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**IS RETAIL COMPATIBILITY A
NATURAL PHENOMENON?: A
COMPARISON OF STORE
COMPATIBILITY IN PLANNED AND
UNPLANNED RETAIL CENTRES**

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Abstract

The emergence of the internet and a more discerning consumer has created the need for traditional retail centres to provide a more convenient shopping environment. A retail centre offers convenience when it minimises the spatial, temporal and effort costs of shopping. A key means of providing spatial convenience is through store compatibility. Creating clusters of stores that share customers, also reduces shopping's temporal and effort costs. This study provides statistical insight into the degree of compatibility offered by a sample of 6 planned centres and 6 unplanned centres. Across all four tests, the planned centre was found to hold a significant competitive advantage. The findings add support to the notion that the demise of the unplanned centre could be linked to its inability to satisfy the needs of a convenience-oriented society.

IS RETAIL COMPATIBILITY A NATURAL PHENOMENON?: A COMPARISON OF STORE COMPATIBILITY IN PLANNED AND UNPLANNED RETAIL CENTRES

INTRODUCTION

Spatial convenience plays a major role in minimising the cost of shopping. A retailer can offer spatial convenience in two ways (Thompson 1967). The first, is his absolute location. Traditional measures of spatial convenience focused on the proximity of a retail facility to consumers. However, increasing consumer mobility, affluency, and awareness created a shift in emphasis. Academic interest switched to internal convenience, and the second means of spatial convenience, proximity to other retailers.

When stores that interchange customers are located together, retail compatibility occurs. The measure of compatibility is the degree to which two businesses interchange customers. For two businesses to be deemed compatible, they can sell shopping goods for which the consumer prefers to compare price and quality, or complementary goods. When compatible stores are clustered together, each store benefits from the traffic it normally generates, plus the additional customer traffic generated by surrounding stores (Nelson 1958; Eaton and Lipsey 1979). The degree of customer interchange for highly compatible stores can be as high as 62% (Brown 1988).

COMPATIBILITY AND RETAIL CENTRE PERFORMANCE

Compatibility can create wide deviations in the expected drawing power of retail centres (Berry and Parr 1988), influencing both patronage and sales (Eppli 1998). It also addresses a major cause behind shopping centre failure; the lack of adequate linkage between stores (Nelson 1958). Planned centres, which once sought to manipulate shopper movement by separating compatible stores, have begun clustering similar stores together to create malls within a mall, and provide for greater shopper convenience (Hartnett 1995). The success of the planned centre has in fact been attributed, in part, to the greater compatibility it offers (Eppli and Benjamin 1994). Faced with the additional problem of having to travel further in unplanned centres to make comparisons, consumers have been found to prefer planned centres (Dommermuth and Cundiff 1967). Increased spatial integration and stronger store linkages are also likely to reduce internal traffic circulation problems (Bromley and Thomas 1988 in Bromley and Thomas 1989). These factors combine to ensure that centres with a compatible tenant mix are generally successful (Bruwer 1997).

When consumers are uncertain in their purchase decisions they are more likely to seek information about price, quality and variety. This is especially true for higher order goods where the perceived purchase risk is high. In this situation, shoppers are more inclined to invest the effort to carefully gather and analyse the information necessary to minimise the occurrence of dissonance. The clustering of compatible stores facilitates the consumer decision making process, particularly the information search and brand evaluation stages. Clustering also reduces the travel and search costs of imperfectly informed consumers. By decreasing the temporal cost of travelling between stores, retail compatibility also enhances consumers' shopping productivity.

By creating a precinct of complementary stores containing a variety of products often purchased in the same shopping trip, the consumer also enjoys the added benefit of one stop shopping. Such is the motivating influence of convenience and shopper utility, that they are regarded as being the driving forces behind the clustering of compatible firms (Eppli and Benjamin 1994).

RETAIL COMPATIBILITY: A NATURAL PHENOMENON

Academic research is evenly divided as to whether clustering is a naturally occurring phenomenon. According to Anderson (1986), it is an empirical fact that retail firms selling identical goods tend to locate

in proximity to one another, preferring to engage in differentiation activities other than location. Studies undertaken in a number of countries, covering a diverse range of commodities and using a variety of analytical methods, conclude that compatible firms do tend to cluster (refer Brown 1991). Other studies have found that clustering is more likely to occur when there is a significant variation in taste amongst consumers and retailers are confronted with imperfectly informed consumers (Wolinsky 1983; de Palma, Ginsburgh, Papageorgiou and Thisse 1985).

The balance of academic research suggests that while retail compatibility is a relatively common phenomenon, its occurrence will vary according to specific circumstances. Of the three basic types of retail centre, general, specialist and ancillary (Brown 1991), it is the specialist retail centre with its greater depth of merchandise, that provides for greater compatibility. It is also influenced by the size of a retail centre, declining once size falls below a given threshold. The impact of compatibility will be limited in a smaller centre because its composition lacks the necessary width and depth, particularly in higher order goods. As a rule of thumb, the impact and degree of clustering is inversely linked to the order of the good, with the impact on sales, and propensity to cluster, declining as one moves down the hierarchy from higher to lower order goods (Horton 1968). Other studies have found the tendency to cluster is not limited to higher order functions (Scott 1959; Getis and Getis 1968; Johnston and Kissling 1971), with lower order functions, including services (Egan 1983; Morrill 1987), also showing a tendency to cluster. The spatial integration of a retail centre also influences inter-store linkages, with compactness impacting positively on compatibility (Bromley and Thomas 1989).

The clustering of compatible firms can also occur due to agglomeration economies, multipurpose shopping behaviour, and efforts by retailers to reduce consumer uncertainty. Consistency of demand is also a key influence. Retailers with highly variable demand are more likely to cluster than merchants with more certain demand (Brown 1989). Clustering can also represent the outcome of managerial decision making in planned centres, where retailers have been allocated specific sites (Beddington 1982). Alternatively, it may be an example of institutional influence, such as the part played by town councils in determining the retail geography of retail centres (Nelson 1958). Other influencing factors include; (1) similarities in target markets; (2) similarities in trading hours; (3) the level of customer heterogeneity; (4) frequency of purchase; and (5) the age of the firm. In this case, younger firms will sometimes compensate for their inexperience by locating where other similar firms are prospering (Johnston and Kissling 1971; Pascal and McCall 1980; Braid 1988).

In contrast, other studies have found that retail compatibility will only occur in the single instance where competitors have perfect information and identical expectations (Anderson 1986). By sacrificing a spatial monopoly and engaging in price competition, lower profit margins act as a disincentive for firms to cluster (de Palma et al 1985). The consumer propensity for multipurpose shopping also leads to a dispersion of competing firms, with the level of dispersion determined by the relative costs, demands, and prices for various goods (McLafferty and Ghosh 1986; Ingene and Ghosh 1990). Multipurpose shopping therefore provides an important economic motive for incompatible firms to congregate together (Eaton and Lipsey 1979; Mulligan 1983). As such, research has yet to confirm whether compatibility occurs naturally, or whether it is a phenomenon limited to the "artificial" environment of the planned centre.

The study of retail compatibility has focused on a variety of issues including its benefits, the reasons for its occurrence, the compatibility of retail functions, and factors influencing its impact and extent of customer interchange (Nelson 1958; Dommermuth and Cundiff 1967; Horton 1968; Eaton and Lipsey 1979; Pascall and McCall 1980; Braid 1988; Brown 1988). Research has also acknowledged its contribution to shopping convenience (Thompson 1967; Gehrt, Yale and Lawson 1996). The clustering of compatible stores allows consumers to efficiently acquire information, compare prices, review merchandise and undertake multi-purpose shopping trips. Hence, compatibility provides for convenience by minimising the spatial, temporal and energy costs involved in comparison shopping.

Retail compatibility is an integral component of spatial convenience. While scholars have noted that the planned centre offers a greater degree of retail compatibility (Dommermuth and Cundiff 1967; Eppli and

Benjamin 1994), research has failed to quantitatively prove this proposition. In fact, with the exception of a single study conducted more than thirty years ago (Getis and Getis 1968), there has been a distinct lack of quantitative analysis on compatibility. Many scholars, it would seem, have concluded that planned centres offer superior spatial affinity, on the basis of observation, intuition or measures of consumer perceptions. Statistical research is therefore necessary to determine the nature and extent of the gap that separates planned and unplanned centres. Given that the few studies that do exist are now dated (eg Dommermuth and Cundiff 1967), research is also needed to determine whether a gap still even exists. This can be expressed as the research question;

How do planned and unplanned centres compare in terms of the provision of store compatibility?

METHODOLOGY

The sampling frame for the study was provided by the Australian Retailers Association, Victoria. Only community level centres were included in the sampling frame. To be classified as a community centre, planned centres had to contain at least 50 businesses, including at least two magnet stores such as a supermarket and department store. Only those unplanned centres comprising at least 200 businesses were included. In effect this provided a census of Melbourne's 51 most influential retail centres, yielding 34 planned centres and 17 unplanned centres. Six centres were then randomly selected from each of these subsets.

A personal visit was made to each of the centres, and each business visually inspected; a methodology offering a potentially high level of accuracy (Dawson and Sparks 1986). Each business was categorised into one of eleven classifications based on the type of goods sold (Brown 1986) and their degree of compatibility (Nelson 1958). The eleven categories were;

- * Department Stores;
- * Supermarkets;
- * Food Stores & Health (eg butchers, bakers, grocers, chemists);
- * Food Service (eg cafes, fast food outlets, hotels, restaurants);
- * Homeware (eg furniture, carpet, curtains, electrical goods);
- * Hardware, Industrial and Automotive supplies (eg paint, hardware, plumbing supplies, gardening supplies, cars, automotive accessories etc);
- * Fashion (eg mens, womens, and infants apparel, shoes, lingerie, wedding accessories, hats, socks and jewellery);
- * Leisure Products (eg books, photography, fabric, toys, music, giftware, pets, camping, bicycles, small variety stores etc);
- * Professional Services (eg banks, insurance, accountants, medical services);
- * Consumer Services (eg beauty salons, electrical repairs, locksmith etc);
- * Community Services (eg municipal offices, industrial sites, sport centres, and welfare services).

Once each business had been classified and plotted on a map of the retail centre, the centre was divided into sectors. A sector typically represented one side of a city block in the unplanned centre, and one side of a thoroughfare in the planned centre.

Four separate tests were used to measure and compare retail compatibility. For the first test, the methodology from Getis and Getis was replicated, albeit with some minor modifications. Their study defined compatibility in terms of store adjacency. Hence, compatibility occurred where a specific store (eg womens clothing) was located next door to another store of the same type (eg womens clothing). For the purpose of this study, this measure was expanded to the two adjacent positions on either side of the store under study. All things being equal, a compatible store located two doors down, still represents spatial convenience.

For the first test, only three of the eleven categories, *fashion*, *food sales*, and *food service*, were used to assess retail compatibility. Fashion and food sales were included because their functions enjoy the greatest degree of customer interchange (Nelson 1958). Due to the wide variety of fashion stores, analysis was limited to womens clothing stores, as it was in the Getis and Getis study. Food service was included for several reasons. While it does not satisfy all elements of compatibility's definition (eg customer interchange), consumers will compare the prices and offerings of food service providers. Furthermore, the spatial clustering of food services offers two key advantages. Firstly, it creates a food court, with its refreshments and seating reducing the effort (another key element of convenience) involved in shopping. Secondly, it creates a major attractor, particularly for recreational or social shoppers (Reynolds 1990). Because high retail compatibility is not limited to functions within the same category, department stores and supermarkets were also included. Department stores were treated as a fashion function, and supermarkets as a food sales function. The functions that are considered highly compatible with each of the three test categories are;

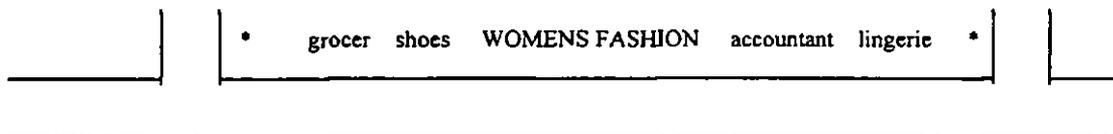
For womens clothing: department stores, shoes, lingerie, infants clothing, mens clothing, jewellery, handbags, wedding accessories and other fashion accessories. Of these, male fashions would appear the most contentious. Research shows however, that almost one in three men allow their partner to purchase their clothing for them (Dholakia 1999).

For food sales: supermarkets, butchers, grocers, delicatessens, liquor stores, bakers and confectionery.

For food service: cafes, fast food outlets, hotels and restaurants.

The location of each store was plotted on a map of each retail centre. The two adjacent locations on either side of the store were then measured for compatibility. If the store were located on the corner of the main street, only the two adjacent locations on the main street were measured. This was due to the change in retail land use that typically occurs with the transition from main street to side street. The number of compatible stores was then tallied. In the scenario in figure 1, the two compatible functions (shoes and lingerie) on either side of the womens clothing store, would mean a score of 2 out of 4. The individual scores for each store were then combined to provide an overall percentage score for planned and unplanned centres.

Figure 1



Given the dearth of statistical studies on retail compatibility, three new measures were devised. Compatibility is essentially a spatial dimension in that 2 stores can not offer the convenience of compatibility if both are located some distance apart. A necessary measure of compatibility therefore, is the distance between compatible stores. While the methodology employed by Getis and Getis provided a measure of proximity, it was limited to adjacency. In planned centres in particular, two compatible stores can be located close together if located opposite each other. The second test therefore measured the distance between the closest cluster of the two most compatible categories, food sales and womens clothing. For womens clothing, two cluster sizes of 4 and 8 stores were used. For food stores, the measure was based on the shortest distance necessary to visit a supermarket, butcher, baker and grocer.

The degree of compatibility for a cluster of stores is compromised when they are separated by incompatible businesses. The degree of compatibility amongst compatible firms is therefore influenced by the spatial behaviour of incompatible firms. As the degree of compatibility is greatest when functions within the same category are located together, it will also be at its lowest when numerous retail categories occupy the same sector. The purpose of tests 3 and 4 was to measure the degree of compatibility provided by each separate sector within the retail centre. Test 3 measured the average number of categories within each sector, while test 4 measured the degree to which any single category dominated a sector. For test 3, sectors were divided into small (5 to 13 business) and large sectors (14+ businesses).

Test 4 focused on fashion, food sales, food service and homeware to determine the extent to which any single category dominated a sector. If less than one third of all functions in a sector belonged to a single category, it was classified under "No compatibility". If however, a sector contained 10 businesses and seven of these belonged to a single category (eg fashion), then it was recorded under the 66%-80% classification. In all, five levels of compatibility were used to measure the degree of clustering;

- 1) no compatibility
- 2) compatibility 33%-49%
- 3) compatibility 50%-65%
- 4) compatibility 66%-80%
- 5) compatibility 81%-100%.

ANALYSIS

Test 1 Findings:

The test confirmed the scholastic proposition that planned centres offer the shopper greater store compatibility (refer table 1). In terms of fashion, 68.2% of the stores immediately adjacent to womens clothing stores in planned centres are highly compatible. In contrast, unplanned centres recorded a score of just 21.7% for the same test. For food sales, planned centres recorded a score of 45.3%. This score is made all the more important by the relatively low number of food stores found in planned centres (they represent only 8% of units in planned centres). Food stores in unplanned centres, seemingly in reverence to retail theory, preferred to locate away from their competition. Subsequently, just 13.5% of stores immediately adjacent to food stores in unplanned centres are highly compatible. Results were almost identical for food service providers, with the planned centre scoring 59.1% (due mainly to its food courts) and the unplanned centre 13.7%.

Table 1: Compatibility by adjacency

Unplanned	<u>Fashion</u>				<u>Food sales</u>				<u>Food service</u>			
	No	Com	Adj	%	No	Com	Adj	%	No	Com	Adj	%
Bentleigh	15	5	58	8.6	26	22	96	23.0	23	10	92	11.0
Dandenong	9	1	33	3.0	26	6	96	6.3	40	10	160	6.3
Geelong	30	21	107	19.6	15	4	60	6.7	72	62	288	22.0
Camberwell	40	73	150	48.7	15	4	56	7.1	44	47	176	27.0
Prahran	12	7	48	14.6	23	16	88	18.0	52	26	208	13.0
Oakleigh	13	17	48	35.4	26	20	100	20.0	17	2	68	2.9
Averages				21.7				13.5				13.7

Planned	Fashion				Food sales				Food service			
	No	Com	Adj	%	No	Com	Adj	%	No	Com	Adj	%
Eastland	30	96	116	82.8	16	41	64	64.1	22	62	80	77.5
Whitehorse	9	14	36	38.9	7	12	28	42.9	9	15	32	46.9
Mkt Square	14	42	51	82.4	2	0	8	0.0	12	24	48	50.0
Airport Wt	20	45	77	58.4	12	31	48	64.6	17	32	62	51.6
Knox City	32	90	121	74.4	12	22	44	50.0	30	60	108	55.6
Doncaster	34	95	131	72.5	10	18	36	50.0	24	65	89	73.0
Averages				68.2				45.3				59.1

Key

No = number of stores measured

Com = number of adjacent stores that are compatible

Adj = number of adjacent stores

% = percentage of adjacent businesses that are compatible

Test 2 Findings

The small size of some of the centres meant that some could not satisfy all criteria. Irrespective of size, there was evidence of compositional flaws in the tenant mixes of unplanned centres (refer to table 2). Geelong, the third largest retail centre in Victoria, contains 8 bakers but no supermarket in its unplanned precinct. Dandenong, the fourth largest centre, contains 7 bakers but no grocer. It must also be noted however that the planned centre Doncaster, with 201 businesses does not include a butcher or grocer.

This test confirmed the proposition that consumers must travel further in unplanned centres to make comparisons (Dommermuth and Cundiff 1967). Whereas a shopper in a planned centre can visit 4 and 8 womens clothing stores in a distance of 40 metres and 115 metres respectively, a shopper in an unplanned centre would have to travel approximately 120 metres and 392 metres to achieve the same result. A similar result was recorded for food sales, with an average approximate distance of 50 metres for the planned centre as compared to 340 metres for the unplanned centre. This poses two contrasting, yet significant problems for the unplanned centre. The excessive distance between stores increases the cost of shopping for the pedestrian, and therefore serves as a deterrent to continued patronage. If the shopper decides to minimise the temporal, spatial and effort costs involved in such distances, they may decide to shop from their car. When this happens, it denies retailers vital pedestrian traffic, and reduces the opportunity for impulse buying.

Table 2: Compatibility by distance

Unplanned	Fashion		Food	Planned	Fashion		Food
	4	8	S/B/B/G		4	8	S/B/B/G
Bentleigh	100	200	120	Eastland	40	90	40
Dandenong	200	800	n/a	Whitehorse	60	180	40
Geelong	100	300	n/a	Mkt Square	30	80	n/a
Camberwell	30	100	550	Airport West	60	180	40
Prahran	250	750	350	Knox City	30	70	80
Oakleigh	40	200	n/a	Doncaster	20	90	n/a
Averages	120	392	298	Averages	38	111	46

* *Averages* refers to the average distance in metres.

Test 3 Findings

The provision of spatial convenience was again higher in the planned centre (refer table 3). On average there are just 3 categories in each small sector, and 4 categories in each large sector. In contrast, there are on average 5.5 categories per small sector and 6.5 categories per large sector in the unplanned centre. It must be noted however, that sectors were slightly larger in the unplanned centre. Fewer categories per sector translates into fewer incompatible stores located together. This minimises 'dead' shopping space for consumers engaged in a specific purchase task (eg fashion browsing, food shopping etc). It also reduces the three costs of retail centre patronage.

Table 3: Number of retail categories per sector

<u>Unplanned</u>	<u>Cats</u>	<u>Sect</u>	<u>SctSz</u>	<u>Cats/Sec</u>
Small Sector	270	49	11.1	5.5
Large Sector	399	61	18.2	6.5
<u>Planned</u>	<u>Cats</u>	<u>Sect</u>	<u>SctSz</u>	<u>Cats/Sec</u>
Small Sector	153	48	8.7	3.2
Large Sector	58	15	16.9	3.9

Key

Cats = Total number of categories across all sectors in the sample

Sect = Total number of sectors

SctSz = Average number of firms per sector

Cats/Sec = Average number of categories per sector

Test 4 Findings

Whereas 83% of all unplanned sectors provide no significant level of compatibility across the 4 retail categories, this figure falls to 36% for the planned centre. Furthermore, while just 2% of unplanned sectors have two-thirds or more of their businesses dedicated to a single category, almost half (49%) of all sectors in planned centres are dominated by stores belonging to the same category.

The concentration of a single category in one sector allows the consumer to satisfy a single shopping objective (eg grocery shopping), without having to traverse the entire retail centre. Most importantly, such spatial organisation is not incompatible with the needs of recreational shoppers'. It is unlikely that the hedonic motives of leisure shoppers will be satisfied by browsing amongst accountants offices, medical practices, service stations and union offices.

Table 4: Percentage domination of retail sectors by a single category

<u>Planned Centre</u>	<u>No</u>	<u>%</u>	<u>Unplanned</u>	<u>No</u>	<u>%</u>
No Compatibility	27	36	No Compatibility	98	83
Compat 33-49%	4	5.3	Compat 33-49%	14	12
Compat 50-65%	7	9.3	Compat 50-65%	4	3
Compat 66-80%	16	21.3	Compat 66-80%	1	1
Compat 81%+	21	28	Compat 81%+	1	1
Total Sectors	75	100	Total Sectors	118	100
Av.Sec.Size	11		Av.Sec.Size	14	

Key

No = number of sectors

% = percentage of sectors

FURTHER RESEARCH

This paper provides statistical confirmation of the competitive advantage enjoyed by planned centres over unplanned centres, in terms of retail compatibility and therefore spatial convenience. However, further research is necessary to determine whether consumers actually perceive such a difference, the importance consumers attach to retail compatibility, and its influence over their patronage behaviour. There is also a need to revisit the concept of inter-function compatibility. Given the changes that have occurred over the last half century, further research is necessary to determine whether Nelson's compatibility table (1958) still holds true today.

SUMMARY

Compatibility provides for convenience by minimising the spatial, temporal and effort costs of shopping. It also offers benefits for the recreational shopper. Irrespective of the enjoyment derived from shopping, the recreational shopper is also confronted with temporal limitations. They are therefore likely to patronise those retail environments that maximise the time they spend browsing amongst the stores offering the greatest recreational appeal. This supports the proposition that in order to attract the recreational shopper, a retail centre must first provide shopping convenience.

This study applied four separate tests for compatibility to a sample of planned and unplanned centres. In terms of convenience, the planned centre was found to enjoy a considerable advantage. The results suggest that retail compatibility does not occur in any substantial degree, outside the "artificial" environment of the planned centre. The ramifications of this are that efforts to revive the unplanned centre must go beyond traditional strategies such as parking, landscaping and promotion to include convenience measures such as retail compatibility, and the spatial juxtapositioning of retailers.

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