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INTRA-CENTRE SPATIAL CONVENIENCE: BRIDGING THE GAP BETWEEN SHOPPING MALLS AND SHOPPING STRIPS

Abstract

Purpose: Due to rising obesity levels, declining fitness levels, an aging population, and shopper lethargy, retail planners must give serious consideration to the physical demands retail centres place on their patrons. The aim of this study is to determine the importance consumers assign to intra-centre spatial convenience, measure how consumers perceive shopping malls and shopping strips (also referred to as the downtown area, central business district, Main Street or the High Street) in relation to it, and compare them in their provision of it.

Methodology: The study utilises a household survey of consumers and a retail audit to address these research objectives. The survey was used to identify the importance consumers assign to intra-centre spatial convenience, while the retail audit was used to establish how malls and strips compare in their provision of it.

Findings: The results of the survey indicate that consumers regard intra-centre spatial convenience as important and believe that malls are superior in providing it. The retail audit confirmed the accuracy of these perceptions, with the mall providing greater store compatibility, and a more compact shopping environment.

Originality / value: The influence of intra-centre spatial convenience on shopping behaviour has been largely overlooked. Moreover, those studies that have focused on this topic have typically done so from the singular focus of either malls or strips. This study incorporates both, and does so via an empirical analysis of consumer attitudes and a spatial comparison of both retail formats.

Key words: shopping, patronage, retail centres, malls, convenience.

1. Introduction

Despite the emergence of various hybrid versions, shopping malls and shopping strips (also referred to as the downtown area, central business district, Main Street or the High Street) still serve as the two predominant retail centre formats in most developed nations. Since its inception, the shopping mall has competed with the shopping strip for market share and in many markets has emerged as consumers' preferred shopping destination (Damian et al., 2011; Gorter et al., 2003; Hall, 2011; Hernandez and Jones, 2005;

Kuruvilla and Joshi, 2010; Shen et al., 2011). Despite the significance of this trend, it has been largely overlooked in the retail literature (Teller, 2008; Teller et al., 2008).

In response to the strip's loss of market share, retail planners have undertaken strip rejuvenation on a grand scale, with the number of rejuvenation projects in the U.S. alone cited in the hundreds (Mitchell, 2001) and thousands (Bohl, 2003). Such projects are vital due to the key role the shopping strip plays in maintaining the health of the wider urban system. Such a role extends beyond mere economic benefits to also include social and cultural benefits (Haklay et al., 2001) such as civic pride, community spirit and creating a positive first impression for visitors. And yet in spite of decades of continuous redevelopment, many strips across the globe continue to struggle.

A potential reason for this is that rejuvenation efforts have often overlooked the need to make strip shopping more convenient. Such a premise stems from the notion that the strip is at a competitive disadvantage to both the mall (Hackett and Foxall, 1994) and the Internet in terms of shopping convenience. The typical focus of convenience-oriented strategies has been to improve public transport access, car access and parking (Padilla and Eastlick, 2009; Robertson, 1995). In spite of the fact that convenience serves as one of the few strategies that directly addresses the strip's competitive disadvantages, even this strategy has often proved insufficient to halt its decline in many markets. Perhaps the reason for this is that current convenience strategies have failed to incorporate all possible and necessary means for minimising the time and effort involved in patronising a shopping strip. One such often overlooked aspect of convenience is intra-centre spatial convenience.

A retail centre can offer spatial convenience in two ways (Thompson, 1967). The first is via its proximity to consumers so that the shorter the distance between the two, the more spatially convenient it is. Hence in this context, spatial convenience refers to the time and effort involved in traveling **to** a retail centre. The second means for offering spatial convenience is by minimising the time and effort involved in traveling **within** a retail centre. In this study, this form of spatial convenience is referred to as intra-centre spatial convenience. Such convenience is potentially important because with the sole exception of shopping trips limited to drive-through retailing, all visitors to a strip or mall become pedestrians at some point, irrespective of whether they reached it by car, public transport, bicycle or on foot.

There are four attributes of a retail centre that determine its intra-centre spatial convenience: its retail concentration, its size, its layout and its store compatibility (Reimers and Clulow, 2009). A key aim of this study is to measure the importance consumers assign to these attributes. Moreover, because each of these attributes could

potentially differentiate the strip from one of its major competitors – the mall – this study also measures consumer perceptions of malls and strips in relation to intra-centre spatial convenience, and compares them in their provision of it.

The rest of this paper is structured as follows. First a review of the literature provides insight into the nature of intra-centre spatial convenience and its attributes. This is followed by a discussion of the methodology, the presentation of the results and suggestions for further research.

2. Intra-centre spatial convenience: Why is it of potential importance?
A key reason behind the potential importance of intra-centre spatial convenience is the physical limitations that many consumers must endure due to aging, declining fitness levels (Knuth and Hallal, 2009) and physical disabilities (Kaufman, 1995). For example, the worldwide population of consumers aged over 65 will more than double from its current estimate of 180 million to an estimated 370 million by 2050 (United Nations, 2010). In Australia, the number of consumers aged over 65 is forecast to mirror this trend, jumping from its current level of 13% of the total population to 25% by 2056 (Australian Bureau of Statistics, 2008). The aging of the population highlights the need for senior-specific marketing strategies, not only in terms of convenience in general (Pettigrew et al., 2005), but intra-centre spatial convenience specifically. However, very few retail centres as they currently stand, are regarded as being well placed to serve the needs of an aging population (Myers and Lumbers, 2008). If this proposition is correct, it has ramifications for both strips and malls.

In the past 3-4 decades many nations have witnessed a rapid rise in obesity (Witten et al., 2011). In the U.S for example, it is estimated that obesity and physical inactivity account for an estimated 300,000 premature deaths every year (Loukopoulos and Gärling, 2005). In Victoria, Australia - the geographic context for this study - 62.6% of Victorians aged 18-75 are either over-weight (38.1%) or obese (24.5%). Almost 1 in 3 Victorians (31%) do not get enough weekly exercise to maintain even minimum health levels, due in part to the fact that 26% are classified as living sedentary lifestyles (Department of Health, 2012). With obesity-related illnesses accounting for 17,000 Australian fatalities every year, it now rivals cigarette smoking as the major cause of death (Jones, 2005). Such a problem is unlikely to resolve itself in the near future. One in four Victorian children are now either overweight or obese; up from a rate of 1 in 20 in the 1960's (Rechter, 2012).

However, even in the absence of these human conditions, intra-centre spatial convenience offers potential benefits to shoppers. Since the advent of the car, shoppers now experience the physical effects of distance walking *within* retail centres rather than travelling *to* retail centres (Bouchard, 1973). Nelson (1958, pp. 236) observed more than

half a century ago, in an era preceding current concerns over declining fitness levels, the tendency for shoppers to return to their car and drive between stores when the distance exceeded just 200 metres. Since then consumers have become even more accustomed to driving, to the point where many have grown averse to walking, even for shorter distances (Loukopoulos and Gärling, 2005). For example, in a study of 20 Californian retail centres, Schneider and Pande (2011) found that walking accounted for less than 5% of the total distance covered by patrons and that 35% of trips *within* retail centres were made via some means other than walking. When consumers opt to drive between stores *within* a retail centre, it deprives retailers of the transient pedestrian traffic upon which so many rely. In addition, creating spatially convenient retail centres should address a major cause behind consumers' decision to end a shopping trip early – tiredness (Zhu and Timmermans, 2006).

Yet in spite of the recognition that consumer movement within retail centres is often governed by the principle of least effort (Bitgood & Dukes, 2006; Brown, 1987), relatively few studies have focused on intra-centre spatial convenience. Those that have, only incorporated isolated elements amongst a much larger pool of retail centre attributes. The results of these studies revealed that the ability to move from store to store with ease (Gautschi, 1981), minimising out-of-vehicle walk time (McCarthy, 1980) and the degree of compactness (Oppewal et al., 1994) all serve as important influences over consumer perceptions of a retail centre. This may explain why the general layout of a centre has been identified as the greatest determinant of retail spending ahead of such other more widely recognised attributes as helpful staff and a nice place to spend time (Dennis et al., 2005).

Unfortunately, this handful of studies represents the sum total of academic interest in the intra-centre spatial convenience of retail centres. Such an oversight is perplexing given that the battle for market share between malls and strips is recognised as a major trend in retailing (Gorter et al., 2003; Teller, 2008), that convenience has been found to influence the success of other retail formats (Kim et al., 2005; Kim et al., 2007), and that intra-centre spatial convenience could potentially differentiate the two. A key purpose of this study therefore is to address this oversight by measuring the importance consumers assign to intra-centre spatial convenience and how they perceive malls and strips in its provision (henceforth referred to as a demand-side analysis).

There is also a dearth of research into how malls and strips compare in the actual provision of intra-centre spatial convenience (henceforth referred to as a supply-side analysis). This oversight is equally significant because of the limitations associated with any study limited to a demand-side analysis. While such an approach is important in identifying the salient attributes of a retail centre and how consumers perceive malls and

strips in their provision, the implications that result from such research are far from clear. Take for example the hypothetical finding that consumers regard intra-centre spatial convenience as important and believe that malls offer a superior shopping environment in this regard. How should such a finding be interpreted? Do these spatial differences physically exist or do they only exist in the minds of respondents? For strip planners – be it local government or a town centre manager - the answer to this question would be vitally important because in the case of the former, a major refurbishment strategy would be required to create a more spatially convenient shopping environment, while in the case of the latter, a communication strategy may be all that is needed to correct consumer misperceptions. Yet in spite of its potential benefits, the need to incorporate a combined demand-side / supply-side analysis has been ignored in academic research. This study seeks to redress this research gap.

3. The four attributes of intra-centre spatial convenience
As highlighted in section 1, intra-centre spatial convenience comprises retail concentration, the size of a centre, its layout and its store compatibility. Retail concentration refers to the segregation of retail and non-retail firms so as to create a dedicated, compact shopping environment. By doing so, retailers provide spatial convenience through their relative proximity to other retailers. This proximity is enhanced when retailers are concentrated in the centre's core. The greater the proportion of stores in the retail core, the greater its concentration. Conversely, a retail centre with stores dispersed throughout its confines, adds to the spatial costs of shopping. In spite of its potential importance, just one study on retail concentration – to the best of the authours' knowledge - has ever been undertaken (Reimers and Clulow, 2004). While that study found that the mall offers a greater degree of retail concentration than the strip, the importance consumers assign it was never established via empirical research.

When it comes to the size of a retail centre, recent academic interest has typically focused on the notion that 'bigger is better', and only in the context of a mall. In this regard, mall size has been found to have a positive impact on mall sales (Le Hew and Fairhurst, 2000) and consumer perceptions of a mall's retail offering (Finn and Louviere, 1996). However the potential negatives that stem from shopping at a large retail centre have been largely overlooked. The larger a retail centre, the greater the potential distance the shopper must walk, thereby impacting upon its intra-centre spatial convenience and subsequently the time and effort required to shop there. Increased size may not automatically equate to increased utility because most consumers will only be interested in that portion of the retail centre that carries their desired product at that time (Crask, 1979; Meoli et al., 1991). As such, academic opinion is divided on the importance consumers assign to retail centre size. Moreover, their perceptions of malls and strips in relation to it have yet to be established.

The layout of a centre refers to whether its shape is linear or non-linear. Layout can serve as an important factor in differentiating centres of equal size on the basis of convenience. For example, in two centres of equal size (e.g. 40,000 square metres) a shopper would be expected to walk less distance in a centre with a non-linear layout (e.g. 200 metres by 200 metres) than one with a linear layout (e.g. 800 metres by 50 metres). In spite of its ramifications for intra-centre spatial convenience, very few studies have focused on layout. In one of the few exceptions, McGoldrick and Thompson (1992) found that *shopping ease*, a factor that included the layout of a centre, influenced consumers' choice of destination, expenditure, frequency of visit, and shopping duration.

Retail compatibility refers to the degree to which two or more stores interchange customers: the higher the customer interchange, the greater the compatibility. When stores that experience a high degree of customer interchange are located within close proximity, it minimises the time and effort involved in information search, product evaluation and purchase. It should therefore be no surprise that compatibility has been found to influence mall performance (Anderson et al., 1999; Le Hew and Fairhurst, 2000). Such research however has been limited to the singular context of mall shopping, therefore ignoring the importance strip shoppers assign to it, as well as consumer perceptions of how malls and strips compare in its provision.

In summary, to the best of our knowledge, very few academic studies have sought to determine the importance consumers assign to intra-centre spatial convenience. Those few that have, only focused on isolated elements of it, resulting in the absence of a more holistic understanding of the salience of intra-centre spatial convenience per se. This leads to the first research question.

Research question 1: How important is intra-centre spatial convenience to consumers?

Any rejuvenation strategy designed to enhance the intra-centre spatial convenience of a retail centre is likely to be an expensive one. For example, re-zoning the core of the strip so that it is limited to retail use only may involve offering significant financial incentives (e.g. tax subsidies, rent subsidies etc) to encourage existing retail and non-retail businesses to relocate accordingly. Such expense could also be encountered with efforts designed to create compatible shopping clusters (e.g. fashion, giftware, or food areas). From a practitioner's perspective, the expense involved in initiating such strategies would not only include time and money, but also opportunity cost given the existence of alternative rejuvenation strategies. It is therefore necessary to ensure that any appeal that intra-centre spatial convenience might offer is not limited to smaller segments of the population. This issue leads to the following research question.

Research question 2: Is the importance of intra-centre spatial convenience limited to a smaller subset of the population?

The importance consumers assign to intra-centre spatial convenience only establishes its potential influence. In order for it to then serve as a reason to choose one retail format over another, consumers must perceive spatial differences between them so that one is regarded as offering superior value to the other. This issue leads to the following research question.

Research question 3: How do consumers perceive malls and strips in terms of intra-centre spatial convenience?

In order to establish the importance of intra-centre spatial convenience it is also necessary to determine whether its influence is significant enough to shape retail centre preference and serve as a reason for shoppers to choose one retail alternative over another. This issue leads to the following research question.

Research question 4: How does intra-centre spatial convenience influence consumer preference for either malls or strips?

Due to its initial ability to provide a more compact shopping environment, the mall was once regarded as offering superior intra-centre spatial convenience to the strip. Because consumers cannot drive directly to individual stores in an enclosed mall, its size was initially restricted so as to encourage high pedestrian flow throughout its confines (Weiss, 1996). However, the regional mall's shift in focus from convenience to entertainment (Muhlebach, 1998) and the associated need to include food courts, cinemas and other amusements, meant that mall development became characterised by a 'bigger is better' philosophy (Jones and Simmons, 1990). As a result, the mall may have inadvertently negated a key source of intra-centre spatial convenience. However in the absence of actual empirical data comparing malls and strips in terms of their size, such a notion can neither be confirmed nor disproven.

The convenience afforded by a compact layout also serves as a potential differentiator between malls and strips. In fact the shopping strip derived its name from its typically linear layout. Such is the linear nature of the British High Street that it is in fact defined as a linear aggregation of mixed uses (Hall, 2011). The Australian shopping strip is similarly characterised. Rather than design its layout around customer needs, its layout was determined by its predominant form of public transport: linear in the case of the tram and non-linear in the case of the train (Johnston and Rimmer, 1969). In contrast, mall planners, recognising that the layout of a mall serves as its central nervous system

(Brown, 1999), should be expected to adopt a layout that takes consumers spatial needs into account. While this suggests the mall would offer a more compact layout, there is again an absence of empirical research to confirm this notion.

Malls were also once regarded as enjoying an advantage over strips in regards to compatibility (Carter and Haloupek, 2002). But this assumption may no longer hold true because many mall managers opted to locate compatible stores at opposite ends of the mall so as to expose customers to as many stores as possible (Anderson et al., 1999). However, as with the two preceding attributes, in the absence of actual empirical research, such an assumption cannot be confirmed.

An in-depth analysis of how malls and strips compare in the provision of retail concentration is beyond the scope of this paper. In the one previous study that did provide a supply-side analysis of retail concentration, Reimers and Clulow (2004) found that the mall offered a more spatially convenient shopping environment by segregating its retail and non-retail functions. However, in the case of store compatibility and a compact size and layout, academic research has overlooked the need to compare malls and strips in their provision. This leads to the following research question.

Research question 5: How do malls and strips compare in the provision of intra-centre spatial convenience?

4. Method

Multiple approaches were used to address the research questions. In order to address the first four questions, a demand-side analysis of consumer attitudes was used. A supply-side analysis was then used to address the fifth research question by comparing malls and strips in their provision of the attributes of intra-centre spatial convenience.

4.1 Demand-side method

4.1.1 Subjects
Adult shoppers served as the subjects for this study, while consumer households located in Melbourne, Australia served as its sampling units. Questionnaires directed to the primary household shopper were dropped off at randomly selected households within specifically selected suburbs. Those suburbs that contained one or more of the 18 retail centres under study in the supply-side analysis were deliberately chosen as the geographic sampling frame for the demand-side analysis in order to facilitate a more meaningful comparison between consumer perceptions of the spatial attributes and their

actual provision. This step also maximised the likelihood respondents would have visited at least one of the 12 strips and one of the 6 malls under study.

Within each of these suburbs, systematic stratified random sampling was used (Zikmund et al., 2007) whereby both the neighbourhoods and the household starting point within each of those neighbourhoods were randomly selected, from which point every fourth household received a questionnaire. Of the 1500 questionnaires delivered in this way, 491 useable questionnaires were returned, providing a response rate of 32.7%. Analysis of the respondent profile indicated the potential for some non-response bias in relation to gender. When compared against the near equal proportion of males to females residing within the greater Melbourne area, the sample's gender profile indicates that males are under-represented, making up just 21% of the sample. However this is to be expected given that the questionnaires were directed to the primary adult shopper and that in many households females still assume much of the responsibility for shopping (Mitchell and Walsh, 2004).

4.1.2 Questionnaire design
A self-administered survey served as the measurement instrument for the demand-side analysis. Respondents were asked to indicate on a 7-point scale (1=not at all important, 7=extremely important) the importance they assigned to various retail centre attributes. In addition to the 4 spatial attributes, this list also included other convenience attributes as well as 5 hedonic attributes (refer table 1) so that both the absolute and relative importance of intra-centre spatial convenience could be determined. Respondents were also asked to rate malls and strips on the four spatial attributes (1=extremely poor, 7=excellent).

Pre-testing of the survey revealed special challenges in operationalising size and layout. Participants reported that when retail centre size was operationalised via two-dimensional form (e.g. 400 metres by 200 metres) they had difficulty distinguishing it from layout. Size was therefore operationalised in one-dimensional form via the following scale; '*The retail centre does not extend more than 300 metres in any one direction*'. The distance of 300 metres was utilised on the basis that it is regarded as the maximum length a retail centre should stretch over if shoppers are to be expected to walk it (Bohl, 2003). It would also provide a benchmark against which the results of the supply-side analysis could be compared.

To operationalise layout, the final survey contained two diagrams, one showing a square layout with depicted measurements of 200m by 200m, and the other a linear layout showing measurements of 500m by 80m. The survey informed respondents that these two hypothetical centres were identical in all regards, with one exception: they differed in

terms of their layout. Respondents were first asked which of these two layouts, if any, they preferred. They were then asked to indicate how important the provision of a square layout (the more compact option of the two) would be in relation to their choice of retail centre (1=not at all important, 7=extremely important). The answers to these two questions would then set the benchmark against which the supply-side analysis of layout could then be compared.

4.1.3 Attitude context

Because of the growing consumer propensity for multipurpose shopping (Leszczyc et al., 2004), it served as the context for this study. Multipurpose shopping has been described as rational behaviour designed to reduce the time, effort and cost involved in obtaining a desired set of goods and services (Baker, 1996). Such a convenience-oriented description suggests that adopting multipurpose shopping as the context for this study could bias its results. However, because multipurpose shopping is also characterised as the purchase of higher-order *and* lower-order goods in a single trip, it can include elements of both recreational (e.g. higher-order) and convenience (e.g. lower-order) shopping. Hence it provided a context that would neither exaggerate (as might be the case if grocery shopping alone served as the context) nor understate the importance of convenience (as might be the case if recreational shopping alone was used). To confirm respondent experience with the attitude context, respondents were asked to indicate how often in a typical month they undertook the three following types of shopping trip:

1. Convenience shopping for groceries.
2. Multipurpose shopping.
3. Recreational shopping.

Respondents revealed that multipurpose shopping accounted for 45% of all shopping trips in a typical month, convenience shopping for 37% and recreational shopping for just 18%. Hence, of the three potential contexts, the one adopted in this study - multipurpose shopping - served as the attitude context that best represented a 'typical' shopping trip for the largest proportion of respondents.

4.1.4 Evaluating indicators

The 20 items used to measure consumer importance ratings of the various retail centre attributes were subjected to principal components analysis using SPSS. Prior to conducting the analysis, the data distribution was first checked. The subsequent skewness values and Normal Q-Q plots revealed the data to be normally distributed.

Both the Kaiser-Meyer-Oklin test (.83) and Bartlett's Test of Sphericity ($p < .001$) indicated the data were suitable for factor analysis. Eigenvalues were used to determine the number of factors to rotate, with principal components analysis revealing the presence

of five components. A Varimax rotation procedure was then utilised to rotate these five factors due to its considered superiority in achieving a clearer separation of factors (Hair et al., 2010). For the purpose of interpretation, each factor comprised variables that loaded .40 or higher on that factor (Malhotra et al., 2002). The five-factor solution explained a total of 65.1% of the variance (table 1).

The first factor, explaining 27.3% of the variance, comprised all 5 hedonic attributes and was therefore labelled as such. Of significance to this study, the factor comprising the 4 *spatial* attributes explained the second largest degree of variance (13.6%). The third factor, explaining 9.7% of the variance comprised the three parking attributes and was therefore labelled *parking convenience*. The fourth factor comprised the access attributes number of lanes, methods of traffic control, pedestrian areas and public transport and explained 7.6% of the variance. The final factor was labelled time convenience due to such attributes as trading hours, proximity and one stop shopping. It explained 6.9% of the variance.

Table 1: Rotated component matrix

Item	C1	C2	C3	C4	C5
A good place just to walk and browse amongst the shops	.80				
There are plenty of good places to eat and drink	.77				
Offers activities other than just shopping (cafes, cinemas)	.76				
It's a good place to take your family or meet with friends	.71				
Aesthetic qualities (landscaping, architecture, colour)	.65				
Its stores do not extend more than 300m in any one direction		.87			
Its stores are organised into a compact rather than linear layout		.79			
Similar stores are located close together		.77			
It's retail stores are separated from its non-retail businesses		.63			
You can park close to desired stores			.86		
There are plenty of places to park			.86		
It has the type of parking you prefer (parking lot, curbside)			.73		
Its access roads have at least two lanes				.72	
It uses alternatives to traffic lights (e.g. roundabouts)				.67	
Areas are set aside for pedestrians where cars can't enter				.64	
It's quick and easy to reach by public transport				.53	
It's open weekday evenings and weekends					.82
It's close to where you live or work					.78
It provides protection from the weather					.77
It has all the stores for one-stop shopping					.50
Eigenvalues	**5.5**	**2.7**	**1.9**	**1.5**	**1.2**
Cronbach Alpha Coefficient	**.81**	**.81**	**.81**	**.72**	**.66**

The five factors were then analysed using Cronbach alpha to test their reliability. Alpha scores above 0.65 are regarded as acceptable, particularly when there are fewer than ten items per construct and the scale is new (Loewenthal, 2001). All five factors yielded an alpha score ranging between .66 and .81, indicating them to be reliable.

4.2 Supply-side method

In order to ensure meaningful comparisons between the two retail formats, analysis was limited to malls and strips at the regional level. This criterion was operationalised via the definition that a regional mall contains between 50 and 150 retail stores (e.g. fashion, homeware, giftware, supermarket etc.) and was applied to both malls and strips (Berman and Evans, 2007). This resulted in a total of 18 regional centres, 6 of which were malls and 12 of which were strips. Personal visits were then made to each of these retail centres to collect data on the attributes of intra-centre spatial convenience.

Whereas the task of classifying the layout of each strip as either linear or non-linear was a relatively straightforward one, it was relatively more complicated with malls. No mall possessed the purely linear layout that characterised most strips, nor did they possess the symmetrical layout used to measure respondent attitudes. Therefore in order to classify the supply-side findings for the mall, it was necessary to further define what constituted a linear and non-linear layout. For this purpose, a mall design was classified as linear where its length exceeded its width by more than three times.

The key challenge in measuring the size of each retail centre was to delimit its boundaries. Whereas this represented a straightforward task in the case of the mall, in the case of the strip such boundaries were set at that point where the predominant land-use transitioned from retail to non-retail use. Measuring the size of strips was also complicated by another factor. Whereas the afore-mentioned method helped define the length of strips, the width of a linear strip is determined by the depth of each store lining its main street as well as the width of its road and footpaths. Rather than measure the depth of every such store, the average width across the 11 linear strips was estimated at 60 metres. The uniform application of this estimate across all strips was based on near identical footpath widths and road widths (all 11 were traversed by a single lane thoroughfare and 10 offered the same form of on-road parking). Moreover each strip predominantly comprised smaller, independent stores with little significant variation in store depth. However in spite of such consistencies, the figures given in Table 6 should still only be regarded as approximate measurements.

Compatibility refers to the degree to which two or more businesses interchange customers. As the degree of interchange is dependent upon the distance between stores (Brown, 1993), it is a function of space. The closer compatible stores are located

together, the greater the intra-centre spatial convenience. Compatibility can therefore be operationalised by measuring the distance between compatible stores.

While retail compatibility can take several forms, its two most common applications are comparison-shopping (e.g. several shoe stores locating close together) and complimentary shopping (e.g. a butcher, baker and grocer locating in close proximity). In the context of a multi-purpose shopping context, these two applications – the former representing higher-order goods and the latter, lower-order – provided, in theory, the ideal means for operationalising retail compatibility. Hence, the initial intention was to focus on the two product categories empirically recognised for their high degree of customer interchange: *fashion* and *food* (Brown, 1987; Morrill, 1987). The aim was to use fashion-shopping as the context for comparison-shopping and food-shopping as the context for complimentary shopping.

Given the low-involvement nature of food shopping, consumers are less likely to visit multiple stores of the same kind. In spite of this, consumers desire to complete their food shopping in a single trip may entice them to visit multiple food stores of differing kinds (Brown, 1994), such as a butcher, baker and grocer. However, the provision by supermarkets of another key source of convenience – one stop shopping - has, for many shoppers, circumvented the need to visit multiple food stores. For example, Haddock-Fraser et al., (2009) found that 80% of grocery shopping took place in a single store and that one stop shopping is the most important attribute shoppers look for in a supermarket. This finding was supported via several rounds of pre-testing, with no combination – other than a supermarket in isolation – accurately representing the typical trip-chain behaviour of respondents when completing their household food-shopping. The supply-side analysis of retail compatibility was therefore limited to comparison-shopping for clothing.

Due to the wide variety of fashion stores in the 18 retail centres under study, analysis was limited to women's clothing stores. This was further operationalised via the requirement that such stores had to sell garments that would potentially appeal to the same target market. For this purpose, fashion stores offering apparel with *widespread* appeal to women aged 18-40 was adopted as the compatibility context. This meant for example that a store specialising exclusively in bridal wear would be excluded from the analysis. Such a precise definition was employed to ensure the likelihood of customer interchange between the stores under study. The supply-side measure of compatibility was therefore defined as the distance consumers would need to travel in order to visit the most compact cluster of four women's clothing stores in each retail centre. This figure of four was initially chosen on the basis of the number of stores typically visited when both fashion-shopping and attending a retail centre such as a mall (e.g. Martin and Turley, 2004; Moye and Kincade, 2003; Nicholls et al., 2002), and then confirmed via pre-testing.

5. Results

5.1 Demand-side results

Research question 1: How important is intra-centre spatial convenience to consumers?
Of the five factors, consumers rate intra-centre spatial convenience as the third most important determinant of where they shop (table 2). While initial analysis indicated that all four convenience factors were important, subsequent analysis via a one-sample t-test indicated that the mean score for access convenience was not significantly different to the scale mid-point value of 4, and therefore cannot be regarded as being salient to shoppers. Significantly, the hedonic factor ($\underline{M}$=3.4) was assigned the least importance. This finding was particularly interesting given that females dominated the sample (79% of respondents) and that they are often empirically associated with higher levels of shopping enjoyment (Chebat et al., 2008; Jackson et al., 2011). It may also suggest that the enjoyment derived from shopping is limited to recreational shopping contexts: a context which, on the basis of this study, accounts for a clear minority of shopping trips.

Research question 2: Is the importance of intra-centre spatial convenience limited to a smaller subset of the population?
Independent samples t-tests were used to compare respondent attitudes across gender and income. For income, respondents were divided into lower (<=$80,000 gross annual household income per year) and higher income groups (>$80,000 gross annual household income per year). Analysis found no significant difference between males ($\underline{M}$=4.8, $\underline{SD}$=1.3) and females ($\underline{M}$=5.0, $\underline{SD}$=1.1; t(141)=1.2, p=.22), nor between the lower ($\underline{M}$=5.0, $\underline{SD}$=1.2) and higher income groups ($\underline{M}$=5.0, $\underline{SD}$=1.1; t(487)=.012, p=.99).

Table 2: The relative importance of intra-centre spatial convenience

Factor	$\underline{M}$	$\underline{SD}$	T	DF	P
Parking convenience	5.5	1.4	24.1	490	<.001
Time convenience	5.4	1.5	22.4	490	<.001
Intra-centre spatial convenience	5.0	1.1	19.0	490	<.001
Access convenience	4.1	1.6	1.4	490	.152
Hedonic shopping	3.4	1.2	-11.7	490	<.001

A one-way ANOVA test was used to explore the consistency of respondent attitudes towards intra-centre spatial convenience across three age groups; 18-39 years old, 40-59 years old and 60+ years old. Analysis revealed a statistically significant difference for age [F(2,486)=6.6, *p*=.002], with the oldest age group assigning greater importance to intra-centre spatial convenience ($\underline{M}$=5.3, $\underline{SD}$=1.1) than both the 18-39 ($\underline{M}$=5.0, $\underline{SD}$=1.1) and 40-59 age groups ($\underline{M}$=4.8, $\underline{SD}$=1.1). However, in spite of this variation in attitude, it did

not alter the underlying fact that all three age groups regard intra-centre spatial convenience as important.

Research question 3: How do consumers perceive malls and strips in terms of intra-centre spatial convenience?

Paired sample t-tests were used to compare respondents' perceptions of each of the two retail formats on each of the four attributes of intra-centre spatial convenience. The resulting analysis revealed that respondents regard malls as offering superior intra-centre spatial convenience on each of the four attributes (Table 3). Further analysis via eta-squared revealed the magnitude of all such attitudinal differences to be extremely large (Pallant, 2011). Hence, not only do respondents regard intra-centre spatial convenience as important, they also believe that the mall is clearly superior in its provision. Moreover, each of the 4 rating scores for the strip fell below the scale mid-point, indicating not only a poor perception relative to the mall, but also a poor overall perception as well.

Research question 4: How does intra-centre spatial convenience influence consumer preference for either malls or strips?

This question was addressed via a direct logistic regression analysis using retail centre preference as the outcome. Seven factors in total served as the predictors for the analysis. The importance assigned to parking, time, spatial and access convenience as well as hedonic shopping served as the first five of these. The two remaining predictors were consumer perceptions of mall intra-centre spatial convenience and strip intra-centre spatial convenience. These latter two predictors were operationalised via the respondent perceptions addressed in research question 3. Prior to conducting the analysis the reliability of each of these two factors was confirmed, with perceptions of mall and strip intra-centre spatial convenience registering Cronbach alpha scores of .78 and .84 respectively.

Table 3: Paired-sample t-tests for consumer ratings of intra-centre spatial convenience

ATTRIBUTE	Ind.Var	<u>M</u>	<u>SD</u>	DF	t-score	Sig.	Eta-Sq.
Retail concentration	Malls	4.9	1.7	491	10.4	<.001	.16
	Strips	3.8	1.8				
Retail centre size	Malls	5.4	1.3	491	16.8	<.001	.37
	Strips	3.9	1.8				
Retail centre layout	Malls	4.8	1.6	491	19.9	<.001	.45
	Strips	3.1	1.7				
Store compatibility	Malls	5.1	1.5	491	16.7	<.001	.36
	Strips	3.6	1.7				

Analysis was limited to just those respondents that had indicated a clear preference for either malls or strips. This had the effect of reducing the number of cases from 491 to 256. Of these 256 cases, 120 preferred strips and 136 preferred malls. A test of the model against a constant-only model was statistically reliable, χ^2 (*DF*=6, $\underline{N}$ = 256) = 79.2, $\underline{p}$ < .001, indicating that the predictors as a set, reliably distinguish between the two groups. The subsequent prediction success was 67.5% for those preferring strips and 80.1% for those preferring malls, for an overall prediction success rate of 74.2%.

Table 4 provides summary statistics for the four predictors that significantly predicted retail centre preference ($\underline{p}$ < .05). The model indicates that retail centre preference can be predicted by the importance assigned to time, space and parking convenience. Respondents that prefer malls ($\underline{M}$=5.9) assign greater importance to time convenience ($\underline{z}$= 30.9, $\underline{p}$=<.001) than those that prefer strips ($\underline{M}$=4.8). Significantly in the context of this study, respondents that assign greater importance to intra-centre spatial convenience ($\underline{z}$= 16.0, $\underline{p}$=<.001) also prefer malls ($\underline{M}$=5.3) over strips ($\underline{M}$=4.6). This same pattern repeated itself for the third predictor ($\underline{z}$= 11.5, $\underline{p}$=.001), with respondents that prefer malls ($\underline{M}$=5.7) assigning greater importance to parking convenience than those that prefer strips ($\underline{M}$=5.3). Retail centre preference can also be predicted by consumer perceptions of the intra-centre spatial convenience afforded by the strip ($\underline{z}$= 20.8, $\underline{p}$=<.001): the more negative the perception, the more likely consumers are to prefer malls.

Table 4: Logistic regression analysis of retail centre preference as a function of attitudinal variables

Variable	Beta	SE	Wald	Sig.	Exp(B)	95% C.I (L)	95% C.I (U)
Time convenience	. 686	.123	30.9	<.001	1.99	1.56	2.53
Intra-centre spatial convenience	.435	.109	16.0	<.001	.648	0.52	0.80
Spatial beliefs (strip)	-.430	.094	20.8	<.001	.650	0.54	0.78
Parking convenience	.398	.117	11.5	.001	.671	0.53	0.85

5.2 Supply-side results

Research question 5: How do malls and shopping strips compare in the provision of intra-centre spatial convenience?

5.2.1 Size
Analysis revealed that the two retail formats are comparable in size, with malls measuring approximately 50,000 square metres on average and strips approximately 44,000 square metres (tables 5 and 6). This may appear a logical finding given that the same selection criterion was used for each (i.e. they must contain between 50-150 retail

stores). However the mixed-use nature of a shopping strip can potentially lead to its retail stores being interspersed amongst numerous other non-retail organisations and hence spread over a larger area. As the measurement of size terminated at that point in each strip where predominant land-use transitioned from retail to non-retail use, such a finding is indicative that even in the unmanaged retail environment of the Australian shopping strip, some level of retail concentration still exists (Reimers and Clulow, 2004).

5.2.2 Layout
While malls and strips may be similar in size, the former typically minimises extreme walking distances by providing a non-linear layout (table 5). So while the mall is similar in size to the strip, its average length was just 275 metres whereas the average length of a shopping strip was 658 metres (table 6). This is well in excess of the 300 metres a strip should be if consumers are to be expected to shop both sides (Bohl, 2003).

Table 5: The size and layout of malls

Mall	Layout	Length (M)	Width (M)	Size (SQ/M)	Levels
Airport West	L	500	100	55000	1
Box Hill Centro	N-L	200	200	40000	3
Brandon Park	N-L	150	100	25000	2
Forest Hill	N-L	200	150	60000	3
Greensborough	N-L	200	175	60000	3
The Glen	L	400	100	60000	2
Averages		**275**	**137.5**	**50000**	

KEY: M=metres, SQ/M=square metres, L = linear, N-L = non-linear, Levels = number of shopping levels/floors.

As part of the demand-side analysis, respondents were asked which retail centre layout they preferred. Just over half the respondents (53.7%) preferred a non-linear layout, 18.7% preferred a linear layout and 27.6% indicated an equal preference for either. It is therefore significant that just 1 of the 12 shopping strips offered respondents their more preferred layout. Hence strips, despite being slightly smaller than malls, potentially require shoppers to walk far greater distances. Bentleigh shopping strip for example has its 133 retail stores spread over a distance of 850 metres, while Northcote and Brighton North with just 79 and 81 stores respectively extend over a distance of approximately 700 metres (table 6). This finding is made all the more disconcerting by the notion that if a consumer were to shop both sides of the strip, then the actual distance covered could be double that of the measurements provided.

Table 6: The size and layout of strips

Shopping strip	Layout	Length (M)	Width (M)	Size (SQ/M)
Bentleigh	L	850	60	51000
Brighton	L	600	60	36000
Brighton North	L	700	60	42000
Carnegie	L	600	60	36000
Coburg	L	600	60	36000
Elsternwick	L	700	60	42000
Fitzroy	L	800	60	48000
Hampton	L	750	60	45000
Ivanhoe	L	700	60	42000
Moonie Ponds	L	500	60	30000
Northcote	L	700	60	42000
Oakleigh	N-L	400	200	80000
AVERAGES		**658**	**72**	**44167**

KEY: M=metres, SQ/M=square metres, L = linear, N-L = non-linear

In contrast, 4 of the 6 malls in this study possess a non-linear layout (table 5). This, in combination with the fact that 5 of the 6 malls provide two or more shopping levels, meant that despite representing some of the largest retail environments in Melbourne, only 2 of the 6 malls require shoppers to walk more than 300 metres in any one direction. However, in interpreting the respective results from the demand-side and supply-side analyses in relation to mall layout, it should be noted that the non-linear diagram that most respondents rated favourably was square in shape and with measurements that indicated it was 200 metres in length on all 4 sides. The layout of the malls in this study were neither linear nor square, and instead are generally best described as a rectangular compromise lying somewhere between the two. Moreover, the average length of the malls in this study (275 metres) exceeded that in the depicted diagram. Hence, the results of the supply-side analysis should only be interpreted as indicating that of the two retail formats, it is the mall that best approximates respondents preferred retail centre layout.

5.2.3 Compatibility
The degree of interchange between compatible retailers is strongly influenced by the distance between them; a distance that should not exceed 200m if consumers are to be expected to walk it (Brown, 1987). It is therefore significant that in order to visit four women's fashion stores, the shopper need not exceed this distance in either a mall or a strip (table 7). It should still be noted though that in order to visit four such stores, a strip shopper must walk more than double the distance (88 metres) to that of a mall shopper (37 metres).

Table 7: The distance between compatible stores

Shopping Strip	Fashion	Mall	Fashion
Bentleigh	90	Airport West	30
Brighton	40	Box Hill Centro	60
Brighton North	200	Brandon Park	40
Carnegie	-	Forest Hill	30
Coburg	170	Greensborough	30
Elsternwick	100	The Glen	30
Fitzroy	-		
Hampton	60		
Ivanhoe	60		
Moonie Ponds	40		
Northcote	200		
Oakleigh	100		
Average (in metres)	**88**	**Average (in metres)**	**37**

* Blank cells indicate the centre was unable to offer the necessary stores to meet the test criteria.

6. Conclusion

Theoretical implications
The findings from this study revealed that intra-centre spatial convenience was one of three convenience factors rated as important by consumers. Hedonic shopping, often proposed as the best means for preserving bricks-and-mortar retailing, was rated as the least important factor. Significantly, such ratings occurred in the context of respondents' most frequently undertaken type of shopping trip; multipurpose shopping.

The appeal of intra-centre spatial convenience cannot be regarded as being limited to smaller sub-segments of the population. Analysis revealed only one significant difference in attitudes, and even then it did not alter the underlying fact that all three age segments still regard intra-centre spatial convenience as important. It is however still worth noting that, in the context of a global trend towards an aging population, it was the oldest segment of shoppers that assigned the greatest importance to intra-centre spatial convenience.

Intra-centre spatial convenience provided 2 of the 4 factors capable of predicting retail centre preference. For 3 of these 4 predictors, it was mall shoppers that assigned the greatest importance to convenience – be it time, spatial or parking - a significant finding given that the mall has emerged as the dominant retail format in so many markets across the globe. Moreover, the more negatively respondents perceive the intra-centre spatial convenience of a strip, the more likely they are to prefer shopping at malls.

The supply-side analysis revealed that the disparities in intra-centre spatial convenience between malls and strips were as tangible as they were perceptual. Despite the design principle that a strip should not exceed 300 metres in length if shoppers are to be expected to walk it (Bohl, 2003) the average length of the 12 strips in this study was more than double that. Similarly, despite the fact that a linear design serves as consumers least preferred layout, it is the layout that describes 11 of the 12 strips. In contrast, the more preferred non-linear layout describes 4 of the 6 malls. The mall further enhances intra-centre spatial convenience by organising its stores into compatible clusters. When these results are combined with the finding that malls also minimise intra-centre spatial costs by segregating shopping and non-shopping functions (Reimers and Clulow, 2004), it becomes quite clear that the mall offers shoppers greater intra-centre spatial convenience.

This study also makes an important contribution in relation to its methodology. Its findings highlight the benefit in combining a demand-side and supply-side approach. In so doing, it not only serves as a means of testing the validity of the survey-based findings; the additional direction it provides also enhances the study's contribution to practitioners.

Practical implications
The findings stemming from this study provide additional support to the notion that convenience has influenced the varying fortunes of malls and strips. Moreover, if the current trends of declining fitness levels and an aging population continue as predicted, the gap between malls and strips may widen even further. The findings also offer important direction for both mall and strip planners, particularly in light of the importance consumers assign to intra-centre spatial convenience. In the case of the mall, its tangible advantage in this area should be emphasised in its marketing communications. In the case of the strip, the results of this study confirm that consumer perceptions about the strip's inferior intra-centre spatial convenience are based on tangible differences. Hence land consolidation, re-zoning and/or creating compatible clusters of stores all provide a potential means for redressing this competitive gap.

The recent phenomenon that has come to be called *Retailtainment* is often characterised by a 'bigger is better' philosophy. Current trends suggest such a philosophy may be inconsistent with the needs of many shoppers if not countered with such attributes as a compact size and layout, and compatible clusters of stores. While many consumers have always been reluctant to walk excessive distances when shopping, such reluctance is likely to be further exacerbated by increasing obesity, declining fitness levels and an aging population. Retail planners must therefore give serious thought to creating retail environments compatible with such human tendencies and conditions. Offering intra-centre spatial convenience provides one such strategy for the mall and strip.

Future research

Further research is still necessary. One of the motivations behind this study was an aging population, and in fact, older shoppers *were* found to assign intra-centre spatial convenience greater importance. However the views of other potentially affected segments such as the severely overweight and those with other forms of physical disability were not specifically identified in this study. Further research is therefore necessary to determine how intra-centre spatial convenience may influence their attitudes and shopping behaviour.

Another reason to create a compact shopping environment relates to concerns over climate change and the subsequent need to reduce car usage. If shoppers are to be expected to abandon the car in favour of walking trips and public transport, it has been proposed this will require creating retail centres that offer intra-centre spatial convenience (Ewing and Cervero, 2010; Rotem-Mindali and Saloman, 2007). Further research is required to substantiate this proposition.

This study has also limited its focus to retail centres. However, intra-centre spatial convenience also has the potential to influence patronage of individual stores. For the individual retailer, success depends to a large degree on the level of pedestrian activity passing by their storefront. And because the level of pedestrian activity is influenced by the layout of a centre and the juxtapositioning of its stores (Haklay et al., 2001; Porta et al., 2009), further research should explore how intra-centre spatial convenience influences store choice.

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