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# EVALUATION OF RETAIL SYSTEMS \*\*

The subject matter of this paper are geographical retail networks. Such networks provide producers with an opportunity to get their goods closer to the consumers, which makes them sell better. The primary purpose of retail networks as seen from a societal point of view is, however, to make it easy for consumers to provide themselves with the goods they might need and to get better information about what goods are available.

From a consumer viewpoint the functioning of retail networks (retail systems) has been of great importance since the beginning of the industrial revolution. A well functioning retail system is also an important factor for the economic development of a country at all stages of its development. To function well, the retail system has to be adjusted to changes in society.

This article focuses on the problem of evaluations of retail systems from a consumer point of view. The ideas presented are based on Swedish experiences. At least to some extent the problems are, however, general enough to make exchange of ideas fruitful. A few introductory comments on development processes in Swedish retail systems may help in understanding the rest of the paper.

## 1. SWEDISH RETAILING AND ITS DEVELOPMENT TRENDS

Of special interest is the development in food retailing.

In the early 1950's the food stores in Sweden were still small. Although there had been a trend towards bigger stores there were still

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\*\* The ideas of this paper have also been presented in a chapter in *Future directions for marketing*, edited by Fisk et. al., Marketing Science Institute, Cambridge, Mass. 1978.

4—5 food stores per 1000 inhabitants<sup>1</sup>. The introduction of the self-service system, however, started in the 50's a trend towards accelerated growth in store sizes. It changed the cost function of the stores making new big self-service stores potentially more profitable than the old small stores. In new housing areas only big stores were started but in areas without rapid population growth changes were slow for a long time. By 1960 nothing much had changed in many rural areas and older parts of big cities with a stable or decreasing population. Changes in the existing structure proved to take a considerable time. For business firms to grow by taking a larger share of a non-increasing market is often a slow process.

The main changes came in the 60's. In 1970 the number of stores per 1000 inhabitants decreased to less than 2. In the 70th this trend towards fewer and bigger stores continued but at a slower pace. Gradually consumers and retailers began to feel that the development might have gone too fast and too far.

The concentration of food retailing to a small number of groups of stores also has a long history. It started with the growth of the consumer cooperatives early in the century. The threat from the successful cooperative stores was one of the factors that made the voluntary chains now organized in the ICA group start to grow.

Reduced costs at the wholesale level, increased buying power, better co-operation with local planning authorities and more efficient marketing at the retail level successively made the growth continue. Already in 1955 the cooperative stores and the ICA group each had about one fourth of the total convenience goods retailing. The remaining part, however, was not very well organized. Today there is the third group Dagab which is somewhat more heterogenous than the others but that still in many ways acts powerfully on behalf of its members. When it comes to stores selling a full line of food products the unorganized part of retailers is almost eliminated.

A number of reasons for these two concentration trends could be identified. First the general economic development with increasing levels of consumption, increased consumer mobility and substantial population movements led to changes in the demand patterns.

At the same time this general economic development led to changes in retail cost and operating conditions. Prepackaging and advertising made self service possible. Increasing labor costs made it necessary and self service itself changed radically the optimal size of individual food stores.

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<sup>1</sup> This figure does not include bakeries and other very specialized stores.



Increasing labor costs also made changes at the wholesale level necessary. Various forms of integration were one of means of reducing wholesale costs e.g. costs for personal selling.

Competitive forces of various kinds have been at work. The success of one group (the cooperatives) of distributors increased the competitive pressure on outsiders compelling them to react and form other groups (ICA and finally the Dagab group). Competitive pressure forced small high cost stores out of business. It started slowly in the 50's but the rate of change increased in the 60's partly due to more aggressive marketing and competitive behavior.

All through the process various kinds of actions from national and local authorities have exerted a strong influence. Health regulations have influenced cost and operating conditions. City planning influences demand patterns and competitive relations. It also more directly makes structural changes more or less feasible. As will be further discussed an increasing public sector of the total economy leading to higher taxes has also gradually strengthened the bigger stores in their competition with the smaller neighborhood stores. High income taxes and wage related fees to be paid by employers increase substantially the cost differences between labor intensive small stores and hypermarkets often doing a smaller part of the total distributions task.

In important parts of the non-food retailing sector there has also been a concentration trend. Two big department-store chains, the consumer cooperatives and the NK-Ahlen chain, play an important part in food retailing but they are much more important in some lines of non-food retailing. Also other stores tend to become bigger over the years and they get organized to an increasing extent in chain cooperatives of various kinds. Geographically they also tend to be more concentrated in town centres and in bigger cities also in suburban shopping centres.

The governing factors behind this development of non-food retailing are not very much different from those behind the development within food retailing. Cost and marketing efficiency call for larger organizations. At the same time varied consumer needs make large assortments of goods and thereby big stores and big shopping centres necessary. Increasing buyer mobility makes them possible.

## 2. ADJUSTMENT PROCESSES IN RETAILING SYSTEMS

Continuous adaptation in the retail system is necessary due to changes in cost functions and buyer characteristics as well as other changes

in the environment of the retail system. Some of these changes are linked to general economic growth in society in a way that makes them predictable. However, adaptation of retailing systems tends to be primarily reactive rather than offensive. The systems must respond to unforeseeable discontinuities.

In a market economy adjustments to new conditions are governed by market mechanisms. Sellers try to adjust in a profitable way to changes in buyer behaviour, and buyers react individually to changes made by sellers. Both parties react to changes that directly affect the outcome of what they are doing. Buyers set limits to what sellers can do but they are limited in ability to introduce new solutions, e.g. stores in new locations or new types of stores.

Market mechanisms are not unchallenged governors of changes in retail system because even in market economies, measures taken by official authorities greatly influence retail systems. Public measures taken to shape the services offered by retail systems also yield effects in retail systems as a secondary result. Of the first kind are various special regulations of store sizes, opening hours, sanitary requirements and assortments which differ from country to country. Such regulations raise difficulties for some retailers but may help others. Certain kinds of stores even get direct support from some official authority as is exemplified by the special support given to stores in sparsely populated areas in Sweden. In most countries there are also city planning regulations that can influence the location and degree of geographic concentration of retail facilities. Often, however, the secondary effects on retailing of city planning activities governing population movements, population density, segregation between income groups in housing areas and public and private transportation facilities are even more important.

The effects of these measures are fairly obvious. Less obvious, however, may be measures influencing industrial structure including import regulations, marketing law, income distribution, working hours, population movement, employment of women, and the impact of taxes on the performance of retailing tasks.

### 3. THE WHY, WHEN AND HOW OF EVALUATIONS

The fact that retail systems are influenced by a number of decisions made by various authorities automatically makes evaluations important. Evaluations from a societal point of view are needed as guidelines for the decision-making. If market mechanisms could perfectly govern the



adjustment processes one might argue that evaluations were unnecessary. Nothing could be done to improve the system. However, this is only a theoretical possibility. In the real world competitive pressure on the individual firms may fail to force retailers to adjust to environmental changes and to hold prices close to costs. Often retailers can choose between different developments. Evaluations from a societal point of view may then suggest changes that are good for consumers as well as acceptable to retailers.

Evaluations are here regarded as guidelines for decisions. These decisions sometimes influence retail systems on a national scale and sometimes only locally. Evaluations should therefore be made of the total retail system in a country as well as of local parts of it. In the following I am going to start with some general evaluations and then go on with a discussion of some methods for evaluation of local networks.

The fact that evaluations are regarded as guidelines for decisions does not mean that they are to be made only in situations when there is a well defined problem of decision. They may and should be made also as more or less regular audits that might point at problems that should be taken care of.

On the other hand, decision oriented evaluations in my opinion should compare alternative achievable results. Comparing actual systems with utopian ones seldom solves any problems. Not given, however, is what should be compared, alternative adjustment processes or the different end results i.e. the retail networks. I am going to illustrate this statement later on.

Difficulties in making evaluations tend to be ignored in public debate. Finding inadequacies is only a first step towards a real evaluation. It is essential to determine the extent to which it is possible to eliminate problem spots without getting into more serious problems. To know that requires knowledge of how the whole system works. Individual parts of the system typically have several functions and effects and the effects may be different for different groups of consumers. Elimination of one effect without changing another is often not possible. Furthermore the measures that have to be taken, e.g. some kind of regulation, usually in themselves have more effect than the one you want them to have. Some of them are often difficult to detect in advance. Setting performance goals is usually the most difficult part of the evaluation. Important goal dimensions may be deduced from analysis of functions retail systems serve from a consumer viewpoint and the main kinds of effects such systems have. Among the important goal dimensions are: 1) kinds of goods to be offered, 2) production and di-

tribution costs, 3) price level and price structure, 4) information transmitted by retailers in all directions, 4) buying convenience specifications for consumers, 6) transporting and information gathering, and finally, 7) effects of retail systems on the general image and functioning of towns, cities and suburbs. The weighing problem is, however, the most difficult element in setting performance goals. Effects pulling in opposite directions have to be compared to each other, something that often seems impossible. To make the task even more difficult, decisions have to be made as to if and in what way negative effects for some consumers may be traded off for positive effects for others.

#### 4. PROBLEMS FACED BY SWEDISH COMMISSION ON DISTRIBUTION

The problem of making an evaluation of the Swedish distribution system, especially the networks of food (or rather convenience goods) stores in the whole Sweden was faced by the Swedish Government commission on distribution problems which published its final report in 1975<sup>2</sup>. The task of that commission was to study the trend towards bigger stores and evaluate this trend from a consumer viewpoint. The commission was also supposed to suggest remedies if present structures or future developments were considered to be detrimental to vital consumer interests.

Some serious problems were anticipated as an effect of the retail development. Convenience goods store sizes grew and the number of stores diminished very much during the sixties. A marked trend in this direction continues. This must mean that consumers have to travel longer distances to buy food and other convenience goods. With increasing car ownership this might not be too much of a problem for a majority of households but how about old people, low income groups, and others with limited mobility? Retailers could point to cost savings in stores and at the wholesale level due to increased store sizes. To a large extent these cost savings were passed on to the consumers as price reductions or perhaps more frequently as hidden price increases. There seemed, however, to be a widespread feeling among consumer representatives that the development towards bigger stores was going too far because cost savings were not enough to pay for the reduced consumer convenience. But, that was just a feeling calling for fair evaluation.

The interest within the commission was mainly focused on the retail

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<sup>2</sup> Samhället och distributionen, SOU 1975-69-70.



networks themselves i.e. the end result of the adjustment processes. Goal formulations concerning this result were attempted but they were not very successful. To the extent that they could be agreed upon they were rather vague and not operational enough to give a clear guidance.

At that stage my own interest as a member of the commission started focusing not on the retail networks themselves but on the adjustment processes within the retail systems. Were they producing a good result that could be expected or were there weak spots or biases that could force the development in wrong direction? Could such weaknesses be eliminated? What I found was especially one point of interest, especially from the economic point of view. That was the effect of the tax system and the rising tax levels in Sweden.

#### 5. SUPERMARKET SHOPPING AS A DO-IT-YOURSELF TREND PROPELLED BY HIGH TAXES

Distribution of goods from manufacturers to the place where they are consumed may be thought of as work partly done by business firms and partly by households on their own behalf. If households pick up the goods at the manufacturer they perform almost all of the distribution job that has to be done and if the goods are delivered at their doorsteps (e.g. by the milkman) business firms do almost all of the job. In the same way the small neighborhood store may be thought of as doing more of the job than the big supermarket to which consumers often drive several kilometers and where they buy in fairly large quantities.

Some household consumers buy in supermarkets because they like it but many do it to save money by paying lower prices. Costs are considerably lower in bigger stores. This may be due to the fact that such stores take over a smaller part of the distribution job from households than the neighborhood stores do. On the other hand supermarkets take over part of the job that is otherwise done by wholesalers.

In a market economy the neighborhood stores compete with supermarkets, but they also compete with households for doing that part of the distribution job that is not done by supermarkets. Neighborhood stores are put at a very heavy disadvantage by the tax system in such competition, at least in present day Sweden.

A law-abiding business firm in Sweden which hires a person to do a job has to pay:

- 1) the net income (after taxes) that the employee expects to get,

2) the income tax of the employee which may be 20—50% of the salary,

3) a series of fees to the state related to salaries paid amounting to about 30% of the salary,

4) a sales tax of about 20% on the costs that are included in the price of the goods.

The total amount is thus about 3 times the net salary.

A household that pays a business firm to do a job has to pay about three times the net income of those doing the job. If somebody in the household does the job there will be no taxes due. What the household loses if somebody has to stay home from work is the net income. As long as business firms on an average are not three times as efficient in doing the job as the household itself, the optimal decision for the average household tends to be to make, not to buy. That is to shop in supermarkets.

This reasoning applies to all kinds of jobs that households can do for themselves. The do-it-yourself trend is not only due to want of consumer satisfaction in solving problems and working for themselves. Supermarket shopping is a kind of do-it-yourself trend propelled by rising taxes. Some 20 years ago when small neighborhood stores still dominated in food retailing in Sweden, taxes were much lower than today. I am convinced that the retail system today would be much less dominated by big stores if the tax level was the same as it was in 1950.

This opinion is of course difficult to prove. International comparisons between countries with different tax levels could be made but the picture would be much distorted by all kinds of other differences between countries. If a cost difference between a big supermarket and a small neighborhood store of say 4% of sales could be reduced to 1 or 2%, and the difference of 2—3% of sales put into the pockets of the small shopkeepers, many of those who had to close their stores could have managed to stay in business. At the same time I am the first to agree that big stores are efficient and convenient for many consumers to shop in and that they are not entirely a product of rising taxes.

#### 6. SHOULD SOMETHING BE DONE ABOUT THIS TAX EFFECT?

It was the questioning of this trend towards bigger stores and longer distances between stores and homes that was the main reason for appointing the commission on distribution in Sweden. Is it good or



bad for consumers that the rise in taxes effects retail systems? Should something be done about it? The commission did not decide.

My reasoning which was presented fairly late during the commission's work was not accepted by the majority of the commission before its report was presented, but my own conclusions are as follows: Looking first at the fact that because of differences in taxation, the same type of work is priced differently if it is done within business firms or within households, we have to conclude that it has to result in an inefficient division of labor. Efficiency is usually taken to be one of the main goals of the economic system. It is, therefore, difficult not to take the position that such pricing has to be defended on special grounds. For other types of work such a defense line might be that different prices are necessary to compensate for some opposite effect. For instance, people are not enough aware of the great satisfaction they themselves (and their fellow citizens) get for working on their own behalf, so pricing means should be used to induce them to do it. Nobody proposed that in the case of buying in supermarkets. Only supermarket owners and maybe some manufacturers seem to want to encourage supermarket buying.

I therefore conclude that a more efficient retail system would emerge if the effects of the tax system could be eliminated. On the other hand, I have to admit that there are very good reasons for high taxes. At the same time the possibilities to construct tax systems which do not have such effects are small. There are also good reasons to avoid a communistic planned economy in which problems of the kind discussed here would be easier to avoid.

What could then be done? My suggestion within the government committee was to introduce a kind of compensation system taking money from big stores and give it to some kinds of small stores. Although such a compensation would be feasible, it is difficult to construct and to implement. To avoid sudden unexpected changes in working conditions for existing stores, a gradual introduction would be helpful.

## 7. OTHER BIASES IN ADJUSTMENT PROCESSES

The analysis presented in the preceding paragraph is part of an evaluation of the economic processes which form store networks. The tax system introduces a bias in the processes steering away from what may be thought of as the best possible network. Other biases in the processes seem to go in the same direction. For example, retail services are sold as a part of other goods, not as a merchandise in itself with

its own price. If neighborhood stores could charge more in those situations when consumers really need them and less when supermarket shopping is a good alternative, their possibilities for survival would probably be better. Now consumers make small last minute purchases in the neighborhood retail store thus providing a very tiny reward. The neighborhood retailer tries to compensate by raising all his prices, thus defeating his efforts to compete for large profitable purchases. Another kind of bias in retail networks is introduced because adjustment processes take considerable time. What is once built affects retail networks for years and even decades. In Sweden you could at least in the sixties find remarkably different retail structures in living areas built during different decades. Differences still exist today, but they are less marked.

The planning processes are therefore important within retail organizations. In Sweden at least city planning processes are also important because they create possibilities and set limits to planning by retailers. More and more of political power and responsibility is going into the planning of retail networks. This creates an immediate need for evaluations of alternative local networks in actual communities. I will, therefore, return to a brief account of problems and possibilities in such evaluations.

#### 8. METHODS OF EVALUATING LOCAL RETAIL NETWORKS

Evaluations of retail networks could be a matter of comparisons between alternative designs for the same set of external conditions (e.g. population location patterns, consumer preferences for types of retail outlets and cost functions in stores). In some cases, however, some of these conditions should be treated as parameters that could be changed in the same way as the retail networks. Comparisons would then be made between retail networks designed to serve in somewhat different environments.

I am going to start from simple methods that take into account only a small part of the differences in effects between networks. They are, therefore, unsatisfactory, but it should always be remembered that no single measure can give the whole picture.

In the case of convenience goods (primarily food) the amount of travelling consumers do to buy goods and to transport them to the place where they are to be consumed seems to be important. One method of taking this into account could be to say that the best retail network is one that minimizes the summated distances (measured one way or the other) between homes and the nearest store with some mi-



nimum assortment of convenience goods. Such a goal could, however, lead to an extremely dense network of stores and very high costs in stores as well as in earlier distribution links. It would be better to try to minimize total actual travelling for convenience goods shopping done by consumers because consumers do not always shop at the nearest store. It is sometimes worth while for them to do some extra travelling to get lower prices and or better goods. In these ways only travelling costs of consumers are included. Another step forward would, therefore, be to add together these costs at the consumer level and other distribution and manufacturing costs. A retail network leading to lower such total costs should then be regarded as better than one leading to higher costs. Calculations of that kind were made by Leif Widman of Stockholm University in a doctoral thesis<sup>3</sup>. In spite of the fact that retail costs were considerably lower in the big stores he found total costs to be lower in systems with smaller stores, at least in some types of city districts. Differences, however, were rather small.

To consider only cost aspects of distribution seems, however, not to be satisfactory. There may be other values in shopping and buying than cost savings. What values there are is not easy for experts to decide. Economists are used to letting consumers do the evaluation by choosing between alternatives and to use preferences thus revealed as a basis for evaluations of large systems. Consumers show preferences in their choices of place of shopping. Models describing consumer shopping behaviour could therefore be used as a basis also for evaluations. Attempts in that direction have been made some years ago by myself in the case of retail systems for shopping goods<sup>4</sup>.

I started by showing that a kind of gravitation model related to the Reilly law of retail gravitation and the models by Huff could describe aggregated behaviour fairly well. In later analyses starting from models of individual shopping behaviour in specified buying situations, the fact that gravitation models can describe aggregated shopping behaviour was explained. I, therefore, felt it reasonable to assume that the same gravitation model could show how consumers on an average value shopping opportunities. Distances on one hand and assortment and other factors positively correlated with size of a shopping centre, on the other hand, seem to be of main importance as they determine the drawing power of shopping centres. The total drawing power of all

<sup>3</sup> Widman, L., *Alternativa Distributions System*, Stockholm 1976.

<sup>4</sup> This work started with empirical studies published in the book *Kunderna i Vällingby, Later theoretical analyses are only available in mimeographed form*, Stockholm, 1960.

shopping districts on one consumer<sup>5</sup> could then be regarded as a measure of how good the shopping possibilities of that consumer are. To aggregate over all consumers I took the logarithm of this measure and summed over consumers<sup>6</sup>.

My proposition is that this sum will measure consumer benefits from retail networks for shopping goods provided that the variables are defined so that the gravitation model describes aggregated shopping behaviour. The higher the value for one consumer the better the shopping possibilities for him/her. At the same time an increase of say 10% of his shopping possibilities (through better communications or in some other way) is traded off for a 10% decrease in the shopping possibilities for some other consumer when the sum total for all consumers is used as the value to be maximized.

#### 9. THE WEIGHING OF GOALS AND CONSUMERS

Tradeoffs of increases for some consumers for decreases for other points to a trouble spot in the previously mentioned evaluative measures. These allow the planner to compensate bad shopping possibilities for some consumers by giving still better shopping possibilities to those consumers who are already fairly well off in this respect. This is questionable. Good reasons should be given before an evaluative measure of that kind is used.

Goals that do not lead to this kind of problem have to be satisfying goals. A planner or evaluator of a retail system could thus say that all consumers should reach a defined level of retail service, e.g. a convenience goods store with a minimum assortment of goods within a certain distance from their homes. The main difficulty with goals of that kind is the setting of these minimum requirements. Conditions differ between areas, e.g. between rural areas and densely populated city districts. Goals that are unattainable in some areas will not discriminate at all between alternatives in others. The thresholds must therefore be different for areas of different types. Goals of this kind often have to be somewhat vague but they can easily get too vague to give any real guidance.

<sup>5</sup>  $\sum_j \frac{s_j}{d_{ij}^2}$  where  $s_j$  = size of shopping districts; and  $d_{ij}$  = distance from consumer  $i$  to shopping district  $j$ .

<sup>6</sup>  $\sum_i \log \sum_j \frac{s_j}{d_{ij}^2}$ .



High thresholds may be desirable but they easily get too high to be attainable with available means and with reasonable sacrifices. Usually some exceptions have to be accepted. Low thresholds often do not discriminate between alternatives. Combined with maximizing (or minimizing) goals of the kinds described above, they may, however, offer the best possible solution to the problem of formulating goals that can serve as a good basis for evaluations of retail systems from a consumer point of view.

#### 10. FINAL COMMENTS

In conclusion, I will however point to the functions of retail stores that are not directly geared to the distribution of goods. Even if those functions are secondary it may sometimes be worth-while not to try to develop that retail system which is most efficient in distributing goods, but one that makes it possible to gain some other quality. Retail systems form an important part of life itself in most kinds of living areas and even more so a part of life of retailers and their employees. The system that is most efficient in distributing goods may not always be the best system. In line with what I have been trying to do in this article is to point to what could be thought of as „side effects”. It is important to be able to evaluate how retail systems fulfil their primary function of distributing goods to consumers, but it is also important to know about and take side effects of various public policies (e.g. tax systems) on retailing into account.

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#### OCENA SYSTEMU HANDLU DETALICZNEGO

W artykule autor zaprezentował wyniki swoich badań poświęconych ocenie rozwoju szwedzkiego handlu detalicznego. Szczególnym przedmiotem zainteresowania autora był wpływ polityki finansowej państwa na kierunki rozwoju handlu detalicznego w Szwecji, a zwłaszcza na kształtowanie jego form.

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