3 Method

3.1 The survey area

3.1.1 Introduction

Theoretical research considerations with direct application to this study are discussed in this section. The selection of Newcastle as the survey site as an example of convenience sampling is also addressed. Problems of estimation of population sizes are found to detract from the general applicability of the study to a wider Australian base, but individual readers are urged to use their own discretion as to the likelihood of significant differences between the study's findings and the Australian Market in general. The characteristics of the City of Newcastle are discussed in detail, as is the convenience selection of the geographical area of Newcastle chosen for the survey.

3.1.2 Simple random sampling

Simple random sampling requires that any sample selected from a population has the same chance of selection as any other sample (Kinnear at al 1993; Green et al 1988; Kvanli at al 1989). This requirement implies that it is necessary to know the size of the population. Green et al identify this restriction as the first of two reasons that simple random sampling is *not widely used in marketing research* (1988, 331). The second reason given is that market research generally resolves around industries and that industries will generally be *characterised by a wide variation in the size of firms*. Green et al, logically enough, suggest that the larger firms may be of more interest to the researcher than the smaller. This implies that the researcher may not wish to have a sample in which all the elements have an *equal probability of selection* (1988, 331). Kinnear et al on the other hand report that 85% of US businesses claim to have used simple random sampling in their market research. Further they state that this is a higher rate than the reported use of *non-probability sampling*. They further state that 51.61% of US businesses claim to *frequently use* simple random sampling (1993, 306-7).

Probability correct simple random sampling was not used in the present study. It was quite impossible for the researcher to verify the size of the population of fruit and vegetable retail outlets in Australia, the state of New South Wales or even the City of Newcastle. An attempt was made to establish the population of Newcastle fruit and vegetable retail outlets via a listing provided by the Newcastle Chamber of Fruit and Vegetable Industries Co-op Limited dated 5th July 1993. The listing was a client list of the Newcastle Fruit and Vegetable Markets containing the names of wholesalers, hotels, restaurants, agents and buyers from a myriad of centres. The listing proved to be unsuitable for the task. The 1993 Newcastle telephone book, specifically the Yellow Pages, was the resource actually used.

3.1.3 Area sampling

Area sampling is reported to be used by about 52% of United States firms in market research (Kinnear et al 1993, 353). Area sampling is categorised as a subset of cluster sampling and regarded as a bona fide probability sampling technique (Kinnear et al 1993, 298; Green et al 1988, 334). As such, however, statistically valid probability area sampling requires the use of simple random sampling once the area has been defined.

3.1.4 Stratified sampling

Stratified sampling is defined as a classification of the population into *mutually exclusive and collectively exhaustive strata* followed by the selection of a *simple random sample in each stratum* (Kinnear et al 1993; Green et al 1988). Green et al go on to state that stratified sampling is more *efficient* than simple random sampling if there is a high degree of *within-stratum homogeneity* and a high degree of *among-stratum heterogeneity* (1988, 333). Kinnear et al state that 72% of United States businesses use stratified sampling in market research with 34.54% of businesses claiming they use it frequently (1993, 345).

In designing the survey form it was envisaged that it may have been useful to categorise retail outlets into supermarkets and non-supermarkets. The categories would constitute two strata. It would be possible to create further strata by categorising retail outlets as either perceived high volume or perceived low volume outlets. This could have been done by hypothesising that non-supermarket outlets in shopping-towns are likely to have higher turnover than the older main street strip outlets. This process runs the risk however of incorrectly categorising fruit-barns etc. into the lower turnover stratum. An additional factor is that the survey does not address the sales volume aspect as it would have been impractical, indeed impossible, to calculate sales volume for each retail outlet. Other possibilities were considered such as estimating the floor space of the retail outlet but the judgement aspects seemed fraught with inaccuracy. In a 1970 study of Newcastle shopping patterns, attempts to obtain reliable data on floor space and turnover were unsuccessful (Short, 1970, xii). A further consideration of stratified sampling is the sample size. With only fifty-six retail outlets surveyed, thirteen of those supermarkets, there could be some concern as to the sample size of further stratum where at least one of the elements of interest was a storewide characteristic.

Again statistically valid probability stratified sampling requires the use of simple random sampling once the strata are identified. Once again it was impossible to determine the population size of each of the stratum. Much of the analysis attempted in this work does, however, separate supermarket and non-supermarket retail outlets. It has been useful to do so. The researcher hypothesised that supermarket chain retail outlets were likely to be more homogenous than the non-supermarket retail outlets. This proved to be

the case. Kinnear et al in their discussion of disproportionate stratified sampling note that complex formulas are used to determine the weighting of samples between strata. In general, however, they note that the formulas indicate:

1. *the larger the stratum, the larger the sample*; and
2. *the greater the variability within a stratum, the larger the sample* (1993, 346).

The proportion of supermarket retail outlets surveyed to non-supermarket retail outlets surveyed is 13:43. The proportion of supermarket apple displays surveyed to non-supermarket apple displays surveyed is 70:355. The reader must use their own judgement in the application of the knowledge created by these findings.

3.1.5 Judgement sampling

In this study the researcher can identify a number of retail outlets which because of their perceived floor space, location, reputation in the industry and perceived activity on the day visited would qualify as high turnover retail outlets. Sampling based on these criteria and the perception of the researcher would be classified as judgement or purposive sampling. The risks associated with judgement sampling are listed by Kinnear et al as:

1. that the degree and direction of the error are unknown; and
2. definite statements are not meaningful (1993, 299).

On the positive side, if the judgement of the researcher is correct then this non-probability sampling procedure will be more accurate than convenience sampling (1993, 299). Judgement sampling as such was not used in this study.

3.1.6 Newcastle and the survey

The selection of Newcastle as the test location is an instance of convenience sampling, a non-probability sampling procedure (Kinnear et al 1993, 298; Green et al 1988, 327). The port city of Newcastle founded in April of 1801 is Australia's second oldest city (Farrelly and Morrison, 1968). The 1986 census identified the Newcastle statistical subdivision as having a population of 432.6 thousand people (ABS, 1993). The geographical municipal area know as Newcastle actually consists of two cities, the City of Newcastle and the City of Lake Macquarie. The City of Newcastle comprises the port, the central business district, and the inner, western and northern suburbs, and has a population of about two hundred and eighty thousand people. The City of Lake Macquarie comprises mainly the southern residential suburbs (UBD, 1993; Renewal Co-ordination Unit, 1992). For the purposes of this study, the two municipal areas are referred to as Newcastle. The large industrial base is centred on the port with coal mining, heavy manufacturing and export activities. Internationally Newcastle has been compared with Baltimore and Portland in the USA, Newcastle-upon-Tyne in the UK and

Wuhan in the Peoples Republic of China (Renewal Co-ordination Unit, 1992). Newcastle has a large University which includes a teaching hospital and student college accommodation. The city is also the home of a building society with over thirty branches, the Newcastle Permanent (Yellow Pages, 1993). The Hunter Valley, geographically close to Newcastle, has further coal mining, power generation and significant dairy and wine industries and is an important source of retail trade to Newcastle. Newcastle also has a sizeable daily newspaper, the Newcastle Herald, at least seven radio stations and a television station, NBN Television (Yellow Pages, 1993).

Table 3.1

Newcastle Radio Stations

1	ABC - 2NC	5	2KO
2	ABC - 2UH	6	FM 105 - 3
3	2NUR - FM	7	X 107 FM
4	2HD		

Compiled by author

The researcher also identified and visited six shopping cities and eight large shopping centres of the Plaza, rather than main street strip type. These shopping cities and plazas are listed in Tables 2.2 and 2.3 and serve to identify Newcastle as a city with sophisticated shopping facilities. The majority of the Shopping Cities each have more than eighty speciality stores plus multiple supermarkets. The researcher believes Newcastle to be a cosmopolitan city with a large and diverse ethnic base.

Table 3.2

Newcastle Shopping Cities

1.	Charlestown Shopping Square
2.	Garden City Kotara
3.	Junction Plaza
4.	Lake Macquarie Fair
5.	Stockland Mall Jesmond
6.	Wallsend Plaza

Compiled by author.

Table 3.3

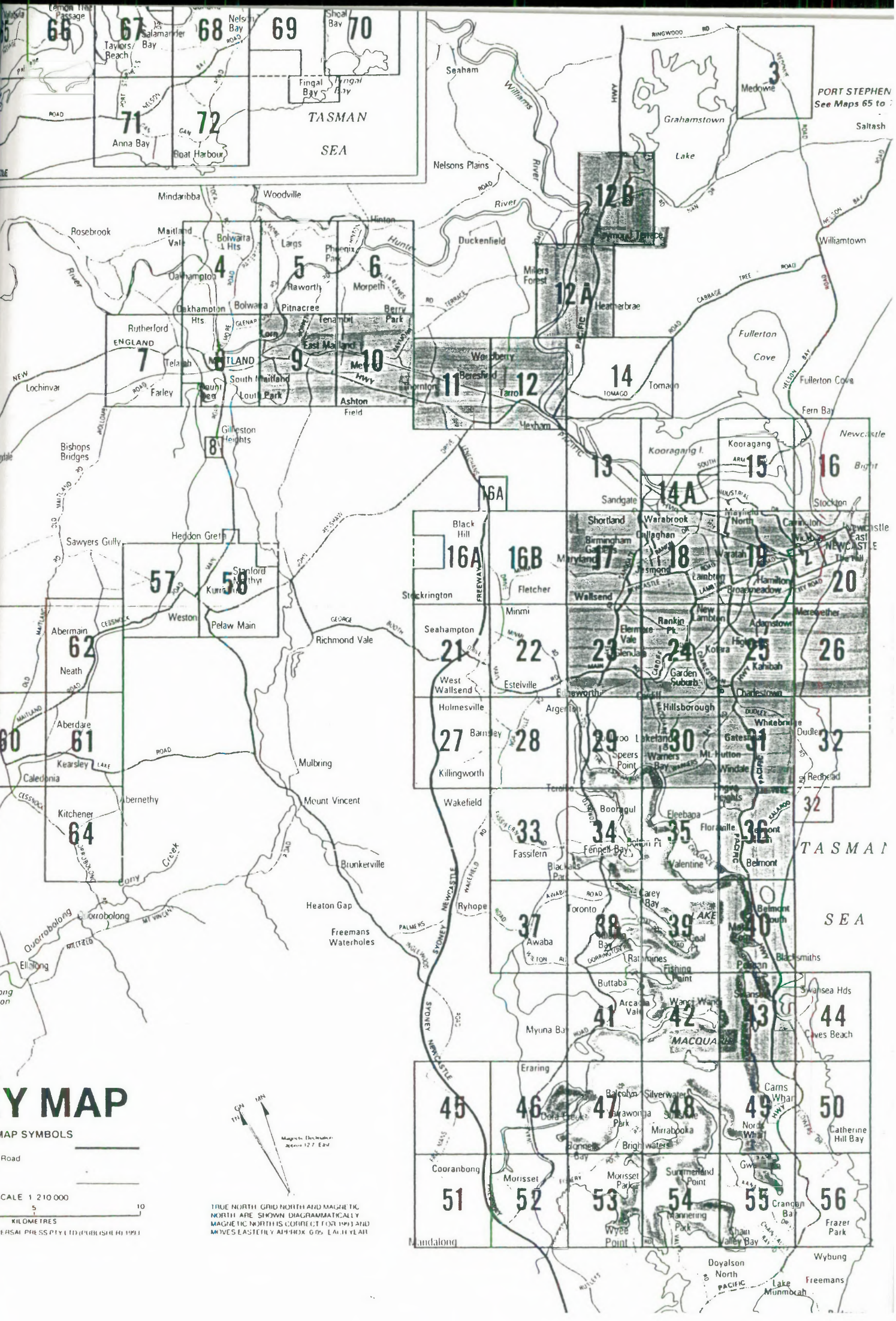
Large Newcastle Shopping Centres

1.	Belmont City Centre
2.	Belmont Market Plaza
3.	Charlestown Hilltop Plaza
4.	Elermore Shopping Centre
5.	Jewellstown Plaza
6.	Marketown Shopping Centre
7.	Raymond Terrace Plaza
8.	Thornton Shopping Centre

Compiled by author.

The areas selected for the survey comprise two sets of grids in Map 1. The sets are identified by the orange colouring. Set one comprises map references 9 to 12B. This set is a growth area north of Newcastle sitting astride the two main northern highways in eastern New South Wales, the New England and the Pacific Highways. In the survey area the New England Highway forms a corridor of development from the town of Maitland to its junction with the Pacific Highway. The New England Highway is also the major arterial route from the Hunter Valley into Newcastle. The Pacific Highway forms a corridor from Raymond Terrace to the Newcastle CBD. Raymond Terrace is a substantial growth area. There were also fruit and vegetable retail industry indications of the perception of growth in these areas. Established families in the industry had recently expanded into the areas. The Thornton shopping centre (Map ref. 11), home to a large retail fruit and vegetable outlet, is reportedly owned by a family which is regarded by many to be a leader in the Newcastle retail fruit and vegetable industry (Sept. 93, pers. comm). The family base is a fruit and vegetable retail outlet in a Newcastle south eastern suburb (Map ref. 31). The fruit and vegetable outlet at Heatherbrae (Map ref 12a) is owned by a family whose base is situated in Adamstown (Map ref. 25), an older Newcastle suburb.

Area two comprises map references 17 - 20, 23 - 26, 30 - 31, 36, 40 and 43. These areas include all the older Newcastle areas, all the shopping cities and most of the major shopping centres. Newcastle is an elongated city with the Pacific Ocean and Lake Macquarie two of its most imposing features. There is little shopping west of Wallsend (Map ref. 17) or south of Belmont (Map ref. 36).


Y MAP
MAP SYMBOLS
Road
SCALE 1 210 000
KILOMETRES
TASMAN
SEA
PORT STEPHEN
See Maps 65 to
Anna Bay
Boat Harbour
Taylors Beach
Salamander Bay
Nelson Bay
Shoal Bay
Fingal Bay
Medowie
Grahamstown
Lake
Saltash
Seaham
Nelsons Plains
Mindaribba
Woodville
Rosebrook
Maitland Vale
Bolwarra Hts
Largs
Hinton
Duckenfield
Millers Forest
Heatherbrae
Williamtown
Oakhampton
Rutherford
Telarah
Farley
Lochinvar
Bolwarra
Pitnacree
Morpeth
Berry Park
Tenambit
East Maitland
Woodberry
Beresfield
Tarro
Hexham
Ashton
Field
Tomago
Fullerton Cove
Fern Bay
Bishops Bridges
Gillieston Heights
Kooragang I.
Kooragang
Newcastle
Sandgate
Stockton
Black Hill
Shortland
Warabrook
Callaghan
Birmingham Gardens
Maryland
Mayfield North
Carrington
Wallsend
Waratah
Lambton
Hamilton
Broadmeadow
Sawyers Gully
Heddon Greta
Stanford Merthyr
Kurri Kurri
Weston
Pelaw Main
Stockrington
Fletcher
Minmi
Seahampton
Richmond Vale
Abermain
Neath
Aberdare
Kearsley
Caledonia
Abernethy
Kitchener
Seaham
Rankin Pk
Elermore Vale
Glendale
Kotara
Adamstown
Kahibah
Mereweather
West Wallsend
Estelville
Garden Suburb
Charlestown
Holmesville
Barnsley
Killingworth
Argenton
Hillsborough
Whitebridge
Dudley
Speers Point
Lakeland
Warners Bay
Mt Hutton
Gateshead
Windale
Redhead
Wakefield
Teralba
Boolaroo
Eleebana
Floraville
Fassifern
Fennell Bay
Valentine
Belmont
Mulbring
Mount Vincent
Brunkerville
Heaton Gap
Ryhope
Freemans Waterholes
Quorrobolong
Ellalong
Toronto
Carey Bay
Awaba
Rathmines
Fishing Point
Pelican
Blacksmiths
Buttaba
Arcadia Vale
Swansea Hds
Myuna Bay
MACQUA
Caves Beach
Eraring
Dora Creek
Balcolyn
Silverwater
Wyrallah
Mirrabooka
Cams Wharf
Catherine Hill Bay
Brightwaters
Cooranbong
Morisset
Morisset Park
Summerland Point
Manning Park
Wyee Point
Crangan Bay
Shaw Bay
Frazer Park
Mandalong
Doyalson North
Wybung
Lake Munmorah
Freemans
TRUE NORTH GRID NORTH AND MAGNETIC NORTH ARE SHOWN DIAGRAMMATICALLY
MAGNETIC NORTH IS CORRECT FOR 1961 AND MOVES EASTERLY APPROX 0.05 EACH YEAR

In Short's 1970 study the Blackalls Park/Toronto area, map references 33 and 38, was a major shopping area. It was deemed a self contained shopping centre by virtue of its distance from the Central Business District (CBD) (Short 1970, 137). This area was not covered by the present work. By September 1993, Coles was the only major supermarket chain represented in the area and there were only two retail fruit and vegetable outlets listed in the yellow pages. Thus the trend towards use of major shopping cities and plazas by residents in non-shopping city suburbs has intensified.

In 1977 it was found that residents of Newcastle identified their neighbourhood area as being on the *inner city side* of their homes. That is, their homes were on the outer limit of their neighbourhood viewed from the CBD. It was concluded that the CBD and industrial areas were their focus (Sharma 1977, 6). For this reason the main arterial routes into the CBD were considered by the researcher to supplement the shopping cities in terms of importance to fruit and vegetable retail turnover. Indeed this was confirmed by the perception of a number of people in the Newcastle fruit and vegetable wholesale and retail industry. These people perceived that the fruit and vegetable retail outlet with the highest turnover in Newcastle was situated at Bennetts Green. Bennetts Green is a high volume road traffic corridor with low residential density. The corridor runs from the southern most suburbs to the major shopping cities.

Apart from the observed growth in shopping cities and plazas, and the decline of local main street strip retail facilities, Sharma concluded in 1977 that in terms of local interaction and facilities, Newcastle neighbourhoods were loosing their importance (Sharma 1977, 17). Daly in his 1967 study is quoted by Short as concluding that Newcastle has *no real zonation of residential areas as in other cities, but rather many centres scattered throughout the city* (Short 1970, 5). Newcastle is an atypical city in terms of density and distance correlations. Daly divided the city into five sectors based on the major transport routes. High density and distance correlations were found only in the southern and northern sectors *served by the Pacific Highway and Maitland Road* but not in the other sectors (Short 1970, 6). This suggests that in the late sixties Maitland Road and the Pacific Highway were more densely settled near the CBD than in the outer suburbs. In the last twenty years this will have changed. Of the three inner city Maitland Road retail fruit and vegetable outlets listed in the 1993 Yellow Pages, two had closed their doors when visited in September 1993. Indeed the whole Maitland Road inner city and near city areas are visibly depressed and form a corridor of vacant retail premises.

Daly also attempted to assess the population distribution of Newcastle on the basis of occupation classes. Short considered that Daly *tentatively concluded that Newcastle does not conform to a normal distribution of social classes.* Normal in Daly's model suggests high levels of the lower socio-economic groups domiciled in the inner suburbs (Short, 1970, 6). Nothing observed by the researcher in September of 1993 suggests a major shift in the intervening years.

3.1.7 Conclusion

The implications of the identification of Newcastle's key characteristics are that samples covering more than one suburb will most likely return data applicable to both the Newcastle and Australian markets. It is also quite likely that the survey results from the larger samples used in the present study will be indicative of the Australian market, despite the fact that true randomness is not evident.

The selection of the survey area, therefore, has an element of judgement but was predominantly a convenience sample. In undertaking the survey the researcher calculated the number of outlets he would most likely be able to visit in a day. In order to obtain the largest and most useful sample the researcher hypothesised that the shopping cities and major shopping centres had to be included. Once that decision had been taken, it was a matter of identifying retail outlets between and around these centres particularly those on the main arterial roads. The researcher believes that he visited almost every retail outlet situated in the designated survey area with more than three apple displays.

The bottom line however is that the convenience selection of Newcastle as the sample site impacts on our ability to calculate the sampling error accurately (Kinnear et al 1993, 298). The within Newcastle area selection was also a convenience selection based on the criteria outlined. The within area selection of retail outlets, however, did have an element of randomness. Initially the Yellow Pages were used to estimate the population size and location. Once on the road each morning, however, traffic flows, coincidence and closed doors altered the daily plan. For this reason no attempt will be made to extend the findings beyond Newcastle. It is left to readers to make their own decisions on the extension of the findings to either a state or national level.

3.2 Method - The survey design

3.2.1 Introduction

In this section the design of the data collection documents is discussed. Comments on the conduct of the survey are also included with some helpful hints for the beginner. The data collection method consisted of a survey incorporating three documents. The first was an observation survey which is reproduced in Appendix E. The other documents consisted of an interview questionnaire and an interview response form which are reproduced in Appendix C and Appendix D respectively. To assist with analysis of the data Appendix K details classification of the data as either nominal or ratio or ordinal.

Both the observation and the interview surveys are cross-sectional in nature. That is they have been carried out once only with each respondent and all respondents were interviewed within a period of 14 days (Emory 1985, 61). Because of the seasonal nature of apples it could be that the displays of varieties and brands of apples at the time of the survey were atypical. For this reason the interview survey includes questions designed to give the respondent the opportunity to exhibit typical behaviour. Questions one, five, seven, eight, nine and twelve to fifteen inclusive, are in this category.

3.2.2 The observation survey

The purpose of the observation survey was twofold. Firstly to gather primary data useful in judging the marketing behaviour of both packers and retailers, and secondly, as a control on the information given in the interview.

The first page of the observation survey consists of identification data, classification data and control data (Kinnear et al 1993, 257). The identification data consists of the date, postcode, and the outlet number, with the outlet number assigned sequentially from 1 to 56. A separate list was maintained matching the outlet number to the name and address of the outlet as this his was thought necessary in case clarification of an item was required at a later date. Question One clarifies the outlet as either a supermarket or not a supermarket. Question Two is a control to ensure that all the apple displays in the outlet have been surveyed. Question Two was completed prior to continuing to Question Three and was checked against the total number of apple displays surveyed at the completion of Question Four. Where differences occurred the missing display was identified and surveyed.

Completion of questions Three and Four provided the core information sought.

3.2.3 The interview

The primary purpose of the interview was twofold. Firstly to gather data not available from observation, and secondly, to extend the time frame of the survey backwards by either three or twelve months from the date of the visit.

In conducting the interview the author endeavoured to speak with the owner or manager of the outlet wherever possible. The first two questions were classification questions designed to identify the likely level of knowledge of the respondent. If the respondent was the owner and usual buyer, the level of knowledge was regarded as high. The remaining questions concerned the core data sought.

About half the questions are direct questions requiring a *yes*, *no* or *don't know*. There are a number of questions where the respondent is encouraged to quantify their response on a continuum between *all the time* and *never*, and there are three open-ended questions. Question Twenty which was considered to be the most difficult to administer and respond to, was left until last.

The heterogeneity of respondents was not considered to be a concern when designing the survey. Apple retailers were thought to be a rather homogeneous group with the normal divergence of marketing ability likely to be found. When administering the survey the author considered four factors thought to influence the willingness of respondents to respond with accuracy :

1. the situation is not appropriate for disclosing the data;
2. disclosure of the data would be embarrassing;
3. disclosure is a potential threat to the respondent's normative views; and
4. is the data required for legitimate purposes? (Kinnear et al 1993, 262).

Wherever possible interviews were conducted in the 'office' of retail outlets which in most cases was at the rear of the premises. Many interviews however, were conducted on-the-run and in public. Little or no reluctance to answer questions was detected in respondents. A great deal of care was taken to ensure that the questions were neither personal nor of a confidential financial nature. The normative views of retailers were not known prior to the survey and a pilot survey conducted in Armidale prior to the journey to Newcastle did not disclose any clashes of this nature.

The questionnaire was also arrange with questions about a specific topic, grouped together. The purpose of this grouping was to reduce potential confusion for the respondent. Questions seven to twelve inclusive concerned the purchasing behaviour of the retailer. Questions thirteen to fifteen inclusive concerned the promotion support

provided to retailers by packers. Questions sixteen to nineteen inclusive concerned the attitudes and management style of the retailer while question twenty, which is also an attitude question, was administered last because of its complexity.

3.2.4 Hints for the beginner

One of the reasons the survey went so well was the care the author took to identify himself to retailers. Prior to visiting any of the supermarket chain outlets the author telephoned the area produce manager or the state produce manager. In the case of Bi-Lo Newcastle, the area manager was friendly, co-operative and willing to allow access to both the group buyer and the floor staff at the individual retail outlets. Of the two national supermarket chains neither would allow access to their buyers, and neither would allow conversation with their floor staff in the individual outlets visited. The state produce managers, however, did allow the author to interview them. They also allowed the observation survey to be conducted with one a little concerned that I might be too obvious. The author assured them that he would not be disruptive. As a courtesy, however, the author introduced himself to the people on the supermarket chain floor. Once they knew why I was there it was difficult to discourage them from providing information and, indeed, the views expressed were at times quite different from those of management.

The other aspect of identification concerned dress. During the survey the author consistently wore a colourful UNE shirt, a bright green on white background UNE name badge, and a luminescent yellow UNE cap. There was no doubt as to where I was from. As a means of introduction, this attire worked wonders.

The final aspect of conducting the survey concerns the order in which the observation and interview were performed. It was originally intended that after introducing myself to the outlet owner the observation survey would be conducted first, followed by the interview. In the pilot run in Armidale suspicion level seemed to be zero. On the first day, however, at an early outlet where English was definitely a second language there was a sense of uneasiness as I carried out the survey. From that outlet on, after introductions, the observation survey followed the interview. The results were terrific with a genuine desire on the part of most retailers to assist, plus the odd offer of a free apple.

4. Retailer behaviour with regard to apple varieties and apple size

4.1 Introduction

One of two factors is required if the brand labelling of apples as a component of the creation of apple brands is to be effective:

1. the existing marketing behaviour of apple retailers must be conducive to the marketing of branded produce; or

2. apple retailers will have be convinced that a change in their marketing behaviour to accommodate branded produce is rational.

Clearly if the existing marketing behaviour of apple retailers is conducive to the marketing of branded product then the costs to the apple packer of switching to a predominantly pull marketing strategy will be substantially reduced. That is, the pull strategy will not be in fundamental conflict with the existing retail strategies.

4.2 The hypotheses

The hypotheses to be tested in this section are:

A2.1 *Retailers of apples mix more than one variety of apple in the one display when displaying apples for sale.*

A2.2 *Retailers of apples mix more than one size of apple in the one display when displaying apples for sale.*

As a consequence of the scope of the survey we also test to identify whether supermarket outlets have as many apple displays per retail outlet as non-supermarket retail outlets. While this information does not concern brand labels, it is available from the survey, and to the knowledge of the researcher has not been previously tested. Our third hypothesis is:

B1 *Major supermarket chains have as many apple displays per retail outlet as non-supermarket fresh fruit and vegetable retail outlets.*

Currently there are at least two essential criteria for the display of apples in retail outlets. The first is variety. Varieties are not mixed. The second is size. Sizes are not mixed. The only observed exceptions to these rules in the sample were the organic apple displays. The observation survey covered these points at Question 3.2 which recorded the variety of the apples in the display, and Question 3.3, which recorded the size of the apples in the display.

4.3 Varieties

Table 4.1 details the occurrences of mixed variety displays and mixed size displays observed during the survey.

Table 4.1

The occurrence of mixed variety displays and mixed size displays

	Mixed variety displays	Non-mixed variety displays	Mixed size displays	Non-mixed size displays
n = 426				
Absolute frequency	0	426	0	426
Relative frequency	0	1	0	1

This overwhelming result indicates that the hypothesis that *retailers of apples mix more than one variety of apple, in the one display, when displaying apples for sale* should be rejected.

4.3.1 The origins of variety segregation

The origins of these basic marketing standards for variety and size are not known. Variety segregation may have originated with colour, green and red, and the seasonal nature of apples. Certainly price is a factor. Varieties are differentiated by price at the packer/wholesaler interface. Whatever the origins, variety, is a definitive factor in the marketing of apples with clear consumer preferences for various varieties of apples. Although consumers' opinions were not tested, the observed behaviour of retailers in the independent display of apples by variety strongly suggests that apple retailers believe consumers buy by variety, or at least prefer to be given a clear choice of variety by retailers. Section 1.3 detailed results from previous studies that confirm variety's importance to consumers. There was also evidence that some consumers cling to the variety concept and confuse brands with varieties. On more than one occasion during the survey a retailer stated that "some customers think Batlow (a brand of apples) is a variety".

4.3.2 Apple varieties marketed in Australia and the present stage of their product life cycle

Table 4.2 lists the varieties of apples which are thought to be presently marketed in Australia. This table was constructed with the assistance of those persons listed at the bottom of the table. It is thought by the researcher that this is the first comprehensive Australian listing of this nature. No single organisation involved in the apple industry was able to provide the researcher with this information. The listing is subject to minor variation depending on the geographical location of the orchards. The listing is also prone to subjectivity regarding the classification of the present stages of the product life-cycles of the various varieties. Nevertheless it is hoped that the Australian Apple Industry will note the value of information of this nature and give some consideration as to how the industry may maintain and improve on marketing intelligence of this type.

Table 4.2

Apple varieties marketed in Australia

Variety number	Variety	Season	Notable characteristics	Life-cycle stage
1	Abas	early	sets heavily	maturity
2	Adina	mid	Qld. only	growth/maturity
3	Akane	early	good eating, short life	decline
4	Bonza	early/mid	heavy bearer	maturity/decline
5	Braeburn	mid/late	requires 5 picks	introductory
6	Cox's Orange Pippin	early/mid	highly regarded	almost extinct
7	Crofton	mid/late	low yield	decline
8	Delicious	mid	poor colour	decline
9	Democrat	late	Tas. only, export	decline
10	Earlidel	early	red delicious appearance	introductory
11	Fuji	late	sweet, terrific texture	growth
12	Gala	early	attractive, distinctive	growth
13	Golden Delicious	mid/late	bruise easily	maturity
14	Goldina	mid	Qld. only	growth
15	Granny Smith	mid/late	multi purpose	maturity/decline
16	Gravenstein	early/mid	biennial	decline
17	Jonagold	early/mid	promising variety	introductory
18	Jonathan	early	cannot compete with Gala	decline
19	Lady Williams	late	excellent keeper	growth
20	Mutsu	mid/late	vigorous	maturity
21	Pink Lady	late	excellent eating	growth
22	Red Delicious	mid	reliable	growth/maturity
23	Rome Beauty	mid/late	biennial	decline, nearly extinct
24	Starkrimson	mid/late	red delicious type	maturity
25	Sturmer	mid/late	popular export	decline
26	Summerdel	early/mid	Qld. only	growth
27	Sundowner	late	excellent eating	growth
28	Unknown			

Compiled from information sourced from:

Richard Bennett, Australian Horticultural Corporation.

Delia Dray, New South Wales Department of Agriculture.

Paul Miller, *Commercial Horticulture*, various issues.

Kathryn Burton, Australian Horticultural Corporation.

4.3.3 The aggregate occurrences of different varieties in retail outlets

Table 4.3 details the aggregate occurrences of varieties observed during the survey. The reader will note that only ten varieties are listed from the listing of twenty-seven contained in Table 4.2. The observations should not be regarded as a guarantee that these proportions are indicative of the Australian market. Even with the use of controlled atmosphere (CA) storage technology, apples are still seasonal. This will be true on both a geographical and a yearly basis. Ted Tomlin in his 1985 study indicated that Red Delicious was *now considered to be the most popular eating apple.* In Tomlin's 1983 survey, Jonathans were the most popular. Granny Smith was the *best all rounder* in both surveys (Tomlin 1983, 1985). Tomlin's 1983 field work was carried out in early 1983 and the report completed in April 1983, while his 1985 field work was carried out in May 1985. The results of Tomlin's work in 1983 and 1985, and the present field work carried out in September 1993, indicate that Granny Smiths are a stock product. Red Delicious on the other hand are meeting some competition from Fuji, Lady Williams and Pink Lady. It should be noted however that retail turnover figures are not available from the present study and the '93 observations are based on the occurrence of displays only. It is also worth noting that the display of apples as either Delicious or Red Delicious appears to be somewhat arbitrary on the part of a minority of retailers. Some Delicious displays could have been classified as Red Delicious by the researcher and vice versa. Displays were recorded as Delicious if the display material read Delicious.

Table 4.3

The aggregate occurrence of varieties

n = 426		
Variety name	**Number of displays**	**Relative frequency**
Bonza	33	0.078
Delicious	38	0.089
Fuji	21	0.049
Golden Delicious	31	0.073
Granny Smith	126	0.296
Jonathan	45	0.106
Lady Williams	24	0.056
Pink Lady	6	0.014
Red Delicious	99	0.232
Sundowner	3	0.007
Total	**426**	**1**

4.3.4 Varieties per retail outlet

The average number of varieties stocked per outlet are detailed in Tables 4.4, 4.5 and 4.6. These tables provide the mean number of displays per outlet and compare the mean number of varieties stocked by outlets.

Table 4.4

The occurrence of displays and varieties in all outlets

n = 426	Displays	Varieties
Mean	7.61	4.91
Standard deviation	2.55	1.55
Coefficient of variation	0.34	0.32
Approx coefficient of skewness	0.72	0.79

For all outlets the average number of displays is about seven and a half, with the average number of varieties stocked close to five. The implication is that, overall, retailers

provide a choice of about five varieties of apples per outlet. Figure 4.1 graphically describes the distribution of displays across outlets.

Figure 4.1

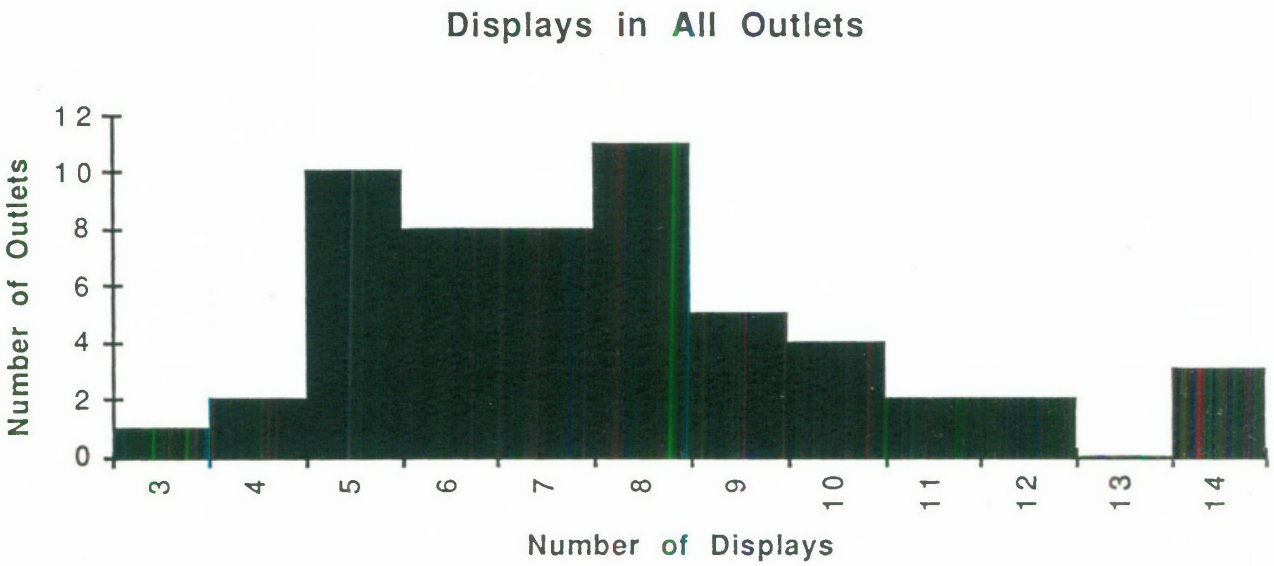


Table 4.5 details the occurrence of displays and varieties of apples in supermarkets. The average supermarket has slightly more than five apple displays with nearly four varieties stocked in each supermarket.

Table 4.5

The occurrence of displays and varieties in supermarkets

n = 426	Displays	Varieties
Mean	5.38	3.85
Standard deviation	1.26	0.9
Coefficient of variation	0.23	0.23
Approx coefficient of skewness	0.9	-0.5

The relatively low standard deviation and coefficient of variation and the negative coefficient of skewness for the occurrence of varieties all give support to the homogeneity of apple displays in supermarket outlets.

Figure 4.2

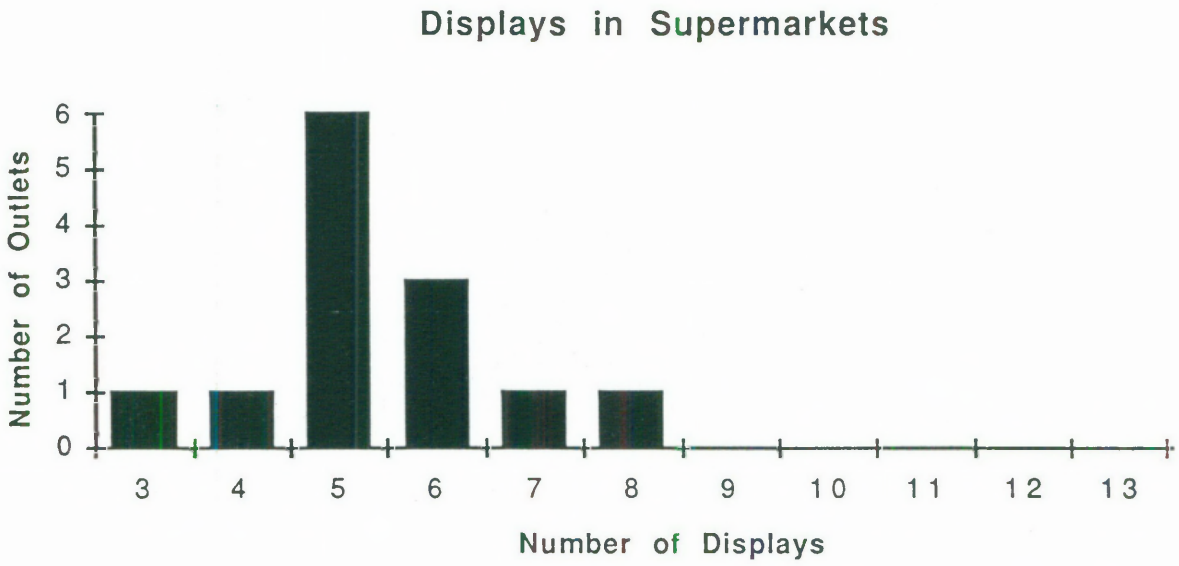


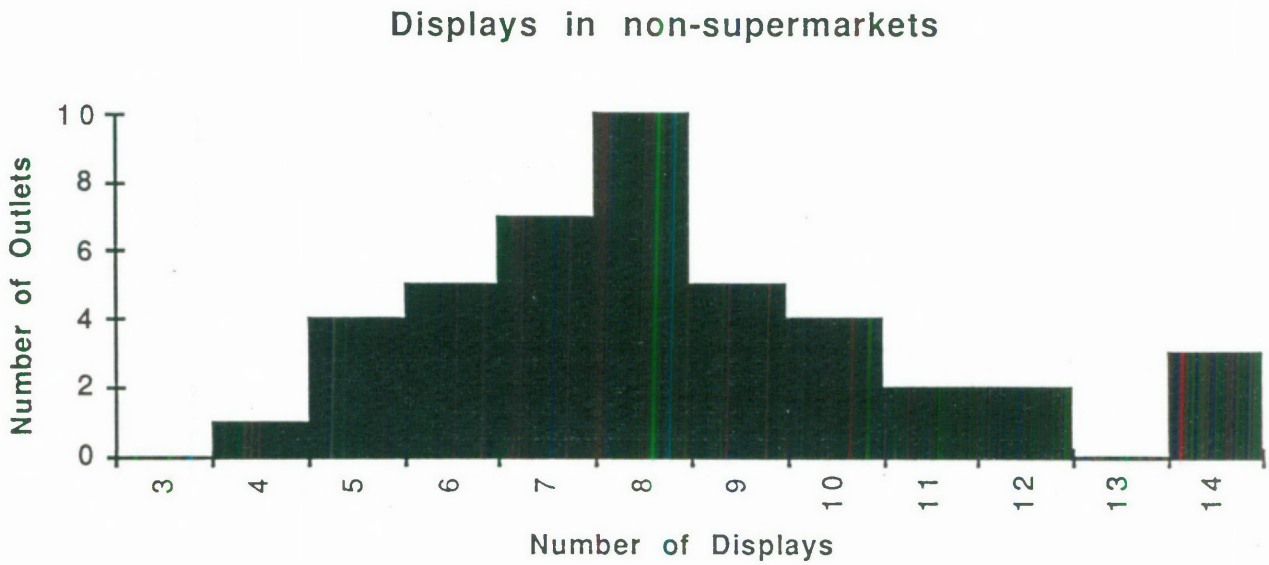
Table 4.6 details occurrences of both displays and varieties in non-supermarkets. Our average non-supermarket has slightly more than eight apple displays and stocks slightly more than five varieties of apples. The implications for the industry are that supermarkets have fewer displays of apples than non-supermarket retail outlets, and that supermarkets provide less variety in the apples they stock than non-supermarket retail outlets. This finding suggests that we should reject the hypothesis that *major supermarket chains have as many apple displays per retail outlet as non-supermarket fresh fruit and vegetable retail outlets.*

Table 4.6

The occurrence of displays and varieties in non-supermarkets

n = 426	Displays	Varieties
Mean	8.28	5.23
Standard deviation	2.46	1.57
Coefficient of variation	0.3	0.3
Approx coefficient of skewness	0.34	0.44

Figure 4.3



4.3.5 Varieties or generic brands?

In terms of marketing behaviour conducive to the retailing of branded products, the implications are that apart from the one hundred percent consistency in displaying varieties separately, a high percentage of apple displays per outlet are of different varieties. Are they, or prior to the introduction of brand labelling were they, de facto brands?

4.3.6 Importance of variety in retailers' purchase decisions

The ranking of variety as a purchase criterion is detailed in Tables 4.7 and 4.8. The ranking is against the criterion of price, size and brand label, and was determined from retailer responses to question twenty of the interview. Extended versions of these tables which include relative frequency distributions and cumulative frequency distributions are presented in Appendix J.

Table 4.7

The ranking of price, variety, size, and brand label, in non-supermarket retailers' purchase decisions

Rank	Price	Variety	Size	Brand label
First	18	24	5	4
Second	1	3	30	0
Third	19	11	3	0
Fourth	0	0	0	34
Total	38	38	38	38

Table 4.8

The ranking of price, variety, size, and brand label, in supermarket chain purchase decisions

Rank	Price	Variety	Size	Brand label
First	2	3	1	0
Second	0	0	2	0
Third	1	0	0	0
Fourth	0	0	0	3
Total	3	3	3	3

The results are a indication that variety is a primary consideration in the minds of the surveyed retailers when they purchase apples.

4.4 Size

4.4.1 Industry packaging

Apples are currently sold to retailers packaged in either bulk crates or packaged in cartons. Bulk crate apples are generally displayed and priced in retail outlets as 'specials'. Cartons of apples are packed by number and roughly equate to a weight of nineteen kilograms per carton. The number of apples per carton ranges from sixty-four apples per carton for the largest apples, to one hundred and ninety -five apples per carton

for the smallest. The categories of large, medium and small are detailed by the number of apples per carton in Table 4.9.

Table 4.9

Apples per carton

Classification	Number of apples per carton Industry source one	Number of apples per carton Industry source two
Large	64, 72, 80, 90	64, 72, 80, 90, 100
Medium	100, 110, 120	110, 120, 130, 140
Small	130, 140, 150, 165	150, 165, 180, 195

Compiled by the author from personal communication Sept, 93.

This categorisation is somewhat subjective and varies with the seasons.

4.4.2 The recording of size during the survey

During the survey the researcher classified the apples on display as large, medium or small as a majority of 'apple display price notices' included those descriptions. Two examples are:

Large Red Delicious, $1.25 each; and

Medium Granny Smiths, 6 for $2.00.

Some of the classification was judgemental, however, and as a result some of the data may contain marginal classification by size errors.

4.4.3 Mixed size apple displays

Table 4.1 detailed the occurrences of mixed sized apple displays. With the exception of the organic apple displays not a single mixed sized apple display was observed during the survey. That is zero, from a survey sample size of four hundred and twenty-six. These results indicate that hypothesis A2.2 *Retailers of apples mix more than one size of apple, in the one display, when displaying apples for sale* , should be rejected.

4.4.4 Apple size as a product characteristic

It is also clear from the survey that size is a marketing mix variable consciously used by retailers . Size may have been a price consideration prior to the availability of contemporary weight/pricing devices. Modern technology would allow retailers when pricing by weight to efficiently mix sizes and still charge consumers the desired margin. The fact that retailers do not mix sizes suggests that either habit or rational marketing reasons guide retailers' behaviour. Alavoine et al in their 1989 French study reported that more than 50% of French consumers considered the apple size to be an *important* purchase criterion, with about 25% considering size *very important* (Alavoine et al, 1990). A number of respondents commented on parents of school children purchasing small apples only. These retailers believed that parents thought that larger apples are wasted by young children who may only take a few bites and then discard the apple. On the other hand, some retailers believed that young women in particular will purchase large apples as the main item in their lunch. The point is that retailers recognise consumer preferences for the sizes of apples they carry.

4.4.5 Importance of size in retailers' purchase decisions

The ranking of size as a purchase criterion is detailed in Tables 4.7 and 4.8 and is reproduced in the extended form in Appendix J. The ranking is against the criterion of price, variety and brand label, and was determined from retailer responses to question twenty of the interview. Size constitutes the most consistent ranking of the purchase criteria with 79% of non-supermarket retailers responding that size was the second most important purchase criterion (Appendix J). When the first and second ranking's are taken together, size becomes the most important criterion in the purchase decision of non-supermarket apple retailers with a cumulative distribution function of .92 (Appendix J).

4.5 Conclusion

All three hypotheses considered in this section have been rejected. The rejection of hypothesis B1:

Major supermarket chains have as many apple displays per retail outlet as non-supermarket fresh fruit and vegetable retail outlets;

provides marketing information to the apple industry which may have been considered common knowledge, but which has not to the knowledge of the author been previously tested. The rejection of hypotheses:

A2.1 *Retailers of apples mix more than one variety of apple in the one display when displaying apples for sale; and*

A2.2 *Retailers of apples mix more than one size of apple in the one display when displaying apples for sale;*

provides us with food for thought in a number of areas. The contemporary behaviour of apple retailers suggests that they are sensitive to consumer preferences in both variety and size. The ranking of variety and size in the purchase decisions of retailers relegates price to a secondary consideration. The indications are that variety and size are the prime purchase considerations and that retailers possibly regard price levels as a function of the market. This suggests that the retailers consider that "apples ain't just apples". Further it suggests that apple retailers are likely to be receptive to additional marketing mix product characteristics which build upon their existing behaviour. If a retailer already segregates apples in terms of variety and size, how big a step will it be from the present behaviour to display by brand? Evidence will be presented which confirms that it has not been very far at all. In terms of incremental marketing behaviour the basic building blocks already existed. The results are also positive in terms of the rationale of apple packers using adhesive labels on apples to assist in the creation of apple brands. Positive because apple branding does not seem to conflict with existing behaviour of apple retailers. The rejection of hypotheses A2.1 and A2.2 will contribute to the case for rejection of hypothesis A2 i.e. the marketing behaviour of retailers of labelled apples is not consistent with the marketing behaviour of retailers of a branded product.