

# An Aspect of Spatial and Structural Changes in the Japanese Retail Market\*

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## ABSTRACT

The latest census of commerce shows that a drastic change is undergoing in Japanese retail market, especially in convenience goods market. This article is a case study, concerning the changes in the spatial and structural pattern of urban retail system in Japan. Some consideration on the new trends of market competition are also discussed.

## INTRODUCTION.

The latest census of commerce of Japanese government was published last September. According to the census, the number of retail establishments has decreased by 93 thousand during the last three years. These figures were in contrast to our expectations, because the commercial sector had enjoyed its growth in every respect ever since the world war two without exception. We may regard this census as symptoms of dramatical changes in the historical trends in retail market. These changes seems to be a reflection of some type of retail competition, which is not related to the old system of old retailers co-existing with new comers, but a new type where some old retailers are compelled to move out of the market. As it is reasonable to consider this type of keen competition will continue to prevail, the trends of decrease in number of retail establishments will not change for at least some time in the future.

This trend is certainly tied together with spatial and structural changes in the urban retail system, which is strongly associated with customer behaviour. The aim of this paper is to verify an understanding on the retail competition from the stand point of dynamic interactions between consumer behaviour and store's efforts. As an example of this interaction, we will analyse a research survey done at Okayama city, Japan.

### SCOPE OF INTERESTS AND SELECTED TRENDS.

In order to investigate the decrease in number of retail establishments, we limit the scope of our study to a fresh food retailer at the O-centre in Okayama city. The reason for choosing a fresh food retailer as our case study is that more than a half of the decrease (58%) in nation-wide are in the retailers of food and beverage sector. The rate of the decrease in Okayama Prefecture is approximately similar to the rate of Japan and Okayama city is a regional business centre with a population of about 550 thousand. There are three major business centres in Okayama city, i.e. Omote-cho, Ekimae, and Hokan-cho. The O-centre is the number one centre generally associated with high quality goods since pre-war, whereas H-centre has been developed without any big stores and is associated with low quality consumer products. The E-centre was developed during the post war with big stores and an underground shopping area.

Table 1 Selected Trends of Three Major Centres

Retail Sales (City Total)	(Ten million Yen)					
	1979		1982		1985	
	41,766		53,548		57,307	
O-Centre	6,397	15.3%	7,612	14.2%	7,510	13.1%
E-Centre	5,395	12.9%	7,253	13.5%	7,231	12.6%
H-Centre	1,063	2.5%	1,048	2.0%	945	1.6%
Sales of Food and Bev. (City Total)	11,195		147,13		16,388	
O-Centre	350	3.1%	433	2.9%	399	2.4%
E-Centre	654	5.8%	859	5.8%	750	4.6%
H-Centre	258	2.3%	320	2.2%	279	1.7%
No. of F. Retail Est. (City Total)	2,990		2,962		2,678	
O-Centre	62	2.0%	65	2.2%	56	2.1%
E-Centre	114	3.8%	105	3.5%	92	3.4%
H-Centre	83	2.8%	87	2.9%	87	3.2%

(Source) Okayama City Office.

Table 2 No. and Sales floor of Newly established Big Store.

	No. of Est.	Sales Floor(m <sup>2</sup> )
1977-1979	16	52,127
1980-1982	5	14,783
1983-1985	3	13,429

(Source) Okayama Chamber of Commerce and Industry.

Table 3 No. and Sales floor of Newly established Small Store (less than 500 m<sup>2</sup>)

	No. of Est.	Sales Floor(m <sup>2</sup> )
1977-1979	22	6,018
1980-1981	13	5,290 (incomplete)

(Source) Okayama Chamber of Commerce and Industry.

Table 4 No. of convenience store opened by  
the leading F.S. Company (24 hrs op.)

1981	-- 1	1982	-- 12	1983	-- 6
1984	-- 9	1985	-- 10	1986	-- 8

(Source) The leading F.S. Company.

Tables 1, 2, 3 and 4 show some statistical information of Okayama city and business centres. The population of Okayama city increases steadily and so also the retail sales and the sales of food and beverage of the city total. The item of number of retail establishment in Table 1 is of

food and beverage. In Table 1, we notice that firstly there is a general decrease in relative sales of business centre in city total and secondly the number of retail establishment of food and beverage has started to decrease even before 1982 in Okayama city. The decrease in relative weight of the central business district is worthwhile for further investigation. Also the number and sales floor of big stores opened most recently shown in Table 2, are mostly outside the business centres mentioned above. So even in a medium size city like Okayama, there is retail decentralization. The statistics on number and sales floor of small stores established as of late is partly available, in Table 3. To supplement Table 3, we checked the development of convenience stores opened by the leading franchise system company as given in Table 4. This company is still positive in increasing the number of franchisee and another big company announced a plan to develop a network of convenience stores in Okayama city. The average amount of investment required to open a convenience store in this franchised system, is 200 million yen in addition to land acquirement. The chain management provides owners with help and training in areas of management techniques and stocking policies. This implies that revolutionary changes are taking place in retail management. In particular, P.O.S. system which computerized cash register system collects information on all the items sold in the store and is used for research, merchandising and planning purposes. P.O.S. system is mostly fed into the warehouse system. As for the merchandise on display at the store, 1,800 items out of 3,000 to 3,500 have been replaced by different merchandise in a half year in response to consumer needs. The growing efficiency of distribution system has made it possible to provide the consumer with adequate and attractive

assortments outside the city centre. Thus businessmen in general are strongly positive in retailing business of convenience goods outside the city centre.

### A THEORY ON RETAIL COMPETITION.

It is necessary to analyse what is going on in the retail market. And hopefully, we may obtain an effective and consistent way of thinking on the changes in retail market. With a purpose of acquiring a better insight into why and how fresh food stores in the business centre are decreasing, let us propose our theory of retail competition on which we may rely later when we consider the survey research below. The retail business of food and beverage is generally characterized by the daily demand of stability and growth. In responding to this demand, many small retailers come into the market. They had been the seeds or core of the birth and development of business centre. In the case of food and beverage, a consumer has to shop regularly, so easy access is highly demanded. As a result, many stores of food and beverage are scattered all over the urban area. And the stores located as such are competing with each other in order to share the stable demand. This competition is done among some stores and among business centres.

Generally, retail competition is characterized firstly by heterogeneity in both sides of sellers and buyers and secondly by locational variables. Therefore, we require a model on retail competition which explains these characteristics.

Mostly, retailers are located at a certain place and wait for a customer to come and do business with him. So competition is assumed to be focussed on the customers' selection of store to visit.

A traditional model on store selection told us that a consumer takes account of various factors in his selection processes, which may be summarized into six groups of factors as (1) geographical distance, (2) assortments, (3) amenities, (4) information service, (5) price level and (6) supplementary services. In the evaluation processes of store, the relative importance of these factors are apparently different from person to person and by type of goods he purchases. Taking these into account, the outcome of the store selection can be formulated as follows:

Max.  $\{X_{ik}\}$  where  $X_{ik}$  is the attractiveness of store  $k$  perceived by consumer  $i$ .

$$X_{ik} = \sum_j AS(kj) \cdot I(jni)$$

$AS(kj)$  is the degree of attractiveness in  $j$  factor offered by store  $k$ .

$AS(kji)$  is the perceived  $AS(kj)$  by consumer  $i$ .

$I(jni)$  is the individual weight assigned to  $j$  factor when consumer  $i$  shops type  $n$  goods.

Each store is supposed to have a certain number of customers according to the outcome of this model and this number would be a signal to modify his  $AS(kj)$ . And again each consumer re-evaluates  $X_{ik}$  using the modified  $AS(kji)$ .

When we investigate the information processes of the store evaluation above, some retailers come into the consumer's mind at first and to him, most of the evoked set are regarded indifferent as to the geographical distance. And secondly he evaluates the stores for selection. Such way of thinking leads us to make a distinction between "spatial behaviour" and "behaviour in space".

The spatial behaviour relates to the rules by which alternative locations are evaluated in order to limit the geographical space of his

shopping behaviour. And the term "behaviour in space" is reserved for the description of the choice processes made consequently within the limit.

With this idea in mind, a survey research is made on the evoked set and revealed store selection. A result of the survey is depicted in Figure 1, and by circling every selected store, we obtain his "usage field" or shopping area. The analysis of usage field shows that their size differs by the characteristics of the consumer but the shape is similar, which is close to triangle rather than circle. The information and usage field tend to display a directional bias in that they are more likely to visit the shops which are located toward the city centre from their home than they are store located in an out of city direction. So the information and usage field of each customer is in the two lines radiating from the city centre. Dr. R. Potter summarized his research results of usage fields as in Figure 2, which shows the mean consumer usage field by family status and socio-economic status.

With these ideas and evidence, we are allowed to propose a store selection model that the factor of geographical distance is treated differently from others. That is, we assume that the distance variable of retailer is preconsidered beforehand. The usage field of a particular consumer is determined by his variables such as age, income, car ownership and the like. So we modify the traditional model above by excluding factor  $j=1$ , under the supposition that usage field of consumer  $i$  is predetermined.

Even when we restrict the consumer by the variables mentioned above and the type of goods of shopping, the outcome of store selection done by a particular consumer can not be uniquely determined. This is,

we assume, due to the variety of shopping situations. The variety of shopping situations is largely classified into two. One is a shopping of single type goods, say food and beverage only and other is multi-purpose shopping which shops more than one type goods at one shopping journey, that is to say, buying food and beverage in addition to clothing. In the case of multi-purpose shopping, above Xik is supposed to be modified as follow:

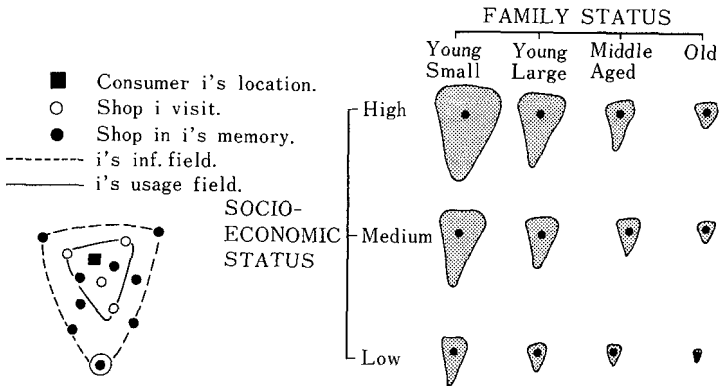


Fig. 1 Consumer Information and Usage Field.

Fig. 2 The spatial complexity of mean consumer usage fields by family status and socio-eco. status.

Source; R. B. Potter, "The Urban Retailing System", Gower Pub. Co., 1985.

$$X_{ik} = a \cdot [\sum_j AS(kji) \cdot I(j, n=n, i)] \cdot [\sum_j AS(kji) \cdot I(j, n=m, i)],$$

where Xik is the attractiveness of store k perceived by consumer i when i shops at his multi-purpose shopping of the type of goods n and m.



Table 5. Artificial table of retail competition.

	$S_1$	$S_2$	$S_3$	$S_4$	$S_5$	-	$S_i$
$C_1, t$	○ 0.6	●	○ 0.4				
$C_2, t$		●			○ 1.0		
$C_3, t$	○ 0.3		●	○ 0.7			
$C_4, t$	●	○ 0.2	○ 0.3		○ 0.5		
$C_4, t+1$	●	●	○ 0.3		○ 0.3		○ 0.4

Table 5 shows an artificial example of retail competition. The mark ● is the store which is in his memory but is not being visited and the store marked ○ is the one actually being visited by  $C_i$  for his shopping during a certain period. We call the store marked ● as a potential competitor of the store marked ○.

In the table,  $S_1, S_2$  and  $S_3$  are supposed to be located at a same business centre, and  $S_4, S_5$  and  $S_i$  are located somewhere outside the centre. So stores  $S_1, S_2, S_3$  are supposed to compete with each other. When we look at the competition closely,  $S_1$  is competing with  $S_3$  in getting  $C_1$ 's patronage but not with  $S_2$ . Though  $S_1$  has a difficulty in strengthening his differential advantages more than present, if  $C_1$  shops at  $S_3$  in the case of multi-purpose shopping. The store  $S_5$  are very monopolistic as to  $C_2$  at time period  $t$ , because the consumer  $C_2$  buys fresh food at  $S_5$  every time, even knowing that store  $S_2$  located in the centre. The consumer  $C_1$  shops at  $S_1$  and  $S_3$  with probability of 0.6 and 0.4 respectively and he does not shop at  $S_2$ , though he has the store in his memory. In the case of  $C_4$  at period  $t$ , he knows  $S_1, S_2, S_3$  and  $S_5$  and uses only  $S_2, S_3$  and  $S_5$  with a probability of 0.2, 0.3 and 0.5 respectively. But in period  $t$  plus 1, he finds  $S_i$  newly opened and uses  $S_i$  with highest probabilities by adjusting his usage rate of old shops such as  $S_2$  and  $S_5$ .

During his adjusting processes, he does not change his usage rate of  $S_3$ , probably because of his multi-purpose shopping.

The probability or usage rate of each store by  $C_i$  is the results of his evaluation processes modeled 'above. The stableness of  $S_3$  in competition is explained by the functions offered other than fresh food by the  $S_3$  which enable the consumer one spot shopping.

### AN INTERACTION BETWEEN CONSUMER AND RETAIL SHOP: A interpretation of survey research made in Okayama city.

The survey research was done by a local bank, which had a very high return rate and reliable information. We would like to investigate to see what is going on in the interaction between consumer and retailer. The consumers' reaction to the offerings of retailers are explained in the frame of the model of consumers' store selection. Tables 6 and 7 show the changes of customers' distribution by the time required and type of means of travel in percentage during 1982 and 1985.

Table 6 Fresh food shopping at the O-center by Travelling method.

	Bus	Train	Car	Cycle	Foot	Others
1982	12.4%	1.7%	30.6%	21.3%	33.1%	0.9%
1985	17.1%	0.7%	33.6%	21.3%	24.7%	2.6%

(Source) Okayama Economic Research Institute "Report of the survey research on spatial behaviour at Okayama Pref." (OERI-RRSO).

Table 7 Fresh food shopping at the O-centre by the time required one way.

	less than 10 min.	10-30 min.	30-60 min.	more than 60 min.
1982	45.5%	37.7%	15.5%	1.3%
1985	33.7%	45.5%	18.9%	1.6%

(Source) OERI-RRSO.

In the category of time required, the percentage of less than 10

minutes decreased whereas every class of more than 10 minutes increased, especially between 10 minutes and 30 minutes which increased to 45.5% from 37.7%. In Table 6, it is noticed that there is a decrease in "on foot" and an increase of "by car" and "by bus". As most of all the residential areas of this city are located within the 10 km circle from this O-centre and by this enlargement of consumer usage field, the business area of this centre for fresh food has become to cover the entire city.

The centre seems to have the tendency to enlarge its business area beyond the city as a whole, especially for car owners. This means the fresh food stores at this centre are supposed to increase customers by adding new ones. These tendencies of usage enlargement apparently favour the stores of this centre. The store in this centre, however, has to have a differential advantage in order to compete with the store which was never was before. That is, the stores of the centre have began to compete partly with the newly established modern convenient stores located far from the centre. Some of the convenient store are well managed with modern facilities of store automation. This means the stores of the centre have to have something of a new sphere of competence to compete with. In other words, the competition has become more multidimensional and keener.

Table 8 Frequency of fresh food shopping at the O-centre

	Small store	Sup-Mkt	Dept.	Shoppinc-C	Total
Almost everyday	59.2%	32.2%	20.0%	Neg.	31.5%
2-3 times/week	19.7%	32.1%	40.1%	53.3%	33.2%
Once/week	19.7%	18.5%	Neg.	46.7%	18.6%
2-3 times/month	Neg.	8.5%	37.0%	Neg.	10.4%
Once/month	Neg.	4.9%	2.9%	Neg.	3.8%
Several/year	1.3%	4.0%	Neg.	Neg.	2.8%
Total	100.0	100.0	100.0	100.0	100.0

(Source) OERI-RSRSO.

The merits of stores in the big business centre is to be explained by the consumer behavior of multi-purpose shopping. Though we do not have statistics on multi-purpose shopping, we may infer them from Table 8, the frequency of visiting this centre with the purpose of fresh food shopping. We may assume most of the persons visit once or 2–3 times per month, some of the people visiting once in a week and a small fraction 2–3 times per week would be multi-purpose shopping. And the merits of big business centre work mostly for department stores, super-markets and shopping centres where customers can enjoy one spot shopping. If it is so, we can say that small stores are not within the group enjoying the merits of being located in business centre and suffer from keen competition with unfamiliar tactics of new suburb competitors. Generally speaking, every fresh food store in the centre is located in the usage field of the same groups of customers. So the competition among these stores in the O-centre, as we saw before, is carried out by the efforts that each store pays his own way uniquely. The customers' image on the characteristics of each store, which reflects the unique store efforts or way of store operation, are the determinant factors of store patronization. As a result, each store is patronized by a certain number of customers. If this number is not enough to operate store S for a long time, store S will be extinct some time in the future. In order to prevent store extinction or to realize the store prosperity, retail store owner puts more efforts in bettering his store characteristics aiming to retain his customer patronage and to attract the customers patronizing other stores. These store efforts influence the store images of the customers and a new picture of allocation of customers among the stores comes in. Hence, the pattern of behavioural interaction between

customer and stores evolves as time goes by. This behavioural interaction is the point of our interest.

Table 9 Reasons to purchase fresh food at the O-centre by retailer type in 1982.

	S. store	Sup.-mkt.	Dpt.	Shopp-C	Est.No. Custmer	%
Nearness	37.3%	55.5%	18.3%	75.0%	23,371	49.5%
Parking fac.	7.5%	13.9%	20.0%	Neg.	6,339	10.8%
Reas. Price	16.2%	13.4%	7.3%	Neg.	5,929	12.5%
Nice service	7.5%	Neg.	Neg.	Neg.	420	0.9%
Rich assort.	9.2%	13.1%	52.1%	25.0%	8,405	17.8%
Credit avai.	7.5%	Neg.	Neg.	Neg.	420	0.9%
High quality	7.5%	2.5%	2.4%	Neg.	1,395	3.0%
Others	7.5%	1.7%	Neg.	Neg.	983	2.1%
Total	100.0%	100.0%	100.0%	100.0%	47,262	100.0%

(Source) OERI-RSRSO.

Table 10 Reasons to purchase fresh food at the O-centre by retailer type in 1985.

	S. store	Sup.-mkt.	Dpt.	Shopp-C	Est.No. Custmer	%
Nearness	69.1%	46.2%	10.0%	31.1%	17,012	43.3%
Parking fac.	Neg.	8.5%	Neg.	46.7%	4,228	10.8%
Reas. Price	21.0%	18.5%	3.3%	6.6%	6,232	15.8%
Nice service	Neg.	4.0%	Neg.	Neg.	1,021	2.6%
Rich assort.	9.9%	14.2%	43.5%	25.0%	6,398	16.3%
Credit avai.	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.
High quality	Neg.	4.2%	31.7%	Neg.	2,705	6.9%
Others	Neg.	4.5%	1.6%	15.6%	1,739	4.4%
Total	100.0%	100.0%	100.0%	100.0%	39,335	100.0%

(Source) OERI-RSRSO.

Table 11 Unsatisfactory matters in purchasing of fresh food at the O-centre by type of retailer in 1982.

	S. store	Super-mkt.	Dept.	Shopp-C.	Total
Far(long dist.)	Neg.	18.0%	15.0%	Neg.	12.5%
No parking fac.	25.0%	4.6%	Neg.	Neg.	8.9%
High price level	50.0%	13.7%	85.1%	50.0%	28.3%
Inferior service	Neg.	13.7%	Neg.	50.0%	11.8%
Poor assortments	Neg.	41.0%	Neg.	Neg.	26.7%
No credit avai.	Neg.	Neg.	Neg.	Neg.	Neg.
Inferior sence	12.5%	Neg.	Neg.	Neg.	3.0%
Inferior quality	Neg.	4.6%	Neg.	Neg.	3.0%
Others	12.5%	4.6%	Neg.	Neg.	5.9%
Total	100.0	100.0	100.0	100.0	100.0

(Source) OERT-RSRSO.

Table 12 Unsatisfactory matters in purchasing of fresh food at the O-centre by type of retailer in 1985.

	S. store	Super-mkt.	Dept.	Shopp-C.	Total
Far(long dist.)	6.1%	Neg.	Neg.	Neg.	0.7%
No parking fac.	Neg.	41.1%	30.7%	Neg.	31.3%
High price level	Neg.	19.6%	46.2%	Neg.	22.7%
Inferior service	46.9%	19.6%	Neg.	Neg.	17.0%
Poor assortments	Neg.	Neg.	Neg.	100.0%	5.7%
No credit avai.	Neg.	Neg.	Neg.	Neg.	Neg.
Inferior sence	Neg.	Neg.	Neg.	Neg.	Neg.
Inferior quality	46.9%	9.8%	Neg.	Neg.	11.3%
Others	Neg.	9.8%	23.0%	Neg.	11.3%
Total	100.0	100.0	100.0	100.0	100.0

Tables 9 and 10 show some aspects of this behavioural interaction. In Table 10, we can notice that the characteristics of small stores have become extremely simplified during the two years. It is said small stores are supposed to be numerous and they do business uniquely with different characteristics. These unique characteristics are essential prerequisites to share the customers with stability. In 1982, a variety in characteristics of the small stores seems to have existed in this centre. But by 1985, the small stores worked uniformly in making a reasonable price level and increased their assortments slightly. However, the supermarket has also strengthened the differential advantages of reasonable price and rich assortments and improved quality level gradually. The department store had very powerful advantages of rich assortments and improved the quality level in a considerable scale keeping its remarkable advantage of assortments during the two years.

The changes in store images are the result of the differences among the stores' behaviour, that is, the managerial efforts to retain and strengthen their differential advantages. In order to retain present customers and to gain new customers, stores have to maintain their present advantages and make improvements in the unsatisfactory aspects.

The survey was done to inquire whether the customer is satisfied or dissatisfied with different types of retailer and we also asked the reasons of dissatisfaction from the customers who answered "unsatisfied". The results are summarized in Tables 11 and 12. High price or expensiveness had been a prominent unsatisfactory point of small store in 1982, excluding the items related to usage field determination. The small stores' improvement in price level appeal made by 1985, which is shown in Table 10, can be taken as the behavioural reaction of small store to the signal of "too" expensive from the customer or from others. At least, we may consider the small stores' reaction to the unsatisfactory group is one of the causes of the improvement of price level made.

We, however, can see very clearly from Tables 9 and 10 that the efforts in improving price advantage of small retailer has been carried out by sacrificing other advantages such as high quality and good service offered. It is matter of course that the price advantage can only be made when the price level has more advantages than the price levels offered by other types of retailer. We, therefore, examine the changes in price level by type of retailer from the side of the purchaser. We see that the change rate of price appeal in percent of small stores is less than that of supermarkets and some customers patronize shopping-centers because of reasonable prices in 1985 though none patronized them in 1982 due to reasonable price. So it is very doubtful that small store has succeeded in the policy of improvement in price advantage, though it might have worked well in competition with department store. The number of persons who answered unsatisfactory is more or less 20% in every type of retailer. And the small stores' rate of improvement in price advantage to the reaction of the 20% unsatisfied is equal to that of shopping

centers, a little bit better than the department store and better than super markets which are retarded in this respect.

Seeking for price advantage is, generally speaking, the last desert from the point of marketing management. In fact, they should try to create more effective tactics other than lowering price. In addition to this, as we can see in Table 9, the most powerful and attractive characteristics of this O-centre as a whole is the rich assortments which exceed by 5.3 in percentage and 2,470 person in number in 1982. And the number of customers increased due to the effort made in price reduction was only 300 customers in the two years, and the decrease in number of customers who favoured this centre because of rich assortments, was more than 2,000. That is, it is hard to say that the policy of lowering price carried out by small stores has been successful. We suggest that *small stores had made a mistake in their policy.*

Another point we should notice here is the rapidness which small store reacted to the unsatisfactory group and the unsatisfactory group responded to the adjustment made by small stores.

## CONCLUSION

We started with the news on decrease in number of retail establishments, and inferred how the spatial and structural changes together with the decrease in number of retail stores, based on some statistical evidence and survey research. We found the retail business of fresh food and presumably all the convenience goods has a tendency to decentralize. And the tendency of decentralization in some type of retail business from the city business centre is certainly a reflection of spatial changes in consumer demand and retail competition. The retail functions



of business centre for the consumer demand are apparently changing. We insist that the change of spatial and structural pattern of urban retail system has to be taken into account when considering the city policy of retail business and the city redevelopment project.

In city policy of retail business, they usually consider the merits of free competition in one hand and the protection of small stores in the other hand within a very limited area. A city committee often works only to compromise among the different interest groups concerned. In Japan, city redevelopment projects are often scheduled under the support of government. Sometimes, they proceed the project with the purpose of maximizing customers in the project area. But they should have in mind what functions at what level and quality in the redeveloped area. The redeveloped area would then perform within the future pattern of spatial and structural behaviour of retail business as a city total which reflects the future demand of citizens.

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