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## Trade Area Analysis Of Out-Of-Town Shopping Malls: A Case Study From The Netherlands

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TRADE AREA ANALYSIS OF OUT-OF-TOWN SHOPPING MALLS;  
A CASE STUDY FROM THE NETHERLANDS

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**Abstract**

Recent years have witnessed a shift from central urban location of shopping facilities to extra-urban locations. This trend, which has become a prominent one in North-America, is increasingly also observed in several European countries (e.g., France, Germany). The Netherlands has always had a discouraging policy for out-of-town shopping malls. Recently, however, a new experiment has been implemented, in the Greater Rotterdam area. This paper deals with the potential competition of an out-of-town shopping mall in the retail sector with respect to the inner city of Rotterdam. Based on a survey questionnaire, this paper aims to identify the motives of visitors/buyers for such large-scale shopping facilities. Analytical research into the nature (run or fun shopping), and the spatial market area of a particular site, located in Greater Rotterdam (Alexandrium), shows that the anticipated policy goals are met, so that the shopping mall concerned turns into a regional market for run shopping purposes.

## **Introduction**

The opportunities for retail businesses to settle in peripheral locations in Dutch towns have been very restrictive due to strict governmental regulation on spatial planning in the Netherlands. In recent years, however, some experiments have taken place to develop large-scale retail locations outside Dutch city centers. This is a common phenomenon in other industrialized, urbanized countries such as France, Great Britain, Germany and the United States (see for a pioneering study on Great Britain and the United States, Jones 1969). For example, in France it can be noticed that retail businesses, in particular out-of-town shopping malls (hypermarkets) at peripheral locations, dominate the market. Hence, small-scale retail businesses are crowded out from city centers, so that these centers suffer from – long lasting - vacant shops (and eventually these buildings may be demolished and changed into other purposes). A similar picture for retail businesses is observed in the city centers of the United States that also lost their dominant market position to cheap and easy accessible locations at the city edges. This ‘laissez-faire’ or market driven policy has clearly not been pursued in the Netherlands until recent years. The Dutch government considered it to be socially undesirable that the old (historical, cultural and social) city centers might have to give up their retail and shopping function.

Since 1993, it became allowed for large-scale retail businesses in the Netherlands to locate – to some extent – towards peripheral areas. Two years later, the first out-of-town shopping mall was opened in Rotterdam, the second largest city in the country. A first evaluation of the malls’ functioning, carried out a few months after it was opened (see Gantvoort and Guyt, 1996), revealed that most visitors considered their shopping trip to this mall as a pleasure activity (sometimes referred to as fun shopping). The original purpose of the large-scale, out-of-town shopping mall to simply go and buy as quick and efficient as possible appeared to be less relevant for them.

The aim of this paper is to analyze the effects of large-scale, out-of-town shopping malls on the economic functioning of the city center’s retail sector (in the long-run). Furthermore, it also attempts to focus particularly on the geographical size of the trade (shopping) area of Dutch large-scale, out-of-town shopping malls. These issues will be

addressed in this paper by empirical field research of the first, and therefore unique, experiment of the out-of-town shopping mall in Rotterdam (coined Alexandrium).

The paper is structured as follows. Section 2 deals with the structural and spatial trends in the Dutch retail sector. The data used for the empirical analysis of the peripheral malls' trade area in the case of the site in Greater Rotterdam is described in section 3. The results of this analysis into the determinants of the trade area and the nature of shopping are reported in section 4. Section 5 concludes on the consequences for the spatial-economic functioning of the peripheral and central shopping malls..

## **2. Structural and spatial trends in the retail sector: the Dutch case**

### 2.1 Structural changes in the retail sector

The retail sector has experienced major structural changes in the last decades. Traditionally, retail businesses were located in the center of cities (in line with the well-known central place theories of Lösch and Christaller). Nowadays, shopping in the city centers is still considered to be quite attractive, especially due to the pleasure enjoyed during trips in concentrated shopping areas. City centers offer a wide variety of shops and articles and in addition to that, central places often have other facilities or cultural, historical and social values that visitors find attractive (shopping is then regarded as going out ,see also Ruiz, 1999). Nevertheless, several reasons can be identified from the 1960s onwards that made the center less appealing, relative to peripheral locations. One can think of the deterioration of the accessibility of the centers, the lack of parking facilities and also the shortage of shopping floor space (both quantitative and qualitative). Clearly, the increase in traffic congestion has pushed out retail businesses from the city's centers. But on top of that, increasing rent prices in the centers were also driving out retail shops towards peripheral locations (where in fact due to processes of sub-urbanization, the clustering of people increasingly took place). For example, in 1997, the average rent price of superior locations in Dutch towns was between 400 and 1300 guilders/m<sup>2</sup>, whereas peripheral locations just demanded 150-300 guilders/m<sup>2</sup>.

Besides these internal changes in the businesses of the retail sector, one can also observe (see Boekema et al., 1998) two important external trends from the perspective of the consumers (demand side):

1. Spatial competition: Enlarged transport possibilities, especially due to the increase in car ownership, has made the consumers much more mobile than before. As a consequence, consumers can easily visit other places than the (nearby) center.
2. Sectoral competition: Income growth has coincided with a less than proportional growth of expenditures on retail goods. In other words, the priorities of consumer demand has shifted to other goods (for example, leisure activities).

As a result of increasing (car) mobility, consumers face a large set of opportunities when they go out shopping. The choices made will depend on the underlying motives of the consumers. Bolt (1995) distinguished the following types of motives.

- perception motives in which the emphasis is on the comparability of goods and services, the quality, the presentation and the function of goods and services
- economic motives in which the emphasis is on efficiently and cheaply buying goods; important aspects in this respect are the prices, special discounts, travel time and costs, and parking facilities
- personal motives that are based on habits and norms; in this respect, personal service and the meeting of friends and acquaintances are vital elements.

In general, shopping visits to the centers are made for reasons of pleasure perception, whereas peripheral centers are used for economic motives. Personal motives mostly play a role in neighborhood centers.

An alternative classification for shopping motives - as briefly mentioned in the introduction - makes a distinction between fun-shopping and run-shopping. Fun-shopping is associated with going to several (comparable) shops for pleasure and cosy entertainment (often jointly with others). This is most likely to take place in

concentrated city centers in which there is a wide variety of shops and goods, and also many opportunities of 'going out'. In contrast, run-shopping is supposed to be an efficient activity in which particular, predetermined goods are to be bought as quickly as possible (for example, after working hours on the trip from work-to-home). This kind of shopping activity may predominantly take place at the fringe of the city where consumers can go to good accessible shopping malls without much social atmosphere and collect the desired good(s) without any time delays (see also Borchert, 1995). In short, perception motives are related to fun-shopping, whereas economic motives are linked to run-shopping. As long as consumers stick to shopping for either fun or run reasons, and in case the peripheral out-of-town shopping mall is developed to serve run purposes, the retail sector in the urban center does most likely not face severe competition of the peripheral mall. However, when the two types of motives (run and fun) are mixed at both down-town and out-of-town shopping malls, retail businesses may be significantly threatened in their survival. This also has, of course, implications for the planning of the spatial structure of retail businesses. Governments may desire to intervene in order to avoid extreme competition between geographically nearby located shopping centers that are close substitutes in the eyes of the consumers. This is what basically motivated the Dutch government to follow a restrictive allowance strategy with respect to large-scale retail businesses at peripheral locations. In the next section, the Dutch spatial planning guidelines for the retail sector will be discussed in some more detail.

## 2.2 Planning

Similar to other industrialized and urbanized countries, Dutch consumers became more mobile in the post war era. This led to the demand for out-of-town shopping malls at which large scale retail businesses offer their goods (following the examples observed in France, Germany, Britain and the United States, see Kulke 1992 for an extensive spatial analysis in the case of Germany). However, retail organisations formed by businesses located in city centers were strongly against this development. They successfully exercised their influence to persuade the Dutch government not to allow for this new, peripheral type of locations (note that the term peripheral is used here as peripheral to urban or neighborhood centres). Consequently, the prevailing spatial policy in the Netherlands was to heavily restrict the development of shopping centres

out of town: Except for some space-extensive goods (like furniture, boats, cars, building material, etc.) it was simply not allowed to locate at the urban fringe. This selective and discouraging planning policy – that continued during the 1970s and 1980s – clearly hampered significantly the dynamics in the retail sector. Actually, representatives of the sector itself advocated at the beginning of 1990s that the spatial restriction of retail locations should be relaxed. In 1993, it was decided to allow for the settlement of other types of businesses that needed large shopping space as well. Moreover, a major policy shift was made by introducing new guidelines for the peripheral (that is, out-of-town) locations of large-scale retail businesses (“Grootschalige Detailhandelsvestigingsbeleid” in Dutch). This national policy did not focus on the type of retail business, but on the clustering of large-scale retail activities. Now, decisions with respect to the allowance of certain goods had to be made at the local (municipality) level. Large-scale retail businesses were allowed to cluster at peripheral locations under the following conditions (see Langenberg-Van der Klaauw and Clement, 1997):

1. The location should be at one of the thirteen most important city nodes in the country (note that the nodes are chosen in the Fourth Memorandum of Physical Planning)
2. (Minimal) requirements have to be met by the large-scale out-of-town malls with respect to size, regional market area, availability of (lack of) space in city centers, accessibility by public transport and by car, and intermunicipal cooperation with surrounding municipalities

### 2.3 Economic function of the retail sector in city centres

In general, policy measures related to the retail sector have to fulfil two main objectives (see Seip and Voogd, 1998):

1. To ensure sectoral growth and change;
2. To maintain the shopping function of the inner city.

In practice, it is hard to achieve one of the above mentioned targets without harming the other. In fact, the first objective of a dynamic economic development asks for deregulation (*laissez-faire*) of the retail sector, whereas meeting the second goal clearly demands regulative policy actions in favour of the retail businesses in the city centres. To put it differently, deregulation is needed for the retail sector to remain competitive at

the national and international level and in addition to be able to adjust business strategies and the mixture of activities (goods). Regulation is necessary to avoid the economic (and possibly social) collapse of the city center, but might give rise to economic support to retail businesses that are faced with negative returns (see also Bak, 1994). This dilemma is of course hard to solve in practise, as can be noticed from the recent governmental decision in the Netherlands to allow for peripheral locations that – at the same time- will not impede the economic development of central, urban locations. The latter objective should be accomplished by keeping sufficient supply of shops and goods (both in quantitative and qualitative terms) in city centres available and accessible for the consumers. More in particular, consumers should perceive this retail supply to be complete, differentiated and offering ‘value for money’ (that is, the price of the good should reflect the quality of the good). When consumers become dissatisfied with the conditions of the retail sector in the city center (and go to other better places instead), the danger exists that the quality of life in general will deteriorate. This may be due to rising criminality, vacant shopping buildings, and slumps (as can be witnessed in some American cities). As argued, to avoid this negative spiral movement for the inner cities, the Dutch government has put forward the above mentioned conditions to the development of large-scale, out-of-town shopping malls. These conditions should prevent that peripheral out-of-town malls become a real economic threat to the retail businesses in the inner city.

### **3. Data collection**

To gain insight into the effects of a large-scale, out-of-town shopping mall on the retail sector in the inner city, empirical field work followed by statistical analysis has been carried out for the unique case so far in the Netherlands, the shopping area of Alexandrium II (located in the Northeast of Rotterdam). This shopping area was opened in September 1995, and is easy accessible both by car and by public transport.

A structured questionnaire for visitors of this mall was developed to find out whether (potential) consumers actually replace visits to the city centre by going to the out-of-town mall and to analyze the trade area through the consumer’s place of origin (travel time from home to the mall). Moreover, background characteristics were asked about



the type of visitors, their opinion about several features of the mall, and their travel mode.

Interviews were held with 150 visitors to the mall on April, 9, 1999 at the walking promenade in front of the 'megastores' of the mall. It appeared that 130 returned questionnaire forms were suitable for further analysis. The other 20 visitors were moving towards the adjacent mall for housing furniture (Alexandrium III) and had no interest in the megastores of Alexandrium II. A short summary of the outcomes with respect to the purpose of the trip (run or fun shopping) as well as information on the actual and potential (maximum possible in the eyes of the respondent) travel time can be found in Appendix A.

#### **4. Empirical analysis**

In section 2, it was argued that the large-scale out-of-town mall should fulfil the run-shopping needs of consumers in order to avoid that consumers flows to the city centre (that mostly attracts visitors for fun trips) would dampen out. If this would not be the case, and out-of-town malls could mimic the enlightening atmosphere (going-out environment) of the centre, inner cities may face economic deterioration of the retail sector. And as a result, the quality of life and living conditions in general may worsen in the central places.

To shed light on these issues, our analytical research has first focussed on the motives (determinants) for the kind of shopping activity exhibited: what are the decisive factors for visitors to choose between run and fun shopping? In a second stage, it has been examined what the impact is of the kind of shopping activity (run versus fun) on the size of actual and potential trade area (measured via the information on actual and potential travel time). In this way, it is possible to see whether the peripheral mall indeed does serve the regional market for the intended reasons, that is the run visits.

Last and most crucial, the focus was on the central research question: do the (potential) consumers substitute visits to the centre by shopping trips to the peripheral mall, and if so, what are the underlying causes? Of particular interest is then the effect of the trip's purpose (run or fun motive) on the removal of visitors from the centre. If the fun motive

would turn out to have a significant impact on the removal or subtraction flow, then it is can be concluded that the peripheral mall is not a complement but a real competitor of the city centre.

This analysis is carried out by using the outcomes of the questionnaire described in the previous section, and hence it is based on 130 individual, and independent observations (visitors). To investigate the nature of the shopping trip (run or fun motive), a binary choice (logit) model is estimated. The size of the market area, reflected by the actual and potential travel time, is investigated through regression analysis. And finally, the question whether or not the visits are distracted from the city centre is approached by estimating – again- a binary choice model.

The set of determinants includes the following three groups of regressors:

- Factors related to the visitors (age, gender, number of joint visitors, place of origin, travel time)
- Factors related to the mall (subjective evaluation of key features of the mall, such as atmosphere, size and diversity of goods, accessibility, and parking facilities)
- Mode of transport used for the trip (car/public transport/bike).

Table 1 shows the results for the analysis of the trip's purpose (run versus fun-shopping).

[Table 1 about here ]

The estimation results show the significance of just three factors on the run nature of a trip to the out-of-town shopping mall. First of all, it appears that when visitors attribute a high value to the size of the good offered at the mall, the mall is used more often for buying a predetermined good as efficient as possible (run motive). So it seems that the larger the supply of goods available at the peripheral mall, the larger the probability that the mall is used for its intended function (from a policy point of view). The opposite holds with regard to the impact of atmosphere of the mall: this perception motive leads to fun shopping and therefore does not correspond to the idea of buying quickly and efficiently. The third significant factor is – not surprisingly – found for the average

shopping time. It appears that the shorter the visit, the higher the probability of going to the mall for run reasons.

The next main issue to analyse concerns the impact of the run motive on the geographical size of the trade area, as reflected by the actual and potentially maximum travel time for the trip. The estimated regression coefficients, obtained by ordinary least squares methods, are presented in Table 2 and 3.

[Table 2 and 3 about here]

It can be observed that the run motive does have a significant effect on the actual travel time, but not on the potentially maximum travel time. Apparently, the peripheral mall is more likely to serve the consumers that live further away for their targeted shopping needs to be efficiently (as fast as possible) fulfilled. In other words, the peripheral mall is fulfilling its regional distribution function. However, the opportunities to enlarge the trade area for run motives do seem to be rather limited. The spatial reach of the trade area can be increased for other reasons (according to the estimates shown in Table 3). This will happen when visitors will consider the atmosphere to be of higher value or in case the shopping visits to the peripheral mall will last shorter. The latter effect does – indirectly – point at the importance of run visits for extensions of the geographical trade areas after all. Note that the duration of stay also has a significant, negative effect on the actual travel time (see Table 2). Another significant factor in the model for actual travel time is found for the number of persons going out for shopping jointly. Remarkably, it is seen that car use is related to both short and long travel trips to the mall.

The third central question is handled by examining the determinants of visitor's removal from the centre due to the mall in general, and the impact of the run (versus) fun motive in particular. The estimation results for the model for the probability of a removal of shopping visits from the centre is presented in Table 4.

[Table 4 about here]

On average, removals do take place, since about half of the visitors would have bought their goods in the centre, if they would not have gone to the peripheral mall. But what

does actually influence this substitutable flow of retail goods? In other words, what causes the competition for the retail businesses in the inner cities? The results displayed in Table 4 point at the following significant factors. If visitors come in groups, make use of a car to go to the mall, and are living in the inner city of Rotterdam itself, they substitute the central location for the peripheral destination to search for retail goods they want to buy. A remarkable result of the logit analysis is that the actual motive for the trip (run of fun) does not play a significant role. This implies that the competition faced by the central area is not caused (directly) by the pleasure nature of the peripheral mall. Therefore, it can be concluded that there is no direct, strong evidence of an unintentional functioning of the peripheral, large-scale shopping mall in Rotterdam as a shopping place of enjoyment and pleasure (fun).

## **5. Conclusions**

This paper has analyzed the geographical radius of the trade area of the first, and so far unique, large-scale out-of-town shopping mall in the Netherlands. Directly related to this, the main aim of the paper is to find out to which extent the shopping area in the centre faces competition of the newly opened peripheral shopping mall. These central issues have been addressed by collecting and analyzing data on shopping behaviour of visitors to the peripheral mall in the city of Rotterdam.

At first sight, the average numbers pointed at a threatening situation for the retail businesses in the inner city, since about half of the visitors indicated that they visited the peripheral mall for reasons of pleasure (fun) and also about half of the visitors responded that they would have bought their goods in the central city if the peripheral mall was non-existent.

Nevertheless, in-depth analytical research has shed other light on this average pattern of shopping behaviour by looking at the underlying determinants of the size of the market (trade) area and the substitution from the central city (due to the new peripheral mall). It appeared that the large-scale, out-of-town shopping mall is more attractive for consumers at a longer distance from the mall, and thereby giving an indication that the peripheral mall does meet a clear regional service function. Furthermore, it was found that the nature of shopping trips has no influence whatsoever on the degree of visitors'

choice to neglect shopping malls in the inner city of Rotterdam. On the other hand, it was evident that especially people living in the central city substitute the peripheral mall for the retail business nearby. On the whole however, it may be concluded that the anticipated policy goals are met, so that the shopping mall concerned turns into a regional market for run shopping purposes.

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**Table 1 Logit regression results of run shopping (48% on average)**

<b>Variable</b>	<b>Parameter</b>	<b>Significance level (p)</b>
Number of persons	-0.5366	0.13120
Size of goods/articles	0.5744	0.0211
Accessibility	0.0723	0.8214
Parking facilities	0.1564	0.3944
Atmosphere	-0.3871	0.0939
Age of visitor	0.0184	0.188
Gender (male)	-0.1022	0.8251
Residential place of origin <sup>1</sup> : Capelle a/d IJssel	0.0856	0.8925
Residential place of origin: Other regions <sup>2</sup>	-0.8005	0.1828
Residential place of origin: Outside Great-Rotterdam area	-0.1236	0.8623
Average time of visit	-0.0099	0.0073
Transport mode: car	0.7489	0.4315
Transport mode: foot/bicycle	0.1464	0.8441
Transport mode: public transport	-0.7789	0.2863
Number of observations =130		
Nagelkerke R2 = 0.344		

<sup>1</sup> Reference group for this variable on the residential place of origin is the central city of Rotterdam.

<sup>2</sup> Other regions in the Greater Rotterdam area are (except for Capelle a/d IJssel) – at the outer boundary - the following set of towns: Maassluis – Delft – Zoetermeer – Gouda – Schoonhoven – Dordrecht – Spijkernisse.

<b>Variable</b>	<b>Parameter</b>	<b>Significance level (p)</b>
Number of persons	5.573	0.092
Size of goods/articles	-0.389	0.866
Accessibility	-0.545	0.851
Parking facilities	-1.679	0.338
Atmosphere	1.923	0.387
Age of visitor	-0.114	0.361
Gender (male)	6.870	0.124
<i>Run shopping</i>	8.118	0.068
Average time of visit	-6.136	0.013
Transport mode: car	-10.125	0.250
Transport mode: public transport	2.576	0.698
Transport mode: bicycle/foot	-8.717	0.198
R <sup>2</sup> = 0.277		
Number of observations =130		

<b>Variable</b>	<b>Parameter</b>	<b>Significance level (p)</b>
Number of persons	6.780	0.125
Size of goods/articles	-1.207	0.694
Accessibility	1.561	0.681
Parking facilities	-1.559	0.492
Atmosphere	5.122	0.087
Age of visitor	-0.127	0.439
Gender (male)	-1.590	0.787
<i>Run shopping</i>	4.568	0.448
Average time of visit	-8.466	0.008
Transport mode: car	-15.719	0.198
Transport mode: public transport	-4.333	0.632
Transport mode: bicycle/foot	-18.506	0.060
R <sup>2</sup> = 0.270		
Number of observation= 105		

<b>Variable</b>	<b>Parameter</b>	<b>Significance level (p)</b>
Number of persons	-1.0786	0.0149
Size of goods/articles	0.1075	0.6799
Accessibility	0.4119	0.3254
Parking facilities	-0.2586	0.2046
Atmosphere	0.1020	0.6601
Age of visitor	-0.0198	0.1775
Gender (male)	-0.1508	0.7780
Residential place of origin: <sup>3</sup> Capelle a/d IJssel	-0.7439	0.2884
Residential place of origin: Other regions	-1.1215	0.0695
Residential place of origin: Outside Greater Rotterdam area	-1.7030	0.0406
Average time of visit	-0.0040	0.1845
<i>Run shopping</i>	0.0697	0.8917
Transport mode: car	2.1761	0.0466
Transport mode: public transport	0.7593	0.3402
Transport mode: bicylce/foot	-0.1833	0.8206
Number of observations =130		
Nagelkerke R2 = 0.465		

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<sup>3</sup> Reference group, see note 1.



## Appendix A

<b>Table A1 Average travel time x Run shopping</b>			
	<b>Runshopping</b>		
<b>Average travel time</b>	<b>No</b>	<b>Yes</b>	<b>Total</b>
0-15 minutes	42	31	73
16-30 minutes	16	20	36
31-45 minutes	4	5	9
46-60 minutes	1	5	6
61-90 minutes	3	1	4
91-120 minutes	1	-	1
> 120 minutes	-	1	1
<b>Total</b>	67	63	130

<b>Table A2 Maximum travel time x Run shopping</b>			
	<b>Runshopping</b>		
<b>Maximum travel time</b>	<b>No</b>	<b>Yes</b>	<b>Total</b>
0-15 minutes	8	12	20
16-30 minutes	21	23	44
31-45 minutes	4	4	8
46-60 minutes	12	11	23
61-90 minutes	5	2	7
91-120 minutes	1	1	2
> 120 minutes	1	1	1
<b>Total</b>	51	54	105

Note: Number of observation=105 (Th subjective information on the potential maximum travel has not been given by the whole sample).