

MARKETING IMPLICATIONS OF DEVELOPMENTS IN CONSUMPTION OF HORTICULTURAL PRODUCTS

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1. Introduction

Consumption of horticultural products has increased substantially during past decades. However growth in consumption of some major products, like fresh tomatoes, is slowing down. This decline in growth of demand for some major horticultural crops makes the theme of this paper topical. It is timely also in view of some developments in horticulture like increasing energy costs and emerging export potential in developing countries.

An appropriate treatment of the theme of this paper calls for a marketing analysis of consumption of horticultural products. This approach offers a broader and more relevant analysis of the problem area than a strict economic one since:

- (a) it does not limit itself to the purely economic aspects of consumer behaviour but includes behavioral aspects as well;
- (b) it implies not only a treatment of appropriate price strategies vis-à-vis developments in consumption, the typical approach in economic theory, but also a discussion of relevant strategies for product, promotion and distribution;
- (c) it covers organizational aspects of marketing strategies; in fact, this seems to us one of the major issues in developing the right marketing approach for horticultural products.

"Horticultural products" is a generic term for a set of diverse products. There is much difference between marketing red cabbage and white lilies. Consequently it will be difficult to arrive at conclusions valid for the marketing of horticultural products as a whole. Nevertheless let us try to develop general views, which seem justified but cannot always be proven, on the basis of actual market developments and research results. In this way, we can contribute a frame of reference for future action.

The scheme of the paper is as follows. First, some general characteristics of consumer behaviour with respect to horticultural products will be discussed. In particular we will try to indicate which developments in consumer behaviour in general seem to contribute to expansion of demand for horticultural products.

Having arrived at conclusions about potential developments in consumption of horticultural products, we will suggest appropriate marketing strategies to utilize the available potential. One aspect is the need for suitable product policies and for consumer education.

Afterwards we will discuss appropriate organizational structures to implement the marketing policies needed. The relationship between marketing problem and organizational structure will be given much attention. Finally some inferences for future research will be made.

2. Consumption of horticultural products: some developments

2.1. General trends in consumption: influence of growth in income

Consumption of vegetables and fruits has increased substantially in Europe since World War II but demand is levelling in recent years. Annual consumption of vegetables per capita is projected by FAO to increase in Western Europe by less than 1% during the period 1975-1980 and only slightly more than 1% in USSR--Eastern Europe (table 1). The projected percentages in growth per capita per year are somewhat higher for fruits: about 1.7% in Western Europe and about 3.0% in USSR--Eastern Europe.

These projections on future consumption of fruits and vegetables are largely based on income elasticities between 0.3 and 0.4 for vegetables and between 0.5 and 0.7 for fruits being estimated from data over the period 1955-1970. Estimated income elasticities of USSR--Eastern Europe proved to be slightly higher than those in Western Europe. Citrus fruits had the highest income elasticity: 0.67 in Western Europe and 0.92 in USSR--Eastern Europe.

Studies on individual countries provide more detailed information on future demand for horticultural products. 1) They show great differences between products in income elasticities. For instance Ostendorf estimated for Western Germany over the period 1961/'62 - 1968/'69 an income elasticity of -0.22 for red cabbage and an elasticity of 0.86 for early carrots. 2) For France, a short run income elasticity of 1.09 and a long run elasticity of 1.94 was measured for canned vegetables over the period 1959-1969 as compared to an income elasticity of 0.29 for fresh vegetables. 3) In 1973 in the United Kingdom processed vegetables had an income elasticity of quantity purchased which did not differ in statistical significance from zero, whereas income elasticities for fresh cucumbers, vegetable juices and frozen vegetables were 0.70, 0.81 and 0.95, respectively. 4)

The declining growth in demand can be assessed in studies in single countries for specific kinds of fruits and vegetables, for instance, in a decline in income elasticities. For Western Germany, income elasticity of fresh tomatoes decreased from 1.32 over the period 1953/'54 - 1960/'61 to 0.32 over the period 1961/'62 - 1968/'69 and in the United Kingdom income elasticity for cauliflower decreased from 0.78 in 1958 to 0.19 in 1973. 5)

2.2. Influence of price on consumption

In view of declining income elasticities, it is relevant to learn whether price decreases might contribute substantially to an increase in demand for horticultural products. However a great many studies show that price elasticity of demand is for many horticultural products lower, in absolute value, than one (table 2). For these products, a price decrease will not contribute any more to expansion of sales, in money. It seems therefore that price policy cannot be a main instrument to expanding sales of horticultural products.

2.3. Population growth

FAO projected a population of 369 383 000 in 1975 and of 383 537 000 in 1980 for Western Europe and of 365 111 000 in 1975 and 384 420 000 in 1980 for USSR--Eastern Europe. 6) Consequently population

growth offers limited room for expansion of demand for horticultural products.

2.4. Conclusion

We must conclude that growth in sales of horticultural products in Europe will decline insofar as it is determined by increase in population and in disposable income per capita. This warrants careful marketing of horticultural products. The West European apple market has for some time shown an imbalance between supply and demand, and many other markets might follow in view of export potential of some countries 7); projections for supply and demand of fruits and vegetables for the European Community already show this tension in the market. 8) Clearly policy measures can contribute to get rid of structural gluts in the European market. International agricultural policy is however beyond the scope of our paper.

Marketing of horticultural products should not only try to fit production size to expected growth of demand on the basis of increase in income and population. Marketing should also exploit new ways of selling horticultural products to fit changes in society, like changing life style. Let us therefore discuss some general trends in consumer behaviour, that are favourable to consumption of horticultural products.

3. Behavioral aspects of consumption of horticultural products

In the theory of consumer behaviour, many models have been developed; for instance, Hansen classified 28 groups of models. 9) Many of these models are too specific to serve as a frame of reference for consumer behaviour in respect to horticultural products. For instance, in their model Bauer and Cox concentrate on consumers' efforts to minimize perceived risk in a purchase; in the model of Fishbein, buying intentions are determined by consumers' attitudes, group norms and motivation of consumers to comply with these norms. 10) A class of models that Hansen calls 'decision models' seems most useful for our purpose; well known models of that class are those of Nicosia, of Howard & Sheth and of Engel, Kollat & Blackwell. 11) The last model provides the line of development taken in this section.

Engel, Kollat & Blackwell deal with the consumers' buying process as a problem-solving process containing, in principle, the stages of problem recognition, internal search and evaluation, external search and evaluation and purchase. The way in which received stimuli affect decisions depends on perception, attitudes, evaluative criteria, information, experience and personality. The contribution of the stages distinguished in the problem-solving process differs substantially; routine buying and impulse buying differ from extended buying. Much buying of fruits, vegetables and flowers is learned and has become a habitual decision process, a routine. Also impulse buying is important in shopping for horticultural products such as flowers. Engel, Kollat & Blackwell emphasize culture, family and social class in influencing the consumer-decision process.

Within this framework, let us discuss some cultural changes relevant to consumers' purchasing horticultural products. Afterwards, in Section 4, we will dwell upon marketing policies by which horticultural industry could profit most from that.

3.1. Cultural changes

3.1.1. Changing values and norms

Food habits, values and norms for food are culturally determined and differ substantially between European countries. However, there are some cultural changes in European countries that seem to draw these norms and values in the same direction. In this way, they have substantial influence on evaluative criteria of consumers and attitudes about horticultural products.

Relevant evaluative criteria are Nutrition and health, Sensory properties and Socio-psychological connotations of the product.¹²⁾ Nutrition and health are important dimensions in food products, in particular in fruits and vegetables. For instance in consumer research in the Netherlands in 1971, consumers were asked to rank the properties taste, perishability, health, convenience and value for money of fruits; 47% ranked taste highest and 40% health.¹³⁾ The importance of health as an evaluative criterion might help to strengthen consumers' appreciation for low-energy food, since in many European countries average energy intake per person is considered too high. Both, automation and mechanization in industry and agriculture will decrease physical effort and reinforce the need for a low-energy intake. Since FAO projected that energy intake per capita in Europe will not yet have decreased by 1980 ¹⁴⁾, there is room for more appreciation of low-energy food. This opens new outlets for fruits and vegetables in the food market.

Another important feature on health and nutrition value is consumer concern about the ill-effects of pesticides used for plant protection. It is worthwhile to have a better understanding of consumer values and attitudes on that matter. Also it is important to limit this problem as much as possible by changing methods of plant protection. Sensory elements are valued high in food. Sensory elements like taste, colour and shape are important to horticultural products. In the quoted Dutch consumer research in 1971, taste was considered the most important property of fruits by 47% of the respondents.¹⁵⁾ Sensory attributes of fruits and vegetables become more important since physiological saturation will stimulate consumer demand for variety in food consumption. This can be largely brought about by variety in taste. Taste also will gain importance since market expansion has to be brought about by penetration in consumption outside meals.

Socio-psychological connotations as perceived by consumers in food are influenced by cultural changes too.

A psychological value for which people are seeking in food, some people even rigidly, is naturalness. While only a few people are strict in their desire for a natural food, a much broader group of people is open to buying natural products if they do not lose much in terms of convenience and price. Horticulture can adapt to this desire by improving plant protection methods.

A social value which has gained importance in the United States, and perhaps also in Europe, is youngness. As a correlate, it might be considered that freshness, bright colour, abundance in taste, juice and smell might become values more appreciated in food. Many fruits and vegetables can be so adapted.

3.1.2. Changing Life Style

A set of changes in life style influences consumer behaviour towards food. More free time, recreation, tourism and entertainment bring new ways of consumption, like barbecue parties, more knowledge of exotic foods, and more hobbyism in food. This offers new opportunities and introduces new requirements to horticultural products, which have to be assessed per product.

Changing life style also influences how the consumer shops for food. Working wives and increased appreciation of free time increase the importance attached to 'convenience': "...as scarcity of products disappears, the scarcity of time ascends the value scale".¹⁶⁾ While this might be one of the reasons for high income elasticities for frozen vegetables in the United Kingdom and of canned vegetables in France, fresh fruits and vegetables can also strengthen their market position by built in services.¹⁷⁾

3.2. Conclusion about consumer behaviour

The cultural developments discussed influence evaluative criteria and attitudes towards horticultural products. In this way, they have an impact on the purchasing process of horticultural products in the stages of problem recognition, search, evaluation and purchase. Purchasing horticultural products has usually become a learned routine or an impulse. Consequently the cultural changes reviewed offer new outlets to producers but they can be reaped only if marketing is adequate. The effect of cultural changes noticed on the purchasing process does not offer exclusive outlets to horticultural producers. Many other agricultural producers could profit from these changes too. But above all, agricultural producers have to compete with producers of other commodities to get a share of the consumer's discretionary income. Let us turn therefore to marketing policies.

4. Marketing policies for horticultural products in stagnating markets

Growth of market sales for horticultural products will be moderate insofar as it is induced by income and population growth. Therefore sales will have to be expanded by an active marketing policy that exploits new opportunities.

There are markets with a fundamental unbalance between supply and demand such as the Western European apple market, for which it would be over-optimistic to expect that expansion of consumer demand could restore equilibrium. It has rightly been advised that apple production be reduced in order to improve the market.¹⁸⁾ But also in such a market improving marketing, in association with such a reduction of production would pay off well.

A marketing policy aiming at increased demand can be designed by an appropriate "Marketing Mix". Let us discuss therefore appropriate strategies for product, price, promotion and distribution.

4.1. Product policy

It seems a platitude to state that product policy should be customer oriented. But Thiault argues, on the basis of a thorough study, that product qualities, which enhance efficient marketing of fruit and vegetables, play too important a role in quality judgment because of Common Market regulations.¹⁹⁾ Consequently, according to Thiault, development of new varieties has been directed too much to

resistance to transport and research has been directed towards higher yields as the main criterion of profitability.

Policies for expansion of sales when commodities have reached commercial maturity are classified by Ansoff as: 20)
market penetration: selling more of the present product in the present market;
market development: selling more of the present product in new markets;
product development: selling a new product in the present market;
diversification: selling a new product in new markets.
For our discussion on expansion of sales of horticultural production, we might add timeliness, the time the commodity is put on the market.

4.1.1. Present product in present market is a strategy to be followed if expansion of sales is possible by changing marketing policy on price, promotion and distribution without changing the product. Some improvements in product that might stimulate sales in this market strategy are: better methods of grading and sorting, and of quality control; and more uniformity in plant material used. An example might be the comment made that the many varieties of lemons, as grown in southern Italy, are disadvantageous to sales. 21)

4.1.2. Present products in present markets and timeliness have been extensively pursued by horticultural producers. For instance the commodity life cycle of tomatoes in the Netherlands shows how expansion of sales has been brought about by expanding production in particular in March to April and in September to November; lettuce is harvested practically all the year round now in this country and has lost its characteristic seasonality (Figure 1). Such policy will endure increasing competition from international trade as another device to supply products all the year through. This is especially true if expansion of the season of production and harvesting has to be brought about by much additional heating in greenhouses.

4.1.3. Present products in new markets is in the domain of the marketing expert and not of technical experts. Marketing experts might be able to find new geographic markets: export trade in horticultural products has been developed substantially in Europe. We do not think that there is much room for expansion of sales for European producers to sell the present products to new European markets. This might change when the European Community is extended to other Mediterranean countries.

For off-season exports, like tomatoes in the period November-February, or apples in the period May-August, some opportunities for "present products in new markets" might be available. This policy might be pursued by Mediterranean or some other African countries.

Another policy in this category "present products in new markets" is to find a new use for the present product: for instance consumption of tomatoes, cucumber or cauliflower as a snack, fruits as a substitute for sweets. What seems to be often lacking are consistent marketing programs based on such product-ideas. In fact only such marketing programs guarantee that sales will grow by a new use of a product.

4.1.4. New products in present markets

There are a great many examples of "new products" in horticulture. Most examples are either new varieties of existing products, for instance a new variety of roses, or introduction of a crop to a new country, such as paprika in the Netherlands. Also many new products have been created in horticulture by processing: citrus juices and tomato juice.

It seems to us that product development should get a high priority in horticulture and that research in this field should be more market oriented. We have indicated consumer trends, like health-consciousness, appreciation of variety in food, of freshness and convenience. Horticulture should exploit these developments by appropriate product development. Our contention that marketing should play a major role in product development programs implies that marketing experts should be well enough informed to give adequate advice to plant breeders, research stations and producers.

Another point that needs to be stressed is that increasing variety in supply should go with market segmentation: in other words one has to choose for a particular set of product properties which seem attractive to the specific group of consumers one has in mind. Examples of such groups are consumers who are extremely health-conscious or hobbyists in cooking, gourmets and convenience-conscious consumers. Essential for market segmentation is a strong relationship between specific properties of a product and specific requirements of a consumer. Also such market segments should be large enough to guarantee efficient marketing, in particular distribution. Branding the product can increase consumers' trust in and loyalty to the specific product qualities they prefer and reinforce such a policy of market segmentation. In our opinion, grading and sorting can never be so refined that they supersede branding as an aid in market segmentation.²²⁾

4.1.5. New products to new markets is the most demanding operation

of the procedures discussed yet since the producer is confronted both at the production side and at the demand side with a new situation. It therefore requires well planned operations like large-scale production of a new crop by a Western company in a developing country, to supply Western European markets. Such an operation is likely to remain exceptional.

4.2. Prices

Price should not be overlooked in marketing horticultural products; mostly prices are not fixed in advance but result from supply and demand in the market. Consequently in markets with a structural over-supply, restriction of supply should be pursued to restore market equilibrium. Minimum price schemes and supply regulations help to mitigate temporary gluts. In the context of this paper we will limit our discussion to some aspects of price policy, which are relevant to the theme of our paper: price as a marketing instrument to increase demand for horticultural products.

In view of the low price elasticities of demand, quoted in Section 2, it does not seem wise to lower prices in order to increase demand for horticultural products. But there are more specific policies which might be considered in order to increase demand, namely price discrimination and price as an indicator of quality.

To use price discrimination as a device to increase sales, one should develop markets for a product which are sufficiently separated in order to make price discrimination feasible. A classic example in this respect is the distinction of the market for a particular horticultural product into a market for processing and a market for fresh consumption. Research in the United States showed that deliberately diverting Washington apples from fresh use to processing would increase the average price for the total crop.²³⁾ Price discrimination between segments of the fresh market might be possible too. An expedient for such price discrimination might be the use of different brands, aiming at different target groups. Clearly such operations require that marketing organizations command sufficient of the crop to establish a brand.

For products differentiated, for instance in brand, alternative price policies become more numerous than for homogeneous products: price can be an indicator of quality or is a tactical instrument in controlling a commodity life style. Price as indicator of quality is in general not appropriate to horticultural products because price per unit is low, risk in purchasing is low and the product is undifferentiated. For instance, for apples in the Netherlands, price as an indicator of quality is important only at very low price levels.²⁴⁾ A survey on Dutch flower-retailing suggests however that this price policy might be of some use for horticultural products aiming at quality-conscious consumers.²⁵⁾

In conclusion, though price is a useful instrument in marketing policy for horticultural products, it is of minor importance to increase demand in the European market for the near future.

4.3. Promotion

Demand for horticultural products could be increased because of consumer changes as described in Section 3. Clearly in order that sales of horticultural products profit from these general changes in consumer behaviour, information to and education of consumers are necessary. For instance, increasing sales by propagating a new use of the product depend heavily on information to and education of consumers. Promotion as a tool to increase demand for horticultural products along this line should first of all help consumers to recognize problems. It should also make clear why the promoted horticultural products can solve these problems better than other products; this might involve a change in routine by consumers.

Producers use a "Promotional Mix", of which advertising is an important element. Available research results show, also for horticultural products, that advertising can have a positive effect on demand. Nerlove & Waugh estimated for the period 1907-1958 an elasticity of sales for United States oranges with respect to advertising of 0.24 on long run and of 0.17 on short run.²⁶⁾ Hochman, Regev & Ward established a significant influence of advertising on retail sales of processed Florida citrus over the period fall 1967 through spring 1972.²⁷⁾ Lambin established for apples in Belgium an advertising elasticity of 0.095 which is modest in comparison with estimated elasticity by the same author of 0.233 for electric shavers but substantially higher than an elasticity of 0.031 for yoghurt.²⁸⁾

In influencing consumer behaviour, advertising should play its role in conjunction with promotion below the line, like free samples, demonstrations, special offers, with educational programs and free

publicity. Therefore, we would warn against heavy preference for unselective national advertising programs. In order to be useful as an instrument to expand demand, advertising efforts should be planned within a promotional program which in turn has to be coordinated in a marketing program. Let us stress planning, since we are aware of the difficulties in bringing together interested parties in a marketing-program at national level. This is necessary in particular to change consumer behaviour towards a class of products; for instance, making consumers more flower-minded in a country requires that all suppliers cooperate in a national promotional program.

4.4. Distribution

Distribution decisions aim essentially at: a) optimum access of a product to the market, i.e. optimum in timeliness, place of supply and presentation of the products, b) efficiency of the distribution operation; and c) strong bargaining power of sellers vis-à-vis buyers. From the distribution decisions of producers, wholesalers and retailers emanates the marketing channel of a product.

The question we have to discuss is how distribution-policy can stimulate demand for horticultural products. A consumer does not look far or consider long in buying fruit and vegetables; routine and impulse buying are usual. In Western Germany consumers buy vegetables and fruits within a radius of 3 km from their homes.²⁹⁾ Consequently, there must be sufficient selling points near the consumer to offer a good selection of products that interest consumers. The number of selling points does not seem a hurdle for expanding sales of fruits and vegetables in Western Europe: every supermarket, a great many smaller shops, specialized green-grocers and markets carry these products. For cut-flowers, however, expansion of selling points might yet be profitable to sales, as has been established for the Netherlands.

Retail companies intend increasingly to develop their own marketing policy for fresh fruits and vegetables. Arguments for such own policies are: (a) fresh products like fruits, vegetables and meat offer to supermarkets more opportunities for differentiation than branded groceries; and (b) sales of fruits and vegetables have a substantial share in total sales of supermarkets, in Western Germany in 1972 9.6% in self-service shops with 400 m² or more selling space.³⁰⁾ Marketing policies of retail companies for fruits and vegetables have to be taken seriously by wholesalers and producers also because of the substantial economic and strategic power of large chains, voluntary chains and buying groups in the marketing channel.

Also distribution policies of wholesalers have always influenced sales of horticultural products. Their main function for a long time has been to find outlets for a given product. Wholesale companies in fruits and vegetables, in particular large ones, however, are changing to a marketing approach: they are searching for products which fit best to the customers they have as target group; the marketing plan "Supermercado" of the Spanish wholesale company Pascual is illustrative.³¹⁾ Consequently also wholesale companies try to influence production according to their needs, for instance by contract farming or even by self-production. Wholesalers have assumed the role of problem solver to retail companies for selection of fruit and vegetables;

wholesalers were innovative especially in logistics, pre-packing and preparing of fruits and vegetables. So wholesalers can contribute to a structural increase in demand.

Developments in retailing and wholesaling, as discussed, show clearly the need for good coordination between marketing policies of producers, wholesalers and retailers in order to increase sales to consumers.

5. Organizing a marketing policy

Having analysed changes in consumer behaviour and marketing policies, appropriate for these changes, let us examine marketing organizations to implement these policies. They are needed since market price alone will not bring about sufficient coordination of marketing plans to increase demand; price is a tool to balance demand and supply in the market, given a demand and supply curve, while marketing policies as discussed in Section 4 aim at changing demand and supply curves.

Coordination of marketing policies implies coordination of decisions about product, price, promotion and distribution by producers, wholesalers and retailers. This coordination is in particular of importance for fresh horticultural products, because of perishability of product. Wholesalers and retailers also influence horticultural products a great deal by packaging, sorting and preparation. There is a need for satisfactory coordination of marketing decisions by producers, wholesalers and retailers, in other words for vertical marketing systems, in order to develop and implement marketing policies as suggested in Section 4.

By "satisfactory" coordination we mean that the coordination needed will depend on the type of marketing plan, such as its objectives, and on the capacities of the companies participating in such a plan. This relationship between type of marketing plan and capacities of companies at the one side and type of coordination in decision making on the other side can be illustrated by the following hypothetical examples.

Example 1: Product policy at macro level. Suppose one would like to increase the marketed range by developing new varieties. Then expensive product research, breeding programs, should be set up after sound market research. Research results should be tested against the market and successful results should be introduced in the market on the basis of an adequate marketing program.

Such a costly long-term program could be set up and implemented by a company like United Fruit Company having integrated research, production and wholesaling. But in Western Europe such programs probably might involve coordination of the activities of different parties like: governmental experimental stations, plant breeders, extension workers, producers and wholesalers. A Marketing Board at national level might have sufficient financial power and authority, also vis-à-vis governmental research institutes, to initiate such plans and to implement them. Large producer's groups or a Commodity Board, like the one for flowers in the Netherlands on which producers, wholesalers and retailers are represented, or a huge cooperative, like the Dutch System of Cooperative Auctions for Fruits and Vegetables, could perhaps initiate and coordinate such program too.

Example 2: Increasing convenience in products. Increasing convenience in horticultural products could be brought about by prepacking and preparing of fresh vegetables. Such operations probably do not start with a new product at the farm but a new device for packaging or preparation as developed by wholesalers. Presumably retail companies will be interested in such device and will be consulted by wholesale companies, be it private, cooperative or marketing board, right from the birth of the new product. Often a new method of preparation or packaging requires specific product properties, like size or colour. In that case, wholesalers have to coordinate production decisions of growers with their plan.

A large wholesale company who has interests in production might probably manage the coordination from producer to retailer inclusive quite well. But a large wholesale company which has not integrated production could perhaps handle such coordination also without gaining control of production, if market supply of producers fits sufficiently to the requirements of the new method of packaging.

These examples illustrate that different organizational solutions might fit to the same marketing plan. In practice one can observe a wide range in the existing vertical marketing structures for horticultural products. Notwithstanding this great variation, two properties of existing structures can be mentioned.

First, it seems that many vertical marketing systems contain two subsystems: one subsystem of growers plus wholesalers which is interested to sell products of growers of a specific region and the other subsystem of retailers plus, if any, wholesalers in the consumption centre which is in particular concerned with selling products to a specific group of consumers. Examples of the first subsystem are: a) a producers' group which has integrated wholesaling operations; b) a marketing board responsible for the sales of some horticultural product of a country or of a specific region; c) a selling cooperative for a horticultural product; or d) a large wholesale company which has gained control of production. Examples of the second subsystem are retail companies who wholesale fruits and vegetables, and purchase direct from producers or from wholesalers in exporting countries.

A second characteristic of vertical marketing systems is that integration of marketing decisions, both within and between the subsystems as distinguished, may vary with respect to formal structure. At one extreme, there is the corporate vertical marketing system which integrates decision making by integration of ownership. Examples are wholesale companies with integrated production and producers' groups with integrated wholesaling. At the other extreme, there is coordination of decision by deliberation and persuasion without links between partners based on contract or title of ownership. The Dutch Central Bureau of Fruits and Vegetable Auctions might be taken as an example; it tries by marketing services, packaging, propagation of new products and promotional campaigns to improve marketing coordination.

Between the extremes, there are intermediate forms like contractual arrangements and cooperation in specific programs. Also it can be observed that coordination at different stages of the marketing channel is achieved in a different way.

It is not possible nor relevant to draw a general vertical marketing structure is best for coordination of decisions in marketing channels in order to stimulate demand. We have already

mentioned the relationship between the structure of marketing channels and the capacities of companies and the objectives of their marketing plan. Two further comments seem in order, yet. First, more planning in marketing channels of horticultural products might reduce the flexibility of marketing, which will be needed also in vertical marketing systems since: (a) market supply and consequently prices vary with the weather; (b) even in many vertical marketing systems, an atomistic market structure will remain at the grower level and will cause variability in supply; (c) regional variations in production and consumption require a flexible market approach; and (d) one will have to live also in the future with unforeseen variations in export trade. This variability of horticultural markets will pose restrictions on the extent of coordination in vertical marketing. For instance, fixing prices for future deliveries between growers, wholesalers and retailers will therefore remain difficult.

Presumably the balance between rigidity and flexibility in planning will vary with the type of retailing: a big chain might need more rigidity because of the standardization and uniformity needed for many outlets. But it is interesting to notice that a big retail chain in the Netherlands, after integrating wholesaling by central purchasing, switched recently to dispersed purchasing of some vegetables by using again the services of wholesalers. Regional wholesalers appeared better able to cope with regional differences in the market.

Our second comment on the merits of vertical marketing systems is that they might have general social and economic consequences not acceptable to any of the marketing parties involved. For instance, maintenance of bargaining power or more generally, the desire for independence of horticultural growers, will not be compatible with some types of contractual vertical systems. To what extent horticultural growers are prepared to sacrifice independence for improvement in market sales or in prices therefore is crucial in structuring vertical marketing systems.

Despite such limitations, more coordination of marketing decisions through the marketing channel is necessary to increase demand for horticultural products.

6. Some inferences for research

Improving marketing policies to increase demand for horticultural products in Europe will have to be based on more marketing research.

Systematic studies on general trends in supply and demand of horticultural products are needed in Europe and relevant non-European exporting countries. The analysis of the Conferenza Nazionale per l'Ortoflorofrutticoltura has been a pioneering venture but has not been followed up by studies of the same depth by relevant authorities in the European Community.³²⁾ This research is needed to understand structural developments in European markets of horticultural products.

More research has to be done on consumer attitudes and shopping behaviour towards horticultural products. We will have to expand our research from mainly economic research to really interdisciplinary research which provides a good background for consumer-oriented marketing of horticultural products.

More research on vertical marketing systems is needed, for instance on marketing planning and physical distribution, in order to develop appropriate marketing channels for the future.

While some of this research for international and national markets, should be taken up by governmental and governmental-aided institutes, also the industry will have to take up research at national and regional level. Suppliers to a specific market should be prepared to finance jointly fundamental consumer research when costs are too high for individual companies. Otherwise they might leave these market opportunities to the real big marketers who can bear the costs of expensive consumer research.

Finally market research should be used by companies systematically as an instrument to improve their marketing policies. Because of the close relationship between marketing policy and market research, this research is the responsibility of individual companies themselves. Vertical marketing systems as suggested in Section 4 should stimulate such research and its application in policy programs.

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Table 1 - Income elasticities and projections of per caput demand for fruits and vegetables in Western Europe and in USSR--Eastern Europe.

	Western Europe			USSR--Eastern Europe		
	Elasticity	Per Caput Demand, kg/year		Elasticity	Per Caput Demand, kg/year	
		1965	1970 1975 1) 1980 1)		1965	1970 1975 1) 1980 1)
Vegetables	.36	94	101 107 112	.40	72	80 86 93
Fruits	.61	85	95 104 113	.72	27	32 37 43
Citrus fruits	.67	18	21 24 26	.92	2	2 2 3
Oranges-Tangerines	.69	15	18 20 22	.93	1	1 1 2
Lemons-Limes	.55	2	3 3 3	.89	1	1 1 1
Others	.61	1	1 1 2	.82	0	0 0 0
Bananas	.44	7	8 8 9	.73	0	0 1 2
Other fruits	.61	60	73 73 79	.71	25	30 34 38

1) Projections

Source: Food and Agricultural Organization of the United Nations, Agricultural Commodity Projections 1970 - 1980, Rome 1971.

Table 2 - Estimates of price elasticities of demand for fruits and vegetables in some Western European countries.

Period	vegetables (fresh)	tomatoes (fresh)	vegetables (total)	apples	oranges	fruit (total)
Belgium France ¹⁾	-0.74	-	-	-	-	-
1960/61-1970/71	-0.18	-	-0.12	-	-	-0.52
Western Germany	-0.79	-0.16	-0.47	-	-	-
Denmark	-	-	-0.49	-0.40	-0.50	-0.91
1955/56-1966/67	-	-0.28	-	-0.57	-1.07	-
United Kingdom	-	-	-	-	-	-
1968-1973	-	-	-	-	-	-

1) Elasticities are long term price elasticities.

Source:

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Figure 1 - Annual production of lettuce and the production in the period from april up to september in the Netherlands.

