father, for their continuous positive support and instilling a spirit of continuance and a value for education.
4. My advisors at different stages, Professor Alan Williams and Dr Mary Earle, for providing guidance and alternate thought patterns.
5. My colleagues Ron Garland and Michael Fox for their untiring and willing contributions; Ron for his patience and readings, and Michael for his statistical support.
6. The Marketing Department at Massey University, in particular Professor Phil Gendall, for research funding and use of Department resources.
7. The Massey University Research Fund (MURF) for funding initial data-based literature reviews, and in particular Massey University for permitting part-time study by staff.
8. The Chief Executives and management of participating organisations for their trust in my research endeavours, and in particular the buyers and buying committee members. Without their time and willingness to participate, this thesis would not exist.

## TABLES OF CONTENTS

	<b>Page</b>
<b>ABSTRACT</b>	<i>i</i>
<b>ACKNOWLEDGEMENTS</b>	<i>iii</i>
<b>TABLE OF CONTENTS</b>	<i>iv</i>
<b>LIST OF TABLES</b>	<i>ix</i>
<b>LIST OF FIGURES</b>	<i>xi</i>
<b>LIST OF APPENDICES</b>	<i>xii</i>
 <b>SECTION I BACKGROUND, LITERATURE REVIEW AND METHODOLOGY</b>	
<b>CHAPTER ONE INTRODUCTION</b>	<b>1</b>
1.1 Introduction	1
1.2 Grocery Retailing Today	4
1.3 Product Acceptance and Rejection	7
1.3.1 The Adoption Process	7
1.3.2 Supplier Selection Criteria	8
1.3.3 Product Selection Criteria	9
1.4 The Study and Its Process	10
1.5 Research Objectives	14
1.6 Research Propositions	15
1.7 Thesis Structure	16
 <b>CHAPTER TWO LITERATURE REVIEW: THE FOOD AND GROCERY TRADE</b>	 <b>18</b>
2.1 Introduction	18
2.2 Pre - 1953	19
2.2.1 Pre - 1920	20
2.2.2 Post - 1920	20
2.3 1953 to 1983	22
2.4 Post - 1983	28
2.5 Summary	31

**CHAPTER THREE LITERATURE REVIEW: ORGANISATIONAL BUYING BEHAVIOUR 33**

3.1	Introduction	33
3.2	Nature of Industrial and Reseller Markets	34
3.2.1	Industrial Market	34
3.2.2	Reseller Market	36
3.3	Industrial and Retail Buying Differences	38
3.3.1	Industrial Buying	39
3.3.2	Retail Buying	40
3.4	Models of Organisational Buying Behaviour	42
3.4.1	Early Era Models	42
3.4.2	Current Age Models	44
3.4.3	Modelling Retail Decisions	46
3.5	Buying Classification Schemes	46
3.6	Retail Buyer Processes and Activities	49
3.7	Evaluative Process	52
3.7.1	Evaluative Criteria	53
3.8	Summary	60

**CHAPTER FOUR LITERATURE REVIEW: DIFFUSION OF INNOVATION AND ADOPTION 62**

4.1	Introduction	62
4.2	A Brief History of Diffusion of Innovation and Adoption	63
4.2.1	Background	63
4.2.2	Diffusion of Innovation History	64
4.3	The Nature of Innovations and New Products	66
4.4	Characteristics of Innovations	69
4.5	Adoption Schemes and Alternative Perspectives	72
4.6	New Product Adoption and the Retail Market	76
4.7	Summary	78

**CHAPTER FIVE MODIFIED ADOPTION PROCESS MODEL 80**

5.1	Introduction	80
5.2	Environments	82
5.3	The Offer	83
5.4	The Process	84
5.5	Outcomes	84
5.6	Summary	86

**CHAPTER SIX LITERATURE REVIEW: DATA REDUCTION AND UTILITY MEASURES 87**

6.1	Introduction	87
6.2	Data Reduction Techniques	88
6.2.1	Factor Analysis	89
6.2.2	Multiple Correspondance Analysis (MCA)	91
6.2.3	Multidimensional Scaling (MDS)	93
6.2.4	Cluster Analysis	97
6.3	Utility Measures	102
6.3.1	Conjoint Measurement	103
6.3.2	Trade-Off Analysis	110
6.3.3	Full Profile Analysis	112
6.4	Summary	114

**CHAPTER SEVEN METHODOLOGY 117**

7.1	Introduction	117
7.2	Objectives	118
7.3	Sample	119
7.4	Procedure	121
7.4.1	Retail Grocers' Environment	121
7.4.2	Select Criteria and Decision Factor Importance	123
7.4.3	Central Importance and Salient Factors	124
7.4.4	A Two Product Application of Salient Factors	126
7.5	Limitations	128
7.6	Summary	130

**SECTION II RESULTS AND DISCUSSION**

**CHAPTER EIGHT EXPLORING THE RETAIL-GROCERS' ENVIRONMENT 132**

8.1	Introduction	132
8.2	Research Objectives and Propositions	133
8.3	Buying Operations	133
8.4	Buying Committees	137
8.5	Buying Activities and Procedures	137
8.6	New Product Definitions and Proliferation	141
8.7	Measurement of Current Offerings	143
8.8	Evaluative Criteria and Their Use	144
8.9	Factor Analysis	156
8.10	Summary	160

<b>CHAPTER NINE</b>	<b>UNRAVELLING CRITERIA AND DECISION FACTOR IMPORTANCE</b>	<b>163</b>
9.1	Introduction	163
9.2	Research Objectives and Propositions	164
9.3	Relative Influence of Selected Decision Factors	164
9.4	Ranked Criteria of The Product Offer	166
9.5	Trade-Off Analysis within The Product Offer	169
9.5.1	Utility Values	169
9.5.2	Utility Values and Background Elements	172
9.6	Summary	179
<b>CHAPTER TEN</b>	<b>CENTRAL IMPORTANCE AND SALIENT DECISION FACTORS</b>	<b>181</b>
10.1	Introduction	181
10.2	Research Objectives and Propositions	182
10.3	Comparison with Previous Research	182
10.4	Relative Importance of Decision Factors	183
10.5	Centrality of Decision Factors	186
10.6	Central Importance of Decision Factors	188
10.7	Relative Central Importance and Background Elements	194
10.8	Central Importance and Company	203
10.9	Interconnections of Decision Factors	207
10.10	Number of Decision Factors	214
10.11	Summary	218
<b>CHAPTER ELEVEN</b>	<b>SALIENT DECISION FACTORS: A TWO PRODUCT ASSESSMENT</b>	<b>221</b>
11.1	Introduction	221
11.2	Research Objectives and Propositions	222
11.3	Analysis of Aggregate Output from CONSURV	223
11.3.1	CONSURV Output Details	223
11.3.2	Aggregate Regression Values Comparison	224
11.3.3	Aggregate Coefficients	226
11.3.4	The Aggregate Conjoint Model	229
11.4	Central Importance and Conjoint Analysis Decision Factor Comparisons	230
11.5	Total Sample Utilities	233
11.6	Majority Sample Overall Utilities	235
11.7	Decision Levels and Background Elements	238
11.8	Decision Factor Assessment	246
11.9	Summary	272



## LIST OF TABLES

		<b>Page</b>
Table 1.1	Staged Research Activities, Objectives and Propositions	16
Table 2.1	Retail Ownership Comparisons, 1953-1973	25
Table 2.2	Number of Grocers, Dairies and Supermarkets, 1977-1982	26
Table 2.3	Number of Grocers, Dairies and Supermarkets, 1984-1993	29
Table 4.1	Key Innovation Characteristics	70
Table 4.2	Changed Perspectives on Adoption Process Models	73
Table 6.1	Kruskal's Stress Values	97
Table 7.1	Questionnaire Block, Version and Number	126
Table 8.1	Top Twenty Evaluative Criteria	145
Table 8.2	Criteria Variation by Background Elements	148
Table 8.3	Ranking Method Comparison of Top Twenty Evaluative Criteria	150
Table 8.4	Grouped Relative Importance of Criteria	151
Table 8.5	Mean Scores on Variable Criteria	152
Table 8.6	Summarised Reliability Test Results	153
Table 8.7	Spatial Location of Scale Items	155
Table 8.8	Unaffected and Affected Criteria in the Majority Sample	157
Table 8.9	Factor Analysis Variations	158
Table 8.10	Factor Rank Comparisons	159
Table 9.1	Relative Importance of the 'Top' Five Factors	165
Table 9.2	T-Test Significance Scores of Sample Means	166
Table 9.3	The Product Offer Criteria Ranks	167
Table 9.4	T-Test Significance Scores of Ranked Criteria	168
Table 9.5	Total Sample Utility Values	170
Table 9.6	Range of Individual Utility Scores	171
Table 9.7	Majority Sample Utility Values	172
Table 9.8	Utility Range Values by Decision Involvement	173
Table 9.9	Utility Range Values by Experience	175
Table 9.10	Utility Range Values by Business Philosophy	177
Table 9.11	Utility Range Values by Company	179
Table 10.1	A Comparison of Top 5 Ranks	183
Table 10.2	Relative Importance of Decision Factors	184
Table 10.3	Non-Significant T-Test Decision Factor Pairs (Importance)	185
Table 10.4	Relative Centrality of Decision Factors	186
Table 10.5	Non-Significant T-Test Decision Factor Pairs (Centrality)	188
Table 10.6	Importance and Centrality Rank Comparisons	189
Table 10.7	Relative Central Importance of Decision Factors	193
Table 10.8	Non-Significant T-Test Decision Factor Pairs (Relative Central Importance)	194
Table 10.9	Relative Central Importance and Decision Involvement Means	195
Table 10.10	Decision Factor Ranks by Decision Involvement	196
Table 10.11	Coefficients of Rank Correlation for Decision Involvement	197
Table 10.12	Relative Central Importance and Experience Means	198
Table 10.13	Decision Factor Ranks by Experience	199
Table 10.14	Coefficient of Rank Correlation for Experience	200
Table 10.15	Relative Central Importance and Business Philosophy Means	201

Table 10.16	Decision Factor Ranks by Business Philosophy	202
Table 10.17	Coefficients of Rank Correlation for Business Philosophy	203
Table 10.18	Relative Central Importance and Company Means	205
Table 10.19	Decision Factor Ranks by Company	206
Table 10.20	Coefficients of Rank Correlation for Companies	207
Table 10.21	Paired Central Importance Decision Factors	208
Table 10.22	Total Interconnections of Decision Factors	209
Table 10.23	MDS Decision Factor Groups and Names	212
Table 10.24	Subjective and Cluster Group Comparisons	213
Table 10.25	Revised and Original Decision Factors	217
Table 11.1	Aggregate Score Regressions	225
Table 11.2	Beta Value Comparisons	226
Table 11.3	Ranked Decision Factor Utility Values (Aggregate)	227
Table 11.4	Central Importance and Total Utility Range Proportions Comparisons	231
Table 11.5	Ranked Decision Factor Utility Values (Total Sample)	234
Table 11.6	Total and Adjusted Utility Range Values	235
Table 11.7	Majority and Minority Utility Values	236
Table 11.8	Total and Majority Utility Range Values - Laundry Detergent	237
Table 11.9	Total and Majority Utility Range Values - Health Bar	238
Table 11.10	Additional Mean Score Values and Background Elements	248
Table 11.11	Summary Values - Demand	249
Table 11.12	Summary Values - Conditions	253
Table 11.13	Degree of Central Warehousing and Conditions	256
Table 11.14	Summary Values - Supplier Information	257
Table 11.15	Summary Values - Appeal	261
Table 11.16	Summary Values - Product Offer	264
Table 11.17	Summary Values - Presenter Enthusiasm	267
Table 11.18	Summary Values - Approvers	270

## LIST OF FIGURES

	<b>Page</b>	
Figure 1.1	Modified and Extended Adoption Process Model	12
Figure 1.2	PhD Study Process	13
Figure 3.1	Transaction Chain for Shoes	33
Figure 3.2	The Business Market String	38
Figure 4.1	Basic Staged Adoption Scheme	72
Figure 4.2	Klonglan and Coward's (1970) Two-Phase Adoption Model	75
Figure 5.1	Modified and Extended Adoption Process Model	81
Figure 5.2	Constituent Parts of the Adoption Process Model	82
Figure 6.1	Structural Nature of Algorithms	99
Figure 6.2	Trade-Off Analysis Matrix	111
Figure 6.3	Full Profile Conjoint Assessment	113
Figure 7.1	Staged Research Phases	117
Figure 8.1	Perceived Positional Map of New Zealand Supermarkets	134
Figure 8.2	Buying Operation Structure	136
Figure 8.3	Staged Vetting Process	139
Figure 8.4	New Product Propositions by Product Definition	143
Figure 10.1	Importance and Relative Central Importance Comparisons	190
Figure 10.2	The Two-Dimensional Space of Central Importance	192
Figure 10.3	The Interrelationship of Background Elements	204
Figure 10.4	3-Dimensional Spatial 'Map'	210
Figure 10.5	Spatial 'Map' of Decision Factors	211
Figure 10.6	Spatial 'Map' of Decision Factors Adjusted by Cluster Analysis	213
Figure 10.7	Revised Spatial 'Map' of Eight Decision Factors	218
Figure 11.1	Aggregate Utility Values	228

## LIST OF APPENDICES

	<b>Page</b>
Appendix A Chronological Listing of Select OBB Models	308
Appendix B Initiating Letters to Chief Executive Officers	312
Appendix C Research Refusal and Acceptances	315
Appendix D Samples of All Respondent Contact Methods	324
Appendix E Qualitative Interview Framework	356
Appendix F Initial Questionnaire - Stage I	358
Appendix G Initial 12 Factor Descriptions	361
Appendix H Questionnaire - Stage II	364
Appendix I Questionnaire - Stage III	374
Appendix J 10-Point Bi-directional Grid	384
Appendix K Conjoint Analysis Block Design	387
Appendix L Questionnaire - Stage IV	390
Appendix M Initial Criteria Rankings and Sundry Tables	412
Appendix N Reliability of Grouped Data	425
Appendix O Central Importance Sundry Tables	438
Appendix P CONSURV Program Output	447
Appendix Q Conjoint Analysis Sundry Tables	472