

# Location Planning Theories in Valuation of Retail Premises

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**Key words:** location planning, retailing, tenants, valuation, shopping centres

## SUMMARY

This paper examines location planning as a valuation tool in retailing context. The broad aim of this paper is to ascertain the type, nature and extent to which location models are used Finnish retailers in their location decisions. More specifically, the objectives of the work are to review the literature on retail location models and ascertain whether or not Finnish retailers use any models for their location decisions. Empirical research is conducted by a survey addressed to all tenants in a large Finnish shopping centre. The aim is to find out the usage of five location planning methods; check list, analogue, financial analysis, regression and gravity model. Most of the sample retailers used the checklist analysis, analogue approach or financial analysis, in one form or another. The research indicated that the different location assessment procedures were complementary to each other, being used in sequence to maximise their overall effectiveness. According to this research, retailers operating in the target shopping centre use quite similar and relatively limited (quantitative) toolbox when making establishment decisions. The possible existence of several qualitative factors is certainly one recommended area for further research; what actually determines the establishment process if quantitative models are not used.

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## 1. INTRODUCTION

The broad aim of this paper is to ascertain the type, nature and extent to which location models are used Finnish retailers in their location decisions. More specifically, the objectives of the work are to:

- review the literature on retail location models;
- ascertain whether or not Finnish retailers use any models for their location decisions

In retailing, everything is based on buying consumers. The concept of the importance of other consumers was introduced by Belk (1974). Belk pointed to "social surroundings" as an important situational factor for consumer behaviour. Also Eroglu and Harell (1986) used the concepts of "density" and "crowding" to establish a conceptual model for the existence of other consumers. Eroglu and Machleit (1990) implemented the model by Eroglu and Harell (1986) and empirically tested it to determine the positive relationship between retail density and retail crowding perception. Under high retail density conditions, they discovered that task-oriented shoppers experience more retail crowding and less satisfaction with the shopping environment than do non-task-oriented shoppers.

Hui and Bateson (1991) used the concepts of "density" and "perceived crowding" to determine how the existence of other consumers affects the individual's emotional and behavioural reactions; they concluded a negative relationship between them.

Lehtinen and Lehtinen (1991) proposed that other customers' presence and behaviour influence the interactive dimension of an organisation's service quality, and may have a more profound impact upon it than contact with service personnel. The realisation that consumer behaviour is affected by situational factors as well as consumer traits and retailer characteristics has a theoretical foundation in field theory (Lewin 1936). Field theory asserts that each individual views each physical and social setting somewhat differently. This subjective conceptualisation of the world is called life-space and its uniqueness results in variations in utility functions and consumption behaviour. Modern interactionism (Bem and Allen 1974; Mischel 1977) represents the empirical assessment of Lewin's theory. The theory dictates that characteristics of the stimulus object (attributes), characteristics of the individual (demographics, Internet usage), and the situation (situational factors) affect reaction to the stimulus object (format preference). Although consideration of these three categories of independent variables may seem to lack focus, the greatest strength of modern interactionism is that it considers typically a more complete set of factors that affect human behaviour.

The actual reasons to choose a certain location have been nonetheless a subject for a limited amount of researchers. One of the first and even today one of the most benchmarked reports

are the research report by McGoldrick (1990) and Brown (1992). Clarkson et al (1996) developed theories further and implemented empirical evidence in grocery retailing. Clarkson et al. forms also the framework for this research, though the focus is on shopping centres.

One of the most recent researches in this field presents innovative methods that are usable in this type of research. Larson et al (2005) uses RFID- technology to find out the most attractive locations in a retailing unit. The research is performed in a supermarket surrounding, but is still a good example of using modern technology and previously tested theories. In these two researches the standpoint is on the customer behaviour. In this paper the standpoint is on the opinions collected from specialists in retailing.

## **2. RETAIL LOCATION THEORIES**

Retail location theory can be said to rest on various theories, depending on the view point. Although, in the literature can be found four broad theoretical approaches. Clarkson et al. (1996) has categorised these theories as following and used them in grocery retailing context:

- central place theory
- spatial interaction theory
- land value theory
- the principle of minimum differentiation

These theories have shared elements, but can still be differentiated from each other. It is difficult to compare the importance of these theories, though. Each of them is suitable for analysis and further research. Actual location analysis can be made by numerous techniques that have their foundations on above mentioned theories. A review of these techniques can be found in e.g. Rogers (1992). In this paper, five techniques are chosen to mirror the theoretical approach. These techniques are:

- Check-list method
- Analogue method
- Financial analysis
- Regression modelling
- Gravity modelling

These models has been applied in Finland formerly in research concentrated in for example grocery retailing (e.g. Kuokkanen 2004), but in the area of shopping centres there exist virtually no literature.

### **2.1. Central place theory**

The foundation for planning theories within retailing is often said to be moulded by Harold Hotellings (1929) theory from duopolistic competition and theories from Walter Christaller (1933) and August Lösch (1954). Their aspects are in central placement theories and area

interaction models, such as gravitational models (Marjanen 1997) On micro-scale has e.g. Stephen Brown (1992) given quite thorough explanations. Planning theories give the framework for the research and understanding of cases (Forester 1989).

Central place theory has been over the past 60 years extremely influential in providing a framework for the analysis of both spatial and non-spatial retailing patterns, although it is subject to certain limitations discussed by Carter (1972) and by Brown (1989). The major criticisms start with Kivell and Shaws's (1980) observation that any model which attempts to reduce a complex reality into a simplified and manageable form suffers from a high degree of abstraction in terms of the assumptions of identical consumers, an even distribution of population and the concept of single purpose (product) shopping trips to the nearest centre that supplies the merchandise. Central place theory assumes consumers to be identical, adopting the economist's "optimising man". This is not seen to be a very realistic concept as shown by Golledge et al. (1966) in that consumers do not always follow the exact precepts of central place theory. The inclusion of a random or stochastic element has been clearly recognised and substantial attempts have been made to interpret central place theory within a probabilistic framework. It is also generally accepted that the central place theory's failure to accommodate change successfully is its single most significant shortcoming (e.g. Brown 1989, Clarkson et al. 1996).

The concept of single purpose shopping trips is arguably the most talked about assumption made by central place theory. Authors have criticised the lack of sophistication of a single product approach, arguing for a multi-product perspective. Thompson (1969) believed that even where the focus is moved from products/purpose to stores there is an implicit assumption that the only factor differentiating one store from another of the same type is location, thus ignoring such factors as price, quality and image. In response to this, formal attempts have been made in recent years to develop mathematical modelling in central place theory which incorporates multi-purpose shopping.

## **2.2. Spatial interaction theory**

Retailers have both responded to market opportunities and led consumers into new modes of shopping, usually at the expense of the traditional shopping centres (Wrigley and Lowe 2002). The larger multiple retailers were the first to recognise the commercial opportunities offered by changing consumer demands, and they responded with the provision of new shopping facilities offering the advantages of easily accessible out-of-centre sites, adequate car parking, larger premises to provide wider ranges of products and associated services, and a more attractive shopping environment in more secure surroundings (Thomas and Bromley 2002). This has resulted in marked increases in market concentration in all sectors of retailing in favour of the largest retail organisations, which wield considerable influence both in the acquisition of products and in the planning environment (Wrigley 1996,1998;Guy 1996; Marsden and Wrigley 1996; Sparks 1996a;1996b).

In traditional retail stores, the service encounter is defined as a period of time during which a consumer directly interacts with a service (Shostack 1987). Many frameworks have been

suggested to conceptualise the service encounter, but, typically, the service encounter is established by interaction among the service provider, physical environment, service organisations, and users. Also, many models suggest that service is provided in an environment that includes diverse consumers, and that the existence of other consumers affects the service experience (Lovelock 1996; Martin & Pranter 1989).

Spatial interaction theory is based on the hypothesis that consumers trade off the attractiveness of alternative shopping areas against the deterrent effect of distance (Clarkson et al. 1996). This offers an alternative normative model to explain behavioural interaction. In doing so it discards the assumption made by central place theory that behaviour is explained by consumers using the nearest offering of a good or service.

The origins of spatial interaction theory date from the pioneering studies of William J. Reilly (1931). Reilly based his “Law of Retail Gravitation”, on an analogy with Newtonian physics linked with empirical observations of shopping behaviour placed in an inter-urban structural context. The basic problem with the original gravity model is that its variables; population and road distance, and the parameters on these variables, unity and the inverse square, do not always perform well in practice. (Brown 1989). Although some empirical studies showed that Reilly’s model performed reasonably well in practical situations, others found its performance inconsistent.

The first recognised refinements and modifications to Reilly’s Law came from Converse (1949) in identifying an “inertia factor” that reflected the reluctance of a consumer to move any distance in making a purchase. Others have refined and modified the variables and parameters in Reilly’s Law. Arguably the single most significant post-war contribution to spatial interaction theory came from Huff (1962;1963). He believed that consumers patronise competing shopping areas as the basis of their overall “utility.” The Lakshmanan and Hansen’s refined version (1965) of Huff’s model has been used subsequently in many planning studies. Their model, devised for metropolitan regions, states that a shopping centre located in a given zone will attract consumer expenditure from another zone in direct proportion to the size of the centre measured in floor space, and in inverse proportion to the distance to the consumer expressed in travel time, and to competing facilities. In this way it allows for overlapping trade areas.

The simplicity of the gravity model has given rise to considerable operational problems. Apart from the absence of a satisfactory test to measure their closeness of fit (e.g. Kivell & Shaw 1980), the operational difficulties mostly revolve around the subjective indexing of variables and calibration of the model. Arguably the most difficult variables to define are measures of attraction and distance. The variables used depend on personal opinion, data availability and time or cost constraints; with numbers of shops, retail employment, sales turnover, retail floor space and types of stores having all been used as measure of attraction; while geographic distance, road distance, travel times and travel costs have all been used as measures of distance (Clarkson et al. 1996).

### 2.3. Land value theory

Along with planning theories, location planning is fitted with land value theories. Land value theory, also known as bid rent theory and urban rent theory, first achieved recognition in a retailing context from the early work of Haig (1926) and modified by Hotelling (1929). Haig argued that competition for an inelastic supply of land ensures that, in the long run, all urban sites are occupied by the activity capable of paying the highest rentals, and land is thereby put to its “highest and best” use. According to Clarkson et al (1996), land value theory proposes that the location of different activities (retailing formats) will depend on competitive bidding for specific sites.

Haig’s work formed the basis of Alonso’s (1964) seminal land use model. As with central place theory and spatial interaction theory discussed earlier, land value theory fails to take the temporal dimension into account. Land use activities occupy locations sequentially and once established they can prove difficult to move. In an urban area there will always be non-conforming or outmoded land uses “interfering” with the logic of bid rent theory. Modern cities such as London are plagued with pedestrianisation, congestion and restrictions on vehicular access and parking and, in addition, the centre has lost much of the accessibility expressed in land value theory. This has led to the existence of positive and non-negative rent gradients, which do not always decline with distance.

Fine tuning by land value modellers in recent years have made substantial attempts to overcome the criticisms discussed earlier. However, Brown (1993) highlights that the attention has focused on the residential sector, and that studies of retailing and internal structure of business districts being conspicuous by their absence.

The tenant mix problem is often discussed subject within shopping centres. Literally speaking it is attached to procedure in which centre managers/owners decide what services are available and where in order to achieve as rational and attractive tenant selection as possible. Seagle (1967) presents a linear programming model for the tenant mix problem. His model finds the allocation of square feet to each tenant class that maximises the total present value of the shopping centre. The model has constraints on the use of space, investment, and other resources of the developer.

Alonso (1964) constructed bid rent curves for each land use function, their slope reflecting the sensitivity of that activity to changes in accessibility. In a desire to attract custom from the entire urban area and, as a result, requiring the most central sites, businesses are prepared to bid the highest rentals, but the amount they are willing to pay falls off rapidly with distance. However, Alonso’s analysis is concerned with business, residential and agricultural land uses and is often considered too broad to show a true reflection of retail location.

Within the context of retailing, these principles have been taken up notably by Firey and Garner. Assuming equal accessibility from all directions, perfect knowledge on the part of the retailer and no legal or social constraints, Firey (1947) suggests that a systematic retail pattern is determined by the maximum rent that retailers are able and to pay.

Garner (1966) incorporates the concept that total sales volume decreases with distance from the peak intersection into his spatial model of business centre structure. He equates high threshold functions with high rent paying ability and concludes that these will be found on high value land at the centre of retail “nucleations”. Garner also recognised the over simplification of his model and pointed out that establishments of a given type are by no means always associated with discrete economic distances from the peak land value intersection. Furthermore, he recognised that real world rent gradients are neither smooth nor symmetrical, but are characterised rather by subsidiary peaks alongside arterials and ring road intersections.

Garner’s model was extended by Davies (1976), going beyond the consideration of accessibility and rent theory. He uses the varying accessibility requirement and rent-paying abilities of different business to link with the previous identification of three distinctive kinds of retail complexes (Centres, Ribbons and Specialised Areas). This overlaps with the hierarchical tenets of central place theory. Garner, Davies and other land value modellers have been strongly criticised over the model’s assumptions regarding accessibility, segregation of land use, a free market in property and again like central place theory, the existence of the previously mentioned economist’s “optimising man”. The model ignores Curry’s (1967) “summation man” and believes individuals to be fully informed utility maximisers who are not influenced by non-economic forces, including whim, tradition, aesthetics, prestige and sheer ignorance. The model ignores imperfections that occur in the property market as pointed out by Brown (1993):

*“The developers of planned shopping centres ensure that the tenant mix and rentals paid are carefully controlled, with the highest order anchor stores often paying the lowest rentals per square foot. He concludes a free market in property does not exist, therefore, nor are rent curves smooth.”*

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## 2.4. The principle of minimum differentiation

The principle of minimum differentiation originates from Harold Hotelling's (1929) classic paper. The principle suggests, in a retailing context, that a given number of stores operating within the same market sector will achieve superior performance if they are clustered together.

In his original model, Hotelling makes key assumptions concerning location, pricing, transport costs, consumer behaviour, conjectural variations, market shape, and number of competitors; which in reality are not always consistent (Eaton & Lipsey 1979). Brown (1993) believes, despite the interesting empirical work that supports the clustering of compatible retail entities, the bulk of the studies support Eaton and Lipsey's (1979) conclusion that:

Although Hotelling's work is strongly criticised, there has been a considerable amount of research effort since publication. In a retailing context a number of empirical studies support the principle of minimum differentiation's hypotheses that sellers of the same or similar categories of merchandise tend to cluster closely together. These studies have been carried out in a number of different countries, incorporating a variety of statistical techniques while referring to a wide range of retailing trades. Brown explains that high order retail trades, like ladies outfitters or department stores, exhibit the most clustered distributions, whereas low order retail businesses such as convenience stores and personal services, are the least agglomerated of all. However, it fails to explain why out-of-town supermarkets often outperform supermarkets in the centre of the business district in close proximity to their competitors (e.g. Clarkson et al. 1996).

## 3. METHODOLOGY

In order to pursue the aims and objectives outlined in the introduction, a content analysis of information gained from a multimethod research process was conducted to establish the underlying trends in location procedures used by Finnish retailers. The first stage involved an in-depth interview with an acknowledged retailing expert in order to establish an understanding of the industry and its terminology. The second stage involved semi-structured in-depth interviews with two major retailers based around secondary research and the interview with the industry expert. The third stage involved the administration of a questionnaire to 105 tenants in a shopping centre located in Turku, Finland. The questions were based around secondary research and the interviews in stage one. The questionnaire was designed to gather information on location procedures used by the retailers studied. The interviewees were asked to indicate their location procedures, frequency of use, factors considered in assessing a store's location, their knowledge of location theory and data sources used. Open-ended questions were asked concerning the levels of accuracy, anticipated changes in procedures used and market saturation. Totally 68 answers, meaning a 65 per cent response rate was achieved for the questionnaire.

## 4. RESULTS

The research identified that all five mentioned different location assessment procedures were being used by the sample retailers (Table 1).

Table 1. Location assessment procedures

	<b>Primary</b>	<b>Secondary</b>	<b>Total</b>
Check list	41	12	<b>53</b>
Analogue	5	0	<b>5</b>
Financial analysis	20	13	<b>33</b>
Regression	1	0	<b>1</b>
Gravity model	1	0	<b>1</b>
<b>Total</b>	<b>68</b>	<b>25</b>	

From the location assessment procedures used by the sample retailers, only gravity modelling stems from a deductively derived (or derivable) theories of retail location, that is spatial interaction theory. Checklist analysis, the analogue method and financial analysis, can be best classified as techniques and regression modelling as a mechanism rather than deductively derived (or derivable) theories of retail location. There are, however, slight similarities between the analogue method and central place theory, in that central place theory states that the nearest store is patronised and the analogue method's use of time bands with the majority of customers coming from the nearest time band. The way financial analysis assesses the viability of a site is to some extent anchored in the theory of land value. However, while financial analysis and the analogue method have similarities with deductively derived theories of retail location, they are not part of them.

Most of the sample retailers used the checklist analysis, analogue approach or financial analysis, in one form or another. The research indicated that the different location assessment procedures were complementary to each other, being used in sequence to maximise their overall effectiveness.

The sequence of usual procedures starts initially with checklist analysis consisting of map work involving a detailed study of the proposed site and its catchment area; looking at the road system, urban development, the location of other supermarkets and urban distribution. This preliminary analysis enables the retailer to screen a large amount of potential sites with only the more suitable ones being analysed further, thus helping restrict the cost of location assessment. Checklist analysis has limitations in its inability to predict turnover, but the way in which it is used as a screening tool presents a cost-beneficial assessment method to the grocery retailer.

After the initial checklist procedure, the retailers studied then applied the analogue approach. First, the retailers undertake an in-store intercept interview of customers at their existing stores. The results of the surveys provide the retailer with information about the origins of the store's customers, their spending characteristics, the demographic composition, shopping

behaviour and media usage habits. In the literature can be found several lists of survey topics, e.g. Clarkson et al. (1996) and Rogers (1992) just to mention a few. Generally the survey can include questions e.g. on the following topics:

- customer address;
- customer socio-economic characteristics: age, income, occupation, race, etc;
- customers' patronage of the competition: identification of the major competitors;
- shopping behaviour: frequency, amount spent etc;
- media habits: newspaper readership, advertising awareness and recall

Second, the retailer identifies current and future stores of their competitors, which are then visited to develop a quantitative and qualitative database of information on competitors' stores. Quantitatively, their distances in drive-time from the proposed site are calculated and their selling square footage estimated. When future competitors' stores are assessed, the retailers studied used general press information and building contract leads. Recent trends have seen three major retailers introduce store loyalty cards while a further major retailer is assessing their viability. The information gained from these loyalty cards will inevitably be incorporated into location assessment procedures in that much of the customer data stored electronically is fundamentally similar to the data suggested earlier.

It can be said that the analogue sales forecasting technique is only as strong as (Clarkson et al. 1996):

- the quality of the data collection effort;
- the experience of the analyst; and
- the analyst's ability to demonstrate commonsense and good judgement in forecasting sales.

The research shows that the procedures used by retailers operating in this named shopping centre do not rely on one approach, but a combination of approaches. This combination of approaches reduces the risk involved in store location assessment by comparing their predicted turnovers. The initial use of checklist analysis reduces the cost and time required to assess a large number of stores before using the analogue approach, regression or gravity modelling. These, in comparison, have a greater degree of accuracy but require more time and money. These procedures provide the retailers in the sample with a high level of accuracy for predicting a store's potential turnover. They are comprehensive and relatively easy to understand. The information required to use these procedures is readily available to the retailers. There is no one "best" method of assessing retail location.

The results indicate that some type of program could emerge if the court eliminates the mandatory program. Immediate questions surrounding the location planning process include: If the location planning process changes from mandatory to voluntary participation among retailers, can the elements of the process be large enough to enhance the success of this store? Will this be optimal in markets where retail sector is imperfectly competitive? What would be the extent of the expected free-rider problem? Based on the author's knowledge, no study has addressed these questions for the Finnish retailing industry.

The results show that retailers with knowledge from chain operations received a higher level of analysis due to a single unit operator. These chain operators reacted by expanding competition and the volume of goods they sold. To some extent the research only tells that retailers use a series of models and often use them in combination and in a clearly defined sequence. However, deductively derived theories give a useful background to the understanding of location research.

## **5. DISCUSSION**

This paper is focused on summing up the location variables through a literature review and an empirical survey. As the shopping centre market becomes increasingly saturated, the development of new stores on new sites would diminish in importance. The need for more sophisticated location assessment procedures would then become significantly less important to the retailers in their pursuit of growth strategies. Several options are open for growth within their existing product formats in this emerging climate. There is no optimal method fitting all circumstances when assessing a retailing location. The results are in this context quite similar to Clarkson et al. (1996), although their research was based on grocery retailing in the UK.

According to this research, retailers operating in the target shopping centre use quite similar and relatively limited toolbox when making establishment decisions. This is certainly one recommended area for further research; what actually determines the establishment process if quantitative models are not used. Are there qualitative factors behind the process or is just a matter of occasions? This does not involve a location decision as we have known it, but more of an evaluation of the future potential of the existing site as a result of a capital injection. More empirical evidence is certainly needed.

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## **BIOGRAPHICAL NOTES**

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