

# **THE POTENTIAL ROLE OF THE CONSUMER IN THE REVITALISATION OF THE ROMANIAN APPLE INDUSTRY**

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## ABSTRACT

Ovidiu Erich Rominger

### THE POTENTIAL ROLE OF THE CONSUMER IN THE REVITALISATION OF THE ROMANIAN APPLE INDUSTRY

After many years of domination by the Soviet Union, 1989 brought great changes in Eastern Europe. The collapse of the communist system has led to the beginning of a new era in which Eastern European countries are being required both to develop a democratic system and adapt to a market economy.

Left with a legacy of massive unproductive factories and immense co-operative farms, the beginning of the transition towards the market economy has been difficult. One of the factors associated with the emerging market economy is argued to be the increasing importance of the consumer.

In Romania, some sectors of the economy declined more than others and compared to other sectors, agriculture and horticulture in particular, have declined less. However, land reform, loss of former markets and poor inputs due to financial constraints have left their mark on Romanian horticulture. Once named by the Soviet Union “the breadbasket of Eastern Europe”, Romania and Romanian horticulture are required to adapt presently to the new market conditions. Within the horticultural sector, the apple industry is one of the areas in urgent need of revitalisation. Reaching its peak under the communist centralised command system, the industry has to be rebuilt to new standards which recognise, perhaps for the first time, the role of the consumer.

This research examines the Romanian apple industry (fresh apples and apple juices), in order to analyse the expectations of consumers and to determine whether the Romanian apple industry is able to adapt and respond to those key expectations in the foreseeable future. Additionally, Romanian consumers and the country’s apple industry are contrasted with those in the UK and Germany, countries with traditional market economies which also represent potential export markets for Romanian produce.

Focusing on the consumer in relation to the Romanian apple industry, the work reports on the findings and discusses some obstacles to, and proposed actions for, the revitalisation of the Romanian apple industry. In order to achieve the various objectives a multiple methodology was developed, including both quantitative and qualitative approaches. The expectations and preferences of consumers were identified by means of questionnaires and focus groups, involving the four domestic apple varieties selected as reference products. The information collected was presented to the apple industry and in-depth interviews were conducted in order to assess the industry’s difficulties and its capacity to respond the consumer requirements which had been determined.

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**To my parents, Maria and Emil.**

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*I declare that, unless otherwise acknowledged in the text, the work presented in this thesis is wholly my own.*

## **1.0 INTRODUCTION**

### **1.1 THE RESEARCH CONTEXT**

The year 1989 was one which brought major changes, political and socio-economic, all over Eastern Europe. Popular mass movements culminated with the knocking down of the Berlin wall and the establishment of democratic governments. For Romania it represented not only the end of 43 years of communism, but also a major transition towards a new system - the market economy, and a constitutional democracy. Accustomed to a command system working through pre-established five year plans, Romania's period of transition was and is still difficult. Some concepts like democracy and hence market economy were totally alien and are having to be learnt from zero. Learning such new concepts has proven to be particularly difficult during the first years after 1989. The freedom of expression and other new rights were often misunderstood and the country went through an initial period of semi-anarchy climaxing with the series of demonstrations by miners in 1990 and early 1991. The quest for Romania's transition from communist autocracy to constitutional democracy was proving to be a real challenge for the new political order. Old mentalities had to be changed and a policy of transparency and openness to other countries, especially the European Union (EU) adopted. Leaving aside the popular discontent with the difficulties of the transition, the process was affecting not only people, but in fact all economic areas of the new Romania.

During the transition, as with the whole economy, the agricultural and horticultural sectors have been affected. However, their decline has been less than other sectors, such as manufacturing, which has almost totally collapsed. In relation to the agri-food industry, as in all other sectors, there is an urgent need to adapt to an approach which is capable of understanding and responding to the driving forces of the market economy, as this is the new direction the country has chosen to follow.

Within the market economy, consumer demand is one of the main focal points. Neglected under the communist regime, the role of the consumer is emerging more and

more as one of the driving forces in new democratic countries like Romania. The former managerial approach accustomed to a command economy, working through a series of inflexible five year centrally developed and implemented plans, is inappropriate under these new circumstances. Conversely, there is a need for the recognition of consumers as separate individuals, with specific needs and expectations if the entire economy, including agriculture and horticulture, are to be rebuilt according to the needs of the market economy.

In Romania, fruit tree growing in general and apple growing in particular were major strengths within horticulture and the basis of modern apple cultivation in Romania was established during the communist years. Extensive plantations were established although planning was centralised and only a limited varietal range encouraged. Nevertheless, Romanian apple growing also benefited from extensive research and adequate funding. Unfortunately, the economic climate after 1989 has not favoured the Romanian apple industry. Inevitably factors like “land reform” have led to a massive fragmentation of the land. Lack of funds for re-establishment of new orchards, confusing legislation and the loss of the former stable markets, to mention only some factors, have all contributed to the decline of apple growing in Romania. Despite having been affected by these factors, at the present time the Romanian fruit industry is still one of the most productive areas within horticulture. However, if Romania aims to keep such a sector productive and profitable to avoid danger of becoming an apple importer, there is an urgent need for revitalisation.

Some countries within the European Union (EU) such as the United Kingdom (UK) and Germany are often unable to satisfy their demands for fresh temperate fruits from internal production and frequently resort to imports. It was recognised that the EU is the world’s largest importer of fresh fruits and vegetables, particularly apples and citrus fruits. The UK has also been seen as enjoying one of the safest and most abundant food supplies in the world (Richardson, 1995). Although apple imports only account for a relatively low proportion of annual Community requirements, they play an important role in supplying the market out of season. This could provide a good opportunity for the Romanian apple industry that could act as a competitive and supplementary source to existing European suppliers (such as Poland) or non-



European ones (such as South Africa, New Zealand or Australia), especially in the new context regarding the enlargement of the EU.

Understanding consumers and their needs is a necessary part of the restructuring and revitalisation of apple growing in Romania. Romanian producers will have to extend their understanding of consumers to countries and cultures other than Romania in the present context where markets are becoming global. Factors influencing demand and purchase decisions are a vital element in influencing the entire industry. In a market economy such factors are mainly dictated by the consumers and their perceptions with respect to a certain product. Various authors have demonstrated that some of these factors are related to different aspects such as price, price of competing fruits, income per capita (O'Rourke, 1994), skin quality, juiciness, crispness, flesh texture and aroma (Daillant-Spinnler 1996), flavour (Stebbins 1992), cultural habits and tradition, advertising and retailing (Leather, 1995), healthy eating (Leather, 1995; MINTEL, 2000). No longer will it be possible for growers to simply choose varieties that ensure high yields, are easy to establish and maintain, or to maintain orchards of the same varieties for a long time. It appears that the global apple consumer market is becoming increasingly segmented. As a result, specific niches will require specific products. There will be a need to respond as quickly as possible to changing consumer tastes not only at country levels, but also around the world. Present global trends, such as population growth, change of age distribution, economic and technological developments, to mention only some, will without any doubt affect the apple market as well. Identifying such trends, as well as the continuous changes in consumer's expectations and preferences is directly correlated with market and consumer research.

The present research has been carried out as part of an Inco-Copernicus European Union funded programme (INCO-COPERNICUS Contract No.IC15-CT 96-1009, "Consumer Expectation as an Agent of Change in the Agri-food Industries of Selected Central and Eastern European Countries"). Focusing on the consumer, this research seeks to identify their needs and expectations in relation to selected products of the Romanian apple industry and the influence that consumer expectation may have upon the production, processing, distribution and retailing of apples within the Romanian apple industry. As such the research seeks to demonstrate the significance of the

consumer and consumer research as a driving factor in the revitalisation of the Romanian apple industry, in order to meet internal and external demand. Last, but not the least, this research is also part of the process of self-improvement and accumulating experience in a new field for the researcher himself.

## **1.2 AIM AND OBJECTIVES**

The main aim of the research is *to investigate the potential role of the consumer in influencing the revitalisation of the Romanian apple industry*. In order to achieve the aim of the research, consumers from locations in three different countries (United Kingdom, Germany and Romania), representing both domestic and potential export opportunities, were surveyed. The locations were selected in accordance with the linguistic abilities of the researcher, personal contacts, as well as considering previously established contacts with Higher Education establishments in these countries through the Inco-Copernicus Programme.

The rationale and detail of this study will be discussed further in chapter four, the “Methodology” chapter. Whilst it is outside the scope of this work to generalise the consumer results to a country level, the study aims to bring present new information mainly about apple consumers in Romania, but also in the UK and Germany. In addition, the study summarises the Romanian, UK and German apple industries, as well as making a preliminary comparison between apple and apple juice consumers in the countries selected.

In attempting to achieve the main aim, a series of objectives leading to the main research challenge, were also set. These are given below:

- to review consumer research and the role of the consumer in Eastern Europe, including Romania;
- to review consumer research and the role of the consumer in Western economies;
- to review some of the factors, including attitudes, which influence consumer purchasing decisions;



- to demonstrate the importance of understanding the consumer decision processes and attitudinal research for the revitalisation of the Romanian apple industry;
- to review the history and the current situation of the Romanian apple industry;
- to review the situation of the apple industry and apple markets of the United Kingdom and Germany;
- to investigate the potential influence of the consumer upon the future development of the Romanian apple industry, including:
  - identification of characteristics of fresh apples and apple juices which have an importance in consumer decision making;
  - the expectations of consumers to purchasing fresh apples and apple products;
  - the potential of the Romanian apple industry to respond appropriately to consumer preferences and expectations;
  - the identifications of the barriers for the Romanian apple industry to accommodate these expectations;
- to make recommendations of appropriate actions to revitalise the Romanian apple industry.

### ***1.3 THE STRUCTURE OF THE THESIS***

The thesis begins with a literature review which focuses on two main aspects: the consumers and the apple industries in the selected countries. The role of the consumers in a command economy and a market economy are discussed, with particular reference to Romania. Factors which affect consumer research in Romania and the evolution of the importance of the consumer are also highlighted. Contrasted with Romania, the role of the consumer in Western countries is also reviewed in order to give an insight into consumer research and factors which affect consumer purchasing decisions.

The literature review continues with an analysis of the apple industries in the selected countries, focusing on both fresh apples and apple juices. The importance of fruit consumption and in particular apple consumption is presented in a separate section.

Chapter four, “Methodology”, describes the design of the research, justifies the range of methods of data collection and analysis embraced and explains the steps followed in aiming to respond to the research challenge.

All data are presented in the results chapter (divided into quantitative and qualitative results), while the discussion brings together the various aspects studied and recommendations suggest advice for the industry and propose further avenues for research.

## **2.0 CONSUMER RESEARCH LITERATURE REVIEW**

The literature review is structured in two chapters, chapter two addressing issues related to consumers and consumer research, while chapter three addresses the state of the apple industries in the selected countries.

Having briefly discussed the context of research and explained the rationale behind it in chapter one, the present issues related to consumers and the apple industries in the selected countries will now be examined. The literature review begins by presenting the current situation of consumer research in the Eastern and Western countries. Firstly consumer research on the food markets of Eastern Europe is discussed, with particular references to Romania. The state of consumer research in the Western economies is also briefly presented.

Having had a brief look at the consumers' role in Eastern and Western economies the literature review continues by reviewing how consumer decisions are taken and the various factors which influence them, including a more detailed discussion on attitudes.

### ***2.1 CONSUMER RESEARCH AND THE ROLE OF THE CONSUMER IN EASTERN EUROPE***

There is a limited discussion in the literature regarding consumer research during the communist period in CEE. Until recently, its role in influencing and determining product qualities was practically unknown or not taken into consideration in countries like Romania. The industry produced a limited range of goods, confronting the consumers with a very poor choice. During those times consumers were completely neglected, both in respect of goods and services (Biggs, 1993; Baron, 1995). Besides the poor range offered by the food industry, consumers had to face food shortages as well. Long queues often formed for the most basic of food products, such as bread and meat. The phenomena was more obvious after the mid 1980's. The food shortage was



not as a result of non production, but a result of political decision. All efforts were made during the 80's to repay external debts by exporting food (and other goods). To meet those goals the needs and demands of Romanian consumers were sacrificed.

Food was mainly centrally produced and processed. Mass production was perceived as bringing potential economies of scale, and many goods were mainly produced in only one plant (Healey, 1994). In Romania most of the agricultural products were processed in the ILF's (Intreprinderi de Legume-Fructe - Vegetable and Fruit Enterprises). The main emphasis was the achievement of quantity by maximising the outputs in every possible way. The quality factor was very often forgotten, a reality mentioned by many authors (Lascu *et al.*, 1993; Baron and Mueller, 1995; Kumssa and Jones, 1999; Petrovici and Ritson, 2000). Imports of foods which could have broadened the range were strictly controlled, especially ones from the West. The main trade was conducted with the former USSR and other Central and Eastern European (CEE) states (Dangerfield, 1995; Baron, 1995). Not only were CEE states making a statement of independence from the West, but they also benefited from access to subsidised energy and gas from the former Union of Socialist Soviet Republics (USSR), as well as secure export markets.

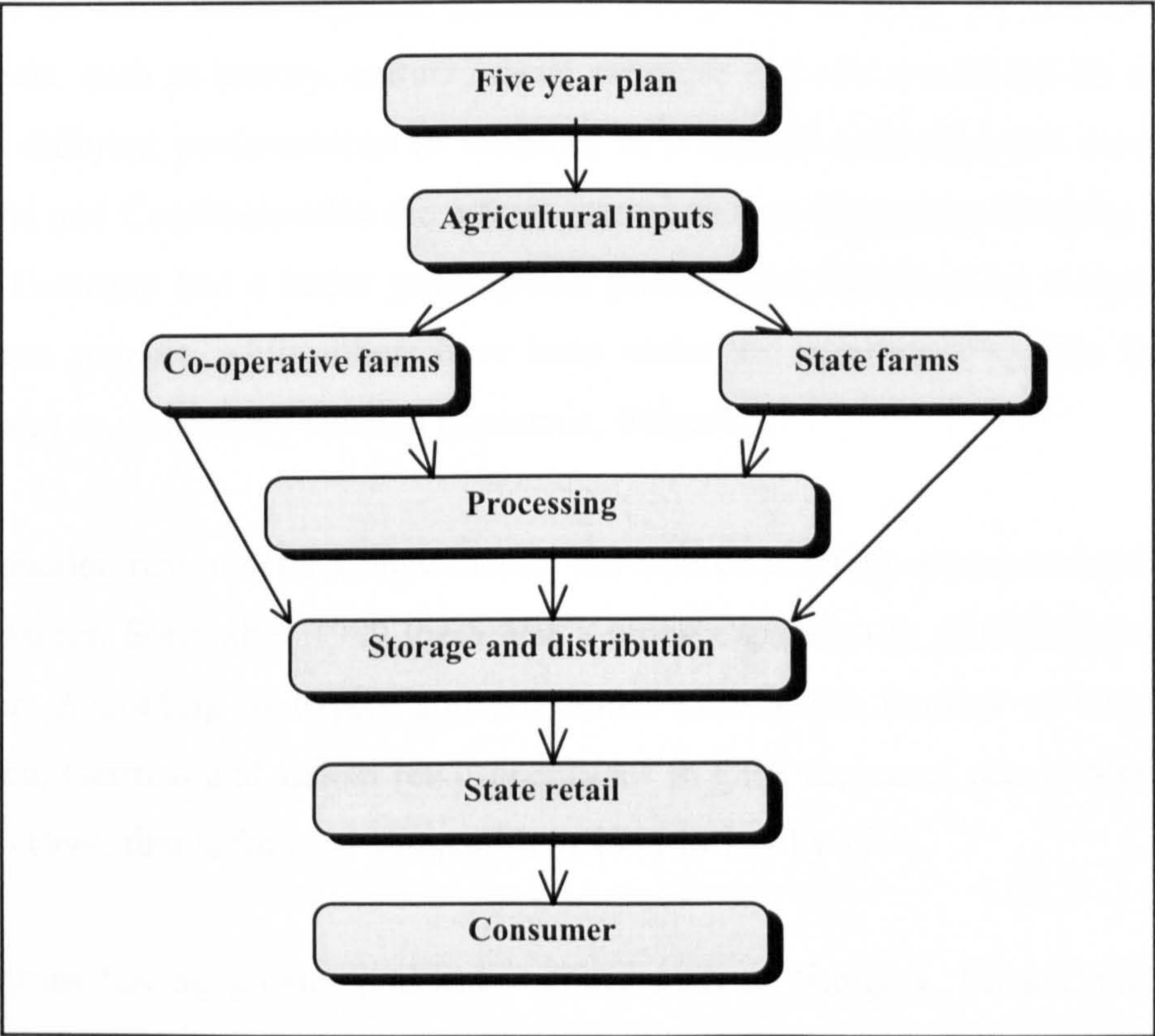
Sometimes imports from the West were encountered in specific shops, but these were only available to a small percentage of people - namely the party hierarchy (Lascu *et al.*, 1993; Petrovici and Ritson, 2000). This also sharpened the silent conflict between the large mass of the population and the ruling elite under communism, which had access to other special facilities as well. Generally, consumer needs were interpreted at the State level, and set through a series of commands to the food industries. Cheap foods were mass produced at low, non-complicated levels of processing. Prices were also centrally set in order to satisfy the demand for cheap food. The distribution system was centralised and operated through both State and Co-operative Enterprises. Figure 2.1 presents the simplified food chain in Romania.

The food producing rural areas were mainly supplied by outlets operated by co-operatives, while the cities were supplied by both State enterprises and co-operatives through centralised distribution chains. The centralised distribution chain ended in



small, specialised outlets. Stores that would have been the equivalent of western supermarkets were almost unknown, with few exceptions in the major cities and Bucharest, the capital. However such surrogate supermarket stores were retailing only the poor range of domestic produce, and most of the time half of the shelves were empty. Due to the small outlets, the average selling space per 1,000 consumers was only 189 square meters in Romania (Mueller and Broderick, 1995). The service in such small specialised shops was also poor, due to under-staffing and low wages. The only outlets that contributed to a broader range, especially in respect to fresh produce, were the so called “free markets” or “peasant markets”. The free markets were open retail places, state controlled both with respect to selling quotas and maximum prices, where the small remaining private producers sold their produce. Nonetheless, the important role that such outlets played in an otherwise very “depressing” retail system has to be acknowledged.

**Figure 2.1: Agricultural products distribution chain in a command economy**  
(Source:author)



The limited food range, and also the unavailability of food (especially in the late 80’s) were some of the main factors that ignited the 1989 Revolution in Romania. Following



the major transformations that took place in Eastern Europe during the same year (1989), most countries started to move towards the market economy, a “new” system which was only poorly understood by them.

After the major events of 1989, with more than 400 million consumers suddenly introduced on a market previously considered to be a “commercial black hole” (Healey, 1994), CEE is emerging as one of the driving forces in a new Europe. Such consumers represent a potential enormous market which has been recently opened, and their demands would have a strong impact upon all major manufacturers in Europe and, nonetheless, the World. Authors such as Raju (1995) stated that CEE markets would have the potential to rival Western Europe in about 20 years.

The path towards a market economy inevitably passes through a transition period, and this transition has raised many difficulties for CEE states. Of course, not all of them started from the same level, and according to some authors it would be unwise to group all CEE states together (Cunliffe, 1997). All of them are different in many respects, such as history, culture, social structure and one should not be surprised by their different performances in adapting to a market economy. For some, such as Poland and Czechoslovakia the reform started earlier. States like Hungary and former East Germany had a better geographical position and benefited by a higher level of western support, while others have been under the communist system for too long (Russia) or completely isolated (Romania, Bulgaria).

The sudden rise of such a huge market has offered exciting opportunities for Western companies. Soon after 1989 there was a quick expansion in Eastern European retail sector. According to Myers and Alexander (1997), the number of Dutch, British, French, German and Italian retail operations in CEE increased nearly 400% between 1991-1994; that is from 28 companies in 1991 to 108 by 1994.

Countries having greater political stability such as Hungary, Poland and the Czech Republic were preferred for initial investments. At the same time Western companies developed regional priorities for business expansion. For example Jones (1993) has



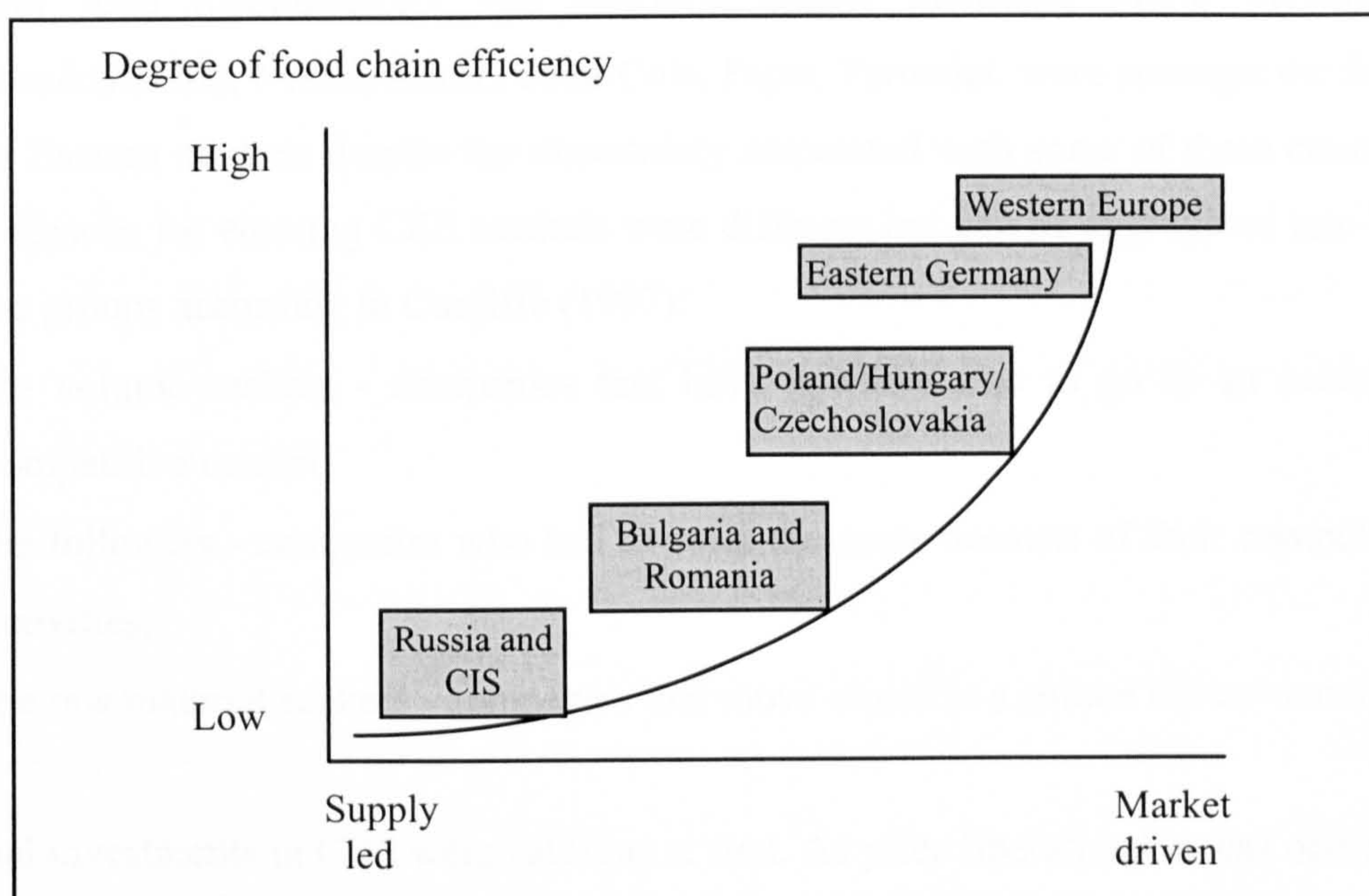
proposed that in the development of the “food chain”, four different groups could be identified:

- former East Germany
- Hungary, Czech Republic, Slovakia, Poland and parts of former Yugoslavia
- Romania and Bulgaria, and
- Russia and the New Independent States (NIS).

The same author also concluded that the first dual corporate activities had taken place under the form of joint ventures and acquisitions, and the second wave was under way with rationalisation, distribution, brand positioning, price strategy and merchandising, so that CEE was positioning itself towards Western Europe (Figure 2.2).

**Figure 2.2: The Evolution towards a Western Food Chain**

(source: Jones, 1993)



More recent opinions (Kumssa and Jones, 1999), divide transitional economies (where there was a shift from a command to a market economy) as having taken two approaches: the “big bang” approach, and the gradual development approach. The “big bang” approach involves the restructuring of the entire economy “...with both macroeconomic and microeconomic privatisation, decentralisation and deregulation and support for entrepreneurship and free market competition, all achieved as quickly



as possible” (Kumssa and Jones, 1999). Romania was considered as part of the former “big bang” approach, together with other CEE countries and the newly independent states of the former Soviet Union. There are strong debates between the advocates of the two approaches. What however became clear is that there is no universal panacea, no smooth transition, and both approaches have their advantages and disadvantages.

Whatever the approach taken, changes are continuous in CEE. Some of the new Commonwealths of Independent States (CIS) (e.g. Estonia, Lithuania), or countries like Poland and Hungary are developing quickly. Certain authors tend to agree that Western Europe and Central and Eastern Europe (CEE) are tending to converge more rapidly than expected, whilst others, like Raju (1995), suggest a more cautious theoretical approach.

Global food manufacturers and fast-food chains including Mars, McDonalds, Procter&Gamble, Nestlé, Knorr, Coca-Cola, Pepsi, Parmalat, were amongst the first to enter Eastern markets despite the uncertainty associated with some of these countries. The reasons for entering CEE markets were different but can be aggregated into three major groups according to Cunliffe (1997):

- the volume seekers - companies that have nowhere else to go in an increasing competitive market;
- the followers - companies who had to enter the game because of their competitors' activities;
- the raw material seekers - companies that move closer to a source of raw materials.

Initial investments in CEE were cautious at first. As price liberalisation was one of the first measures taken after 1989 it generated rapidly escalating inflation, raising problems of affordability. Some countries like Romania and Bulgaria were more affected than others due to the collapse of their artificially maintained economies, confusing legislation and slow progress of the reform (Rominger *et. al*, 1998).

Nevertheless, attracted by the low entry costs, some companies took the investment risk and quickly reached the position of dominating the market share. Western products and companies have extended the range of available products tremendously

in the CEE. Besides exporters, a series of joint ventures between Pepsico, McDonalds, Unilever, Procter&Gamble (to mention only a few) and local manufacturers have been established.

Nonetheless, having recently entered the free market after 40 years of deprivation and confronted with Western produce, Eastern consumers have found it difficult to make a difference not only between Western manufacturers, but between imports generally, treating all such produce as high quality. At the beginning of the transition process this situation was frequently exploited. Domestic products were considered as poor and undesirable, while imported products were embraced regardless. As a result, Romanian consumers have often suffered from poor quality imports that, due to their sophisticated packaging façade appeared to be premium products. The consumer in Romania was considered “immature”. Publicity was made almost exclusively for imported produce. Unused to publicity and advertising, the Romanian consumer often embraced other consumers’ (mainly western) preferences. The access to foreign magazines and television has substantially added to living the “western dream”. This, together with the “ostentatious consumption” (Catoi, 1997) and the “snob appeal” (Baron and Mueller, 1995) represented a period of confusion for the consumer, but, nonetheless, it is an integral part of the consumers’ process of learning in the transition towards a market economy.

As a result of such observations, there have been arguments as to whether consumer research is a necessity or a luxury in Eastern Europe, and that being confronted with a variety of products after so many years of deprivation will induce the Eastern consumer to make ill-judged decisions (Biggs, 1993). The situation was indeed such at the beginning of the transition soon after 1990.

However, the situation is presently undergoing rapid change. The range of available foods is increasing at a very high rate due to an influx of imports. Some countries within the CEE (such as Hungary, Poland or Slovakia) can already be compared to less developed Western countries (such as Portugal or Greece). Sometimes criticism has been addressed towards such a strong flow of imports, arguing that it affects the domestic industries, already performing poorly; but this adverse opinion has been

rejected on the basis of the stimulative effects upon the market economy. Nonetheless, many internal food producers have adapted to the higher quality requirements and now they compete with their foreign counterparts not simply on the basis of price.

Nowadays Romanian consumers are more selective in their purchase decisions, educated in part by Western investments which are highly demanding with respect to a products' availability and quality. Some concepts like consumer research, promotion and advertising have been realistically introduced by such companies. Advertising campaigns are followed by high sales volumes, especially in the food industry which offers more affordable products than the durable goods industries (Baron and Mueller, 1995).

Private initiatives in Romania are also beginning to emerge and are providing notably higher quality goods and services than the state sector (Morton, 1993). Consumer research carried out in other Eastern European countries has revealed exactly the same findings. There is a beginning of brand loyalty developing, consumers orienting themselves more and more towards private shops. However, the degree of shopping in private outlets varies with the region of CEE studied; higher in some states like Czech Republic and lower in others like Bulgaria (Mueller and Broderick, 1995). The private sector is not only perceived as higher in terms of quality, but also having the best variety, service and prices.

Even if privatisation has developed very slowly in Romania, much of what was achieved after 1990 was due to private initiative. Already by the end of 1996 the private sector accounted for 52 percent of the Gross Domestic Product (GDP), 87 percent of agricultural production, 78.5 percent of domestic retail trade, 47.7 percent of imports, 50.7 percent of exports, 74.5 percent of services, and 24 percent of industrial output (Romanian Economic Observer, 1997).

The quality of retail establishments has evolved in many cases from unattractive and small, to attractive, modern medium sized (sometimes self-service) stores. The diversity of commodities on the shelves are significantly greater compared to the period before 1989. Some shops already seem like "small supermarkets" in their



diversification of goods. The evolution in consumers' demand for food quality has also steadily increased since 1989 according to some store managers like G. Tutu and G. Zinger and private retailers I. Slabu and G. Tulbure (personal communications, August, 1999).

Nonetheless, even if the retail system has evolved, retailers remain mainly small, disorganised and "in many hands". There are presently very few private companies owning more than one shop. Within the Romanian food distribution chain there is no evidence of feedback between the sectors like, for example, there is in Hungary (Morton, 1993). The retail system is still disorganised and confused. There is also a need of more initiative, enthusiasm and charm on the behalf of shop managers and shop assistants (Morton, 1993).

However, the role of the consumer has increased notably. As a result, a series of new organisations, mainly privately owned, offering consumer and market research services have been founded. Many of them are backed by established agencies in the West (Biggs, 1993). Names such as The Romanian Market Research Association, The Institute of Marketing and Polls, MIA Marketing, IMAS Romnibus have become familiar to interested institutions. There is nonetheless caution in approaching such companies due to their limited experience, many of them having operated for only a couple of years under the Romanian conditions. Western companies prefer drawing on the experience of respected Western agencies. Nevertheless, the local market research resources have been established and have begun to work. Data from the market is collected recently more frequently, and organisations like "Piata Taraneasca Market Information System" already publishes valuable information on the Internet. Unfortunately, the lack of electronic equipment is an impediment in obtaining such information not only for most of the companies, but also for interested consumers.

Another important development has been the establishment of The Association for Consumer Protection (Asociatia Pentru Protectia Consumatorului). Consumers can finally express approval or disapproval when it comes to a wide range of products and services. A significant body of consumer legislation has been enacted and consumers are becoming more and more aware of their importance. Indeed, they need increased



evidence that they are consulted, at least as a small compensation for the great deal of difficulties associated with the transition they are passing through (Biggs, 1993).

The average Romanian spends around 60% of his income on food (Vacarel, 1996). Limited living space and domestic storage capabilities also force Eastern consumers to shop frequently for food (at least three days a week). However, not all Romanian consumers should be treated as one. Presently within Eastern Europe, including Romania, middle and upper classes are developing quickly. The class stratification is more obvious in the big cities where consumers are becoming more discerning in product choice. There are already in place a limited number of shops addressing such categories.

There are many opportunities for consumer research, particularly in further identifying such groups as well as their needs and expectations in relation to food products. Some researchers, for example Engel (1990), accurately foresaw these aspects:

*“...As a consumer-oriented society emerges, an early manifestation is a middle class with disposable income. Unless political restrictions are imposed, a rising standard of living becomes a dominant concern...It is time to broaden horizons beyond the western world and view consumer research as a universal necessity. This is because basic human needs are universal, although there are undeniable and profound cultural differences in their expression.”*

Unfortunately, efforts to understand consumers and their needs are only beginning in Romania. While a series of surveys has been carried out by major foreign companies or joint ventures (JV) for some food products, the fresh produce sector has been completely neglected. There was no evidence prior to 1997 (when this research commenced) that consumer research had been carried out in the fresh produce field, nor was there any evidence for the promotion of fresh produce. The few exceptions were represented only by foreign companies (for example the promotion of Chiquita bananas).

For the new land owners and State companies, as well as for the new private retailers it has to be clear that in a market economy the consumer represents the backbone. Chaotic production and retailing is no longer possible for those eager for success. It has to be re-emphasised that there is a clear need for consumer research in this field. It

is time to understand and to adapt to consumer expectations and act correspondingly, while steadily moving towards a market economy.

## **2.2 CONSUMER RESEARCH AND THE ROLE OF THE CONSUMER IN WESTEN COUNTRIES**

Within Western Europe countries such as the United Kingdom (UK) enjoy some of the oldest democratic systems in Europe. However, they had to undergo many years of evolutionary processes to reach their current developed stage. The role of the consumer was firstly acknowledged after the industrial revolution, with the emergence of mass consumption and subsequently “consumerism”. But what is consumerism and how did it appear? A simple definition of consumerism according to The Oxford English Reference Dictionary (1996) is “...the protection or promotion of consumers’ interests in relation to the producer”. Kotler (1972), in The Harvard Business Review defines consumerism as “...a social movement seeking to augment the rights and powers of buyers in relation to sellers”.

Even if the birth of consumer society, emergent modern consumption and the rise of mass consumption and mass market culture in England were correlated with the sixteenth and early seventeenth century, Glennie (1995) argues that modern consumption and the explosion of competitiveness started in the late eighteenth century, coinciding with the emergence of commercial and industrial wealth achieved in Western states. Other authors (such as Alexander and Akehurst, 1999) consider that modern retail systems have their origins later, at the end of the eighteenth century and the beginning of the nineteenth century, while Gabriel and Lang (1995) that modern consumption is not the result of spending power growth, but the result of experiencing choice.

Mathias (1969) places the industrial revolution in Britain between the 1740’s and the 1780’s, stating that it occurred spontaneously, Britain experiencing the first industrialization of any national economy in the world; he acknowledges however the multitude of concurring factors, amongst which Britain’s natural resources (water, coal, iron) and economic resources were crucially important. Corrigan, (1997) argues



that the industrial revolution required a simultaneous revolution in production and consumption, while McKendrick *et. al* (cited by Corrigan) suggest that the eighteenth century is the beginning of consumer society and mass consumption.

However, authors such as Benson (1994) debate that even if Britain is presently generally accepted as a consumer society, the basis upon which this conclusion has been reached are not clear, since there is still no agreed way of defining, and identifying a consumer society. Benson also states that there is no agreement over when it was that Britain became a consumer society:

*“... The consumer revolution occurred, and the consumer society emerged, so we are told, in the seventeenth century, in the eighteenth century, between the two world wars, in the years following the Second World War, and during the 1980’s”* and that *“...the study of consumer society...has suffered too from a shortage of empirical investigation: in such circumstances, it can be tempting...to compensate imaginatively - and ideologically - for the lacunae and limitations of the evidence that one has at one’s disposal”*.

Leaving aside the semantic differences and the disputes as to when the so-called “consumer revolution” occurred, one should focus more on the results of such an event. In a very short time human efficiency increased immensely and peoples’ comfort and material wealth increased to an extent beyond the highest expectations of former generations. A whole range of new and cheaper products became available to consumers. Production often ended in excessive supply and the focus of attention changed from ‘how to produce enough’ to ‘how to increase demand’. It was during these times of excessive supply and extreme competition when the term “marketing” first appeared. Focused on putting the consumer first, the marketing concept is, according to Burns and Bush (1995):

*“...a business philosophy that holds that key to achieving organisational goals; it consists in determining the needs and wants of target markets and delivering the desired satisfactions more effectively and efficiently than competitors”*.

As such, the marketing concept embodies the view that an industry is a customer satisfying process which should begin with the customer and his needs and not otherwise.

Marketing first appeared as a concept in the United states of America, and Burns and Bush (1995) identified six different eras (time periods) which had the greatest impact over the evolution of market research as it is known today. These time periods and some of their characteristics are presented below:

- *the pre-marketing era* (colonial period to the Industrial Revolution): businesses were small, mass production non-existent, communication poor, marketeers were accustomed to their clients and clients' needs personally;
- *the early development era* (Industrial Revolution to 1920): mass production led to the growth of factories, the means of goods distribution proliferated, communications improved, the separation of sellers and buyers spurred the first marketing research studies;
- *the questionnaire era* (1920 to 1940): questionnaires became very popular in early opinion polling by the media;
- *the quantitative era* (1940 to 1960): market researchers became involved in statistical analysis and borrowed many methodological techniques from the social sciences. Sampling, hypothesis testing, behaviour, intentions, attitudes and motivational research started during the same period;
- *the organisational acceptance era* (1960 to 1980): the marketing research function became part of the organisation of most of the firms. Marketing research was recognised as being an important mean in understanding remote or fast changing markets;
- *the technological era* (1980 to the present): technology and developments in computers impacted highly on marketing research. Statistical analysis packages became widely available. Firms find it more easy to conduct their own market research, a trend that is to be perpetuated up to the present days, in pace with further evolution in technology.

Evans and Berman (1994) and Chee and Harris (1993) also present the evolution of marketing as a sequence of stages. The concept of marketing has simultaneously evolved in the World's developed nations, but the influence of the US is often acknowledged. Lury (1997), admitting the American influence, states that consumer culture is an aggregate of Euro-American material culture. Furthermore, amongst many authors, Douglas and Craig (1995) and Firat (1995) argue that led by the US, the trend



is presently towards a globalisation of marketing strategies, market segments transcending national boundaries. The US is currently amongst the most active states in the field of marketing and consumer research, amongst the main players being the American Marketing Association (AMA) and the Association for Consumer Research (ACR).

In parallel with the manufacturers' marketing activities, consumers started to develop consumer organisations. It was during these times of profound transformations when the phenomena called consumerism movement firstly appeared, even if its roots can be traced a long time ago (for example during the times of Martin Luther and John Calvin) according to authors such as Engel *et al.* (1990).

In the UK the first organised consumer movement occurred in 1957, when the Consumers Association (CA) was first set up and the first independent test reports about various commodities were published in the magazine "Which?". The CA followed the example of a much earlier American movement, the Consumers Union, founded in the 1930's. (Mitchell, 1978). Presently the consumer organisations in the UK have further evolved and also include names such as: Consumer Advice Centres, the Consumer Affairs Group of National Organisations (CAGNO), the Institute for Consumer Ergonomics (ICE), the National Federation of Consumer Groups (NFCG), the Research Institute for Consumer Affairs (RICA). At the same time governments also became interested in the problems of consumers and a large body of consumer legislation has subsequently been enacted. In the UK the first governmental step was taken in 1959 with the appointment of the Molony Committee, which provided the basis for a series of consumer protection laws. At a national level, another important step was the Fair Trading Act (1973) which established the Office of Fair Trading (OFT) (Mitchell, 1978).

One of the most active organisations is Consumers International (CI) with its head office being based in London. Founded in 1960, it represents consumer groups and agencies all across the Globe; more than 260 organisations in 120 countries are currently members of CI. Since its establishment CI had a great impact over a wide range of issues such as consumer protection laws, consumer education, food policies,

international standards and the environment. CI has currently representation on multiple global bodies, amongst which the United Nations (UN) Economic and Social Council, The World Health Organisation (WHO) and Codex Alimentarius Commission. With respect to food, CI is a permanent militant in the areas of food security and food safety, equity, food health and fair trade.

Within the European Union (EU) consumers are also represented at the highest levels. Amongst the most important EU consumer organisations are the independent Bureau Européen des Unions des Consommateurs (BEUC) founded in 1962 and the Consumers' Consultative Committee (CCC) founded in 1973 and funded by the European Commission (EC) (Mitchell, 1978).

Another important step in the direction of the "consumer society" was the arrival of supermarkets and department stores born out of rapidly industrialising economies, overproduction and the need for more efficient outlets. Offering a great diversity of commodities under the same roof, department stores, with their vast spaces and fancy displays, radically changed the consumers' shopping experience. Corrigan (1997), making allusion to their size and the number of fascinated people attracted, compared them to cathedrals attracting people to worship at the temple of consumerism. Consumers shifted more often from "shopping for need" to "shopping for pleasure". At the present time, department stores and supermarkets have become the major outlets in Western societies. Adopting their own marketing strategies, the major multiples work according to the goals of a marketing system: beyond trying to maximise consumption they also try to maximise consumers' satisfaction, choice, and life quality in general.

Today, the term "consumer" is omnipresent and the hegemony of the consumer is universally accepted in the Western World. Few decisions are taken without considering the consumer, beginning with supermarket chains and ending with environmentalists and politicians. At the beginning of their book "The Unmanageable Consumer", Gabriel and Lang (1995) affirm that "...the consumer has become a god-like figure, before whom markets and politicians alike bow...". The role of the consumer in society has become indisputable. DeBruicker *et al.* (1986) acknowledged



that when taken as a whole, consumers command enormous attention and respect from competing producers and suppliers. Corrigan (1997) also affirms that:

*“...Enormous parts of the economy depend upon consumerism...Consumers are the perfect creatures of capitalism, and consumer movements provide some of the checks and balances that such an anarchic system needs”.*

Slater (1997) actually talks about a “consumer culture” which was mainly developed in the West along recent history and is presently correlated with the idea of modernity itself being part of the “modern experience”.

Even if most of the available literature presents the consumer as the main decisional factor and acclaims its role, the consumer is often presented as having many other facets. One of the most critical approaches is taken by Gabriel and Lang (1995) who depict the consumers as being highly unpredictable and picture the consumer with both its strengths and weaknesses. Consumers are presented as being choosers and communicators, victims and explorers, rebels and activists.

It is also argued that the freedom of choice and consumption has its price, not the least liberating some, while exacerbating the oppression of others, mainly the so-called “third world” nations.

The consumer society is also blamed for its blindness with respect to issues such as tradition, environment, cultural heritage, moral issues. Some authors (Slater, 1997) go even as far as calling the consumer culture as the antithesis and enemy of culture.

Nonetheless, with respect to food, it is enough to look at the high levels of standardisation presently reached in some supermarkets and the disappearance of traditional ways of retailing. Even in the early days, some authors (Cross, 1970) described the consumers as “victims of the supermarket underworld”. The democratic system is said to have made 90% of its people rich by repressing the 10% at the bottom, and allowing farmers to produce more food they can sell while a vast number of people suffer from hunger. Most of modern consumers are prepared to sacrifice everything in the pursuit of pleasure, including ethics, since pleasure (and hedonism) is considered the foundation of consumerism.

The environment has also suffered tremendously as a result of intensive farming, and landscape has changed beyond recognition not only in the “consumer societies” , but far beyond. It was the consumer who also changed the traditional way of living in remote areas such as Africa, for example, in its “freedom to choose” a safari experience. Many authors, amongst which Mills (1999) draw out the devastating results of modern consumerism and intensive farming upon the environment. It is argued that after the Industrial Revolution between one third to one half of the earth’s land surface has been transformed by such actions, and that every individual should carry a moral responsibility for his/her consumption. The consumer strives to convert the “natural into the convenient” (McKibben, 1999). Other authors (Schor, 1999) argue that the modern “religion” of consumerism associated with fulfilling private interests and unlimited spending has created an environment in which the consumer simply cannot control itself.

Consumer culture finally identifies freedom with personal choice and private life, this being one of the main preoccupation of consumer culture critics. As stated by Slater (1977), “...if we cannot judge or regulate the desires of individuals, how can they work to constitute a good or progressive or authentic collective life?”. Nonetheless, it also acknowledged that only the few wealthy nations have the power to rescue the entire globe population from the consequences of mass consumption. It is said that consumer expectations have to change in the future, and that no individual will be saved from the devastating effects of mass consumption, unless all the rest are as a whole.

It is however beyond the scope of this section to depict, criticise and dissect the Western consumer and mass consumption. There is an almost limitless amount of literature at hand for the interested reader. The section rather focuses on the positive aspects of experiencing choice, and the importance and role of the consumer in current Western economies as opposed to Eastern ones. It was nonetheless considered important to present some of the downsides caused by the consumer, consumerism and the consumer society, even if the examples above barely scratch the surface of such an issue.



During the last century, an impressive amount of literature has been written with the consumer as its focus. Psychology, sociology, anthropology, physics, chemistry, biochemistry and many other sciences have joined their efforts in attempts to understand and predict consumers and their behaviour. Arguments to the use and accuracy of predicting and controlling the consumer also arose frequently (Gabriel and Lang, 1995). However, recently, terms like “marketing”, “market research”, “consumer behaviour”, “consumer expectations”, “consumer research” had to enter the current vocabulary of every company eager for success.

In the increasing market competition witnessed nowadays, organisations are fighting a tacit war for consumer loyalty in which consumer research plays one of the most important roles. Meeting consumer expectations and understanding their dimensions has become one of the priorities and much research is carried out in this field (Clow and Beisel, 1995).

In considering the role of consumers in the food markets, a series of observations arise. As opposed to command economies, in Western states the food industry was mainly within the private sector and outside government control. As stated by Josling and Ritson (1986), the ethic aspects of individual freedom of choice have also ensured only minimal government interventions in food purchase and consumption decisions, even if some government actions still have an impact over the food sector (such as the availability of food supplies, the purchasing power of food consumers, and the control of food quality through standards).

In Western food markets, actions like brand positioning and repositioning, new product development, launching of new products are in today’s continuously changing society almost unimaginable without consumer research (Nelson, 1986; Biggs, 1993; Pierson, 1997). There is a constant need for up-to-date information about what the consumer is choosing and why he is choosing a certain product. Due to extensive consumer research on the food markets and interest in consumer nutrition in the UK for example, Britain is amongst the few states in the World to possess long-term studies of dietary patterns on a national scale.

The market regulatory power and the complexity of consumers and their behaviour are acknowledged and debated frequently in the literature (De Bruiker *et al.*, 1986; Engel, 1990; Foxall, 1990). Consumers, through their beliefs and changes in purchasing habits, can often affect major economic areas. As a simple example it is enough to look at the recent “food scares” (salmonella in eggs, Alar in apples, BSE in beef, etc.) when consumers refused to purchase certain products with striking results for the industry.

In order to survive and be profitable under the present highly competitive circumstances the multiples should be motivated to identify and meet even the smallest change in consumer needs (Mitchell, 1998). As a result of consumer research and in order to minimise perceived risks, a series of new products has been developed and healthier food alternatives offered. The consumers’ interest in health issues associated with food has also led to improved labelling and packaging. Researching consumer satisfaction/dissatisfaction became compulsory to marketing managers looking for long term profitability (Simintiras *et al.*, 1997). Consumers are also often researched in order to become target groups, since consumer markets become more distinctly segmented than ever (Boedeker, 1995).

Presently in the UK the demands and preferences of food consumers are mainly researched both by government sponsored studies (eg. Ministry of Agriculture, Fisheries and Food’s National Food Survey) and commercial research. A large number of food research bodies with special interest in consumer sciences, such as Leatherhead Food Research Association, the Institute of Food Research Reading, MINTEL, The National Food Centre and The Food Commission UK, to mention a few, have become very actively involved in consumer research. Along with those, new centres for food research continue to appear, such as The Centre for Food Research at Queen Margaret College in Edinburgh, which has a special interest in fruit and vegetable consumption (De Looy and Turner, 1995). It is also observed that research in the food area is shifting more and more towards the private research sector. Along with the classical approaches to consumer research, new techniques are continuously developed and applied (Davies and Worrall, 1998; Van der Pol and Ryan, 1996).



The idea of consumer education itself has widespread acceptance in market economies. Consumer education encourages critical thinking, instils new skills, promotes self-confidence and generally improves the quality of one's life. Consumers have often formed their own associations, starting from the highest levels. An example is The International Association of Consumer Food Organisations (IACFO). Formed in 1997, IACFO addresses the lack of consumer representation in the debate over the global food trade and to work with international agencies responsible for harmonising standards related to the production, distribution, and sale of foods. The founding members of the IACFO are the Center for Science in the Public Interest (CSPI), the Japan Offspring Fund (JOF), and the Food Commission UK.

Not only the present, but also the future has captured the attention of researchers. According to some authors (Kandampully, 1997) in today's quickly evolving society fulfilling the consumer present needs will not be enough tomorrow. There is a need to anticipate and extend products and services far beyond consumer's expectations if organisations are eager to maintain their position in the future. Furthermore, it is also argued that consumer studies should embrace a global perspective and that professionals of consumer studies should reconsider their approach to marketplace decisions both at an individual and collective level (McGregor, 1998).

As part of the whole, consumer research is conducted in the field of fruit and apple consumption. In terms of fruit consumer research, and hence apple consumers, research stations such as Long Ashton and East Malling in the UK have for a long time carried out studies related to factors affecting choice and ultimately the production of apples (Williams *et al.*, 1977a,b; Alston, 1988). The integration of consumer needs from grower to consumer has also been researched. For example, Gormley (1983) emphasises the need of communication between those implicated in the chain. Other researchers, such as Daillant-Spinnler *et. al* (1996) have looked into the relationship of sensory properties of apples with the preference characteristics of the market. Presently, consumer research on the apple market is frequently carried out. Publications such as "Fresh produce", "The Grower", "Good Fruit Grower", "British Food Journal" often publish articles, ratings and prices of the apple market.

One of the aims of this chapter was to allow a comparison between the role of the consumer in a command economy as opposed to the role of the consumer in a market economy. As observed, these two parties are on opposite sides. As Corrigan (1997) objectively stressed,

*“...Command economies were not of the selling type... the consumer was not the most important element on the market...but rather the protection of the state owned enterprises, the main purpose of which was to fill state-defined quotas...the interests of the producers rather than the consumers were dominant”.*

Conversely, market economies are of the selling type. Increased productivity and choice have been carefully built around the needs of the consumer. Nevertheless, Eastern economies are going through major changes and the first steps towards adopting a market economy have already been taken. However one has also to admit the difficulties such states are facing, amongst which are lack of experience, economic depressions and adverse mentalities.

## **2.3 FACTORS INFLUENCING CONSUMER PURCHASING DECISIONS**

Having discussed in the previous sections the role of the consumer in both command and market economies, the mechanism of consumer decision and how consumers generally formulate their purchase decisions is depicted in the present section. The following section not only aims to examine how the consumer decisional process is built up, but also some of the directions in which there can be acted to meet his needs and expectations; some of the benefits for the Romanian apple industry are presented in chapter 7. Both these topics may be approached by examining the “consumer behaviour theory”.

### **2.3.1 The consumer behaviour theory**

Like all other human behaviour, consumer behaviour is very complex and the goal of the consumer behaviour theory is to simplify the picture and help in an understanding of consumers. Engel *et al.* (1990) define consumer behaviour as:



*“...those actions directly involved in obtaining, consuming, and disposing of products and services, including the decision processes that precede and follow these actions”.*

Howard (1989) takes a simpler approach and defines consumer behaviour as plainly being the study of how and why consumers buy and consume. The study of consumer behaviour helps management understand consumers' needs and to respond by creating new products or by improving existing ones, as well as making better marketing decisions for profit and non-profit organisations. Its roots can be traced to the 1950's and especially in the 1960's, with the development of marketing. It was identified that in reality consumer research at that time was the only researchable area in marketing (Howard, 1989).

Many researchers have tried to explain human choice behaviour. Over the years, a number of consumer decision models were developed such as Assael's (1992), Engel's (1990), Bettman's (1979) or the Consumer Decision Model (CDM) described by Howard (1989). Only the main aspects of what is this complex phenomena will be reviewed. Aspects which have specific relevance to the present research will be presented more fully in chapter seven. The present section will focus mainly on the work of Engel *et al.* (1990), although alternative models and their implications will also be considered.

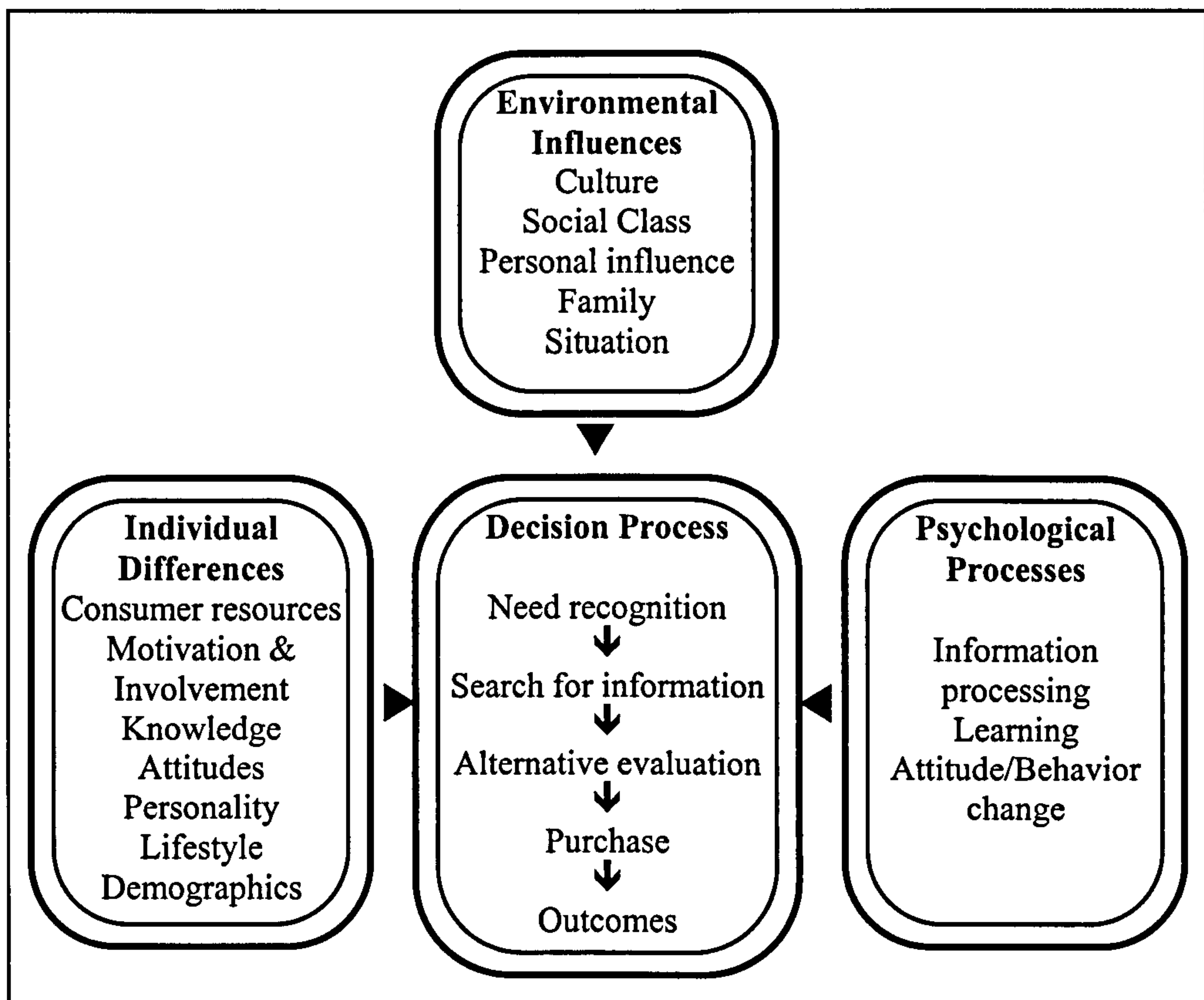
### **2.3.2 Engel's model of consumer behaviour**

Engel *et al.* (1990) acknowledge that the concept of buying decisions as a problem solving one is amongst the most influential within consumer behaviour theories. The concept is presented as revolving around a continuum which has at one end *extended problem solving* (EPS) and at the other end *limited problem solving* (LPS), and where buying decisions range anywhere in between. Problem solving is referred to as “...thoughtful, reasoned action undertaken to bring about need satisfaction”. EPS refers to complicated and meticulous decision processes (major problems). LPS, situated at the other extreme, reflects a simple purchase process, as in the case of products considered having similar characteristics (washing liquids, tissue). The *impulse purchase* is the least complex form of LPS, and is triggered by a product

display. To present a better understanding Engel's model is presented and discussed relation to Figure 2.3.

**Figure 2.3: Engel's model of consumer decision-making behaviour**

(source: Engel *et al.* , 1990)



The problem solving concept incorporates all types of need satisfying behaviour as well as a wide range of motivating and influencing factors. Simply speaking, the decision making includes the following phases:

- need recognition
- search for information
- alternative evaluation
- purchase
- outcomes

**Need recognition** depends extensively on how much discrepancy exists between the consumers' current situation and the situation the consumer wants to be in. When this discrepancy exceeds a certain level, a need is recognised by the consumer. Once the



need has been recognised, the consumer engages in **search** - the second stage of the decision making process. Engel *et al.* define search as “...the motivated activation of knowledge stored in memory or acquisition of information from the environment”, a definition that suggests that search can be either of internal or external nature. If internal search (memories) ends in a satisfactory solution, external search from the environment is unnecessary. However, consumers often resort to external search.

The third stage in the consumer decision making model is **alternative evaluation**, the process by which a choice of alternatives is evaluated and selected to meet consumers needs. One of the most complex stages, it consists of: determining the evaluative criteria employed for judging alternatives (such as price, brand name, country of origin), deciding which alternatives to consider, assessing the performance of considered alternatives and selecting and applying a rule for making the final choice.

After the choice has been made, the consumer moves further onto the **purchase** of a certain product, acquiring the preferred alternative. It is important to stress at this point that a considerable number of purchases are done “unplanned”. Engel *et al.* (1990) cite for example a case when 53% of the groceries purchases were a result of impulse buys (the least complex form of LPS). Often, a purchase intention is not consciously articulated and the shelf displays provide the reminder of a need (acting as a shopping list) provoking purchase. This is frequently the case with some food products.

The decision process does not stop once the purchase has been made; the **outcome** of the decision and the chosen alternative is evaluated after purchase as well, especially in meeting consumers’ expectations. In simple terms, the outcome can be one of satisfaction or dissatisfaction; satisfaction will reinforce consumers’ loyalty towards a certain brand, shop, etc., while dissatisfaction will result in non-repurchase, various complaints or negative word of mouth. Adopting the right strategies, building realistic expectations and making sure that product and service quality meet expectations will hence ensure further consumer loyalty. It is also very important to periodically diagnose gained or lost customers, and, if necessary, implement market research in order to identify and rectify causes.



In respect of EPS and LPS, there are important differences in following the steps presented above. In the case of EPS, all the above phases are expected to be rigorously followed, however not always in the given succession. LPS is a much simpler process; even if all stages may still be followed, the main difference lies in the extent to which they are followed. However, EPS and LPS are situated at the extremes of the decision process continuum and many decisions range somewhere in between these two extremes. Such decisions can be referred to as *mid-range problem solving* for it is acknowledged that most buying decisions cannot be strictly categorised. The mid range problem solving decisions are taken following some steps in-between the complex forethought of EPS and the impulse purchase.

Another type of decision process takes place when the buying process is repeated. Engel *et al.* (1990) give two potential solutions: repeated problem solving (EPS or LPS) and habitual decision making. During repeated problem solving a brand switch is likely due to various reasons such as dissatisfaction with previous purchase, variety seeking, looking for cheaper products or even stock depletion. Repeat purchases can also be based on habits, taking the form of brand loyalty and inertia. As such, habitual decision making emerged mainly as simplifying the decision process and help consumers cope more easily with mundane pressures of life.

There are many variations in the decision process and false assumptions about its nature can have distressing results for some companies (Engel *et al.*, 1990). Marketing strategies should take different forms according to the company's anticipation of consumers' taking EPS or LPS decisions. There are also many cases when an individual (consumer) is not the only decision making unit. Within a family, different individuals can perform different roles in the decision taking, as it is for example in the case of goods purchased for the entire family or presents (where the buyer is not the actual consumer as well).

The variations in the decision process and consumer behaviour are heavily influenced by a series of underlying determinants. Such determinants (see Figure 2.3) can be grouped into three categories. These categories are:

- environmental influences;

- individual influences and differences;
- psychological processes.

The environmental factors are external factors which range from culture (broad) to situation (specific). Within the undertaken research for example, culture may be one of the most important factors in comparing consumers from the three selected countries. According to Engel *et al.* (1990), culture refers to:

*“...a set of values, ideas, artifacts, and other meaningful symbols that help individuals communicate, interpret, and evaluate as members of society.”*

Culture impacts on all stages of consumer decision making, giving meaning to products and services. In different cultures, consumers may place more weight on some products' attributes than on others. As the culture of each nation includes an ideology of consumption (defined by Engel as the social meaning attached to, and communicated by products), it is very possible that many of the potential differences which may be identified between the countries studied have their origin in differing cultural values.

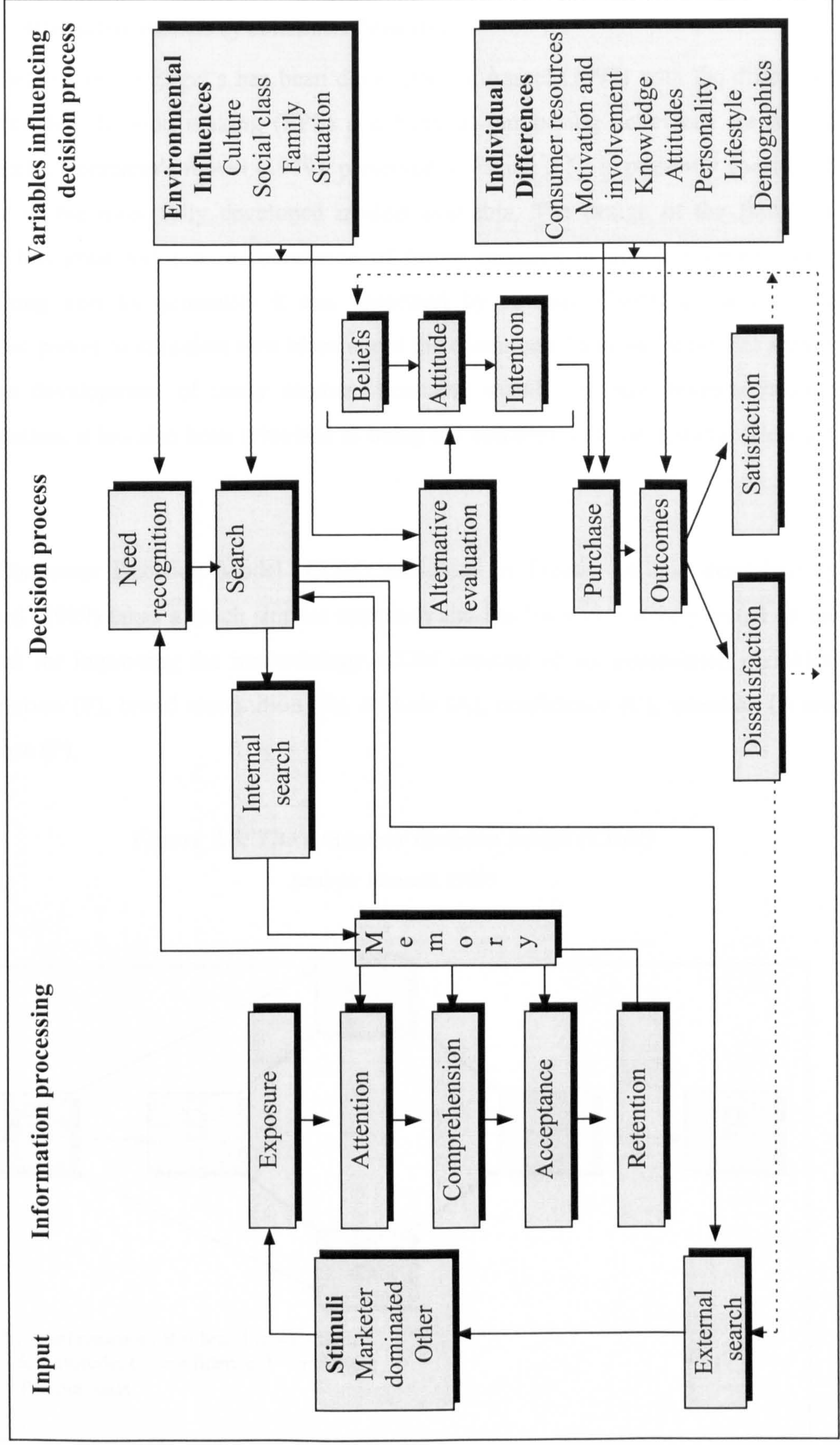
Individual differences and psychological processes are other internal factors which affect behaviour. Within individual differences, attitudes play one of the most important roles in influencing behaviour. The last component, psychological processes, consist of information processing, learning, attitude and behaviour change.

A more complex model of purchase and its outcomes, was also proposed by Engel *et al.* (1990) and is presented in Figure 2.4. The model illustrates once again that purchase is a function of more determinants: intentions, environmental differences and individual differences. However, even if some authors have acknowledged its advantages (such as generality and validity for a wide range of situations), the model has also been criticised as having a lack of sharp definition by Howard (1989).



Figure 2.4.: The consumer decision process and behaviour

(Source: Engel *et al.*, 1990)





2.3.3 *Alternative models of consumer behaviour*

A model similar to Engel’s has been developed by Assael (1992) with the difference that complex decision making (EPS) and habitual purchasing behaviour are treated separately. Bettmann’s model (1979), presented in Figure 2.5, is presently considered as one of the most fully developed models available. The design of the Bettmann model has great value as a foundation of future research in how consumers’ buy. Benefiting also by generality it was described by Howard (1989) as having “the heuristic power to stimulate new ideas about the consumers” and has served as a basis for the development of many models. Focusing mainly on how humans process information, it has also been criticised as being too complex and non-testable (Howard, 1989).

The Consumer Decision Model (CDM) presented in Figure 2.6 and described by Howard (1989) takes a much simpler approach and has been extensively tested on the markets for improving the methodology. CDM consists of six interrelated variables: information (F), brand recognition (B), attitude (A), confidence (C), intention (I) and purchase (P).

*Figure 2.6: The consumer decision model (CDM)*

(source: Howard, 1989)

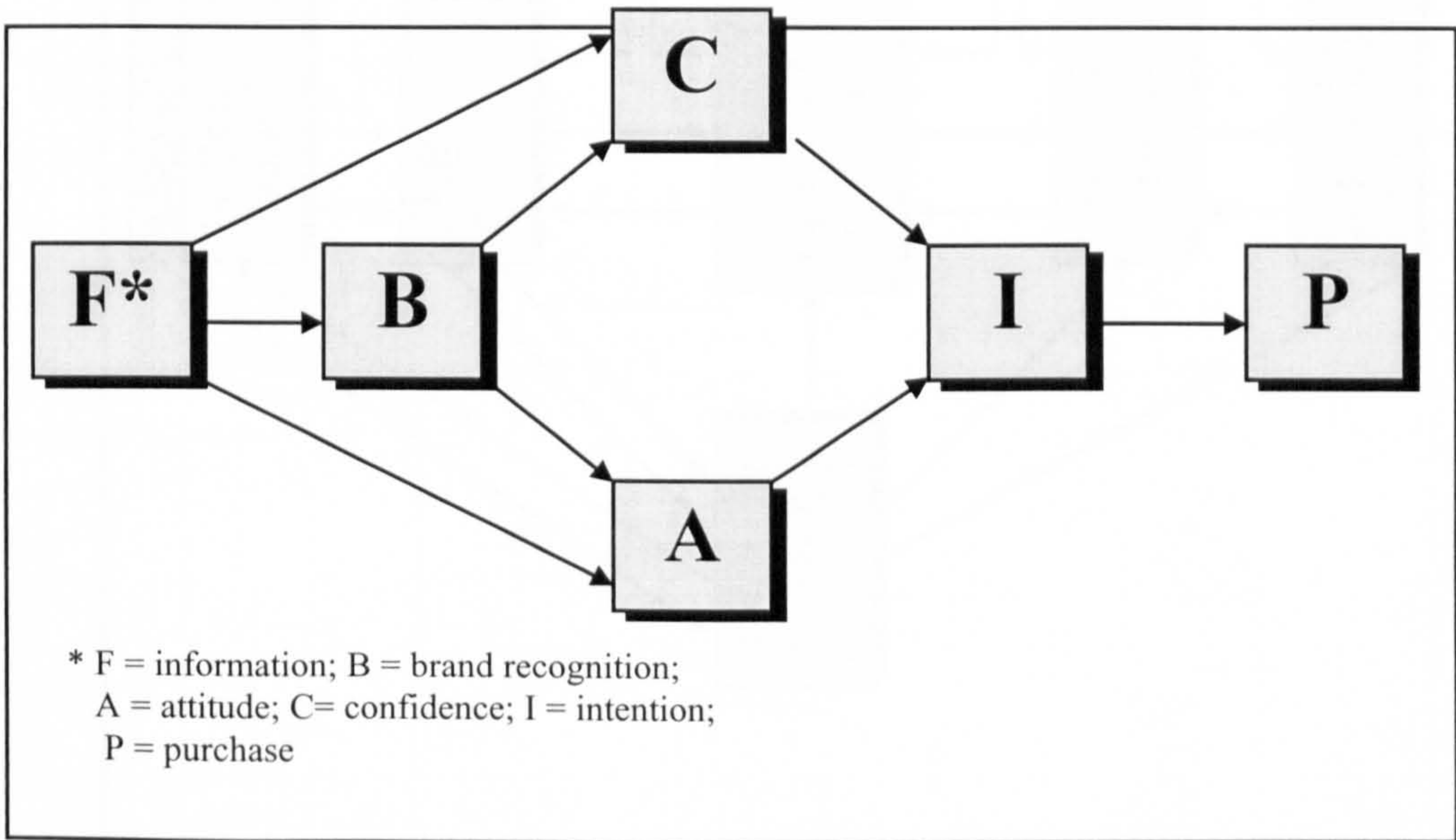
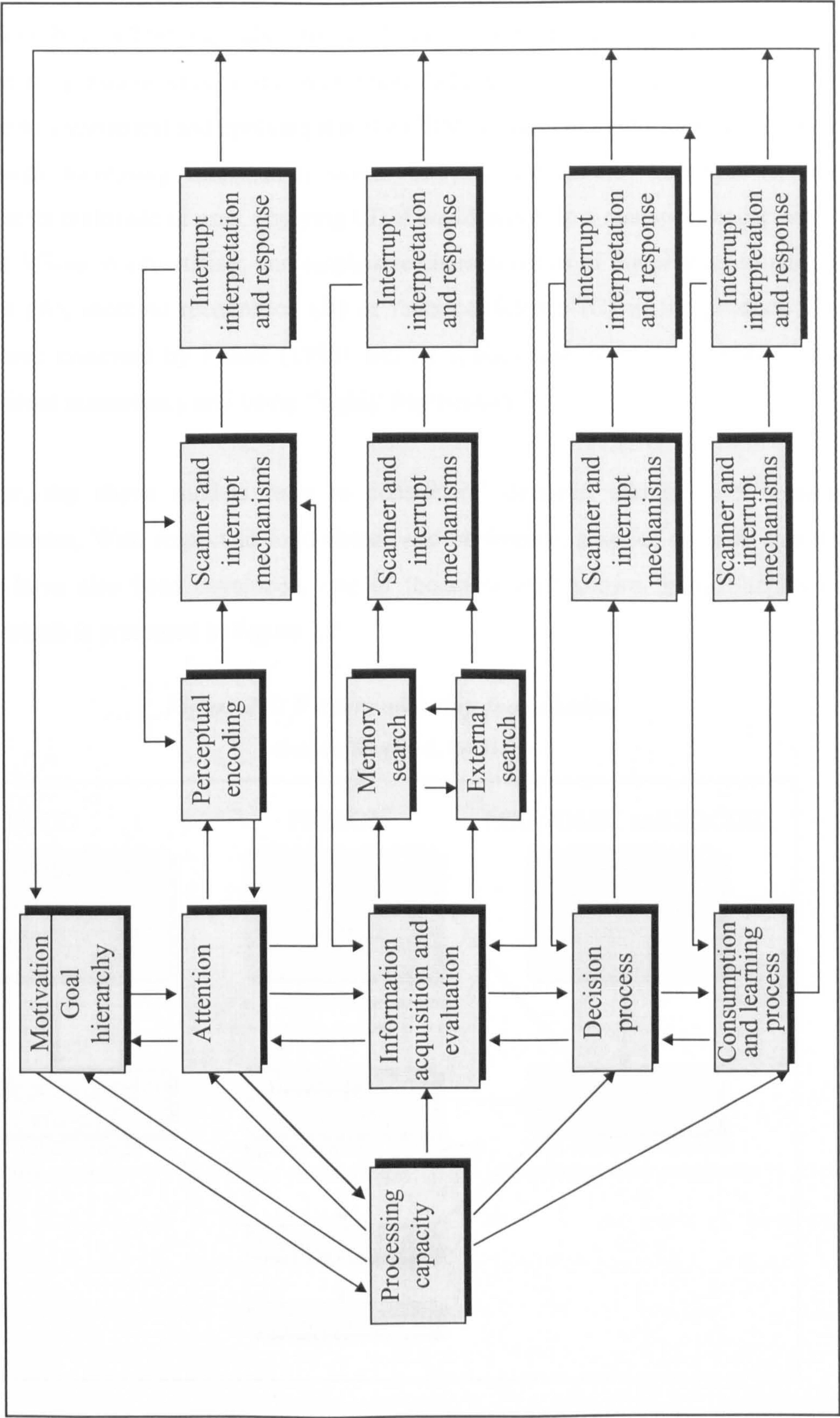




Figure 2.5: The Bettman model  
( source: Howard, 1989)



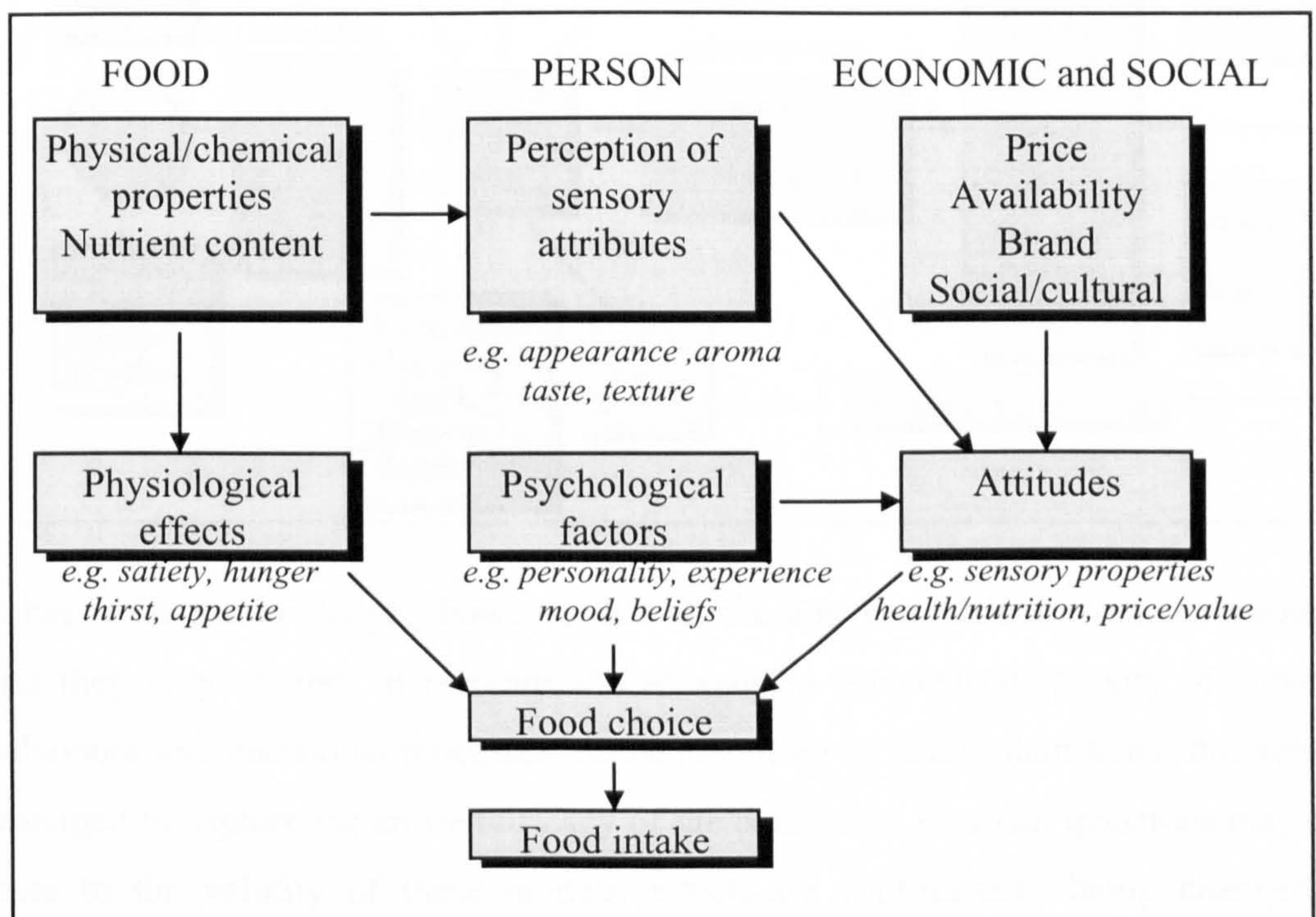


CDM can be used both quantitatively and qualitatively; it has proved very useful in short-term marketing strategy, positioning products or explaining and predicting how consumers buy. CDM can also be used for market stimulation. By developing appropriate questionnaires, using regression (which estimates a direct relationship between two variables) and applying it to the CDM, a manager could for example learn how much increasing information would increase consumers' intention to buy. Amongst its multitude of uses, applying CDM could also help a manager choose which paths to follow in advertising, and emphasize characteristics of the product to change attitudes (A), increase recognition (B) or raise confidence (C) in the product. The model was criticised by Foxall (1990) and its applications were said to show low correlational consistency and being "highly fragmentary".

However, the above models refer to consumers' decision taking under general circumstances. With respect to food choice and preference, a series of more specific models have also been developed, one of the most well known being Shepherd's (1985) which is presented in Figure 2.7.

**Figure 2.7: Factors affecting food choice**

(source: Shepherd, 1985)





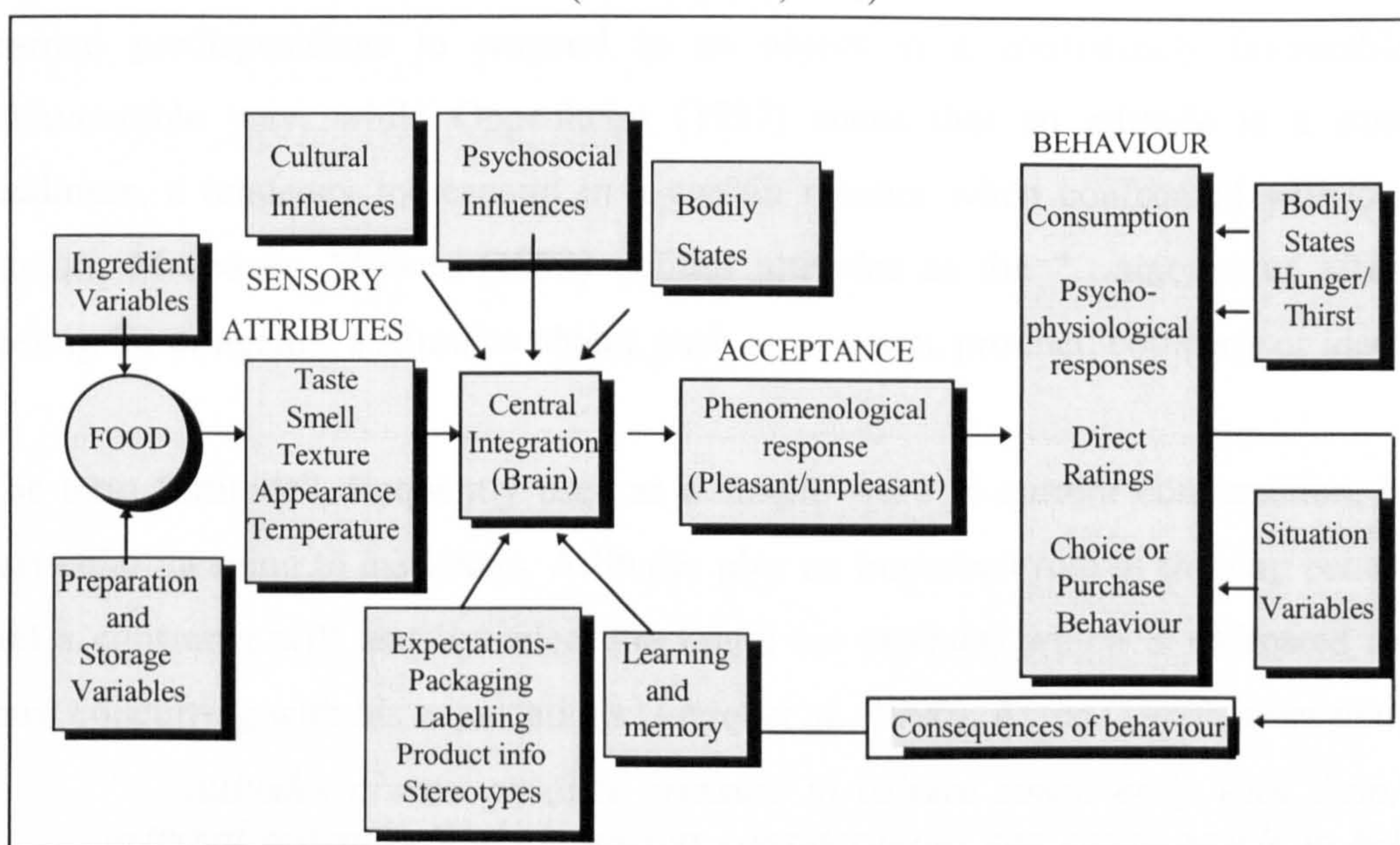
Shepherd (1985) regards food choice as being influenced by a series of attributes related to the food itself, the person purchasing it and economic and social attributes (hence attributes related directly to the product and those determined by the market).

Variations in each of these complex attributes will heavily influence food choice. What is particularly relevant for the present research is that in certain parts of the world (*e.g.* Eastern Europe) availability and price are more likely to be dominant factors in determining food choice compared to Western Europe (Pierson, 1997). Cultural habits and differences between East and West can also strongly influence food choice.

A multitude of other models are also available, such as Cardello's (1994) (Figure 2.8), Piggott's (1994), etc., each of which take a particular approach to food choice decisions.

**Figure 2.8: Cardello's model**

(source: Creed, 1998)



It has to be acknowledged however that all the above models are strictly theoretical and they only attempt to recreate and encompass the real complexity of consumer behaviour and decisional processes. Some are closer to reality than other, but none yet managed to capture the entire intricacy of the consumer. As such, questions may often arise to the validity of these models, which are continuously being changed and updated. It also becomes clear that the complexity of the consumer is difficult to frame,



fact actually given by the tremendous differences existing between consumers, their needs, cultures, geographical locations, etc. Such models can be however used to a limited extent, and some of the benefits for the Romanian apple industry are highlighted in chapter 7.

## **2.4 ATTITUDES AND ATTITUDE MEASUREMENT**

Attitudes are one of the most measured aspects of consumer behaviour. As the present study investigates a variety of attitudinal aspects towards fresh apples as a product, the following section focuses on the attitude literature and some of the proposed ways of attitude change.

A century ago, attitudes were defined as “readiness for attention or action of a definite sort” (Baldwin, 1901 cited by Ajzen, 1980). Assael (1992) mentions attitudes as being learned predispositions to respond to an object in a consistently favourable or unfavourable way, while Oppenheim (1997) states that an attitude is a state of readiness, a tendency to respond in a certain manner when confronted with certain stimuli. Moreover, Mowen (1993) defines attitudes as the “...amount of affect or feeling for or against a stimulus object, such as a person, product, company or idea”.

The term “attitude”, frequently used as a simple word in current conversation, has a particular meaning to marketers. Attitudes play an important role in shaping behaviour and a consumer will usually select the brand (or product) which is estimated as the most concurring with his expectations (Engel *et al.*, 1990). Ajzen (1980) states that:

*“ ...attitudes always produce pressure to behave consistently with them, but external pressures and extraneous considerations can cause people to behave inconsistently with their attitudes. Any attitude or change in attitude tends to produce behaviour that corresponds with it”.*

The study of attitudes can be useful to the industry in a multitude of ways: in judging the effectiveness of marketing activities, evaluating marketing actions before their implementation in the marketplace, segmenting markets and choosing target segments (Engel *et al.*, 1990), define benefit segments, develop new products, develop and evaluate promotional strategies ( Assael, 1992).



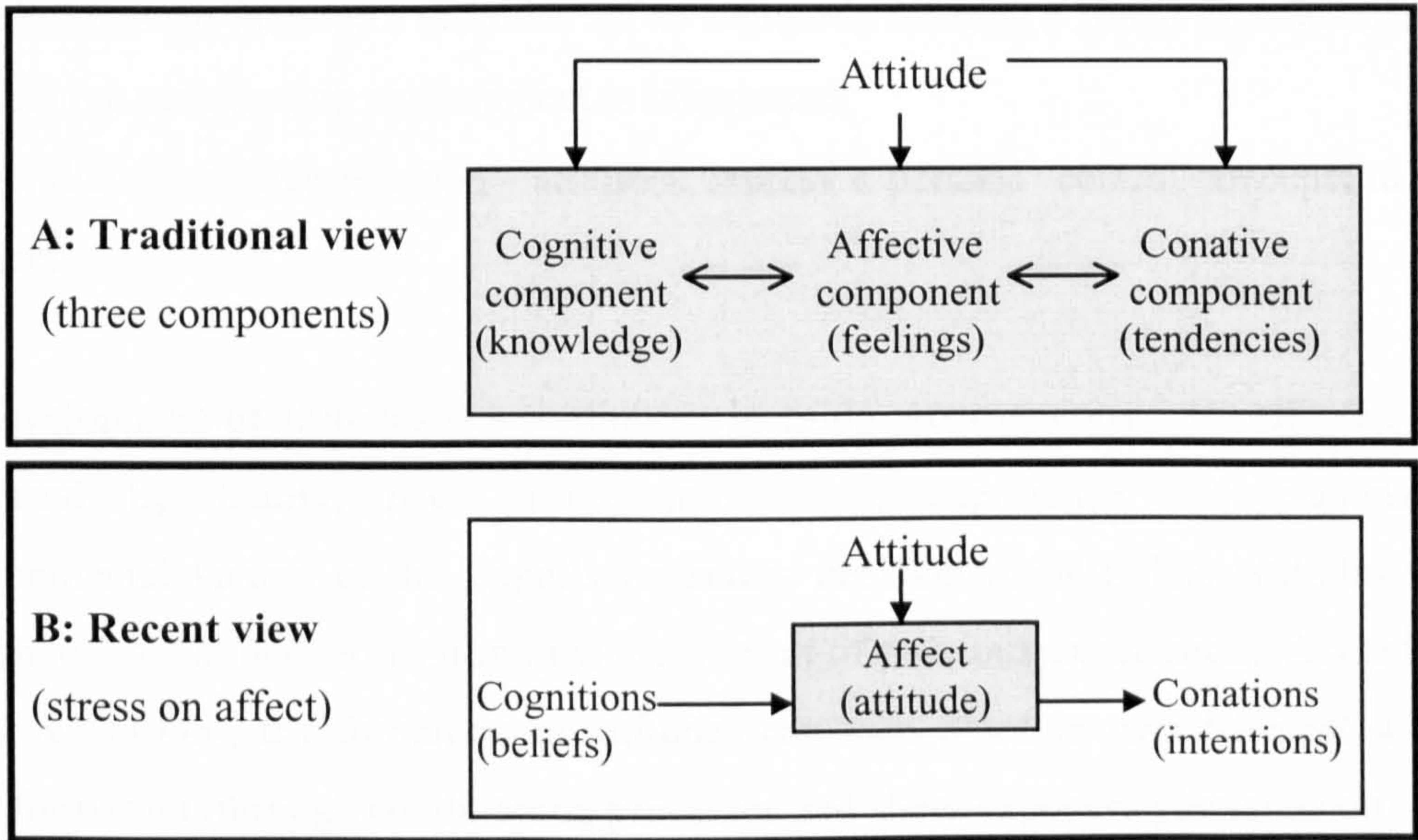
The attitudes that consumers hold are learned through information about a certain product or direct experience. This is a vital factor for marketing which can attempt to change or create attitudes by the means of advertising, product sampling or simply by the like of a product (Lutz, 1991; Assael, 1992; Wilkie, 1999).

As observed earlier, attitudes are tendencies or pre-dispositions to respond which indicates their direct relationship with the consumer’s actual behaviour. Hence, a consumer holding a favourable attitude towards a brand will lead to a favourable behaviour with respect to that brand. However, the “object” can be anything from one product, to entire product categories or broader issues such as consumerism, genetically modified food, etc. (Wilkie, 1990; Mowen, 1993).

In general terms, attitudes consist of three main inter-linked components: cognitive (beliefs), affective (evaluation) and conative (intention to buy) (Assael, 1992). Along the development of attitudinal studies, there have emerged two main orientations: the tripartite (or traditional) view, and the unidimensionalist (more recent) view (Wilkie, 1990; Lutz, 1991) graphically presented in Figure 2.9.

Figure 2.9: Attitude components, the two views

(Source: Wilkie, 1990)





In the tripartite traditional opinion, all three components (cognition, affect, conation) are integral parts of a certain attitude, hence attitudes consist of various degrees of every component. This particular approach has been criticised for lack of empirical investigation and for failing in measuring all three components (Lutz, 1991).

A more contemporary approach extracts the conative and cognitive components out of attitude. Hence, in the unidimensionalist opinion, attitudes consist of affect (positive or negative feelings with respect to the attitude object) only. Nonetheless, the other two factors are also important, but they are not defined as attitude. The recent view proposes a well defined relation amongst the three components: attitudes are built up upon beliefs, while intentions rely on both attitudes and beliefs (Wilkie, 1990; Lutz, 1991).

Once an attitude has been formed, it is stored in long-time memory and retrieved when necessary to deal with a specific issue. The functions of attitudes have been extensively commented upon by authors such as Lutz, (1991); Assael, (1992) Mowen, (1993), and generally described as following:

- the utilitarian function - attitudes guide behaviour in order to get positive reinforcers;
- the ego defensive function - attitudes can act as defensive mechanisms;
- the knowledge function - attitudes act as standards forming a frame of reference by which the surrounding environment is interpreted;
- the value expressive function - attitudes express a persons' central concepts to the others.

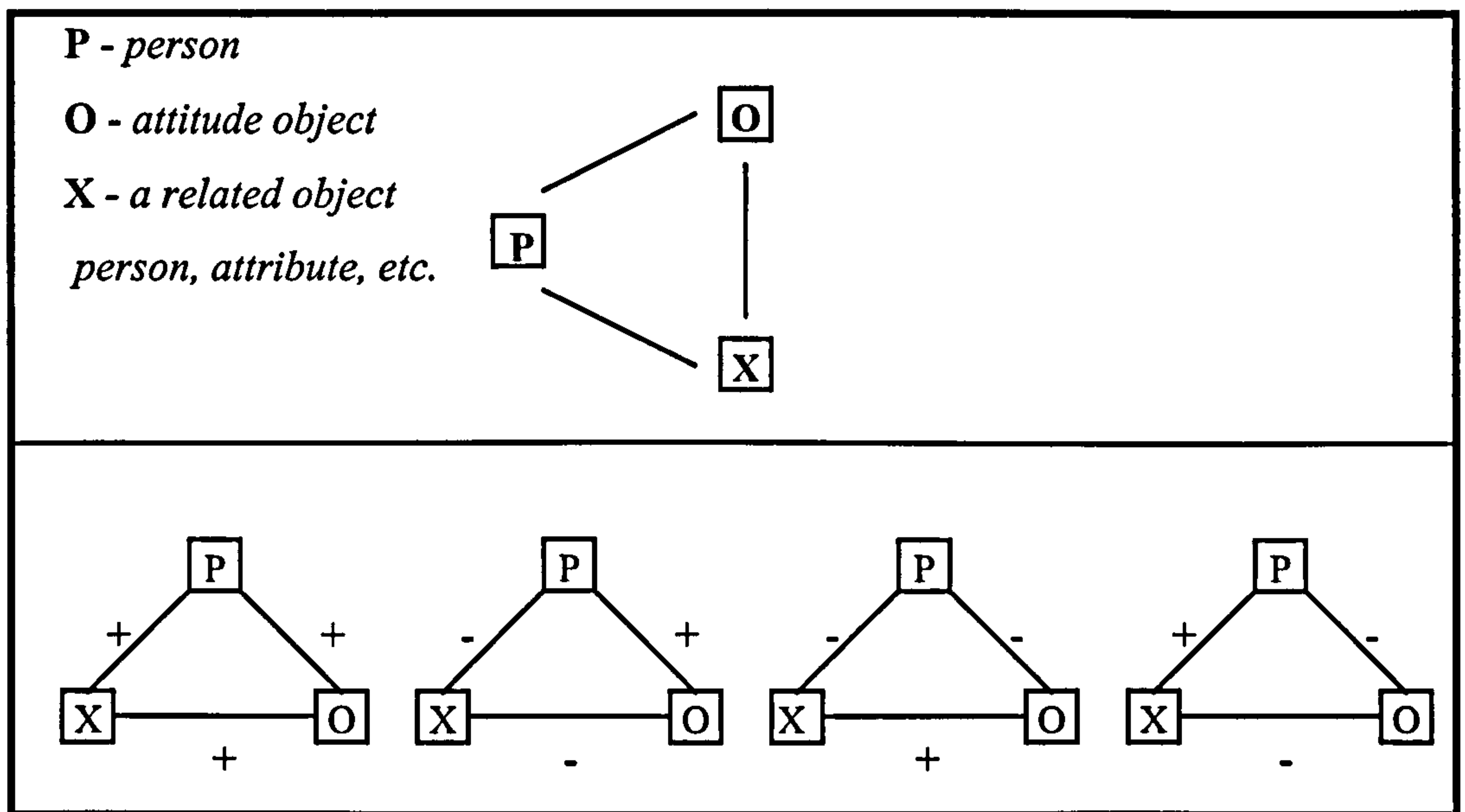
The development of attitudes is a continuous learning process, constantly affected and influenced by family, peer group, information, experience and personality (environmental factors of the Engel's consumer decision model). The attitudes that consumers hold at one moment in time are a result of previous experiences. According to Mowen (1993), the formation of attitudes can take place in two different ways: direct formation (through conditioning processes and sheer exposure phenomenon) and indirect formation (by building a hierarchy of effects).

Over the years, a multitude of attitude and attitude change theories have been designed: the consistency theory, the learning theory and the functional theory are only a few. The consistency theory is actually a “class of theories”, including Heider’s balance theory (first developed in 1946), Festinger’s theory of cognitive dissonance (developed in 1957) and Rosenberg’s affective-cognitive consistency theory (developed in 1960) (Lutz, 1991).

One of the most popular theories is Heider’s balance theory (Figure 2.10) which states that a person seeks to achieve balance between cognitions (beliefs) and affect (evaluations) (Lutz, 1991; Assael, 1992).

**Figure 2.10: Heider’s balance theory and four possible balanced configurations**

(Source: Lutz, 1991)



In the figure, the attitude is represented by the link between the person (P) and the attitude object (O). Heider represents attitude by its valence, either (+) or (-). There are also links (associations or dissociations) between the attitude object (O) and a related object (X) (person, attribute, consequence), as well as between the person (P) and the related object (X) which reflect the person’s feelings towards the object. Heider’s model predicts that the valence of the attitude (P- O) can be determined by the algebraic multiplication of the other two valences. For example, a positive P -X and O - X link will produce a positive attitude.



Heider's theory has been proven useful to marketers in changing consumers' brand attitudes and has served as a basis for new, improved theories. However, one of the most known and revolutionary theories is the one proposed by Fishbein (Engel, 1990; Lutz, 1991; Assael, 1992; Mowen, 1993) stating that an attitude towards a given object is based on the summed set of beliefs about the object's attributes weighted by the evaluation of these attributes. Fishbein's multi-attribute model (1963) can be simply concentrated into the following equation:

$$\text{Attitude} = \int \left( \sum_{i=1}^n b_i e_i \right)$$

where:

$\int$  = function of;

$b_i$  = the strength of the belief that the object has the attribute I;

$e_i$  = the evaluation of the attribute I;

$n$  = the number of salient attributes of the attitude object.

By identifying the number of salient attributes and measuring the strength of the belief and the evaluation of attribute "i", marketers can adopt appropriate strategies and attempt to create favourable attitudes.

All above models are concerned with attitude formation and change. The translation of attitudes into behaviour is also important. Predicting a consumers' behaviour based on knowledge about his/her attitudes may seem logical. However, in mentioning a series of experiments, Wilkie (1990) stated that the correlations between consumer attitudes and their behaviour were far from being perfect. As a result, the idea that attitude measurements can be both misleading and useless arose. Wilkie (1990) suggests that a series of considerations have been left out:

- consumer involvement with particular products is different,
- product use is quickly changing attitudes,
- not all attitudes are closely related to behaviour,
- a consumer might have positive attitudes to a multitude of brands,
- personal factors may affect purchase behaviour.

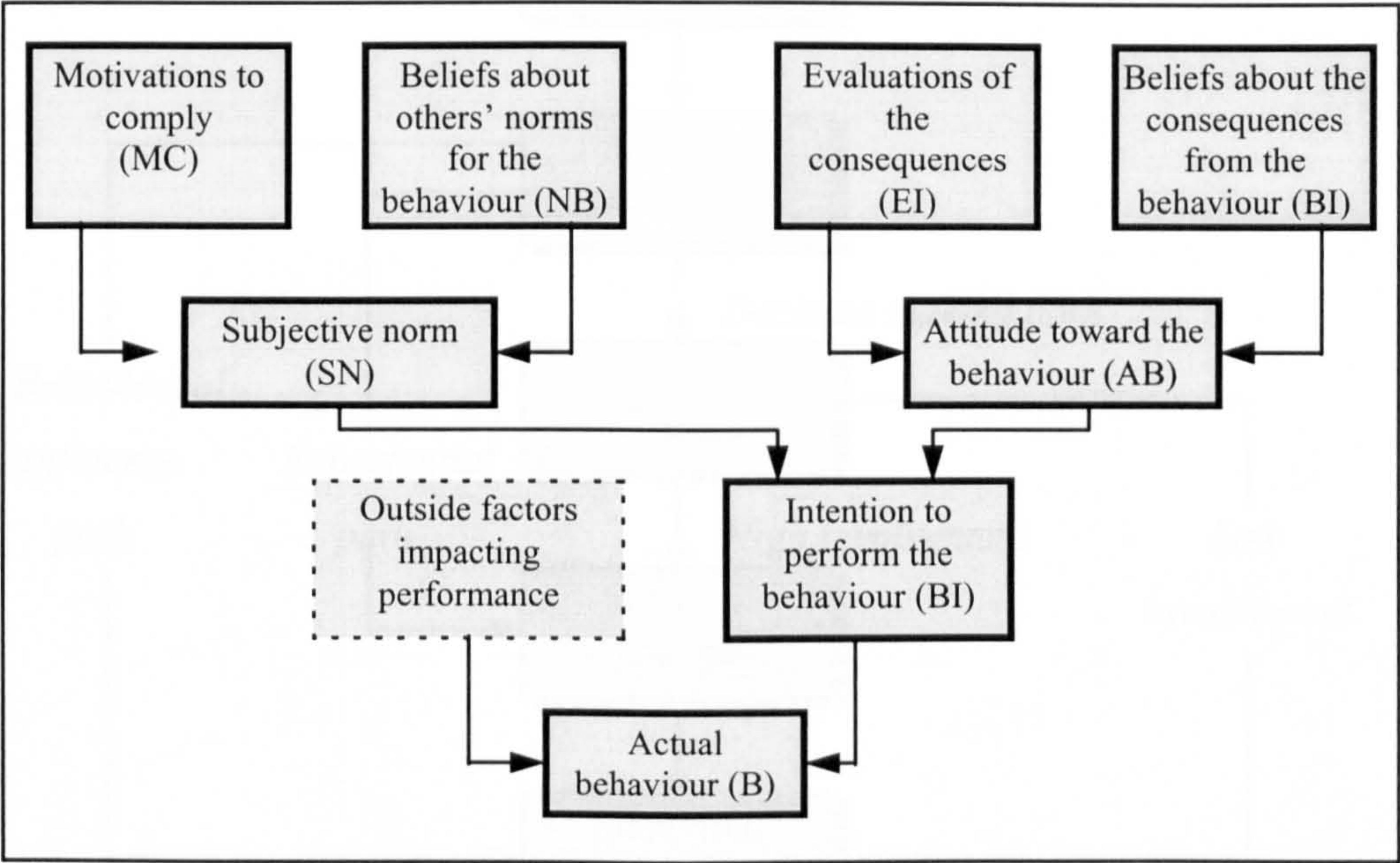


Taking into consideration all above factors, Ajzen and Fishbein (1980) have developed a new theory, the Theory of Reasoned Action (TRA) (Figure 2.11). The rationale behind this theory is that in aiming to predict a specific behaviour, the person’s attitude towards performing that behaviour has to be measured, not only his general attitude towards the object at which the behaviour is directed (Lutz, 1991). Hence, TRA does not attempt to predict behaviour by itself, but the intentions to behave (purchase the product) in a particular manner.

In order to supplement the precision of their theory, Ajzen and Fishbein (1980) have augmented it with a new determinant, the subjective norm (SN). The subjective norm assesses what consumers believe other people relevant to them think they should do, hence measuring the social influences on a persons’ behaviour. The strength of the links between attitudes and intention, and norms and intention, heavily impacts over the formation of the intention.

Figure 2.11: Diagram of Ajzen’s and Fishbein’s theory of reasoned action

(Source: Wilkie, 1990)



If the strength of the link between attitude and intention is greater than the strength of the link between norms and intention, the intention (and behaviour) are under attitude

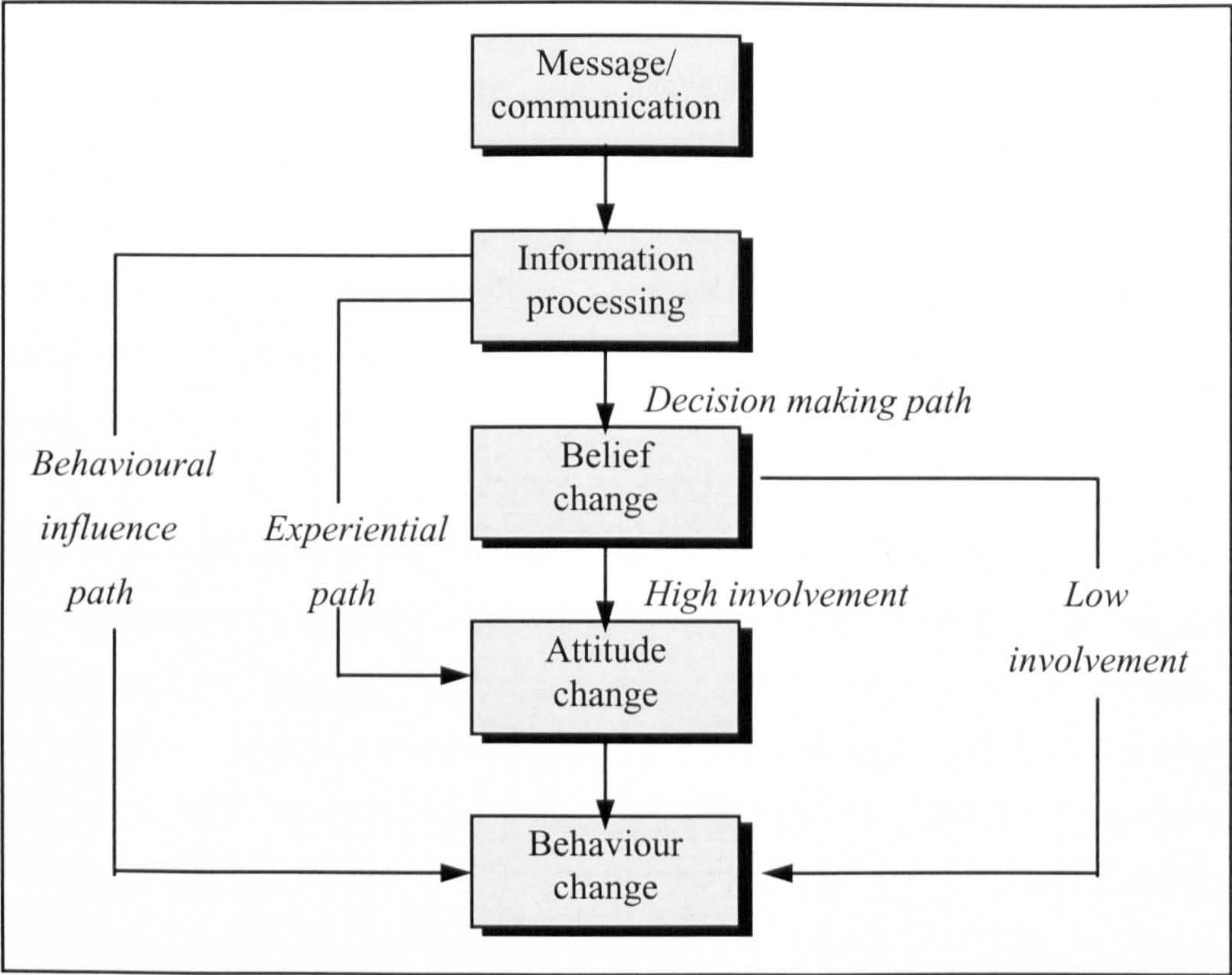


control and reverse. Extensive research on TRA has revealed that most of purchasing behaviours are under attitudinal control (Lutz, 1991; Mowen, 1993).

As a result of the TRA, a number of attitude and normative change strategies can be implemented such as: changing the belief strength or evaluation aspect, changing the normative belief strength or motivation to comply, introducing new salient referents (Assael, 1992; Lutz, 1991).

The final aim of attitudinal studies is, as well as understanding and predicting behaviour, to be able to change these pre-existing attitudes in an attempt to influence the consumer and generate a different (wanted) behaviour. A number of models have also been elaborated for this purpose. One of the models which proposes how beliefs, attitudes and behaviour could be changed is presented in Figure 2.12.

**Figure 2.12: Paths to belief, attitude and behaviour change**  
(source: Mowen, 1993)



As observed from the preceding discussion on the issue of attitude studies, it is easy to note the complexity of such a topic and the importance of attitudinal studies emerges

clearly. Some of the prospective applications of attitudinal research to the apple industry are presented under chapter discussions.



### 3.0 SELECTED APPLE INDUSTRIES LITERATURE REVIEW

The second part of the literature review presents a brief overview on the state of the apple industries in the selected countries. The review also includes short histories of apple growing, aspects of apple consumption and apple juicing. In Romania, separate sections are dedicated to the situation before and after 1989. A short section on the importance of apple consumption for human health concludes the chapter.

#### 3.1 THE ROMANIAN APPLE INDUSTRY

##### 3.1.1 Brief history of apple growing in Romania

The common apple (*Malus domestica*) is one of the best known horticultural species in the world. Starting with the Biblical story of Adam and Eve it also featured in early Greek records of civilization (McKee, 1995). It is mentioned three times by Homer in his “Odyssey”, and by Solon and Teofrast in their writings and it is apparent that the apple has played an important role in the history and culture of humanity (O’Rourke 1994; Macovei and Rominger, 1999). Wild apple (*Malus silvestris*) has been known as a fruit in the area of Eastern Europe presently known as Romania since the Dacian tribes (later conquered by the Romans) were occupying this region. While there is no written evidence, dried fruit residues have been found during archaeological work (Anon., 1984).

After the establishment of the three Romanian principates (Transilvania, Moldova and Tara Romaneasca) that later merged and formed modern Romania, commerce with fruits, vegetables and wine flourished. Situated in a favourable position between the Orient and the Occident and crossed by many roads, commerce with fresh produce was conducted in both directions (Beceanu, 1997). Probably as a result of this increased commercial activity, more written evidence is available. In a document written in 1466, King Stephen the Great of Moldova absolved the peasants from paying custom taxes on “...commerce with apples and cabbage”. Many other documents from the same century state the presence of apples and orchards in monastic villages and

monasteries. Ledgers for fruit and vegetables sales were kept, which show the variety of fresh produce traded (Beceanu, 1997). Travellers, like the Englishman W. Lighton and Muslim E. Celebi reinforce their domestic records describing the abundance of fruits and vegetables in the Romanian principalities (Anon. 1970). By the end of the 18<sup>th</sup> century when trade with Russia developed quickly, apples were a significant component (Beceanu, 1997). Old records demonstrate that during the 19<sup>th</sup> century fruit tree cultivation in Romania was disorganised and with the exception of plums used for alcohol processing, top fruit species were neglected. Apple trees were mainly found scattered throughout the countryside. Orchards are seldom mentioned in relation to big land owners (Boiars), monasteries or peasants gardens (Axenciuc, 1993).

Modern fruit tree growing appears with the beginning of the 20<sup>th</sup> century. Some of the first reliable statistical data resulted from a survey carried out in 1906. Out of a total of 130,627 hectares cultivated with fruit, more than 80% were occupied by plum trees. There was also an area of 3,723 hectares of apples (1,036 thousand trees). Until 1918, the state encouraged the establishment of commercial orchards and nurseries; in the first years of the century Romania was exporting between 1,000-4,000 tones of fresh fruit. The first fruit processing plants are also established during the same period (Axenciuc, 1994).

Before and between the two World Wars, fruit tree growing increased in importance and by the end of 1938 there were 247,000 hectares of orchards, an increase of 90% compared to 1906. Apples came second after plums, with a total production in 1938 of more than 700,000 tones (Diaconiuc, 1997). The destructive influence of the Second World War and loss of some Romanian territories (Basarabia, North of Bucovina) affected top fruit production. Compared to 1938, in 1950 there were only 184,200 hectares of orchards (Rosca, 1997), representing a loss of almost 30%. However, after 1950-1955 Romanian top fruit production and apple growing in particular began a mandatory, but beneficial invigoration under the communist regime.



3.1.2 Agriculture and the apple industry in Romania during the communist regime

Romania was and still is a predominantly agricultural country. Once called the breadbasket of Europe (Anon., 1993), Romania’s agriculture has in the past exported significant amounts of products not only to the USSR, but to western countries as well, such as Germany and the United States of America.

During the Communist regime (1947 to 1989) private property was confiscated, agriculture and horticulture collectivised, and centralised decisions were made to increase production. Large farms were established, some of them with more than 1,000 hectares and some in conjunction with research stations.

Communist agriculture worked through well-established 5 year plans, with exaggerated production targets set in advance. Cheap food was obtained with cheap labour and very low financial inputs. There was pressure for producing more and more food, that was mainly exported. High productions were obtained, but mainly due to imperative party control, not through innovation, initiative and investment (Turnock, 1996).

After forced collectivisation, the large scale of communist farming drastically limited the role of the peasant in its private farming. The former peasants lost their direct relationship with the land and became wage earners on their own farmland. Small areas (especially in the mountains) that remained uncollectivised were the only areas where “private” agriculture was still performed. Even so, quotas were imposed upon Romania’s small private farmers and maximum prices were set. Land use and organisational structure can be seen in Table 3.1 (Mihail, 1995).

Table 3.1: Land structure in Romania before 1989

(source: Mihail, 1995)

Type of units	area (ha)	% of total	unit numbers	average size (ha)
State farms	2,055,500	14	411	5,001
Collective farms	8,963,700	61	4,258	2,105
Private farms	1,420,100	10	340,900	4.17
Other state users	2,354,400	15	-	-

The over-emphasis on industry led to a massive migration of people into the towns. Many villages considered not to have a place in the new order were left without inhabitants. This almost successful attempt to transform Romania into an industrial country is reflected in Table 3.2. In 1960, 65.6% of the people were employed in agriculture. By 1980, this had been reduced to 30.5%, less than half (Turnock, 1996). Similar or more extreme scenarios happened in countries like Bulgaria and Hungary.

**Table 3.2: Agricultural output and employment in CEE countries, 1960-1980**

(Source: Turnock, 1996)

	1960		1970		1980	
	*	**	*	**	*	**
Albania	44.4	71.3	34.5	62.0	n/a	55.9
Bulgaria	32.2	55.5	22.6	35.7	16.5	18.1
Czechoslovakia	14.7	25.9	10.1	18.3	7.3	13.1
GDR	16.4	17.3	11.6	13.0	8.5	10.6
Hungary	30.8	38.9	17.7	26.4	15.8	18.2
Poland	30.3	44.2	17.5	34.7	15.3	28.5
Romania	34.9	65.6	19.1	49.3	14.5	30.5
Yugoslavia	25.0	56.2	18.3	49.8	14.8	32.3

\* contribution of agriculture and forestry to national income (%)

\*\* percentage of employment in agriculture and forestry

However, while the overall role of agriculture continued to be important, goals were achieved by intensification. Mechanisation began to increase in importance, especially after developing the agricultural machinery sector and building a tractor factory near Brasov. Food production targets were set through a series of directives to the State and Co-operative farms. Consumer needs were interpreted as national approved needs, not personal ones (Mueller, 1995). The motivations for creating massive collective farms were relatively complex, incorporating both political and social reasons. Nonetheless, it has been shown that the bigger the size of the farms, the more problems were encountered, from managerial to transport and bureaucracy issues (Mihail, 1995). This together with the large subsidies to agriculture which were not accompanied by increases in the price of agricultural products, led to low or no profit returns.

With the whole agriculture sector revolving around communist politics, propaganda and unreliable data were constantly released to maintain confidence. Many domestic books and journal articles quoted Romania as one of the leading agricultural countries



of the world. Even if the main strengths of the country were based on agriculture, such works totally exacerbated the situation.

With respect to agricultural products, trade was mainly conducted with the East, although some exports (mainly grains and fruits) were also directed towards Western states. Often referred to also as “the breadbasket of Eastern Europe”, the closest trade relations were maintained, as expected, with the former USSR. The importance of trade with the former USSR and other Central and Eastern European (CEE) states is often acknowledged by authors such as Dangerfield (1995), Healy (1994), Nelson and Taylor (1995). Most of the agricultural products were however bartered, in exchange for energy, gas and technology. Barter exchanges were also undertaken with the far Orient, such as Iraq, in exchange for petrol.

Fruit tree cultivation followed the general pattern of agriculture as a whole. But leaving aside the moral and social aspects of this particular period, fruit tree growing can be shown to have boomed during the communist years. The first apple breeding programme in Romania began in 1948 in Bucharest. The first experimental and research stations that later played a major role in the apple industry were established between 1950-1953 (Braniste, 1997). Many of the research stations worked in conjunction with state farms, combining research with production. Extensive apple breeding programmes were initiated during the 1950's, especially for the development of disease resistant varieties. The breeding programmes were followed by successful attempts to introduce into production new Romanian varieties. However, three varieties from the United States dominated the Romanian commercial orchards. Norton (1997) summarised the situation as following: Jonathan (40%), Golden Delicious (25%) and Stark Delicious (15-20%). However, there are some differences of opinions in respect to the varietal range and structure (even if it was clearly dominated by the ones mentioned above). Some researchers (such as Rosca, 1997) suggest a lower percentage of the above varieties, together with: Parmen Auriu 6.0%, Patul 3.0%, Cretesc 2.2% and other new varieties. The percentage of new and other varieties he proposes was somewhere around 18%.

The evidence of a wider apple range being grown is supported by records which show the activity of the Research Stations. In 1967, for example, the Research Stations were testing around 16,000 seedlings based on promising genetic parents. In the 1970's and 1980's, due to the introduction of new gene sources (particularly disease resistance) the number rose to 85,000 seedlings (Braniste, 1997). As a result many new valuable Romanian varieties have been created (25 cultivars in the last 45 years), such as Frumos de Voinesti, Generos, Falticeni, Ancuta, Gloria, Voinea, Pionier. However, the area cultivated with such varieties was small; they were relatively unknown to the ordinary consumer and only low quantities were entering the market.

In respect of the total cultivated area, fruit tree growing in Romania underwent an intense process of regeneration in the period 1960-1970. From an area of 212,600 hectares in 1960, a target of 346,200 hectares was achieved in the 1970's. During the period 1971-1975 the pace was slower, only 30,000 hectares were added to the total area of orchards. Between 1975-1980 however, another 50,000 hectares were planted.

After 1980 an intense programme of orchards renewal begun, 58,000 grubbed up hectares being replaced with 50,000 hectares of young orchards. The final result in 1989 was an increase in area of 45% compared to 1960, although during the same time, due to the implementation of intensive orchard management and mechanisation, fruit production rose by 90.5%. An important increase is noticed particularly in respect to apple production, yields became 6.2 times higher compared to 1960. Also, the proportion of the apple species increases as well in the as a proportion of the top fruit area. From 13.4% in 1960, apples accounted for 44% of the total fruit area in 1989 (Rosca, 1997). Fruits that could be stored over-winter to ensure a constant consumption (such as the apple) were beginning to be favoured.

However, the evolution of apple orchards expressed as a percentage of the whole cannot be stated exactly over years as there were few reliable statistics published during the communist times. Comparisons between productions were preferred, rather than the extent of cultivated areas. Table 3.3 is based on the Food and Agriculture Organization (FAO) database and gives a summary of the harvested apple area and production between 1985-1989.



**Table 3.3: Apple harvested area, yields and production in Romania, 1985-1989**

(Source: FAO Database)

	Years				
	1985	1986	1987	1988	1989
Area harvested (ha)	83,000	83,000	81,000	81,000	79,000
Production (tonnes)	699,100	994,400	594,200	609,400	697,400

While recognising the on-going discussions and analysis of the agricultural policy of the communist period, it is clear that in respect of apple cultivation and production the overall outputs were positive.

### **3.1.3 The present state of agriculture and apple growing in Romania**

Like most of the former communist states, agriculture in Romania has undergone dramatic changes since 1989. The transition from an extremely centralised system towards a market economy has not been easy, bringing many unexpected situations and challenges. In respect of the series of agriculture reforms that were undertaken, the measure that had the greatest impact has been that of land restitution. Around 5 million people were given back the land they or their families had previously owned and which had been held under the communist regime in the form of more than 4300 collective and state farms (Anon., 1993).

Even if under the communist regime the intention was, as previously described, to shift towards an industrial economy, Romania was and still is a predominantly agriculturally oriented country as shown in Table 3.4. By the end of 1989, before the overthrow of the communist regime, Romania had a total arable surface of 9.9 million hectares accounting for 41.7 % of the total land. Following land restitution most of the land is now controlled by private owners. By the end of 1997, only 490 commercial companies (12% of the agricultural area) were still state owned (Table 3.5).

Table 3.4: Land use in selected CEE countries - 1989

(source: Turnock, 1996)

	Total		Forest		Arable		Permanent crops*		Pastures		Other	
	million hectares	million hectares	million hectares	% of total	million hectares	% of total	million hectares	% of total	million hectares	% of total	million hectares	% of total
Albania	2.87	1.05	36.6	36.6	0.58	20.2	0.12	4.2	0.40	13.9	0.72	0.72
Bulgaria	11.09	3.87	34.9	34.9	3.85	34.7	0.30	2.7	2.02	18.2	1.05	1.05
Czechoslovakia	12.79	4.61	36.0	36.0	4.98	38.9	0.13	1.0	1.64	12.2	1.43	1.43
GDR	10.83	2.98	27.5	27.5	4.68	43.2	0.24	2.2	1.26	11.6	1.67	1.67
Hungary	9.30	1.69	18.2	18.2	5.05	54.3	0.23	2.5	1.20	12.9	1.13	1.13
Poland	31.27	8.75	28.0	28.0	14.41	46.1	0.34	1.1	4.05	13.0	3.72	3.72
Romania	23.75	6.37	26.8	26.8	9.90	41.7	0.45	1.9	4.41	18.6	2.62	2.62
Yugoslavia	25.58	9.33	36.5	36.5	7.04	27.5	0.73	2.9	6.35	24.8	2.13	2.13
Total	127.48	38.65	30.3	30.3	50.49	39.6	2.54	2.0	21.33	16.7	14.47	14.47

\* orchards and vineyards



For the new land owners, there are often difficulties in managing the new agricultural operations, not least shortages of inputs and lack of qualifications. But overall, agriculture has declined less than other sectors and its contribution to Gross Domestic Product (GDP) has in fact increased. Romania witnessed a return to agriculture, which uniquely among CEE countries, provided more employment in 1997 than at the beginning of 1989 (EU Working Document, 1998) (Table 3.6). During the period 1989-1995 imports exceeded exports, but after 1995 Romania transformed its balance of payments into a positive one for agricultural produce, exporting mainly cereals, oils, meat, fruit and vegetables.

After the loss of the former Soviet Union, presently the New Independent States (NIS) market, the main agricultural trade is now conducted with the EU (Table 3.7). However, Romania's agricultural trade deficit with the EU represents 34% of the overall agricultural trade deficit (EU Working Document, 1998). The trade with NIS presently accounts for only 6% of the total agricultural exports.

**Table 3.5: Agricultural production structure in Romania-1997**

(source: EU Working Document, 1998)

	Area (000 ha)	% of total	Number of farms	Average size (ha)
Commercial Companies*	1792	12.0	490	3657
Farmers Associations	1748	11.8	3875	451
Family Associations	1245	8.5	12089	103
Individual farmers	8674	58.7	3715396	2.33
Other Institutional	1330	9.0	n/a	n/a
Total	14789	100.0		

\* former State Farms

**Table 3.6: Importance of agriculture in Romania**

(source: EU Working Document, 1998)

		1991	1992	1993	1994	1995	1996	1997
Share of employment	% total	28.9	32.1	35.2	35.6	33.6	37.3	39.7
Share exports	% total	6.7	7.2	7.4	7.4	7.3	8.8	6.8
Share imports	% total	13.9	17.1	16.6	11.4	10.8	7.6	6.0

Table 3.7: Romania’s agricultural trade by region

(source: EU Working Document, 1998)

	Exports %	Imports %
EU	55	51
USA	2	4
other OECD	6	6
CEC’s	3	4
NIS	6	16
Other	28	19
Total	100	100

Regarding the apple industry, in 1997 apples accounted for 30 percent of the acreage of Romania’s fruit production (Braniste, 1997). According to an 1998 EU working document, apples accounted for 43.4% of the total fruit production. Compared to the period 1960-1989 there has been a decline in the harvested area and especially in that of young orchards (Rosca, 1997).

Table 3.8: Apple harvested area, yields and production in Romania, 1990-1998

(source: FAO Database)

Year	Area harvested (ha)	Yield (Hg/ha*)	Production (tonnes)
1990	81,000	84,320	683,152
1991	79,000	63,885	504,688
1992	77,000	70,279	541,145
1993	75,000	146,288	1,097,158
1994	72,000	50,422	363,038
1995	85,625	53,396	457,203
1996	81,484	80,963	659,719
1997	81,025	81,958	664,063
1998	79,449	45,865	364,619

\*hectograms/hectare

After a peak in 1993, when Romania produced almost 1,100,000 tones (according to FAO Database), apple production started to decline (Table 3.8), sometimes also not favoured by adverse weather conditions. In addition to the reasons mentioned above it can be added that there were few remaining plantings under 10 years old, a lack of funds, fear of investment and confusing legislation. Inflation and high prices of fertilisers and pesticides led to even lower inputs. Amongst the new land owners, lack



of appropriate skills and high costs of establishing and maintaining apple orchards contributes to the decline in the total apple cultivated area. Many new land owners prefer grubbing up apple orchards converting the land to new uses (such as vineyards). However, 1993 represented not only the peak of apple production, but also the peak of fruit production in Romania with a total fruit production of 2,200,000 tons, out of which 75% was in the new private sector (Chiran *et. al*, 1996).

The varietal range in the 1990's is recorded as being more extensive compared to the previous (1970-1980's) period, due to the inclusion in production of valuable varieties like Generos, Florina, Idared, and other varieties that account for 25% of the actual range (Popescu, 1993; Braniste 1997). Even so, the bulk of varieties still comprise of Golden Delicious, Jonathan and the Stark Delicious group (e.g. Starkrimson, Red Delicious), which have become obsolete on the world apple market. Some authors argue that the inappropriate varietal range is Romania's main impediment to success on the market (Norton, 1997). Although there exists a wider variety range, recent private land owners are not aware of their existence. Little is done to promote new varieties and as a result, according to G. Corneanu (personal communication, August 18, 1999), the apple tree sales from some nurseries (such as the Sarca nursery belonging to the Fruit Tree Research Station Iasi) have dramatically decreased from over 100,000 before 1989 to 10-15,000 in 1998-99.

#### ***3.1.4 Apple consumption in Romania***

The consumption of fruit in Romania has registered variations from 40 kilograms per capita in 1938 to 52.7 in 1989 and 64.3 in 1993 (Chiran *et al.*, 1996), also one of the peaks of fruit production in Romania. Consumption varies with availability and price as well, 1994 for example registering a much smaller consumption of fruit (Table 3.9).

Even if Romania is still an important apple producer, apple consumption is presently very low at around 13 kilograms per capita per year, almost equalling the UK consumption. Amongst the multitude of reasons that led to such a reduced consumption, galloping inflation and other food priorities are amongst the most important.

**Table 3.9: Fruit consumption in Romania - 1994**

(Source: Rosca, 1997)

Species	Fresh consumption (kg/capita)	Processed (kg/capita)
Apples	12.6	1.6
Pears	2.3	0.4
Plums	9.1	5.4
Apricots	1.4	0.5
Peaches	1.8	0.6
Cherries	2.1	0.7
Nuts	0.8	0.1
Strawberries	0.6	0.2
Other fruits	1.3	0.5
TOTAL	32.0	10.0

Other sources also mention low intake of fruit in Romania. For example in 1998 the average consumption of fresh fruit represented only 68% of the daily allowance recommended by the World Health Organisation (Petrovici and Ritson, 2000). Such low fruit consumption is said to be in conjunction with a number of economic, cultural and educational factors like high alcohol consumption, increases in fruit prices and poor knowledge with respect to dietary implications. Worries were expressed concerning the high rate of coronary heart diseases associated with inadequate nutrition in Romania (Petrovici and Ritson, 2000).

### **3.1.5 The Romanian apple juice industry**

There is little information regarding the apple juice industry in Romania, both before or after 1989. The apple juice industry has never been one of the strengths within the apple industry itself, even if there is anecdotal evidence of apple juice concentrate exports to some Western countries (such as Austria) before 1989. Some bibliographical evidence suggests however that the first concentrated apple juice plant was established around 1968 in the city of Dej, with German equipment (Parnia and Duta, 1998). The same study established the existence in Romania of 12 apple juice plants after 1990, with a daily processing capacity of 1,750 tones. Most of them produce concentrated apple juice, while only two have as an end-product pasteurised apple juice.



However, even if the plants have the above mentioned daily capacity, their production is inconsistent and very low. The exact processing details are difficult to determine, and there is little statistical evidence regarding these products. The main impediments to processing at full capacity according to Parnia and Duta (1998) are the lack of firm contracts, disinterested consumers, inconsistent export requests, very strong competition from imported carbonated drinks, old non-cost effective equipment, lack of financial support and lack of funds for promotion.

Contrary to some of the above statements (especially lack of consumer interest) personal anecdotal observations have revealed a number of apple juices of foreign origin on the Romanian market. There is indeed strong competition from foreign drinks, but consumers appear to becoming more and more interested in “natural” drinks. One of the Food and Agriculture Organisation’s (FAO) database statistics (1999) shows that in spite of some apple juice imports, there are far larger amounts exported of the same product (Tables 3.10 and 3.11). The unavailability of indigenous Romanian produced apple juice on the market is difficult to explain. The demand for home made apple juice is obviously present given that foreign apple juices are now encountered on supermarket shelves.

It is also mentioned that the value of imports for concentrated apple juice rose from \$20,000 in 1994 to \$133,000 in 1997, while the exports for the same commodity and the same years are \$2,729,000 in 1994 and \$9,629, 000 in 1997 (FAO Database, 1999). However, even such official statistics are somewhat unclear when it comes to products such as apple juice. The same source (FAO Database, 1999) cites only an average of 4,000 metric tones of apples being processed in Romania, without specifying the actual type of processing.

One aspect related to apple processing in Romania however remains clear, namely significant amounts which are processed into alcohol. An average of 33.3% of the total apple production is distilled into alcohol annually (Parnia and Parvan, 1998). Alcohol processing is one of the least attractive solutions of the apple industry, being the least profitable for the apple growers. In addition apple “tzuica” (traditional Romanian

distillate) and apple brandy are also being superseded by numerous imported types of alcohol.

Table 3.10: Pure apple juice imports to Romania

(Source: FAO Database, 1999)

	Years							
	1991	1992	1993	1994	1995	1996	1997	1998
Tonnes	40	48	568	100	271	144	284	748
1000\$	26	33	156	19	151	79	79	352

Table 3.11: Pure apple juice exports from Romania

(Source: FAO Database, 1999)

	Years							
	1991	1992	1993	1994	1995	1996	1997	1998
Metric tones	2,406	4,769	7,190	9,686	5,994	10,768	11,735	10,997
1000\$	3,139	5,776	4,345	3,163	7,514	10,615	10,615	6,326

Presently it is acknowledged that the Romanian fruit juice industry does not generally produce any natural pure fruit juices, even if the raw material base is available and abundant, including many species amongst the indigenous flora.

Under developing market conditions it has become clear that the apple juice industry in Romania is in urgent need of re-building to new standards for becoming nationally and internationally competitive, as well as compatible with the new requirements of the market economy. Authors such as Parnia and Isac (1997) mention that some of the most urgent problems are related to the legislation on the quality of imported and local soft drinks, considering that many of these drinks are of questionable quality and the range of such drinks was increasing day by day. The same authors argue that helped by capital investment, the Romanian apple juice industry in time can become competitive and profitable. The sale prices to the juice industry are also forecast as being around three times higher than the sale prices to the alcohol industry.

Market research in the field of juices is also of vital importance, since imported natural juices are lately popular sellers in Romania. Benefiting from superior packaging and labelling, such products do not necessarily contain a better quality juice than that produced internally. Hence, the development of this particular sector, supported by



appropriate market research, might also help in the re-vitalisation of the Romanian apple industry as a whole.

## **3.2 THE UNITED KINGDOM APPLE INDUSTRY**

### **3.2.1 Brief history of apple growing in the UK**

The wild apple (*Malus silvestris*) is known to have grown in Britain since Neolithic times, a fact attested by archaeological sites. Traces of apples dating from Roman times have been found and during the invasion in Britain war veterans were said to be given settlements on which to establish orchards (Grafton, 1995).

It is almost certain that the Romans introduced apple orchards to Britain and by the time of Cato the Elder (234-149 BC) they were already cultivating seven varieties of apple (McKee, 1995). During the establishment of Christianity, orchards were planted on Monastic properties. Some major changes in apple growing within Britain occurred following the Norman Conquest (1066). The Normans with their strong tradition for apple growing and cider making, introduced many apple varieties to Britain. Amongst the first to be recorded were Permain and Costard (Grafton, 1995).

Apple orchards flourished under King Henry VIII, who was responsible for the first commercial orchards (Seaton, 1996; Grafton, 1995). Extensive plantings were also established in Kent during the 16<sup>th</sup> and 17<sup>th</sup> centuries. However, there were also some difficult times to come for the apple fruits. During the 17<sup>th</sup> century, fruits sold by street traders were often regarded with great suspicion as they were blamed for the transmission of diseases (McKee, 1995). During the 18<sup>th</sup> century the apple industry had many downfalls until 1870, when due to industrialisation personal income increased and the apple trade became profitable. The first fruit research station was established at Long Ashton in 1903, followed in 1913 by the East Malling Research Station in Kent, and provided the basis of modern apple growing in the UK.



### 3.2.2 The United Kingdom fresh apple industry

Today apple growing is on a much smaller scale than in the past. Some counties (eg. Herefordshire and Worcestershire) have reduced their orchards to almost a fifth between 1877 and 1979. However, apple growing is a tradition in the UK and it has given the World not only a representative array of varieties (Cox, Egremont, Russet, Discovery, Spartan), but also the widely appreciated series of East Malling (M.) and Malling Merton (M.M.) rootstocks.

Although UK apple products are available for eleven months of the year (except July) (Table 3.12), English apples have only a 38% share within the home market, being unable to compete against low production prices and favourable climates of other countries. The rest is completed by imports mainly from France (34%), South Africa, New Zealand, Chile (Outsider's guide, 1995). The competition from imports, besides varietal range and low prices, is largely due to extended growing seasons with fresh apples being preferred to stored ones.

**Table 3.12: Fresh apples availability from overseas producers**

(source: Outsiders' guide)

	Availability over the months of the year											
	I	II	III	IV	V	VI	VII	VII I	IX	X	XI	XII
<b>France</b>												
<b>South Africa</b>												
<b>New Zealand</b>												
<b>USA</b>												

Tables 3.13 and 3.14 depict the decline of the apple industry in the UK. Divided into two sectors, dessert apples and culinary apples, the area of the UK planted with apples has decreased considerably since 1987. One of the main reasons that has led to the loss of approximately 15% of the UK apple orchards was the introduction of the European



Table 3.13: Dessert apples planted area in the UK (ha)

(source: MAFF)

	1987/88	1988/89	1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1998/99
Cox's Orange Pippin	7,817	7,862	7,829	7,603	7,442	7,173	6,854	6,454	5,524	5,035	5,028
Worcester Pearmain	620	594	552	524	487	504	497	387	323	282	294
Discovery	1,065	1,009	923	881	826	856	808	692	606	562	603
Early season	498	478	438	420	394	354	352	356	312	288	266
Mid season	720	641	587	562	526	528	464	588	525	512	511
Late season	2,169	2,048	1,880	1,797	1,670	1,649	1,724	1,626	1,558	1,573	1,574
Total desert apples	12,888	12,209	11,787	11,787	11,345	11,064	10,699	10,103	8,849	8,252	8,276

Table 3.14: Planted culinary apples area in the UK (ha)

(source: MAFF)

	1987/88	1988/89	1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1998/99
Bramley's Seedling	6,920	6,644	6,625	6,470	6,421	6,150	5,892	5,684	5,248	5,094	4,951
Early season	356	329	274	258	254	198	181	157	139	116	98
Mid/Late season	397	367	310	286	282	285	252	235	208	174	147
Total culinary apples	7,673	7,340	7,209	7,014	6,957	6,632	6,325	6,075	5,594	5,384	5,197

Union (EU) “grubbing up grant”. The grant was introduced in 1995, mainly as an incentive to encourage Mediterranean growers to leave production, but with apple prices being so low during the recent years British producers also took the grants offered under the scheme (Outsider’s Guide, 1995). Some other grants were also offered to producers in an attempt to stop over-production and regulate the market in poor years. In this respect, there were major interventions in 1989/90, 1992/93 and 1993/94. For example during 1989, almost 35,000 tonnes were withdrawn from the market (MAFF, 1996). Internal producers also found it increasingly difficult to compete against low production prices (and generally low retail prices) of other countries, like France and South Africa.

However, even if the area of apples grown in the UK has decreased by 2% a year since the mid-1970’s according to some sources (MINTEL, 1995), production did not decrease as dramatically as the output per hectare increased by one third also. Nevertheless, the imports of apples to the UK has stayed relatively unchanged since 1987, with an average of 420-450,000 tones per annum (MAFF, 1998). This situation reflects clearly the decrease in demand on the home market of the UK. The decrease in demand is also a general phenomena in the EU, the last seasons (before 1999) being said to be characterised by supply pressure, as many producers’ prices could not cover the costs of producing (AgraFood Europe, 1999).

The main strength of the UK apple industry is the product itself, mainly Cox and Bramley. These varieties have decreased as planted areas on the continent, representing a good niche market for the UK (Carter, 1993). From the varietal point of view, Cox is still the most important dessert variety in the UK accounting for over 60% of the dessert apple production in England and Wales (Seaton, 1996). The second place is presently a close competition between Discovery and Gala. However, the British apple industry has been left behind when it comes to its varietal range by many EU countries, such as France and New Zealand. Whilst the UK was concentrating almost exclusively on Cox (and traditional varieties, e.g Egremont Russet), overseas competitors were already growing new varieties like Braeburn, Fiesta, Katy and Pink Lady.



Presently the UK apple industry is facing another crisis. The new specifications set by the multiple retailers are more and more difficult to fulfil by the domestic apple industry. Even traditional varieties like Cox are endangered. For example Lovelidge (1999) reports that some supermarkets have already increased Cox's colour specification by 30%. The achievement of imposed specifications mean higher production costs and stronger competition with other European countries. There are currently some proposed strategies for increasing profitability, such as Ohmae's model (cited by Starkey, 1995) who proposes two ways:

- by increasing the market share and regaining it through promotional activity;
- by expanding the total UK market for apples

Both alternatives involve market and consumer research. In order to raise the awareness of the consumer and increase consumption levels there is a need to get a better understanding of the consumers' aspirations and expectations. Even in a country such as the UK, with tradition in consumer research, there is still much more to do especially in relation to the fresh fruit industry.

### ***3.2.3 Apple consumption in the United Kingdom***

Despite its tradition in apple breeding, the UK has the lowest apple consumption per capita in Western Europe at around only 12 kg per person per annum. While apples are promoted in the UK more than any other fruit, nevertheless consumption has failed to increase (Seaton, 1996). However, consumption figures for fresh apples are often contradictory. According to some other authors (Carter, 1995), apple consumption is even lower, in the area of 10.5 kilograms per capita per annum, relatively unchanged since the 1950's. Authors like Starkey (1995) state that consumption of apples has increased since the 1950's to 12.2 kg/annum in 1970 and 12.5 kg/annum in 1990.

Nonetheless, consumption of fruits has showed a slow growth between 1987-1997. However, the number of fruits with strong demand is relatively low, and demand is driven by the most convenient products (Hutchins and Dawson, 1998; MINTEL, 2000, a). Despite being a "convenient fruit" the consumption of apples is maintained at low levels and loosing popularity compared to other fruits such as bananas and oranges

(Hutchins and Dawson, 1998). Recent articles showed that in terms of apple consumption Britain is situated far behind other EU states. Registering an average yearly apple consumption of 10kg/head, Britain is overtaken by far by France with 16kg/head, Germany with 23kg/head or Belgium with 25 kg/head (Anon., 1999).

Furthermore, the average low intake of fruit and vegetables varies by social class, from region to region and even between genders. The low income groups are often the ones to consume less fruit (Anderson and Cox, 2000; Cottee, 1999). Examples are given when research demonstrated that wealthy consumers eat 77% more fruit compared to other who are less well off (Hutchins and Dawson, 1998).

#### ***3.2.4 The apple juice industry in the UK***

The UK apple juice industry is not a particularly active sector. Although there is a clear demand (Anon., 1998, d) most apple juice production appears to be a result of small enterprises or family businesses. With modern technologies (e.g. the Internet) becoming widely available, many of these small businesses increasingly use more and more frequently the Internet as an advertising tool (Eddisbury Fruit Farm; Hayles Fruit Farm). It is also suggested that such small outlets sell the bulk of high quality apple juice (Anon., 1998, d).

However, some other major drinks companies also produce limited amounts of apple juice. The leaders are Gerber Foods Soft Drinks, Del Monte, Procter & Gamble, Britvic, Capespan and Tropicana which has recently acquired the leading apple juice supplier in the UK, Copella (MINTEL, 2000, b,c). Copella is still the market leader in the UK, with apple juice sales totalling £9.2 million in 1999 (Anon., 2000).

The recent re-emerging Farmer's markets also proved to be popular outlets for domestic or home made apple juices (Johnston, 2000). With the supermarket standards set very high for fresh apples in the UK, some producers saw juicing as an opportunity to increase their profitability by processing second class fruit, while others decided to go for the top of the socio-economic scale and process the first class products too, resulting in a superior but expensive juice (Anon., 1998, d).



However, the overall fruit juice sector is selling increasing quantities of juice, even if the bulk of such juices is provided by citrus based drinks. Fruit juice consumption has risen considerably from the 1970's when it was almost non-existent (Clarke and Moran, 1995). According to more recent sources (Euromonitor, 1999) sales for fruit juices rose from 1993 to 1997 by 16.2%, with further growth being forecast. Market Research GB (Euromonitor, 1999) also mentions an increase of fruit juice consumption per capita in the UK from 18.7 litres in 1993 to 21.5 litres in 1997.

Nonetheless apple juice is growing in popularity. A recent survey (MINTEL, 2000, b) showed that three in ten households purchase apple juice on a regular basis. A brief outlook on the segmentation of pure juice market by flavour is given in Table 3.15. Orange juice occupies evidently the largest share in sales accounting for 77%. Apple juice comes secondly, taking a 10% market share. At the time of the research (1999), the volume share by flavours was said to have stayed unchanged (MINTEL, 2000, b).

**Table 3.15: Sales of pure juice by flavour, 1998 and 2000**

(source: MINTEL, 2000)

	1998 million litre	%	2000 (estimate) million litre	%	% change 1998-2000
Orange	699	77	752	77	+7.6
Apple	91	10	98	10	+7.7
Grapefruit	27	3	29	3	+7.4
Pineapple	27	3	29	3	+7.4
Tomato	18	2	20	2	+11.1
Other	46	5	49	5	+6.5
Total	908	100	977	100	+7.6

It is forecast that in the future, the importance of pure fruit juices and hence apple juices will increase (Euromonitor, 1999). Such changes are suggested to occur with an increased awareness towards health issues. It is also suggested that the fruit juice industries may suffer from massive restructuring, with supermarkets expected to dominate retailing.

### **3.3 THE GERMAN APPLE INDUSTRY**

#### **3.3.1 Brief history of apple growing in Germany**

Apple growing has also a long history in Germany. Apple seeds, circa 2000 years old, were found after archaeological works around ancient stilt villages near Lake Constance (Anon., 1970).

As in Britain, the Romans were first to introduce the apple orchard to Germany. Moreover, they brought new apple varieties and improved cultivation techniques to the Gaelic (French) and German provinces. The Roman writer Plinius was amongst the first to describe apple cultivation in Germany (Anon., 1970). About 800 years later, under Karol the Great, details of the main fruit tree varieties available were collected and described leading to the first varietal reference book ever to be written in Germany (Friedrich, 1977).

In the Middle Ages (500 - 1453 AD.) orchards were mainly the preoccupation of monastic villages. In their pilgrimages, monks and priests brought new varieties back to Germany and propagated them. During the Late Middle Ages (1100 - 1453 AD.) there was a decline in orchards. Even more drastic reductions in German orchards occurred at the time between the 30 Years War and the French Revolution (1618 - 1789 AD) (Anon., 1970).

Inspired by the French, who had at the time the most famous orchards in Europe, German gardeners introduced the first pruning systems (espalier, fan) and artistic shapes (such as the chandelier) to orchards. Encouraged by the results, Father Sickler from Thuringen founded the first horticultural journal, "Der Teusche Obstgartner" (1794 - 1804) and many of the results of his research are still applied today in Germany (Anon., 1970; Friedrich, 1977).

The interest in fruit tree growing increased enormously and the basis of the German varietal range was established. In 1820 Matthias Schroder established near Hamburg one of the oldest nurseries in Germany, offering amongst other species, 463 apple varieties. Later, the introduction of the Railways in 1883 played a crucial role in the



further extension of nurseries increasing their total area to 750 hectares in 1913 (Franz, 1984).

Many scientists became involved in fruit tree growing, such as Johann Meier (1737 - 1804), H.H. Ludwig Manger (1728 - 1790), A.F. Adrian Diel (1756 - 1839). Their works “*Pomona Franconia*”, “*Systematischen Pomologie*”, “*Sistematisch geordneten Handbuch*” are amongst the first modern horticultural German books written in the so called “systematic period” (Franz, 1984). Diel was also the first to classify apples according to their appearance, size, colour and taste. Research became soon extensive in the field of apple growing. One of the most “productive” researchers was Friedrich Jakob Dochnahl (1820 - 1904) who describes in his book “*Fuhrer in der Obstkunde*” no less than 1,263 apple varieties. The increasing interest in fruits led to the first fruit exhibitions in Germany, such as the one in 1853 in the city of Naumburg - Saale. (Franz, 1984). The first meeting of German pomologists in Naumburg, 1853, established the basis of the 10 most recommended apple varieties for Germany; amongst them “Gravensteiner”, “Borsdorfer”, “Luiken”, “Kanada Renette” and “Karmeliter Renette”. But, by the middle of the so called “systematic period”, the recommended variety selection increased to 49 apple and pear varieties following the second and third meetings in 1857 and 1874 (Franz, 1984). However, the most eminent figure in early German pomology remains Karl Friedrich Eduard Lucas (1816 - 1882). Besides writing numerous books and articles, in 1860 Lucas was also the founder of the first Pomology Institute in Reutlingen (Franz, 1984; Anon., 1970).

The First and Second World Wars, as well as the separation of Germany into East and West had dramatic results for the apple industry. Nevertheless, works such as Loewel’s and Labus’s “*Deutsche Apfel, die Handelssorten*” were written during war time (Franz, 1984). Lately, totally recovered, the German apple industry is working with the most modern technologies, being one of the most advanced in Europe (Franz, 1984).

### 3.3.2 The German fresh apple industry

In 1991 the re-unification of Germany brought transformations to the entire apple industry. Adapting quickly to the dictates of the European apple market, the German apple industry transformed itself from being mainly “domestic oriented” to being “export oriented” and reflecting present European preferences rather than domestic ones (Seaton, 1996).

**Table 3.16: Fresh apple imports to Germany by country, 1992-1996 (tones)**

(source: ZMP Bilanz, 1998)

	1992	1993	1994	1995	1996
France	99,118	71,385	80,042	107,062	101,680
Holland	79,554	102,196	102,833	136,029	121,997
Italy	227,305	250,493	240,772	256,262	250,925
United Kingdom	5,320	1,108	1,102	5,042	1,790
Other EU	15,470	71,385	43,776	56,498	58,030
Total EU	426,767	459,702	468,515	560,893	534,422
South Africa	44,509	39,018	42,916	36,242	37,593
Brazil	13,987	8,223	7,914	3,473	1,229
Chile	56,129	24,072	20,684	27,712	26,967
Argentina	32,327	21,228	18,573	25,967	24,662
New Zealand	58,955	40,676	44,308	77,793	91,411
Other	42,634	14,175	22,148	6,808	6,344
Total non-EU countries	248,581	147,392	156,544	177,995	188,206
Overall total	675,348	607,094	625,059	738,888	722,628

As the largest importer of apples in Europe, Germany resorts to many additional sources to satisfy its demand (Seaton, 1996; ZMP Bilanz, 1998). Apple imports arrive into Germany mainly from the EU; the most important partners are Italy, France and The Netherlands. The main non EU apple exporters to Germany are South Africa, Brazil, Chile, Argentina and New Zealand. However, imports from outside the EU have generally constantly decreased, with the exception of New Zealand, while imports from inside the EU continue to increase (except 1996) (Table 3.16), mainly due to increased availability and lower prices of European apples.

Adopting continuous changes in its varietal range, Germany is presently also exporting considerable amounts of fresh apples (Table 3.17). Despite the problems faced, Germany exports apples of the varieties requested internationally, in its attempt to



adapt to consumer change. The main export countries in the EU are Denmark and Finland, while the main non-EU export country is, more recently, Russia.

***Table 3.17: Fresh apple exports from Germany, 1990 - 1996 (tones)***

(source: ZMP Bilanz, 1998)

	1990	1991	1992	1993	1994	1995	1996
France	5,861	3,094	2,908	3,776	3,606	2,102	2,321
Belgium	5,301	12,559	2,924	1,403	2,728	5,627	4,084
UK	2,046	2,424	2,103	2,591	1,340	939	2,271
Denmark	12,326	8,228	7,457	7,181	6,453	8,919	8,283
Finland	5,151	2,022	3,081	8,103	13,899	5,641	2,748
Switzerland	139	285	1,912	42	967	567	1,472
Russia	-	11,063	63	288	2,805	17,747	8,613
Other	28,833	32,232	17,938	14,022	14,673	17,583	14,833
Total exports	59,657	71,907	38,386	37,406	46,561	59,125	44,625

In the past, the main trade of apples was conducted within the EU. However, Germany also exports presently a series of varieties to Eastern European states (especially Russia, Poland and the Czech Republic). Such non-EU exports started as early as 1993. In a Europe characterised by apple surplus production which always exceeds demand, finding new non-EU outlets seems to be amongst the appropriate strategies for Germany. As some states have almost doubled their apple production during the late 1990's (e.g. Austria has increased production by 86%), the future of the European apple industry looks very competitive and challenging for Germany (Nicetto, 1998).

Germany is also becoming one of the important apple suppliers to Britain, especially after the adoption of Integrated Pest Management (IPM) in 1988. In 1996 around 90% of the marketed German apples were IPM produced (Seaton, 1996).

The total apple harvested area has decreased in Germany from almost 80 thousand hectares in 1991 to 63 thousand hectares in 1998. Nevertheless, applying modern technology, Germany has managed to increase yields and, hence, keep up high production. Even if the area cultivated with apples has declined during the last 40 years around 40% (an average of 1% per year), production has increased during the same time by three times (Weis, 1997).

**Table 3.18: Apple harvested area, yields and production in Germany, 1991-1998**

(Source: FAO database)

Year	Area harvested (ha)	Yield (Hg/ha*)	Production (Tonnes)
1991	79,900	145,782	1,164,800
1992	76,800	420,182	3,227,000
1993	74,500	235,302	1,753,000
1994	72,500	289,241	2,097,000
1995	69,900	208,741	1,459,100
1996	66,500	325,068	2,161,700
1997	65,200	245,721	1,602,100
1998	63,500	339,241	2,154,180

\*hectograms/ha

The main apple growing area is located in Baden-Wurttemberg. Including the northern shores of Lake Constance (Bodensee) this region in 1996 accounted for 5% of the total apple production in Europe (Seaton, 1996). With a total cultivated area of 11,521 hectares in 1997, the region of Baden-Wurttemberg is establishing itself as the leader in German apple production. Other important regions in 1997 were Niedersachsen (7,851 ha), Sachsen (2,551 ha), Nordrhein-Westfalen (2,393 ha) and Rheinland-Pfalz (2,018 ha) (ZMP Bilanz, 1998).

Amongst the main problems in German apple growing are its extensive fragmentation and strong competition, especially from growers inside the EU. Most horticultural farms have under 3 hectares, out of which the majority have between 0.15-0.5 hectares. In 1997 for example, out of a total of 21,611 horticultural farms, 18,060 were under 3 hectares (8,606 of these 18,060 being under 0.5 hectares). Much of the produce obtained in the bulk of small holdings can not compete internationally and is mainly sold locally, for fresh consumption or processing (Seaton, 1996).

However, “conventional” production is becoming increasingly focused on exports, supported by a European-oriented varietal range. The varietal range has undergone tremendous changes during the last years. As shown in Table 3.19, the 1958 available apple range has only remote commonalties with the 1997 range (Weis, 1997). Most of the present grown varieties are adapted to the taste of the European apple consumer.



**Table 3.19: The apple varietal range in Germany: 1958-1997 comparison**

(Source: Anon., Obstbau Weinbau, 1998)

Variety	1958 (%)	Variety	1997 (%)
Bohmer Kalterer	30.8	Golden Delicious	48.9
Morgenduft	14.2	Red Delicious	11.0
Champagner Renette	17.5	Morgenduft	9.8
Gravenstein	14.3	Granny Smith	7.4
Goldparmane	5.3	Jonagold	5.7
Jonathan	4.2	Gala	5.4
Kanada Renette	3.9	Braeburn	1.2
Other	9.8	Other	10.6

During the 60's the old varieties Kalterer, Champagner and Gravensteiner were replaced by Golden Delicious, Jonathan and Red Delicious. Variety Jonathan was also replaced by the end of the 80's, after reaching its peak production during the 70's. Some newer varieties, such as Granny Smith, were introduced by early 70's mainly in South Tyroll. The second replacement wave took place during late 70's with the inclusion of Gloster, Idared and Jonagold. Elstar and Summerred followed in 1983, Ozark Gold in 1987, Gala in 1988 and Braeburn in 1991. After unrewarding results, Ozark and Summerred were soon excluded. Today the varietal range is still dominated by Golden Delicious, Red Delicious and Morgenduft (Weis, 1997).

However, the varietal range is still subject to further changes and evolution. Even if various authors (such as Ebner and Tappeiner, 1997; Christoph and Rass or Bradlwarter, 1997) quote different degrees of change, the future transformations are clearly visible. Varieties such as Morgenduft, Idared, Granny Smith are to be further reduced, while other varieties, like Gala, Braeburn, Fuji will increase in percentage; Gala is even expected to more than double its percentage by 2000 (Cristoph and Rass, 1997). According to Ebner and Tappeiner (1997), the varietal range by the year 2000 will be: Golden 40%, Red Delicious 12%, Granny Smith 8%, Gala 15%, Morgenduft 8%, Braeburn 5%, Fuji 5%, other 7%. Even if varieties like Golden Delicious and Jonagold will be maintained, they will be replaced with various clones, superior in quality. According to H. Jakob, head of the fruit tree department of the Forschungsanstalt Geisenheim, the German apple industry is also increasingly testing new varieties such as Topaz, and also new clones, trying to predict future changes in consumers' taste (personal communication, October 27, 1999). In the continuously

increasing competitive European apple market, the future of Germany is not so bright as it may seem. Apple prices often decrease drastically from one year to another (Anon., 1998, a), and similarly to the UK, there is no motivation for the growers. In their attempts to keep prices down, many growers resort to cheap labour (mainly from Poland), especially during the harvesting time (H. Jakob, personal communication, October 27, 1999).

**Table 3.20: Sales of apples by outlet in Germany (in % of total amount sold)**

(source: ZMB Bilanz, 1998)

Outlet	1992	1993	1994	1995	1996	1997
Hypermarkets	24.8	27.1	27.1	27.0	28.8	30.8
Discount stores	19.5	22.6	24.6	26.0	28.8	29.1
Supermarkets	19.3	18.8	16.0	15.0	14.6	15.2
Department stores	1.0	0.8	0.6	1.0	0.0	0.0
Specialist shops	0.5	0.4	0.6	1.0	0.0	0.0
Fruit stands	5.9	5.0	4.7	*	4.9	3.7
Weekend markets	9.8	8.7	9.5	10.0	9.8	8.1
Growers	10.5	9.7	10.5	9.0	6.8	7.1
Other outlets	8.7	6.9	6.7	11.0	5.9	5.6

\* unknown

In terms of sales the main outlets for apples in Germany are the hypermarkets, followed by discount stores (such as Aldi) and supermarkets. Significant amounts of apples are also purchased from weekend markets and direct from the growers (Table 3.20). The diversity of outlets is an impediment in standardisation and strict quality control of apples. In terms of numbers, the most numerous outlets are the discount stores (12,815 outlets), followed by hypermarkets (6,112 outlets) (ZMP Bilanz, 1998).

### 3.3.3 Apple consumption in Germany

Fresh fruit consumption in Germany is amongst the highest in Europe, and can be challenged only by states like Greece and Spain. Its average fruit consumption of 125.9 kilograms per capita per year between 1992-1998 is much above the EU average of 91 kilograms (Carter and Shaw, 1993; ZMP Bilanz, 1998). The average fresh apple consumption was in the region of 31.4 kilograms per capita between the same years



(Table 3.21), three times higher than the average consumption in the UK. However, a general decrease in apple consumption and fruit consumption generally can be noticed.

**Table 3.21: Yearly consumption of selected fruits in Germany (Kg/capita/year)**

(Source: ZMP Bilanz, 1998)

	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98
Apples	45.3	28.3	31.4	26.4	30.5	26.8
Pears	9.5	6.7	6.9	6.8	6.3	4.8
Cherries	4.6	4.2	3.5	3.3	3.4	1.8
Plums	8.1	4.7	5.0	4.2	4.9	4.7
Grapes	4.3	3.6	4.2	3.6	4.2	3.7
Bananas	15.0	12.6	13.7	14.7	13.5	11.3
Oranges	6.1	5.5	6.1	6.7	5.9	5.9

### 3.3.4 The apple juice industry in Germany

Within the entire German fruit processing industry, the apple processing sector plays a special role. Besides processing apples into juice, the industry also produces a series of other processed apple products, such as canned apples and apple purees. Apart from exporting various other fruit purees, Germany exports significant amounts of apple purees - from 11,409 tonnes in 1990 to 4,866 tonnes in 1996 (ZMP Bilanz, 1998). Internally, the consumption of canned apples has also increased over the last years (Table 3.22). Unable to satisfy its internal demand for fruit juices, Germany is constantly resorting to imports. The total imported amounts vary between over 3 million litres up to over 4 million litres in 1997. The import of apple juice comes second in quantity only after orange juice (Table 3.23).

**Table 3.22: Supply and consumption of canned apples in Germany, 1991-1996 (tonnes)**

(Source: ZMP Bilanz, 1998)

	1991	1992	1993	1994	1995	1996
Production	46,358	57,900	54,400	55,700	59,300	58,600
Imports	17,535	16,365	-*	9,424	15,438	25,625
Exports	11,409	6,037	-*	2,709	4,380	4,886
Consumption	52,484	68,228	-*	62,415	70,358	78,891

\*not known for 1993

**Table 3.23: Imports of main fruit juices to Germany, 1992-1997 (1,000 l)**

(source: ZMP Bilanz, 1998)

	1992	1993	1994	1995	1996	1997
Orange	1,515,530	1,532,907	1,579,201	1,613,372	1,721,430	1,759,967
Apple	1,139,760	1,279,692	1,425,433	1,400,584	1,600,770	1,662,686
Grape	131,424	121,420	128,659	132,550	126,039	125,135
Grapefruit	57,477	55,455	62,426	55,661	54,767	64,238
Pineapple	37,175	42,014	60,712	55,933	56,761	59,571
Mixed fruit	24,966	30,751	41,491	46,966	40,541	48,804

The main fruit juice importers to Germany are France, Italy and Spain in the EU and Turkey and the New Independent States (NIS) outside the EU. Important apple concentrate amounts are also imported from CEE states, such as Poland and Hungary (Ellinger, 1997).

**Table 3.24: Apple juice production in Germany, 1990-1995 (million litres)**

(Source: Anon., Flussiges Obst, 1998)

	1990	1991	1992	1993	1994	1995
NGL*	271.4	54.0	74.3	49.5	60.7	59.4
OGI**	305.0	180.0	494.2	333.0	408.7	380.6
Total Germany	522.4	234.0	568.5	382.6	469.4	440.0

\*new German "lander" (former DDR)    \*\*old German "lander" (Bundesrepublik Deutschland)

In terms of regions, the decreasing production of apple juice in the former DDR and increasing production in the former Bundesrepublik compared to 1990 is visible (Table 3.24). We can also observe a decline in apple juice production over the years, mainly due to an increasing market orientation towards other fruit drinks and the so-called "multivitamin juices" which increased in sales by 12% alone in 1997 (Birnbaum, 1997). A whole series of new innovative fruit drinks is also on the way (Bollinger, 1996; Weber, 1997; Steiner, 1997). Generally, the total fruit juice and nectar consumption in Germany has risen from 37.4 litre per capita in 1991, to over 40 litres in 1997 (Anon., 1998, b). As a percentage of the total fruit juice consumption, the consumption of apple juice in Germany remains high, challenged only by orange juice. Apple juice remains number one in consumer preferences, with a consumption of 11.8 litres per capita in 1997 followed by orange juice with 9.8 litres pro capita (Weber, 1997).



Under the motto “consume, but consume healthy” (Weber, 1997) it is clear that fruit juices consumption will continue to increase in Germany over the next years. Many consumer studies are carried out into consumer preferences, trends in taste, and acknowledge the role of the consumer in detecting and depicting complex quality differences (Huhn, 1998). Like the apple industry, the future of the German apple juice industry lies in detecting further trends in consumer preferences and increasing its market share. Within a Europe increasingly aware of “healthy consumption”, some other countries have also augmented their per capita fruit juice consumption levels; Poland from 1.3 litres in 1990 to 10.3 litres in 1997, Russia from 0.3 litres in 1990 to 2.1 litres in 1997, Slovenia from 15.7 in 1994 to 19.5 in 1997 (Anon., 1998, c). With good potential and increasing opportunities for export, the future of the German apple juice industry looks promising within the European context as an aggregate.

### **3.4 BENEFITS OF INCREASING APPLE CONSUMPTION**

“An apple a day keeps the doctor away” says a well-known adage in many countries, including those encompassed in the present study. But is one apple a day enough, one may ask? Presently there is a large amount of published literature, which acclaims the consumption of fruits and vegetables in general, and apple consumption in particular. Why should consumers increase the amounts of fruit consumed and why is it a national issue in the three studied countries and not only, becoming now a global issue? The most important benefits of a high fruit consumption are briefly reviewed below.

Fruit and vegetable consumption is a good predictor of a nations’ health status (Leather, 1995). It is generally accepted that fruit and vegetables are an important part of a healthy diet. It is also proven that they have an important role in the prevention of cancers and coronary heart diseases (CHD), being a rich source of antioxidant vitamins (Anderson *et al.*, 1994; Clarke and Moran, 1995; Leather, 1995; Poole and Baron, 1996). With the percentage of premature deaths rising, the role of fruit and vegetables can no longer be ignored, and increasing levels of consumption should become a national and international issue.

The World Health Organization (WHO) recommends a daily intake of fruits and vegetables of minimum 400 grams (excluding potatoes), that can be translated into approximately five portions a day (Cox *et al.*, 1996; Clarke and Moran, 1995). Taking the UK as an example, which has an average daily consumption of only 200 grams, the consequences are clear: CHD accounts for 26% of deaths, followed by cancer and strokes which account for 25% and respectively 12% of deaths (Richardson, 1995; Cox *et al.*, 1996; Richardson and Brady, 1997). CHD also accounts for £1.4 billion of National Health Service (NHS) expenditure and results in more than 60 million lost working days per year (Richardson and Brady, 1997). Within the UK, in Scotland the is documented to be even lower than 200 grams per day (Anderson *et al.*, 1994; Poole and Baron, 1996). In an attempt to increase consumption, comprehensive strategies to promote fruit and vegetable consumption were developed. As such, the “Health of the Nation White Paper” which emerged 1992 is one of the major achievements in this direction, underlining the government involvement and its proposals for a healthier nation. Amongst its key targets the reduction of CHD and stroke by 40 per cent by the year 2000 was one of the most important (Anderson *et al.*, 1994; Anderson and Cox, 2000).

Public research spending is currently focusing mainly on the role of the antioxidants. Taking the UK again as an example, the Ministry of Agriculture, Fisheries and Food (MAFF) and many private companies have supported recent research on the role of antioxidants. Some of the research carried out in the UK has led to the dictum “antioxidants divide”; it was discovered that the low income groups were at much higher risk to develop some diseases only because they could not afford to buy higher amounts of fruits and vegetables (Leather, 1995). Leather (1995) also argues that about 25 per cent of major cancers in Europe could be prevented by dietary change and that “...hundreds of studies in many countries, with a wide variety of types of diet...” show a direct relationship between fruit and vegetable consumption, CHD and cancer.

However, besides antioxidants and amongst many other attributes, fruit is generally very low in fat and calories, appealing to consumers who follow diets. Fruits are also important sources of non-starch polysaccharides and fibre, which help in preventing certain digestion disorders (such as colonic diverticulitis and colonic cancer) and



control cholesterol levels (Clarke and Moran, 1995; Poole and Baron, 1996) being beneficial to the organism's salt balance (important in cases of hypertension). Moreover they provide a wide range of other vitamins, including folic acid (Poole and Baron, 1996) and play a primary role in protection against atherosclerosis (Clarke and Moran, 1995).

Amongst fruits in general, the apple in particular has a balanced composition. Depending on variety, they contain 0.5-40 mg vitamin C (ascorbic acid)/100 grams fresh product, 0.1-0.7 mg vitamin PP (niacine or vitamin B3 - antipellagric vitamin), 0.02-0.09 mg pro-vitamin A (beta-carotene), and important amounts of vitamins B1 (thiamine), B2 (riboflavin), B6 (pyridoxine) and pantothenic acid (Popescu *et al.*, 1993). Being one of the main sources of vitamin PP, fruit consumption plays an important role in avoiding a range of dermatitis, amongst which pellagra (mentioned in old times as one of the main diseases affecting long distance sailing crews).

The important amounts of polyphenoles (flavonoids) (Table 2.25) could play an essential role in the prevention of cancer, being amongst the main antioxidants found in fruit (Anon., 1998, c). Recent research conducted in Finland has revealed that flavonoids from apples, amongst those whose diets contained high apple intake, had a critical role in decreasing the risk of lung cancer by 46 percent (Processed Apples Institute, 1997). Some other researchers have also acknowledged the role of flavonides in apples, especially the one played by quercitin (Rominger *et al.*, 1999). Talking about the protective effects of fruits in the diet, Williamson (1996) mentions an average amount of flavonoids of 0.04g/kg fresh apples. Amongst many others, Williamsom (1996) also debates around the effect of processing upon the potential benefits of fruits; it was observed that the higher the levels of processing, the lower the contents in beneficial compounds.

A single apple ensures an average intake of 170mg Potassium, representing 5% of the daily recommended intake, 8% of the vitamin C daily recommended intake and 20% of the fibre recommended daily intake. Compared to other fruits, apples also have a very high pectin content (78 grams per 100 grams fruit) (Rominger *et al.*, 1999), higher than

other fruits. However, most of the beneficial compounds are located in the peels of fresh apples.

**Table 3.25: Average content in main polyphenoles for mature Golden Delicious, Gloster, Jonagold, Elstar, Boskoop, Cox, Gala, and Idared apples**

(source: Anon., Obstbau, 1998)

	Peel	Pulp	Core	Total
	mg/g dry matter	mg/g dry matter	mg/g dry matter	mg/fresh apple
Dihydrochalcone	1.5-10.3	0.1-0.3	1.1-3.4	0.3-1.2
Flavonole	3.1-20.5	-	-	0.1-0.7
Catechine and Proanthocyanidine	10.6-18.2	1.4-5.8	2.2-4.4	1.8-6.0

The higher amount of antioxidants (polyphenoles) contained in the apple peels compared to the pulp and core is noticeable in Table 3.25. As many other beneficial compounds are concentrated in the peels, apples are recommended not to be peeled prior to consumption (Anon., 1998, c).

With its many beneficial effects, it is clear that apple consumption and fruit consumption generally should be encouraged. There are a multitude of factors influencing the intake of fruits and vegetables, amongst the most important being cultural habits, traditions, food preferences, beliefs and attitudes and not the least, price (Leather, 1995; Anderson *et al.*, 1994). According to Poole and Baron (1996) one of the challenges to policy makers, health educators and the industry is to "...convert consumer attitudes towards healthy eating into appropriate consumer behaviour".

A wide range of methods can be used in achieving the goal of increasing consumption: promotion, quality schemes and branding (Clarke and Moran, 1995), advertising and retailing (Leather, 1995), information, labelling, education, product development, dietary advice (Richardson and Brady, 1997). It is part of EU policy to increase apple consumption; per annum a discretionary fund up to 18 million Euros' is being allocated for apple promotion throughout the Union (Starkey and Carrbery-Long, 1995).



Public health campaigns have been initially launched in a number of countries (firstly in the USA) for the “five-a-day” fruit and vegetable consumption plan (Richardson and Brady, 1995; Cox *et al.*, 1997); the idea was also undertaken by Finland and Sweden (Clarke and Moran, 1995). Supermarkets in the UK, which account for a 60% share in fresh produce sales, have also embraced the “five a day” plan, developing their own promotional literature (Poole and Baron, 1996; Leather, 1995). The first major campaigns in the UK were undertaken in 1944 by the Fresh Fruit and Vegetable Information Bureau and the Health Education Authority (HEA). The campaigns were aimed to increase both fruit and vegetable consumption and were part of the HEA “Look after your heart” programme (Clarke and Moran, 1995). Other initiatives were part of the WHO “Europe against cancer” campaign.

However, in the UK it is argued that not enough is done to promote fruits and vegetables compared to other commodities (Leather, 1995; Clarke and Moran, 1995). Despite the undertaken initiatives and campaigns, fruit consumption has failed to raise significantly. Amongst the main barriers can be enumerated culture, costs, lack of willpower and family influences (Cox *et al.*, 1996). Some authors went even further and argued that modern production and storage technologies have altered the composition of fruits and vegetables, hence in order to intake the same amount of beneficial elements we have to consume even higher amounts of fresh produce.

In aiming for increasing consumption, the entire distribution chain, from growers to retailers should work much more closely together; all the players have their well defined role in further increasing the fruit consumption. Health organisations have to continue or develop new campaigns, growers have to produce at the highest quality standards and work in conjunction with wholesalers and retailers targeting the final goal of providing the consumer with a premium product at affordable prices. While health campaigns may be effective in raising populations’ awareness, low income families will always encounter problems implementing the recommendations. There is also a need for dietary advice compatible with various cultures and income groups, taking into consideration their specific situation and resources. There is a need to ensure that there is more choice at the bottom of the market and possibly encourage alternative retailing, such as the street and farmers’ markets (Leather, 1995). Other

potentially important areas for encouraging fruit consumption could also be the broadening of the product range, the establishing of premium brands, a more exact quantification of key consumer purchasing criteria and a fragmentation in the market for commodity fruit (Hughes, 1996). Nevertheless, besides being a source of one nations' health, fresh produce sales is also driven by powerful economic incentives, operating good profits for one countries' entire industry.



## **4.0 METHODOLOGY**

The present chapter analyses the challenges presented by this research and justifies the research design adopted together with the range of methods of data collection and analysis employed. Both secondary and primary (qualitative and quantitative) data were required in order attempt to answer the research question as to whether consumer research can be a potential factor in the re-vitalisation of the Romanian apple industry.

The chapter consists of thirteen sections and is structured as presented below:

- the first section will present a range of issues arising from the literature review;
- the second section focuses on the description of the research and the main methodological steps taken;
- the third section will explain the research design and the stages followed;
- the fourth section presents the range of products tested, including apple varieties and apple juices. A brief insight into the process of obtaining the apple juices is also given;
- the fifth section will explain the quantitative data collection methods employed, with the presentation of the questionnaire design;
- section six explains the pilot study;
- section seven is concerned with the running of the main surveys including locations and number of questionnaires;
- the eight section presents the sampling procedure employed;
- section nine presents the analysis methods adopted on the quantitative data;
- section ten explains the desirability for further qualitative data;
- sections eleven and twelve introduce the qualitative research methods adopted, namely focus groups and in-depth interviews;
- finally, section thirteen explains the method of analysis adopted for both focus groups and in-depth interviews.

#### ***4.1 RESEARCH CHALLENGES EMERGING FROM THE SECONDARY DATA REVIEW***

Chapters 2 and 3 presented a review of the relevant literature and some of the challenges emerging from these chapters are now highlighted. The literature review dealt mainly with two areas: the role of the consumer in Eastern and Western countries and the state of the apple industries in the selected countries.

Chapter 2 emphasised the role of the consumer in a market economy. In Romania, after the communist period when the consumer had practically no importance, things changed rapidly. The 1989 Revolution ended with the collapse of the communist era and set the country onto a new course towards a market economy. After a short period of confusion, and faced with the difficulties of the transition, Romania is presently well under way to achieve such goal. As a result, the role of the consumer has also considerably increased compared to the previous period. New private enterprises which emerged soon after the 1989 revolution, together with new joint ventures and foreign companies, have considerably raised the product quality standards in accordance to consumer demand for quality. The range of available products has also increased immensely. New consumer legislation was also enabled, culminating with the founding of The Association for Consumer Protection.

The developments mentioned above are equally applicable to the food industry. However, while foreign food companies are increasingly aware of the importance that consumers have for their businesses, the same claim cannot be made with respect to most Romanian food companies. Most consumer surveys, as well as advertising are made by foreign companies or new joint ventures for their products. A significant part of the Romanian food industry is unfortunately still faced with “old mentality” management, which is often reluctant to change and to admit that the consumer actually represents the backbone of a healthy market economy. Nonetheless, while some food products have benefited by consumer research the fresh fruit sector has been completely omitted (the literature review has revealed no such research in the fresh fruit sector to date, 2000).



In contrast to the Romanian situation, Western countries which have undergone many years of experience of the market economy see the consumer as having the leading role in the overall economy. Few decisions are taken without considering the consumer and its power, and meeting consumer expectation is always on a successful company's priority list. The fresh fruit sector has also been heavily researched, although to a lesser extent than many other food products.

Chapter 3 focused on the apple industries in the selected countries, highlighting aspects of production, varietal range, markets and consumption. Even though the apple industry in Romania has decreased in importance after 1990 due to the difficulties of transition, land reform, lack of financial inputs, etc., it still plays a key role within the overall horticultural sector and economy. With most of the agricultural land is continuously transferred into private hands, there is a need for the new land owners to develop appropriate managerial skills. As competition in this sector begins to emerge, these new players are systematically learning the demands of a market economy, often through personal experience rather than through other means.

The same observation is also valid for what remains of the State sector from which the majority of the production is still obtained due to better management, research and relatively higher inputs.

However, within the increasingly competitive market, and after having lost the traditional export partners, it is time for the entire Romanian apple sector to start adapting more rapidly to the demands of the market economy, in which the consumer plays a fundamental role. Internal consumer research should be supplemented by international research. As the literature review has shown, many countries in Western Europe are unable to satisfy their internal demands for apple fruits and are ready to embrace foreign imports if they correspond to their consumers' exigencies.

As such, the challenges emerging from the literature review can be summarised as following:

- a need to identify the characteristics of fresh apples and apple juices which have importance in consumer decision processes, hence their expectations in relation to these products;
- the need to communicate these expectations to the Romanian apple industry;
- the need to identify the barriers for the Romanian apple industry to accommodate these expectations;
- the need to identify the future potential of the Romanian apple industry to adapt to these expectations.

The above challenges are actually a re-statement of some of the objectives stated in chapter 1. Some other objectives stated at the beginning of the thesis have already been achieved during the literature review: the various factors that have influenced the Romanian apple industry during communist and post communist period were investigated as well as the apple industries of the selected countries; the role of consumers in Romania and the selected EU countries in influencing the market was also compared.

Other challenges of the actual research process emerged from its international context. The cultural and language barriers had to be considered also in achieving the final aim. Due to the research being conducted in an international environment, sample size and sampling problems have been encountered and will be discussed. The international dimension of the research has also had implications over the questionnaire design and semantic barriers had to be overcome within the course of the research.

## **4.2 DESCRIPTION OF THE RESEARCH**

As stated, the research has made use of both quantitative and qualitative methods. In order to assess the ability of the Romanian apple industry to adapt to the continuous changes in consumer expectations, both domestic and international, information on consumer expectations in relation to apple products was collected. Part of this information was collected by means of group administered questionnaires within the selected locations: Hala Centrala Iasi-Romania, the towns of Geisenheim and



Wiesbaden-Germany and Bournemouth, Wimborne and Ringwood in the UK. Four Romanian apple varieties were chosen as reference products, and the consumer's preferences for these products were recorded. The four apple varieties were subsequently processed into apple juice, products which were utilised once more for recording consumer preferences towards the resulting apple juices. In addition, other aspects relating to fresh apples and apple juice consumption (such as frequency of consumption, preferred packaging, preferred outlets and various attitudes toward the product) were also investigated.

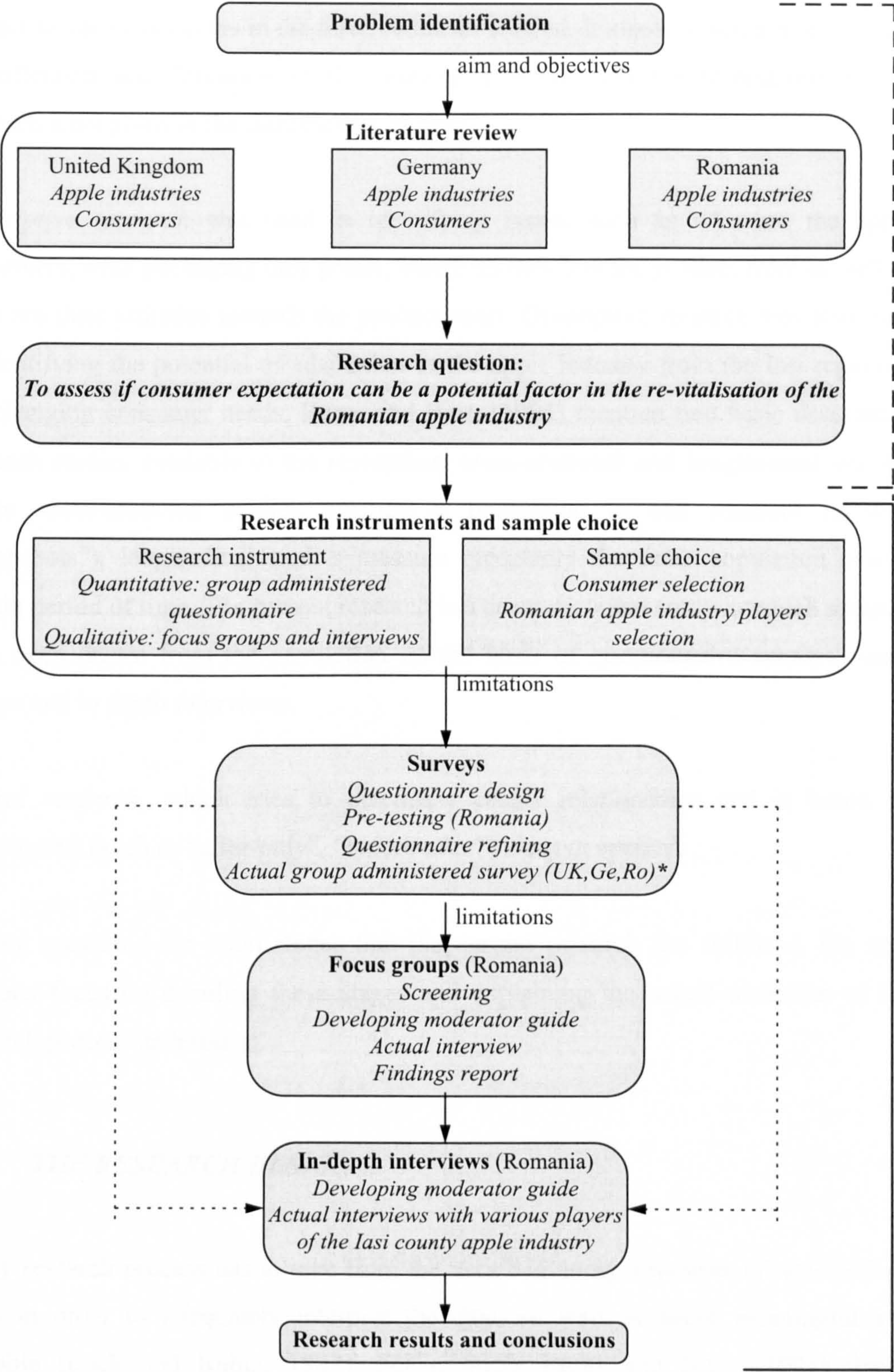
Data from consumers were collated and analysed employing the SPSS (Statistical Package for Social Sciences) package. Additional detailed information was collected by means of focus group discussions. Focus groups were conducted only in Romania due to the importance of these particular consumers and their relevance to the main question of the research. It should be mentioned at this point that more importance was accorded to Romanian consumers since such consumers will actually be the ones to have the main impact upon the Romanian apple industry at an initial stage. The results of the questionnaire analysis and the reports on the focus groups were established as the base for the in-depth interviews with various players (growers, wholesalers and retailers) in the Romanian apple industry. The needs and expectations of the consumers were communicated during the interviews to different levels of the Iasi county apple industry. The results of such interviews, hence the willingness and capacity of the industry to respond to changing consumer needs, were assessed in order to answer the research question. A schematic representation of the research process is shown in Figure 4.1.

Overall the research design can be regarded as a “multiple” one, employing two of the three traditional categories: exploratory, descriptive and causal. As Burns and Bush (1995) state, multiple research designs are often used, since the research process is an “iterative” one. The meaning of “iterative” is that during the process of research one may learn that more additional information is needed, and resort to supplementary and different methods than initially planned.



Figure 4.1: The methodological steps of the research

(Source: author)



\*UK, Ge, Ro = United Kingdom, Germany, Romania

————— descriptive research  
- - - - - exploratory research



*Exploratory research* was undertaken to gain background information about the consumers, the state of the apple industries and the position of these industries with respect to such consumers in the three countries studied. It also allowed a more precise identification and definition of the research problem, and the formulation of the research aims given in the introductory chapter.

*Descriptive research* was used in identifying issues such as who are the apple consumers, what packaging they prefer, where do they buy the product from as well as what are their attitudes towards the product itself. Descriptive research was also used in identifying the potential of adaptation of the apple industry from the Iasi region to the changing consumer needs. Burns and Bush (1995) mention two basic descriptive research studies available to the researcher: cross-sectional and longitudinal studies. While cross-sectional studies measure a population at one moment in time (“snapshots”), longitudinal studies measure repeatedly the same population over a certain period of time. The present research is a cross-sectional study in which samples have been drawn from the population on the basis of questionnaire surveys, focus groups and in depth interviews.

*Causal research*, which tries to determine causal relationships and is based on experiments (such as “after-only”, “before-after”) was not applied.

Having presented the main stages that the current research has followed, the next sections focus on detailing these stages and explaining the actual evolution of the research process undertaken.

### **4.3 THE RESEARCH DESIGN**

Every research process has to take from the very beginning a number of well-defined steps in order to adequately interpret the data, as well as being meaningful and valuable (Luck and Rubin, 1987). For example Burns and Bush (1995) define marketing research as a process of designing, gathering, analysing and reporting on

information which may be used to solve a specific problem. The American Marketing Association also see it as:

*“...the function which links the consumer, customer, and public to the marketer through information - information used to identify and define marketing opportunities and problems; generate, refine, and evaluate marketing actions; monitor marketing performance; and improve understanding of marketing as a process”.*

Luck and Rubin (1987) mentioned a very similar but simpler definition. In their opinion, market research is defined as the systematic gathering, recording, and analysing of data about problems relating to the marketing of goods and services.

All the above definitions refer to market research as being a “process”, a “function”, or a “systematic gathering”, suggesting the existence of various stages of planning and interpreting. Consumer research is similar in its approach to the process of market research. The consumer research process is a complex chain of decisions for the consumer researcher and the literature presents a vast choice of proposals about how such research should be conducted.

Various authors propose different approaches and different numbers of “steps” to be followed for achieving the research goals. A short comparison of some models (Oppenheim, 1997; Burns and Bush, 1995; Luck and Rubin, 1987) is presented in Figure 4.2. Another model, suggesting that the research process is a continuum, a cycle, is given by Frankfort-Nachmias (1996), who also identifies seven main stages (Figure 4.3).

Burns and Bush (1995) also argue that the research process is an iterative one. Depending upon the circumstances and the information collected, the researcher may regularly step forwards and backwards during the research, or even eliminate some steps in accordance with the research undertaken. Kotler (1984) proposes an even simpler approach (Figure 4.4) which was adopted as the basic model for the present research. The five steps that Kotler proposes are further presented as they were applied in this study.



Figure 4.2: Major steps in a research process

(Sources: Oppenheim, 1997; Burns and Bush, 1995; Luck and Rubin, 1987)

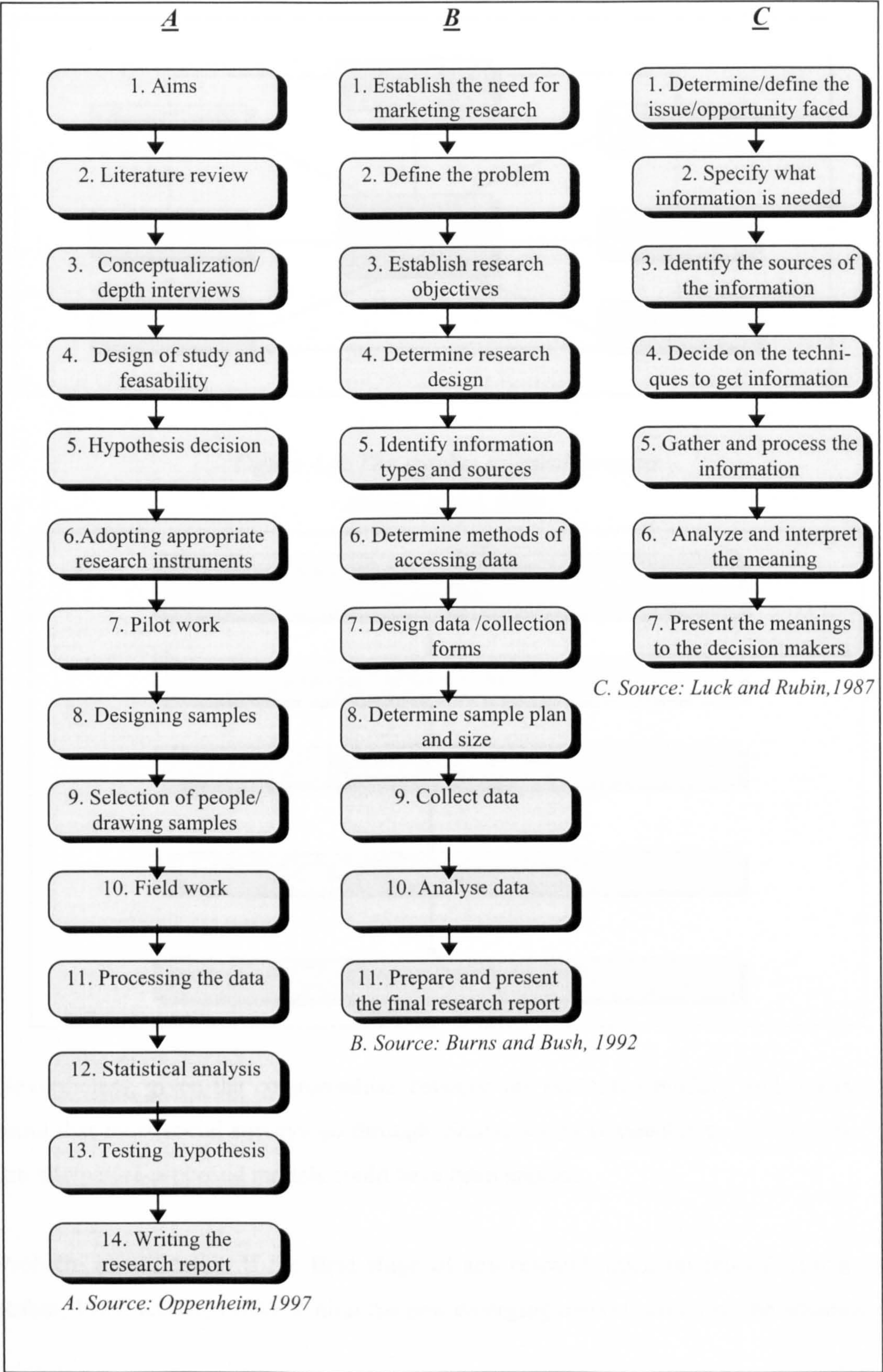




Figure 4.3: General stages of a research process

(Source: Frankfort-Nachmias and Nachmias, 1996)

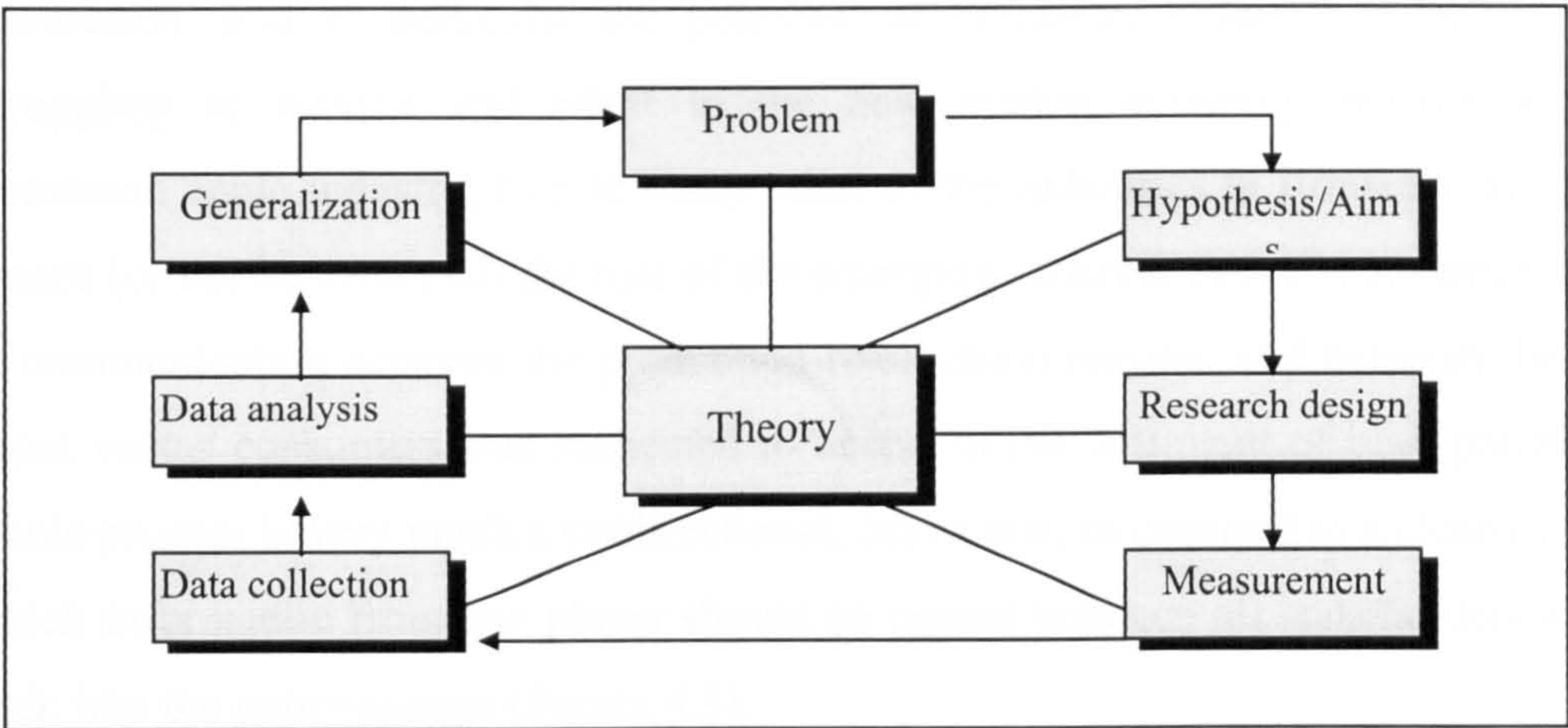
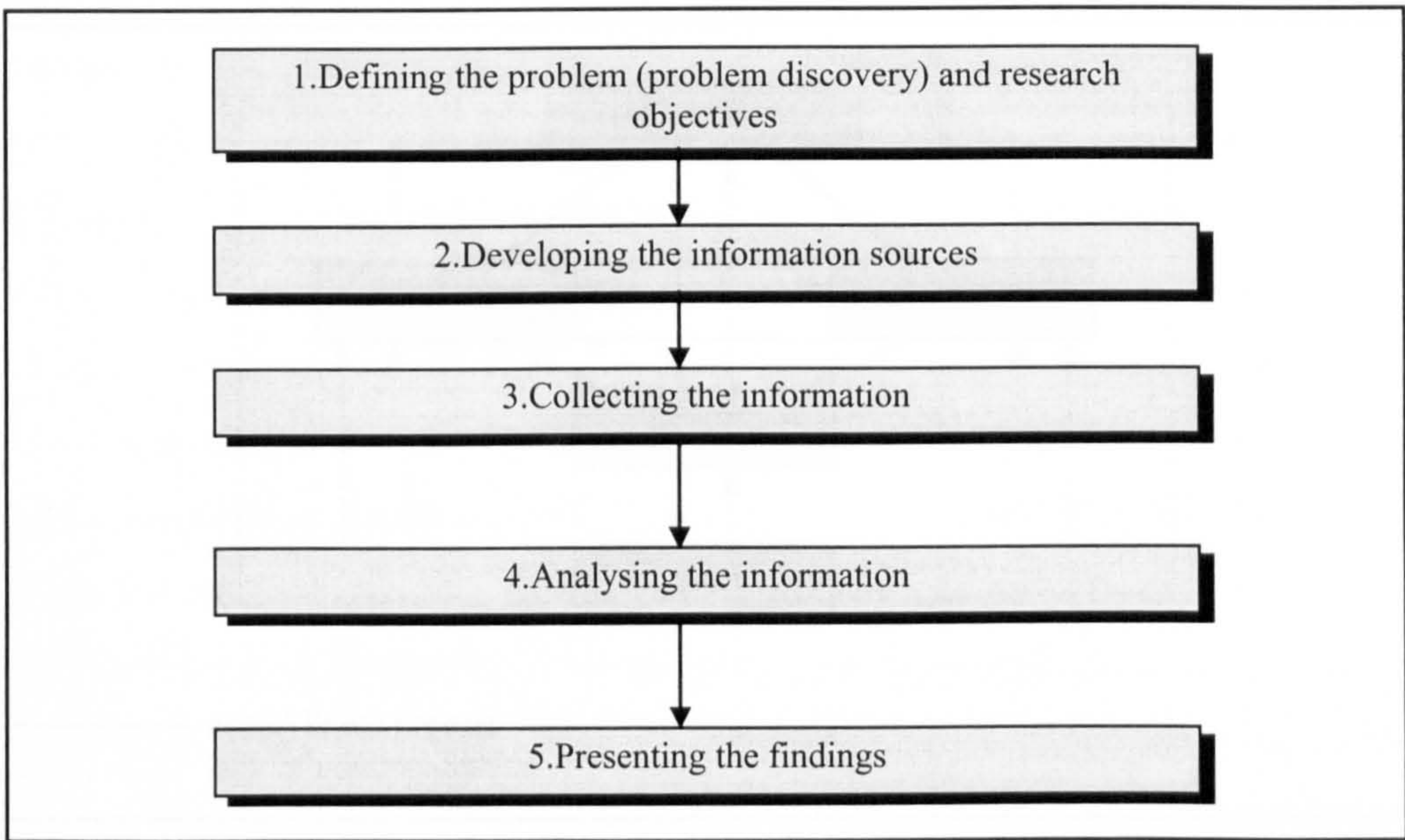


Figure 4.4: The market research process

(Source: Kotler, 1984)



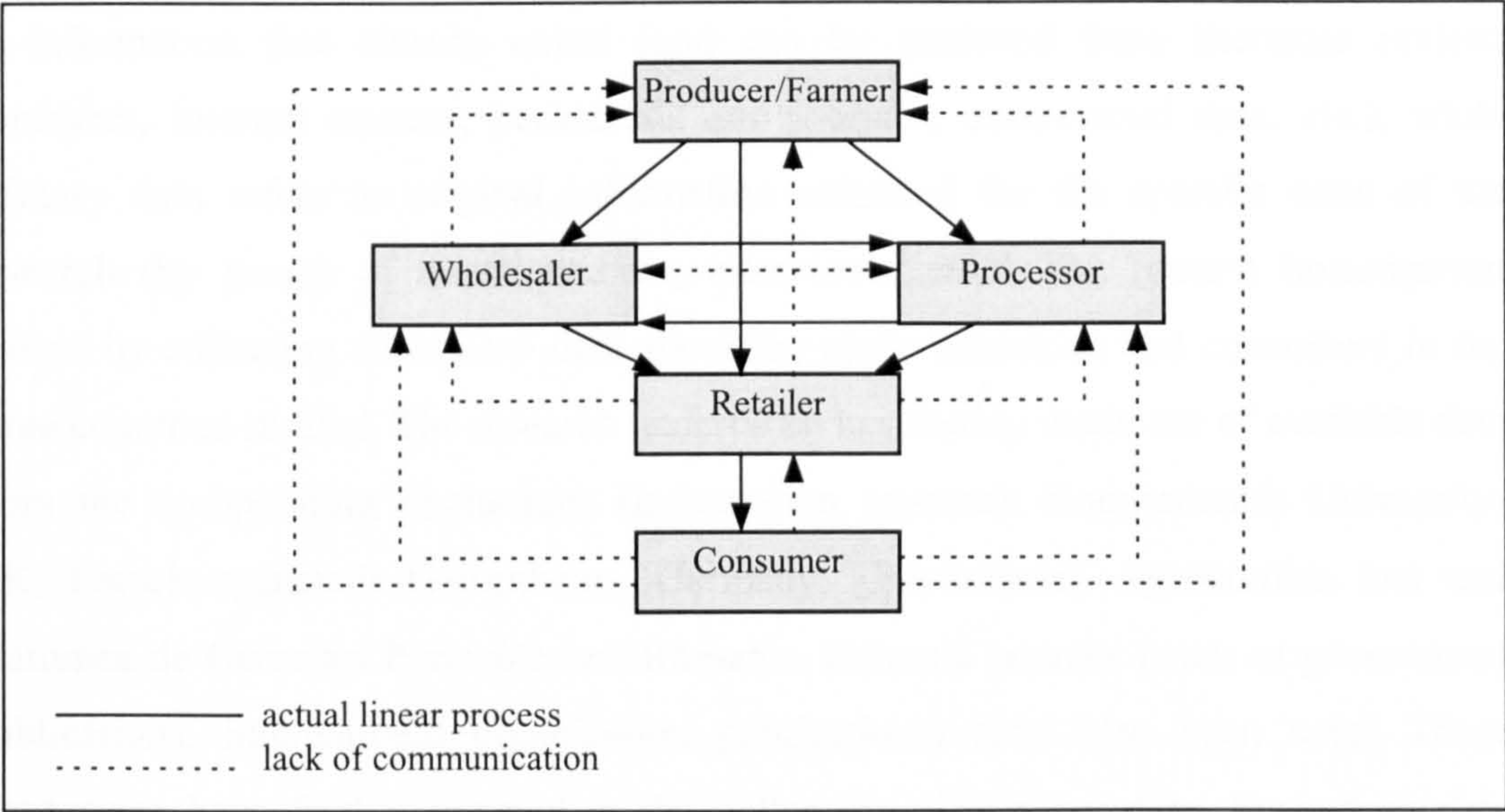
Nevertheless, given the commonalties between the presented models, and bearing in mind that most social surveys go through similar stages (Oppenheim, 1997), either of the alternative proposed models could have been applied.

Problem identification is the **first stage** of any research decision process (Luck and Rubin, 1987; Kotler, 1984). Within the new emerging market economy, the situation of



Romanian agriculture and horticulture, faced with the difficulties of the transition and land restitution, (combined with the horticultural background of the researcher) led to the research focusing upon opportunities for the Romanian apple industry’s re-vitalisation, and in particular the potential of consumer research to achieve this. Struggling to survive and adapt to the new market economy environment, the Romanian apple industry, like so many other of the industries in Romania, appears to ignore (or not be aware of) the role of the emerging “market aware” consumer. A lack of communication between the production-retail chain players, and between the entire chain versus consumers was suspected to occur, to the detriment of both parties. The whole process is very much a unidirectional, linear one, as opposed to a closed cycle in which information from one player should be passed between all stakeholders and fed back into the entire system (Figure 4.5).

**Figure 4.5: A simplified apple marketing chain in Romania**  
(Source: author)



Drawing upon this observation it was decided that the main aim of the study would be to focus on the exploration of consumer research as a potential factor in the re-vitalisation of the Romanian apple industry. This research can be considered as a geographically confined study. Since it is beyond the scope of the research to generalise the results to the entire Romanian apple industry, the study has mainly focused on the county of Iasi and its surroundings in the Romanian province of Moldova.



The study can also be considered a multi-method study. Such studies encourage the use of a variety of research methods (often involving observation, interviewing, etc.) in order to capture the complex reality under study and while they can provide theoretical generalisations (e.g. about processes) they do not usually permit statistical generalisations (Robson, 1997; Denscombe, 1998). For such pieces of research, small numbers of interviews are accepted, with subjects which are investigated in depth (Denscombe, 1998). It is also important to mention at this point that the present research was made possible by the access to, and co-operation from, the people involved in the Iasi county apple industry. Without such co-operation the research would have been much more difficult to approach; this factor was also one of the decisive ones in choosing to focus upon the main aim mentioned above.

The second stage of the research process, according to Kotler (1984), is developing the information sources. In general terms, a researcher can collect two main types of data: secondary data or primary data (or a combination of both). Secondary data refers to information that already exists (and can be retrieved from literature review, databases, internal sources, periodicals and journals, commercial data, etc.), while primary data refers to original information collected for the specific aims of the research (by means of questionnaires, interviews, etc.). The present investigation started by collecting *secondary* data about the apple industries and consumers in the three countries studied. The research undertaken has mainly made use of available data from the co-operating institutions (information sources): Bournemouth University-UK, Forschungsanstalt Geisenheim- Germany, Universitatea Agronomica Iasi and Statiunea de Cercetari Pomicole Iasi-Romania. External sources (such as government publications, international organization publications) have also been used. These institutions have further assisted in the collection of primary data. Secondary data collection was an ongoing process and continued in parallel with the *primary* data collection.

Collecting the data, the third stage, was clearly a vital and critical step. Primary data collection used *questionnaire surveys*, *focus groups* discussions and *in-depth interviews* as main data collection methods. Used synergistically these methods have provided data and insights which are unlikely to have been derived from the adoption



of any of these methods used in isolation. The data collection process is one of the most demanding parts of a research. It inevitably has peaks and troughs, most often related to “time managing”, “project mapping”, “loneliness” and “obsessiveness” of the researcher (Blaxter *et al.*, 1996). Hence developing support networks with all the institutions mentioned from the beginning of the research was also very important.

The **fourth stage** of the research, data analysis, has made use of the Statistical Package for Social Sciences (SPSS) for data interpretation, as well as reporting on the findings of the focus groups and in depth interviews. Commonalties between fresh apples and apple juice consumers from the selected locations were identified by the use of questionnaires. Focus groups have provided further insights into what consumers expect from such products and why, while interviews with various players in the Romanian apple industry tried to clarify if the industry as a whole can adapt to such consumers’ expectations.

The **final stage** of presenting the findings and discussing the observed issues brings together all the results (questionnaires, focus groups, interviews). The cross-cultural aspects implicit in the research have been briefly highlighted too. Besides attempting to answer the research main question, the research also presents some similarities and differences between the apple consumers in the three selected locations and gives a realistic perspective about the main issues faced presently by the Romanian apple industry. Finally an insight on how prepared is the industry to react and adapt to the changing consumer requirements is given, as well as proposing a number of actions for the re-vitalisation of the Romanian apple industry as an entity. However, as quantitative research (questionnaires) was built around a range of products used as reference products, these products are briefly introduced in the next section.

#### **4.4 PRODUCTS TESTED**

The consumer preference and expectations were recorded by means of questionnaires in relation to four Romanian apple varieties and the juices derived from them. These varieties were chosen to be as different as possible in terms of a range of their



characteristics. Three of them are also relatively recent Romanian creations, while one is a popular old Romanian variety. The four varieties studied and their characteristics are further presented, followed by a short section about the subsequent apple juices and the way they were obtained.

#### *4.4.1 Fresh apple varieties*

**Frumos de Voinesti** (Synonyms: Hybrid 53-28-1).

This variety (Plate 4.1) was created at the Voinesti Research Station (hence the name, in English translation “Beauty of Voinesti”) by crossing two well known varieties, Jonathan and Belle de Boskoop.

*Plate 4.1: Variety “Frumos de Voinesti”*



- The tree itself is of medium vigour with a thick globular crown and strong skeleton elements (similar to Jonathan). Its resistance to diseases (especially powdery mildew) is higher than the parental varieties. The actual production starts with the third year after establishing the orchard.

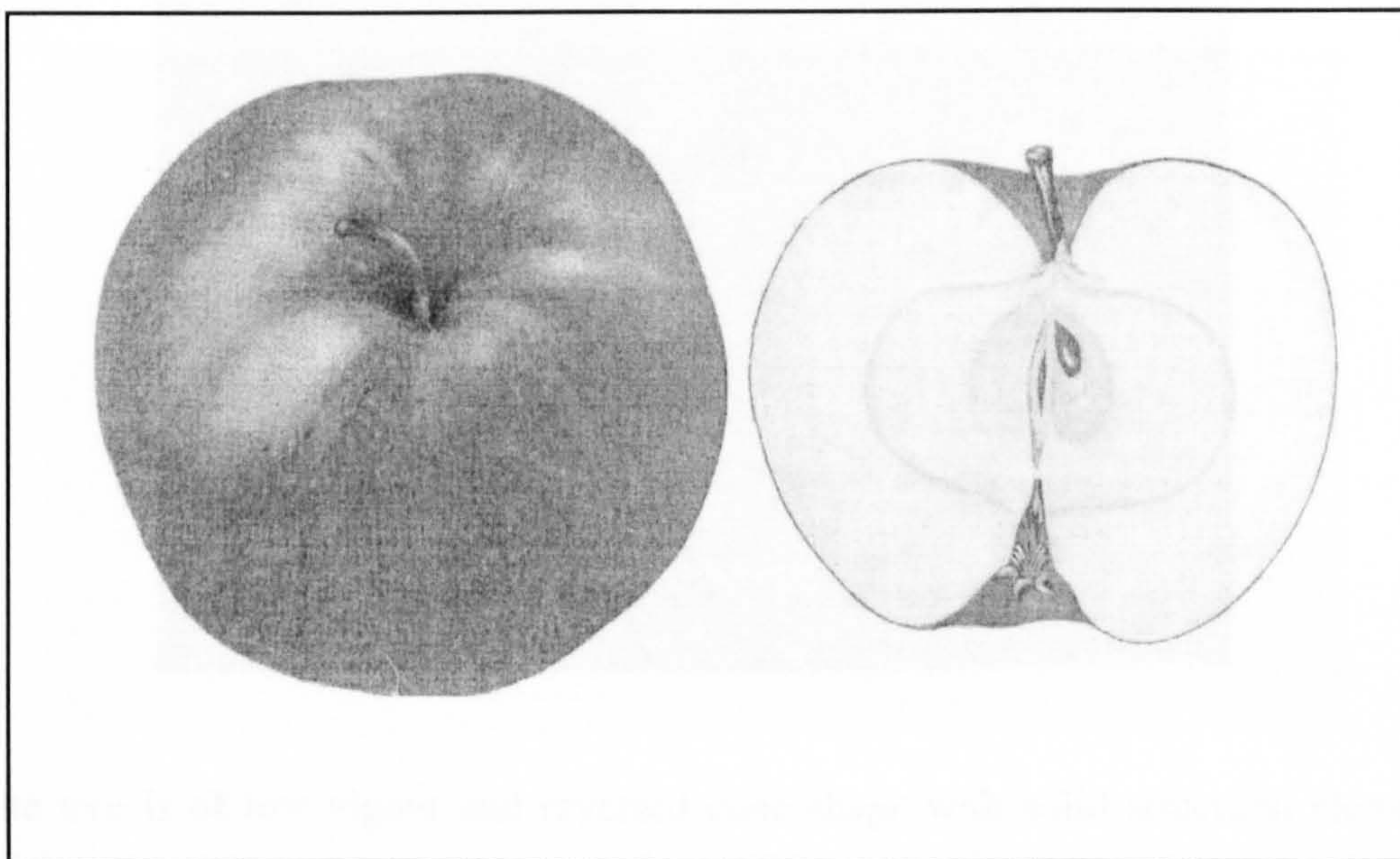


- The fruit is of average size and weight (150-170 grams), slightly compressed spheroid and symmetric. The base colour is yellow over-imposed with bright red, often presenting stripes of different nuances.
- The pulp is white-cream in colour, crispy with a fine texture, succulent, medium sweet with a specific aroma. It contains an average of 9.45% sugar, 3.5-4.5mg% ascorbic acid and 0.21% grams malic acid.
- Under the Romanian climate it matures between October to December, however the maximum qualities are achieved during November. The fruits preserve well under appropriate storage until March-April.

**De Falticeni** (Synonyms: Hybrid 58-25-11).

The variety (Plate 4.2) has been created at the Falticeni Research Station (hence again it has borrowed its name from the place of origin) having as genitors the varieties Jonathan and Wagner.

***Plate 4.2: Variety “De Falticeni”***



- The tree is of low/medium vigour with a spherical crown and predominant short fruiting formations. It starts producing abundantly after 3-4 years after establishing the planting (up to 30 tonnes/hectare) and has a high resistance to diseases and sudden frosts.



- The fruits are medium (130-175 grams) and globular in shape. The base colour is yellow-green, over-imposed with bright red and often rusty stains.
- The pulp is butter-yellow often with thin green streaks, crispy, juicy, acidic and refreshing.
- They mature under Romanian climate conditions between October-December and the fruits store well until next May.

**Generos** (Synonyms: V.48/4; V.72-33-27).

A variety created at the Voinesti Research Station over a number of years of crossing and re-crossing Golden Parmaine, Malus Kaido, Jonathan and Frumos de Voinesti. Its name derives from the actual “generosity” of the variety which produces high and constant yields (Plate 4.3).

*Plate 4.3: Variety “Generos”*



- The tree is of low vigour and reversed cone shape with solid structural elements well garnished with fruiting formations.
- The fruit is above average size (height 6-7 cm; diameter 7-8.5 cm) and weight (160-170 grams), slightly compressed and often asymmetric when sectioned with a smooth naturally waxed skin. The base colour is yellow, with up to 60-70% orange-red where the fruits have been exposed to sun.

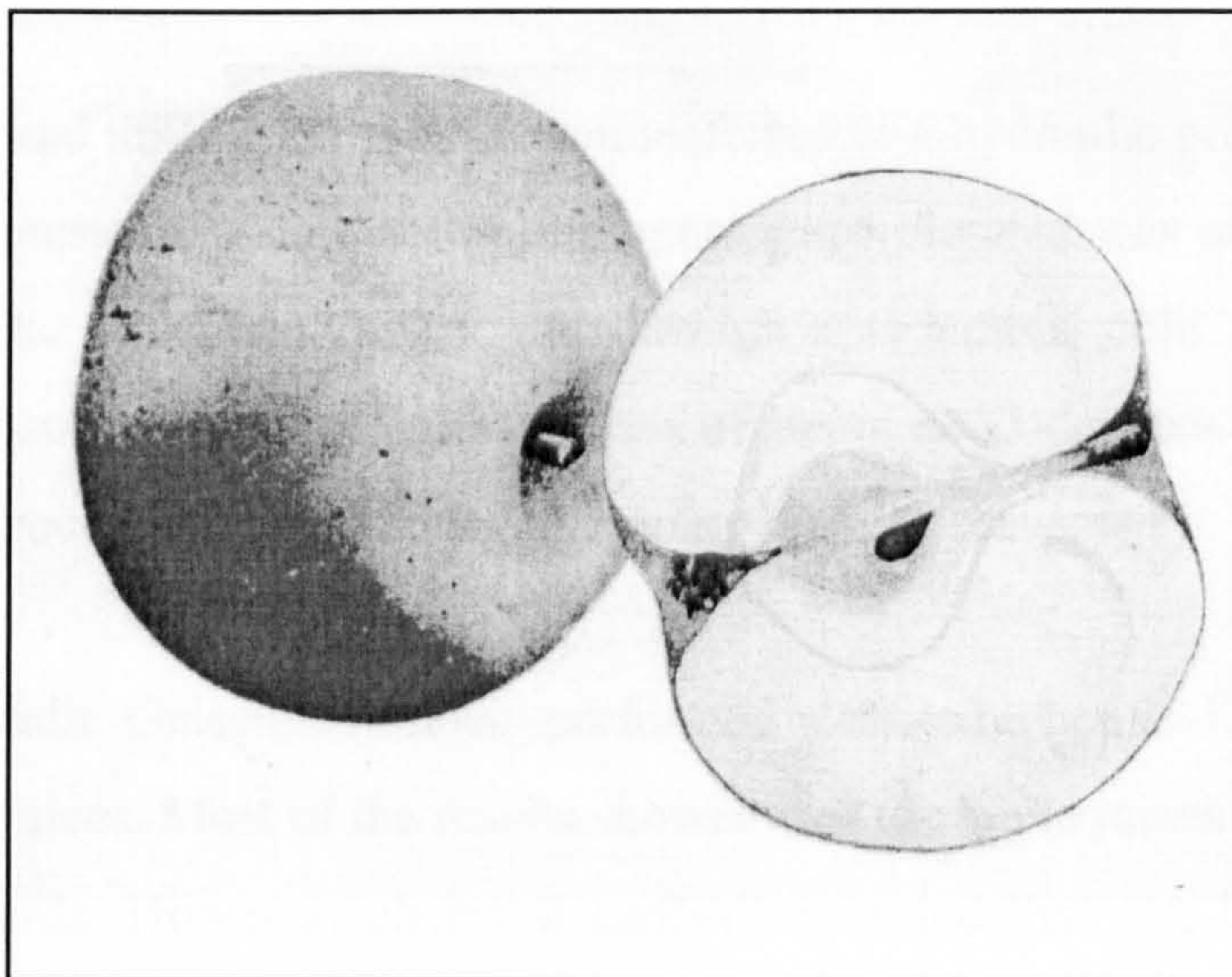


- The pulp is also yellow with a fine texture, medium crispy and sweet, juicy with floral aromas.
- The fruits mature in Romania between October-February reaching the peak of qualities in December and can be stored until March the following year.

**Patul** (Synonyms: Batul, Batule, Mar de Patul)

This particular variety (Plate 4.4) is one of the oldest Romanian apple varieties. Its name derives from the method of storage since Romanian peasants often stored them outside their houses amongst hay in the so-called “Patuls”. Unfortunately, as has happened with Domnesti, another old variety mentioned from the times of King Stephen the Great, Patul is rapidly disappearing. Nowadays it can be found on reduced areas at some Fruit-tree Research Stations, in collections and sometimes in the countryside around self-sufficient peasants houses. The variety accounts its decline mainly due to its size and yields and it was eliminated together with other traditional varieties under the quantity seeking communist regime.

*Plate 4.4: Variety “Patul”*



However, some of its valuable uses can be in further varietal development, its genome being a rich source of disease resistant genes.

- The tree is of high vigour with a pyramidal shaped crown.
- The fruit is small, non-uniform in size (however the average weight 120-130 grams) and compressed at the ends; it is also resistant to transport and rough handling.



- The pulp is white to slight yellow sometimes with green nuances, succulent with a very specific flavour.
- The skin is fairly thick, elastic and naturally shiny. One of the handicaps of the variety is its slight chewy texture after a period of storage. However under appropriate storage the fruit remains firm and crisp.
- The base colour is green at harvesting maturity and lemony-yellow at consumption maturity.
- On the parts exposed to sun there are various degrees of red blush and very rarely rusty spots.
- Under the Romanian climate, it matures in October-November and can be preserved without special precautions until March the following year.

#### *4.4.2 Apple juices*

The same apple varieties were transported to Forschungsanstalt Geisenheim in Germany and processed into cloudy apple juices. The processing method employed was the simple, classical approach presented in Figure 4.6.

After washing and milling the mash was transferred to a hydraulic press and pressed at 2 bar counter-pressure. As a stabilisation agent, ascorbic acid was added in a ratio of 200mg/litre. The juice was further run through a separator, cold filled into sterile bottles and subsequently sterilised by means of steam at 83 degrees centigrade for 20 minutes. The processing ratios for every variety were as presented in Table 4.1.

Forschungsanstalt Geisenheim also performed detailed chemical analysis on the resulted apple juices. Most of the results showed that the apple juices conformed to the German standards. However, chemical analysis revealed that one of the juices (De Falticeni) had a concentration in mycotoxins (namely Patulin) four times higher than the maximum level permitted by EU regulations (30 mg/litre).

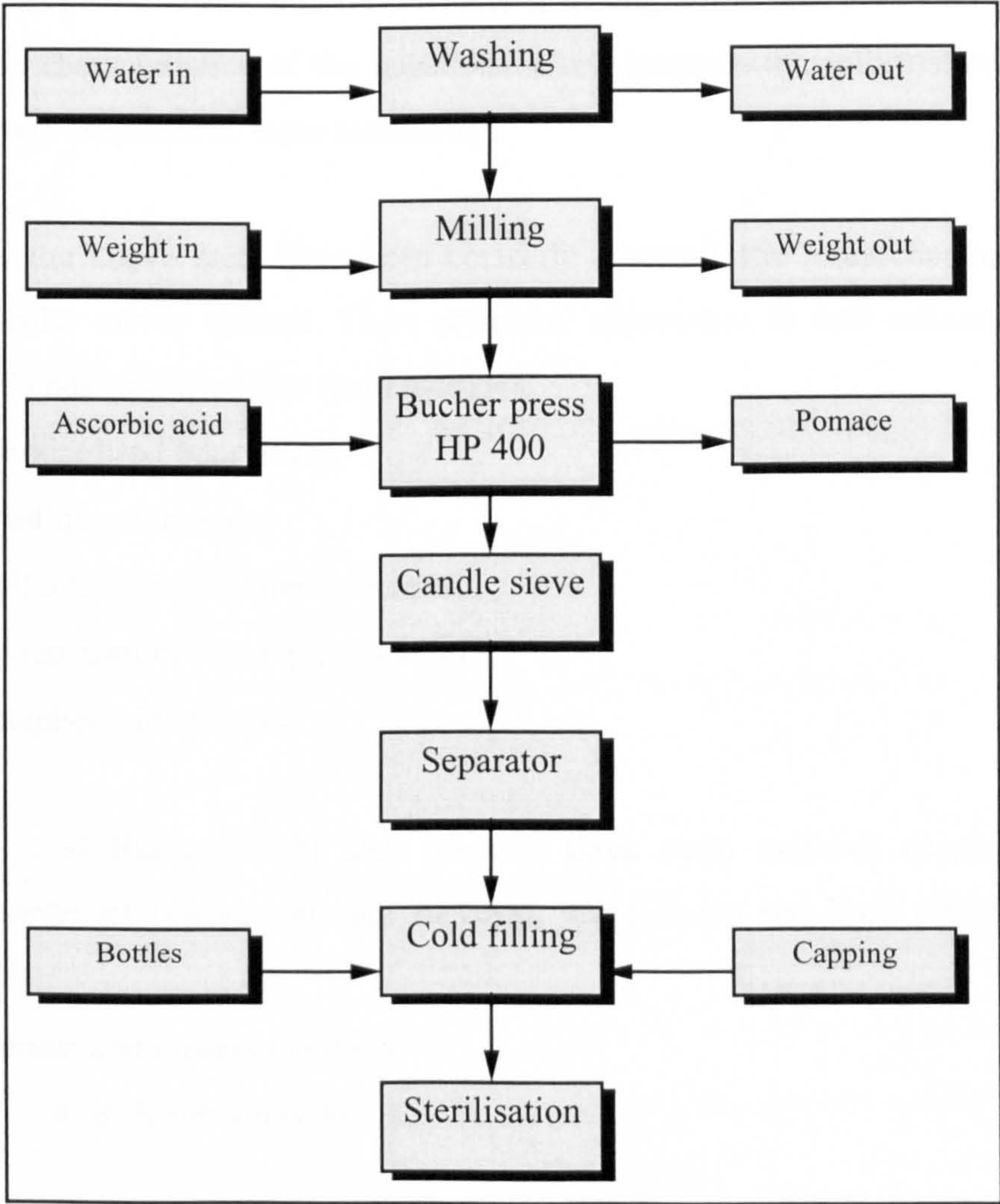


Table 4.1: Apple juice processing ratio for the selected varieties

	De Falticeni	Generos	Patul	Frumos de V.
Mash (kg)	213	233.7	220.4	235.2
Pomace (kg)	57.5	73.0	61.3	73
Ratio juice (%)	73.0	68.8	72.2	68.9

Mycotoxins are chemical compounds produced by fungi while growing on organic substances such as fruit. There has been a great interest developed in Patulin lately in the UK and MAFF has published yearly reports beginning with 1993. The juice sample was excluded from the survey and the grower of “De Falticeni” was also notified. Subsequently, appropriate measures were taken in that particular orchard. Following the results of the chemical analysis, the following apple juice surveys were run only with the three remaining varieties: Generos, Patul and Frumos de Voinesti.

Figure 4.6: Cloudy apple juice processing





## 4.5 QUESTIONNAIRES

As mentioned earlier in the chapter, the research has made use of both qualitative and quantitative data. The current section presents only the quantitative methods, namely group administered questionnaires and the issues surrounding them.

### 4.5.1 General issues

The group administered questionnaires were chosen as one of the research main techniques in accordance with the characteristics of the research. The literature presents a diversity of *data collection instruments* in order to commit to an optimal method for the research. Burns and Bush (1995) propose three categories of considerations, each of which holding a number of factors to be carefully assessed:

- researchers' resources and objectives (time limit, budget, desired quality of data);
- respondents characteristics (incidence, willingness to take part, ability, diversity);
- the characteristics of the questions asked (complexity, information required from every respondent, topic sensitivity).

Once the above facts have been carefully assessed, the researcher has to identify a particular survey method. There are many approaches to data collection. Oppenheim (1997) has identified five main methods:

- standardised interviews;
- mail questionnaires;
- self administered questionnaires;
- group-administered questionnaires;
- telephone interviews.

Luck and Rubin (1987) also mention three main methods (personal interviews, telephone interviews and mail surveys), while Burns and Bush (1995) go into more detail:

- person administered surveys
  - ◆ in-home interviews



- ◆ shopping centre intercept interviews
- ◆ in-office interviews
- ◆ telephone interview (traditional and central location)
- computer administered surveys
  - ◆ computer assisted telephone interview (CATI)
  - ◆ fully computerised interview
- self administered surveys
  - ◆ group self administered surveys
  - ◆ drop-off surveys
  - ◆ mail surveys

Pierson (1997) cites five main types: face to face interviews, call and collect, postal questionnaires, omnibus surveys, telephone interviews. There is therefore a large diversity of opinions and classifications with a series of advantages and disadvantages.

Considering all the above facts, *the group administered questionnaire* was selected as being the most feasible one. Time and budget limits, combined with the unpredictability of international research and the desired quality of the data were major considerations in taking this decision. The nature of the products themselves (fresh apples and apple juices) was also decisive for selecting this particular method. Likewise, such products were considered inappropriate and costly to be tested at home or in other environments.

The following advantages and disadvantages of this particular approach should be emphasized (Oppenheim, 1997; Pierson, 1997; Burns and Bush, 1995):

***Advantages:***

- can be targeted at groups or a cross-section;
- feedback;
- rapport - the interviewer can build a “bridge of trust and understanding”;
- through his presence the interviewer can answer any possible queries;
- quality control and avoidance of misunderstanding;

- adaptability to the differences between respondents (age, education, etc.);
- higher response rate than other methods.

***Disadvantages:***

- risk of non co-operation;
- interviewer may introduce bias;
- expensive due to interviewers employment;
- time-consuming;
- less time for a considered response.

#### ***4.5.2 Questionnaire design***

Once the questionnaire survey had been chosen as a research technique, the process of designing the questionnaire began and the research moved from a general frame of work to a more specific structure. Such structure includes questioning approaches of relevance for every aspect studied (Hoinville *et al.*, 1977).

The questionnaire is perceived as being by far the most common instrument utilised in gathering primary data (Kotler, 1984). The design of the questionnaire is one of the most critical phases in the research process since if the required information is not covered, “...no amount of clever interviewing or ingenious analysis can produce useful results” (Marton-Williams, 1986). The questionnaire is hence an important tool of research and data collection with measurement being one of its main functions.

Presently, the term questionnaire is often used fairly loosely and can contain a variety of research methods such as check lists, attitude scales, projective techniques, rating scales (Oppenheim, 1997). The accuracy and relevance of the data collected depends strongly upon the questionnaire and composing questionnaires is “...a difficult and subtle task...” (Luck and Rubin, 1987). Research has also showed that questionnaire design directly affects the quality of gathered data (Burns and Bush 1995).



According to Burns and Bush (1995), a questionnaire serves six key functions:

- it translates the research objective into specific questions;
- it standardises the questions and the response categories so that every participant responds to identical stimuli;
- by its wording, question flow and appearance it promotes co-operation and keeps respondents motivated throughout the interview;
- questionnaires serve as permanent records;
- questionnaires speed up the data analysis process;
- they hold reliability assessments and are used in follow-up validations.

Other researchers such as Marton-Williams (1986) have also identified six similar functions, but adding the “avoidance of bias” as an extra function. The function of minimising bias is also emphasised by Burns and Bush (1995), who define it as the ability of a question’s wording or format to influence respondents answers.

Before starting the actual writing of the questions there are a series of considerations to be taken into account. Some authors such as Hoinville *et al.* (1977) and Luck and Rubin (1987) propose a series of flow charts in order to ease the questionnaire structure identification. Oppenheim (1997) proposes a series of prior decisions which have been followed in this particular research. These are:

- the prime type of data collection instruments needed (such as interviews, postal questionnaires, etc.);
- the method of approach to respondents;
- the build-up of question sequences (or modules) within the questionnaire, including the ordering of questions, scales and other techniques within the general framework;
- the order of questions within each module;
- the type of questions to be used (closed versus open).

Having decided upon the most appropriate method of collecting information, attention was given to the *method of approaching respondents*. The ways in which respondents are approached will heavily influence their co-operation and motivation to respond to undertaken surveys.

Oppenheim (1997) suggests a variety of approaches leading to increased response rates, including the identification of the interviewer, explanation of the scope of the research, assurance of confidentiality, incentives, length of the questionnaire and even publicity in the local media.

The method used to approach respondents in this research was a mix of these proposed themes. The survey was actually carried out as a *hall test*. Hall tests are used when planning to test the reactions of people to a certain product (or concept) which is impractical to take to homes or be tested in the street (Dunning, 1994). Hall tests involve hiring a suitable venue, that could be anything from a hotel room to any other place close to a shopping area or within a shopping area. Respondents are recruited to the “hall” by interviewers who work outside in the main pedestrian flow. Most hall tests which are conducted with food products aim to measure the acceptability or preference of the products on a number of different attributes including taste, smell and appearance. The researcher works towards determining the preferences for the various products and obtaining insights into the reasons for preference. Trained recruiters work in the close vicinity of the hall, recruiting candidates randomly.

For the present research, locations were hired in the three countries by kind co-operation of the local authorities. In Romania the survey has also benefited by media attention and media advertising, while in Germany samples were given away as incentives to the participants by the completion of the questionnaire. Pre-trained recruiters were working under the researchers’ guidance at all times in all three countries. The respondents were approached firstly by recruiters who identified themselves, followed by a brief explanation of the rationale of the research and asking for their co-operation. Respondents agreeing to take part in the survey were further invited to the venue in order to assess the tested products and to fill in the questionnaires. The questionnaire also stated from the very beginning its confidentiality, another method of gaining the respondents’ co-operation.

The build-up of *question modules* and the *order of questions within modules* were also of vital importance for the overall understanding and flow of the questionnaire. Oppenheim (1997) proposes a series of methods, including the “funnel approach”



mentioned likewise by Burns and Bush (1995). Citing the “funnel approach”, Malhotra (1996) also suggests a logical order with simple, non-threatening questions in the opening which flow into specific information in the later sections of the questionnaire.

The design of the questionnaires for this research tried to follow a simple, logical approach. The opening module referred to socio-economic aspects, flowing during the completion of the questionnaire into more specific details about some characteristics of the products tested. However, as Oppenheim (1997) states, each survey has its own problems of questions order, which makes it difficult to offer general principles.

Finally, having decided and chosen one of the most appropriate modules, the *type of questions* to be used should be decided. Denscombe (1998) gives examples of nine types of questions which can be used in a questionnaire. The three most common types and their variations are well described by Burns and Bush (1995) and are further presented in Figure 4.7. Oppenheim (1997) further groups the questions into “factual” and “non-factual” ones.

The open-ended questions present the respondent with no response options, leaving him to use his/her own words. The unprobed format does not ask for supplementary information, while a probed format includes a response probe trying to encourage the respondent to provide supplementary information.

The closed-ended questions allow only answers which fit into certain categories previously established by the researcher and of interest to the overall research. Dichotomous closed questions present participants with only two response options, while the multiple category includes more than two options.

The scale response questions make use of any scales previously designed for specific purposes, such as Likert scales, hedonic or semantic differential scales etc. One of their most important attributes is that they transform otherwise qualitative information into quantitative data (Luck and Rubin, 1987). Unlabeled scales can be simply numerical or with identified end points, while labelled scales have all the positions identified by some descriptors.

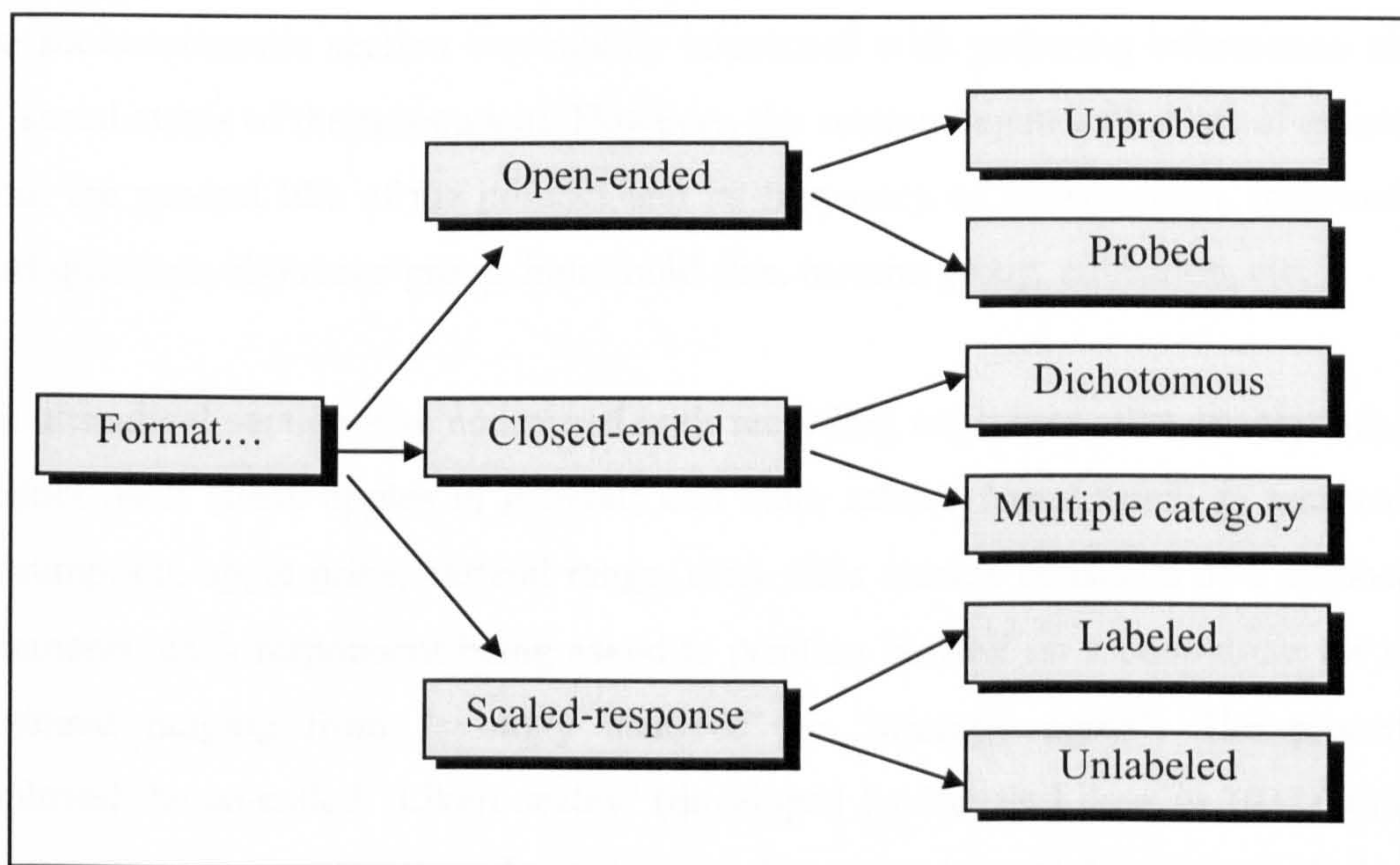


Arguments have often arisen as to which format yields the best results. A permanent debate exists between advantages and disadvantages of open and closed questions. Some of the main advantages of open questions are their reflection of the “richness” and complexity of respondents views (Denscombe, 1998) which are allowed to freely express themselves and are not constrained to pre-given responses. In opposition, the replies require laborious work on the behalf of the researcher (such answers often require coding and classifying) and supplementary mental effort on behalf of the subject.

The main advantages of the closed questions are the uniformity of information, ease of recording and analysing. Nevertheless closed questions are less subtle, may distort responses and frustrate respondents who are not allowed to present their full opinion. However, the last choice depends on the researcher and his decision on the appropriateness of such questions for every particular case.

**Figure 4.7: Alternative question formats**

(Source: Burns and Bush, 1995)



Taking into consideration the advantages and disadvantages of closed and open-ended questions, both sets of questionnaires (for fresh apples and apple juices) mainly made use of closed-ended questions. The main rationale behind employing this particular



approach was related to semantics and the length of the questionnaire, closed-ended questions being easier and quicker to answer (Oppenheim, 1997) and easier to be translated with maintaining the same meaning. Another rationale was working in an international context since some authors draw attention to the use of open-ended question under such conditions. Open-ended questions require participants to respond in their own terms and as a result of different levels of literacy and different cultures such questions should be avoided in cross-national research in order to avoid bias occurrence (Kumar *et al.*, 1999). Direct questions avoid any ambiguity in relation to question meaning and content. However, a few open-ended questions were employed too, either independently or as an addition to closed ended questions, where appropriate. Nevertheless, as it was demonstrated later, respondents tended to avoid such questions or be very evasive in their answers.

Two different questionnaires were designed for the two types of products assessed in this work: fresh apples and apple juices. The questionnaires assessing *fresh apples* consisted of three sections (Appendix A): socio-economic, attitudinal and preference.

The socio-economic section was mainly concerned with gathering information about the social status of the respondent. However, the section began with a set of questions about the general like of the product and its frequency of consumption, followed by short questions about age group, household size, income group, education, etc.

The attitudinal section was concerned with recording consumer attitudes towards the product itself (fresh apples in general) and other related issues (such as reasons for consumption, apple price, varietal range, etc.). This section consisted of a number of statements, each respondent being asked to position himself on a continuum for each statement ranging from “strongly disagree” to “strongly agree”. The procedure employed the so-called “Likert scales” (developed by Rensis Likert in 1932), one of the most popular scaling procedures for recording attitudes which are presently in use (Oppenheim, 1997). Each position on the scale is attributed a simple weight of 5 to 1 for scoring determination, respondents being asked to tick one of the above five positions.

The last section was concerned with recording respondents' preference towards the products taken as reference. The preference for the four selected apple varieties and their characteristics was recorded on 10 point open hedonic scales (Pierson, 1997). Preference was considered on comparative levels of like and dislike; respondents were asked to mark with an x on the open scales their preference for various characteristics of the fresh apples.

The questionnaires assessing the subsequent *apple juices* consisted of only two sections: socio-economic and preference (Appendix B). This time the socio-economic section was combined with more aspects of apple juice consumption, such as preferred packaging, available range, amount and frequency of purchase, etc. The preference section was similar to the one employed for fresh apples, with the difference that it recorded opinions about the characteristics of the apple juices.

The wording of the questionnaire is also of vital importance, since the questionnaire is "... an interface between the respondent and the researcher" (Luck and Rubin, 1987). Some of the most common failures in communicating with the respondents had their roots in ambiguity, the use of unfamiliar words, abstract concepts, or overloading the participants' memory (Marton-Williams, 1984). Numerous authors such as Luck and Rubin (1987), Burns and Bush (1995), Malhotra (1996), Blaxter *et al.* (1996), Oppenheim (1997) and Denscombe (1998) have established a further set of rules and principles related to the wording of questions, such as:

- length of the questions - questions should not be too long, maximum sentences of 20 words;
- avoiding acronyms, abbreviations and jargon;
- avoiding the use of irritating questions;
- avoiding leading questions;
- including sufficient options in the questions ("don't know" and "not applicable" categories should not be left out);
- using the minimum amount of technical jargon;
- being as specific as possible;
- avoiding estimates.



The simplicity of the questionnaire is one of the main characteristics which leads to successful results too, especially when it is replicated in an international context and should not be biased in terms of any one culture (Malhotra, 1996). Therefore, for ease of comprehension and translation it is desirable to have simple questions. This was one of the most important factors considered when designing the questionnaires used in this research work. The wording tried to be as straightforward as possible, mainly due to translation and bias avoiding reasons. However, when conducting cross-national research the style and elocution of some questions has to be changed according to the country in which the questionnaire is being administered (Kumar *et al.*, 1999); words which represent a construct in one culture may be very different in another culture when they are translated, or worst the construct may not have a corresponding word in another language and culture. This was also another rationale for preferring closed ended questions as opposed to open ones.

Generally, in a research process the researcher is often faced with the question as to whether sufficient data has been collected and is often tempted to go on with the process. However, it is of critical importance to stop collecting data at a certain point and move on to the analysis stage if completion is due within a limited time, as it was the case with the present research work. Nevertheless, in a small-scale research it cannot be expected to collect all the data. Furthermore as Blaxter *et al.* (1996) state:

*“No social research project, in a more general sense, is ever going to provide the last, definitive word on any topic. The purpose of small-scale research is likely to be a mixture of practical application, illumination, self-directed learning and/or research training.”*

The actual process of data collection and the limitations faced by the researcher will be presented in the later sections.

As can be observed from going through the present section, there are no standard rules which apply to the construction of the ideal questionnaire, different authors propose different approaches. However questionnaire development is a logical process, beginning with the identification of the specific data to be sought and ending with the wording and refinement of the questions used. Even if no ideal questionnaire exists (Blaxter *et al.*, 1996) and the questionnaire design entirely depends on the experience

and knowledge of the researcher, there are a number of evaluation criteria available.

Denscombe (1998) proposes five basic evaluation criteria which assess:

- the likelihood of the questionnaire providing *full information* on the topic;
- the likelihood of the questionnaire providing *accurate information*;
- the likelihood of the questionnaire providing a decent *response rate*;
- adopting an *ethical stance* - respondents' rights are given recognition and data is treated professionally and confidential;
- the *feasibility* of the questionnaire - the likelihood of the questionnaire being able to confine to the time and money limitations of the research as well as reaching the appropriate respondents.

Nevertheless, the questionnaire design is a continuous learning process and is improving over time, together with the experience of the researcher. Success in such an area comes ultimately from the ability of looking at the subject and wording of questions from the respondents perspective.

As such, the researcher does not claim that the questionnaires developed for the present research are ideal; the questionnaires were however developed to the best abilities and knowledge of the researcher. It has to be acknowledged that flaws in the design are possible, as well as additions to the construct of the questionnaires. However, the entire process of questionnaire design is an integral part of the research bigger picture, not the least of broadening horizons and continuously improving upon one's knowledge. Nonetheless, some authors (such as Malhotra, 1996) argue that:

*"... there are no scientific principles that guarantee an optimal or ideal questionnaire, questionnaire design is a skill acquired through experience. It is an art rather than a science".*

As a final summation, a good questionnaire is ultimately one that has been also thoroughly pre-tested. Furthermore, it is considered that there is presently no substitute which exists for replacing such a step in the process (Kumar *et al.*, 1999).



## **4.6 THE PILOT SURVEY**

Pre-testing the questionnaire is a very important task before actually beginning the main data collection through the main survey. The questionnaire is likely to contain faults, even if the drafts have been meticulously reviewed by the researcher and assessed for all the points of a good design. These faults are likely to emerge when the form is used in the field against typical respondents; the pre-test can be considered therefore an accurate miniature of the planned study (Luck and Rubin, 1987). Due to the unpredictability of the respondents and research situation, it is impossible for a researcher to completely foresee all the problems to be encountered.

According to Burns and Bush (1995), a pre-test involves “...conducting a dry run of the survey on a small, representative set of respondents in order to reveal questionnaire errors before the survey is launched”.

The researcher also places himself in the respondents' position, asking supplementary questions about the clarity and wording of the whole form. Luck and Rubin (1987) emphasise some of the most important roles of a pre-test in indicating:

- whether the subjects would understand and respond to the questionnaire;
- whether it can be administered well;
- the nature of information that would be obtained;
- time required ( or production rate of the interviews);
- particular problems encountered.

The pre-testing of the questionnaire took place in two phases. As during the design process discussions often arose in relation to the accuracy of some of the scales employed, the first phase was concerned with the validation of the scale to be used in the main survey. During this first phase some flaws of the questionnaire already started to arise leading to refinement.

The second phase was the actual pilot survey. Although the literature suggests small samples for the pilot (Luck and Rubin, 1987; Burn and Bush, 1995), a larger sample

size was chosen in this work, one of the arguments being to also start promoting consumer research in the field of horticulture in Romania.

The pilot survey was carried out during the summer of 1997 (June-August) in the city of Iasi, Romania. One of the first problems encountered was the unavailability of the four selected apple varieties at that time of the year. In order to speed up the research process and to avoid postponing the pilot, it was carried out with three different tomato varieties. More detail on the two phases of the pilot surveys and issues surrounding them are presented below.

### **Scale validation**

The survey was initially designed for recording the acceptability of the products and their characteristics. The recording of consumer acceptability was based on the interval scale. However, questions arose as to which of the interval scales is more accurate in recording such information between the open and the divided 10 point interval scales. The open interval scales measure acceptability on a continuous unmarked scale with its ends labelled “totally acceptable” and “totally unacceptable”. The divided interval scales are identical, with the difference that the scale is marked along for ease of assessment.

The scale validation took place at the Agronomic University of Iasi, Romania. Forty respondents were invited to take part in the survey for four days in a row. The first and third day of the process involved questionnaires employing divided interval scales, while the second and fourth day involved questionnaires employing the open interval scales. In order to replicate the conditions of the survey, the experiment took place at the same time every day (11.00 a.m.) with identical products - three different tomato varieties.

In order to achieve maximum sample uniformity fruits had been vine-ripened, graded and matured in the same conditions of temperature and humidity prior to every survey. Every day, before beginning the survey the tomatoes were brought to optimal temperature (room temperature) in order to achieve their normal flavour and aroma.



The questionnaires were collated, scales measured and the standard deviation for the two scales was calculated. As the standard deviation for the divided interval scales was higher than the one for the open scales, it was decided that the open scales are more accurate and hence they were further applied within the main survey questionnaires.

One of the main problems starting to emerge during the completion of the survey was the respondents confusion between acceptability and preference. While acceptability can be regarded as a pre-defined level of quality, preference is considered on comparative levels of like and dislike for a series of products (or product characteristics) (Pierson, 1997). If we consider the products and their characteristics all three of them may be acceptable, but only one is liked more than the other, hence preferred.

Due to the above confusion, it was decided to change the questionnaires from measuring the acceptability of the products towards measuring the preference for the products and their characteristics. The scale adopted for this purpose was the *open hedonic scale*, scale which is presented as a continuum having the ends labelled with “dislike extremely” and “like extremely”. Similar to interval scales, hedonic scales can be divided (and labelled along the continuum) or not. As a result of the pre-testing and their similarity to interval scales, the open (undivided) hedonic scales were selected to measure respondents preferences.

A number of unclear questions were also altered and the wording made more clear. More written information about the way the questionnaires should be filled in were added, improving the overall flow of the questionnaire. A series of irrelevant attitudinal statements were also eliminated from the questionnaires. The remaining attitudinal statements were introduced into a table format (see Appendix A) which helped with shortening an already considered long questionnaire. After the experiment it was also revealed that most of the open questions asking for details about the like/dislike of every assessed character were left incomplete. As a result, they were also eliminated from the questionnaire.

### **Running the pilot survey**

With the above changes, the pilot survey was carried out, this time under real-life conditions, as a hall test. A team of 7-10 recruiters (both academics and students at the Agronomic University of Iasi) were working at all times with the researcher. The recruiters were pre-trained (by colleagues that have attended workshops on these themes at Bournemouth University, United Kingdom) in aspects of interview techniques, questionnaire design, attitude measurement and sensory aspects during a three day session held at The Agronomic University of Iasi.

The pilot involved a total of 510 respondents and was carried out during a period of four days in the “Hala Centrala” supermarket of Iasi. Hala Centrala is the second supermarket of Iasi in terms of size and the biggest one in terms of food products. Situated in the immediate vicinity of one of the main “free markets” (peasant markets) it was considered to be a very convenient position for achieving a representative range and variety of opinions.

The venue was hired by kind co-operation of the supermarket management, who also provided part of the equipment involved in the survey. The management also contacted one of the local television channels in order to advertise the event. Consequently many respondents volunteered themselves to take part in the survey therefore simplifying the work of the recruiters. Due to prior organisation, the pilot did not present any special logistical problems. Some of the results of the pilot survey have been published in a series of scientific papers, both in the UK and abroad (Rominger *et al.*, 1998; Munteanu *et al.*, 1999; Edwards and Rominger, 2001). The pilot also permitted the last fine-tuning changes to the questionnaires before the main survey.

## **4.7 THE MAIN SURVEYS**

The actual surveys took place over a period of two years (1997-1998); the fresh apples were the first products tested in 1997, while the apple juices were tested in 1998. The surveys involving fresh apples were run during late 1997 and early 1998 as following:



- **United Kingdom - 159 questionnaires**

location: Wimborne market-Wimborne and Bournemouth University-Poole

- **Germany - 108 questionnaires**

location: Geisenheim market- Geisenheim and Wiesbaden market-Wiesbaden

- **Romania - 300 questionnaires**

location: Hala Centrala Supermarket-Iasi

The surveys involving the apple juice were run in 1998 at the same locations and the number of collected questionnaires were:

- **United Kingdom - 100 questionnaires**

location: Wimborne market-Wimborne and Bournemouth University-Poole

- **Germany - 80 questionnaires**

location: Geisenheim market- Geisenheim and Wiesbaden market-Wiesbaden

- **Romania - 530 questionnaires**

location: Hala Centrala Supermarket-Iasi

Trained recruiters worked in collaboration with the researcher in all the locations. The surveys were run as “hall tests” in the same manner as explained under section 4.5.2. However, the number of trained recruiters directly affected the number of questionnaires collected. In the case of Germany for the apple juice survey only two recruiters worked with the researcher, the result being obvious in the limited number of collected questionnaires.

#### **4.8 SAMPLING PROCEDURE AND SAMPLE SIZE**

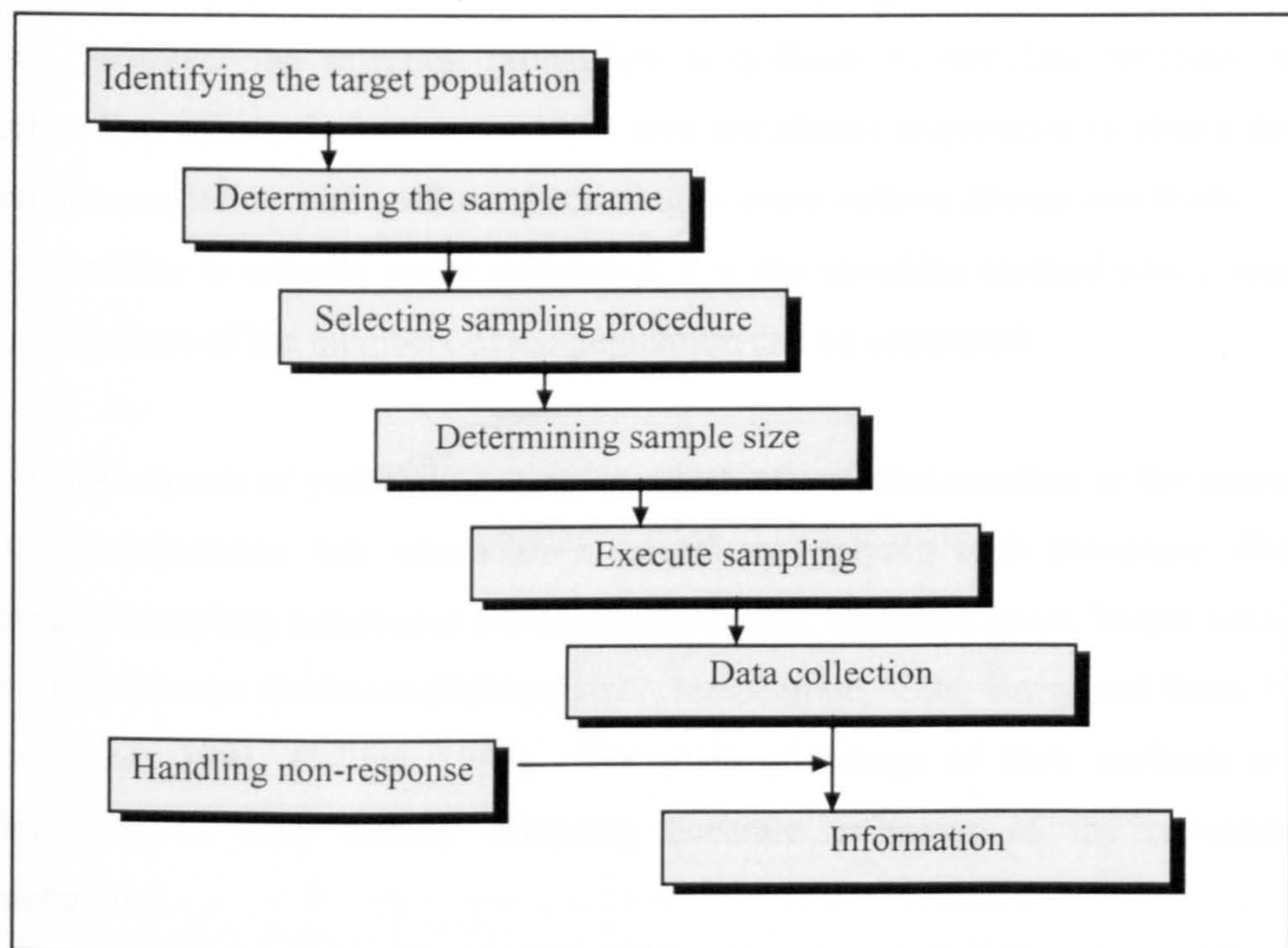
One of the main problems faced by social researchers lies in the fact that they cannot collect data from all the respondents within the category being researched. As a consequence many social researchers rely on a percentage of the whole population (sample), hoping that the results will apply to the entire population (Denscombe, 1998; Burns and Bush 1995; Dixon *et al.*, 1991; Kent, 1993; Collins, 1986). Such fragment of the population represents a sample.



A sample is actually a subset of the population that should represent that entire group (Burns and Bush, 1995). Selecting a sample is particularly useful if the population size is large and the costs associated with obtaining the information from the population are high and time limited (Kumar *et al.*, 1999). Particular attention should be given to such a process, not only because the population is large, but also highly variable. The steps taken in a general sampling process are well depicted by some researchers, such as Kumar (1999) (Figure 4.8).

**Figure 4.8: The sampling process**

(source: Kumar *et al.*, 1999)



*The first step* is identifying the population that has to be sampled. As the study design statement has earlier explained, the populations to be sampled were the actual populations of the cities in which the surveys took place.

*The second step* is establishing a “frame” of that population. A sample frame is usually a list of population members utilized to obtain a sample. However, the sampling frame does not have to enumerate all population members and often the researcher is limited by the lack of such a list (Kumar *et al.*, 1999; Burns and Bush, 1995). In such cases,



the sample frame becomes a matter of whatever access to the population the researcher can perform; in this research work the sampling frame was the actual stream of shoppers which passed through the chosen locations.

There are a multitude of ways of obtaining a sample, *the third step* in the sampling process. The literature focuses mainly on two basic sampling methods: probability sampling and non-probability sampling (Denscombe, 1998; Burns and Bush 1995; Dixon *et al.*, 1991; Collins, 1986). The probability sampling implies that the researcher has knowledge about the probability of that sample to be representative and the members of the population have a known chance to being selected into that particular sample. However the selection probability is difficult to calculate precisely since complete lists of populations in a certain area are almost impossible to obtain due to the continuous inflow and outflow. According to some authors (Burns and Bush, 1995) this probability is actually never calculated, it is the sampling method which ensures that the chances of the members of the population can be computed.

One of the aspects of probability samples which cause most exertion is the access to the target population lists which are a “must” in applying such procedure. Hence, probability sampling techniques are expensive to run, require a much longer time and access to particular databases (Kumar, 1999; Denscombe, 1998; Burns and Bush 1995; Dixon *et al.*, 1991; Collins, 1986). The main advantage of such methods is the minimization of bias, thereby obtaining accurate estimates of the populations’ characteristics.

Non-probability sampling is conducted without knowledge about the selection probability and it is very often unknown if the sample is representative for the overall population. However such techniques strive to draw a representative sample (Burns and Bush, 1995). These techniques do not also require developing costly sampling frames. Amongst the most popular non-probability sampling methods are convenience sampling, judgmental sampling, snowball sampling and purposive sampling (Kumar *et al.*, 1999; Denscombe 1998; Burns and Bush 1995).

The chosen method of selecting respondents in the present research was convenience sampling due to time and financial limitations and the characteristics of the product. Correspondingly, a convenient area (shopping mall or market) was chosen by the researcher for respondent selection in the three countries. There are many criticisms of employing such a method. In selecting a particular location (rather by subjective than objective norms) certain members of the population are automatically eliminated from the sample. In market and mall shopping intercept, respondents who shop there frequently, appear friendly and have extra free time can be over-sampled (Kumar, 1999). The sample is often misleading and the researcher does often not know in what ways the sample is biased (Dixon *et al.*, 1991). However, with all the criticisms of such an approach some authors recognise its use under financial and time pressure (Denscombe, 1998; Kent, 1993) or when operational ease is required (Kumar *et al.*, 1999). With such method, large number of respondents can be acquired in several days.

However, authors such as Kent (1993) acknowledge that this kind of selection can be used legitimately behind exploratory and qualitative research in "...understanding situations, generating ideas, or evaluating products, ideas for products, advertising or ideas for advertising". Furthermore, the convenience method is also justified on the grounds of taste tests set-ups and control of interviewer work force (Burns and Bush, 1995).

Bearing in mind the above considerations and trying to reduce bias as much as possible, the recruiters were instructed to approach every "*n*-th" consumer passing by, a technique similar in many ways to one of the random sampling methods, namely systematic sampling. Nonetheless, as stated in earlier sections the research undertaken does not aim to generalise the results to all of the population, nor to be a descriptive research of such populations. Amongst the main objectives is identifying the expectations of such consumers and communicating those expectations to the apple industry. Besides practicality and time and financial limitations, this can be considered another reason which justified such an approach. However, in an international context the non-probability sampling processes (such as convenience sampling) are used more



often compared to probability sampling techniques because of lack of information (Kumar *et al.*, 1999).

*Sample size* is another important decision facing the international researcher. In the real world of research, with its limits of time and resources the researcher is ultimately the one to decide upon the size of the sample (Kumar *et al.*, 1999; Denscombe, 1998). This was the case in the present research as well. The relatively complex calculations mentioned by some authors (Kumar *et al.*, 1999; Burns and Bush, 1995; Luck and Rubin, 1987; Collins, 1986; Hoinville and Jowell, 1977) used to determine sample size decision were not applied. As the research did not strive to generalise the results, the sample size was mainly determined by time limitations.

The sampling was executed in all locations during the period (first two years of research) strictly determined by the mentioned limitations. However, a degree of bias introduced by the sampling method due to various factors has to be acknowledged i.e. frequent shoppers were more likely to be selected, people living in a high income neighbourhood might have had different opinions, the part and entrance of the shopping centre could also have affected the sample, as well as the time of the day when the survey was run. It was tried to minimise bias by selecting respondents from all over the shopping centre, from all entrances and running the survey at the same time of the day every day.

*Non-response* is another factor which can introduce bias into the research. Usually, it is more of a problem with mailing surveys. However, as the present surveys were run as hall tests, the non-response was more a problem of participants refusal to respond to some of the questions. This particular aspect was handled better when the survey involved greater numbers of pre-trained staff, such as in the case of Romania.

#### 4.9 DATA ANALYSIS

Before actually beginning the data presentation and analysis, it is important to outline the different levels of measurement which are currently used in market research. The

level of measurement is the factor which dictates what statistical analysis the researcher can or can not perform. According to the literature, there are four levels of measurement, namely nominal, ordinal, interval and ratio (Levin, 1977; Burns and Bush, 1995). Each of these scales differ with respect to their characteristics, as shown in Table 4.2.

**Table 4.2: Levels of measurement and the scale characteristics possessed**

(Source: Burns and Bush, 1995)

<i>Level of measurement</i>	<i>Scale characteristics possessed</i>			
	Description	Order	Distance	Origin
Nominal scale	✓			
Ordinal scale	✓	✓		
Interval scale	✓	✓	✓	
Ratio scale	✓	✓	✓	✓

The *nominal* level of measurement, recorded on nominal scales, involves purely the process of labelling, it places the cases into categories and counts their frequency of occurrence. Such scales are merely used in describing data, for example gender, income groups, yes/no answers, etc.

The *ordinal* scales (ordinal level of measurement) permit the ordering of cases. It is employed, for example, in indicating “*n*” choices of preferred characteristics or “*n*” choices of brands. However, the intervals between the ranks of an ordinal scale are not known (even if they possess an order, it is not known how far apart the descriptors are because ordinal scales do not possess a defined origin).

As opposed to ordinal scales, the *interval* scales (interval level of measurement) allow the assessment of the distance between each descriptor on the scale. Interval measures yield equal points on the scale. Normally interval scales measure constant units of measurement (pounds, degrees centigrade, minutes, centimetres). However sometimes the researcher imposes the belief that a certain scale records equal intervals between the descriptors; such scales are called “assumed interval scales”. Examples of assumed interval scales are Likert scales or hedonic scales.



Another type of interval scales, *ratio* scales, present an exact zero origin and allow the construction of ratios when comparing the available data. By employing such scales the researcher can state for example that one person has spent three times more on food than another, that one person earns twice as much as another etc.

The importance of the level of measurement lies in the fact that the higher the level of measurement achieved by the researcher, the more powerful statistical techniques are allowed; low level scales permit low levels analyses, while higher levels permit more sophisticated analyses (Burns and Bush, 1995). These are some of the important aspects a researcher has to consider prior to deciding upon the statistical analysis to be performed. Such analysis can include *parametric* and *non-parametric* tests, according to specific requirements (Levin, 1977).

The present research has employed two levels of measurement: nominal and interval. Even if some requirements (such as normality) for some parametric tests were not met (due to small sample size in some cases), as the survey does not attempt to generalise the results, such tests were still run. The parametric tests were supplemented by non-parametric tests, as described later. The non-parametric tests do not require normality, nevertheless they are less powerful than their parametric counterparts. However, non-parametric tests are regarded as a useful tool when the assumptions for parametric tests cannot be met.

The survey datum was firstly analysed using descriptive methods, such as frequencies. The frequencies provided valuable statistics for describing the data, both for ease of presentation of the respondents' profile and the products' studied aspects. The standard deviation and means were also calculated for the products' studied characteristics in order to determine how each product was assessed in each of the studied countries. In order to explore further relationships and to augment them, a number of independent and dependent variables were selected. Parametric and non-parametric tests such as ANOVA and Chi-square were employed, with a chosen significance level of 0.05.

A series of paired samples T-tests were also carried out to test and to determine if there were significant differences and commonalties between the perception of the studied

characteristics. The repeated measures T-test performed can also be referred to as the dependent-samples test (or paired T-test) and is used when the data comes only from one group of subjects. Data collected from the same group of subjects are also referred to as within-subjects, as the same subjects perform in both or more cases. More exactly, in the present case, the paired T-tests were used to observe if the difference between the means for two sets of scores were the same or different. Each studied characteristic of a certain fresh apple variety or apple juice was cross-compared with the same characteristics of the other apple varieties and juices within the countries studied.

An analysis of variance (ANOVA) was employed to make comparisons amongst three or more sample means. ANOVA yielded an F ratio that represented the variation between groups divided by the variation within groups. The F ratio represents the basis of accepting the “null hypothesis” or rejecting it. A series of independent variables were selected to observe the relationships that they have with the dependent variables (the attitudes recorded on Likert scales and the studied apple juice characteristics, recorded on the hedonic scales). The categories of the independent variables (factors) are sometimes referred to as conditions (i.e. age groups; males and females; secondary, further of higher education, etc.).

However, finding a significant effect will not tell the researcher which conditions are significantly different - it can be only concluded that there are significant differences between the conditions but not where the differences lie. Further statistical analysis such as Tukey’s HSD (honestly significant difference) or Bonferroni tests are required. The present research has adopted the Bonferroni tests to show which conditions differ significantly from each other.

The chosen significance level ( $p$ ) for ANOVA tests was  $p \leq 0.05$  (more exactly meaning that there is a probability of only 5% that the researcher is mistaken in his affirmations, or there only is a 1 in 20 chance that the null hypothesis is being rejected when it should have been accepted). The null hypothesis employed states that there is no difference between the categories of the independent variables with respect to the studied characteristics.



Some of the collected data could only be analysed by employing non-parametric tests, since it was grouped into categories (nominal data). The most common non-parametric test is Chi-square ( $\chi^2$ ), mainly used to make comparisons between two or more samples (Levin, 1977). Chi-square undertakes comparisons between frequencies rather than comparing means. More explicitly, Chi-square is concerned with the distinction between expected frequencies and obtained frequencies. The null hypothesis states that the populations do not differ with respect to the frequency of occurrence of one characteristic, whereas the research hypothesis says that sample differences actually reflect the population differences regarding the relative frequency of a given characteristic.

Chi square tests have been applied to determine differences in the relative frequencies of the variables studied expressed as nominal data, especially in relation to socio-economic data. The size of the samples often affected the Chi square tests. In Germany and the UK, where there were fewer respondents, the numbers of respondents in each cell was occasionally less than 5, hence some Chi square analysis resulted in cells with expected frequencies less than 5. Some authors indicate that the rejection of the results based on a low percentage of the cells is too drastic (SPSS base 8.0). Many researchers use the guideline that no cell should have an expected value less than 1.0 and no more than 20% of the cells should have expected values less than 5.

Alternatively, “Select cases” from the data editor can be used to omit small categories and revisit the analysis. These guidelines were employed for the present research in order to balance the relatively small number of respondents in some locations.

In some special cases (2x2 tables), calculating the odds of the association between the two variables also provided valuable additional information; the likelihood of occurrence of some events could be analysed in more detail.

As with ANOVA analysis, finding significant relationships within Chi square analysis does not indicate very often the degree of association and where the differences lie between the two variables. The adjusted residuals, that have been computed in addition

to Chi square tests, provided valuable information in this respect, indicating the cells that departed markedly from the independence (variables are not related) model.

4.10 THE QUALITATIVE VERSUS QUANTITATIVE DEBATE

Once the questionnaire surveys were finished and the data collated, preliminary data analysis demonstrated the desirability for more insights of the Romanian apple consumers. A logical progression from the questionnaire approach was perceived to be one of the quantitative approaches, namely the focus groups technique, which would allow a closer look to the reasons consumers reacted in a certain way.

In the current literature there is a continuous debate between researchers adopting qualitative methods versus quantitative methods. Researchers such as Kotler (1984), Burns and Bush (1995), Malhotra (1996), Jarrat (1996) or Wagner (1997) have described objectively the advantages and disadvantages of approaching such methods (Table 4.3).

Table 4.3: Summary of differences in quantitative and qualitative research  
(Source: Jarrat, 1996)

Dimensions	Quantitative paradigm	Qualitative paradigm
Purpose	Prediction and control	Understanding
Reliability	Stable - reality is made up of facts that do not change	Dynamic - reality changes with changes in peoples' perceptions
Viewpoint	Outsider - reality is what quantifiable data indicate it to be	Insider - reality is what people perceive it to be
Values	Value free - values can be controlled	Value -bound - values will impact on understanding the phenomena
Focus	Particularistic	Holistic
Orientation	Verification	Discovery
Data	Objective	Subjective
Instrumentation	Non-human	Human
Conditions	Controlled	Naturalistic
Results	Reliable	Valid - the focus is on design and procedures to gain real, rich and deep data

While quantitative research tends to quantify the obtained data and generalise the results from large numbers of representative cases, qualitative research tries to acquire



a qualitative understanding of the underlying reasons from small numbers of non-representative cases.

Qualitative research involves collecting and interpreting data by observing what people do and say. Sometimes researchers consider that large scale surveys are inappropriate or produce data of questionable quality. Employing qualitative research, and hence listening to the market, was said to generate excellent packaging, product design, or even product positioning ideas (Burns and Bush, 1995).

When the research problems require a more flexible approach than the standard quantitative methods, qualitative methods are recommended. Jarrat (1996) states that qualitative and quantitative methods should be viewed as complementary rather than rival techniques. The need of qualitative research arises when it is necessary to find out what is in a consumers' mind (Kumar *et al.*, 1999). Qualitative research

*"...is done to access and also get a rough idea about the persons' perspective. It helps the researcher to become oriented to the range and complexity of consumer activity and concerns. Qualitative data are collected so researchers can know more about things that cannot be directly observed and measured. Feelings, thoughts, intentions, and behaviour that took place in the past are a few examples of those things that can be obtained only through qualitative data collection methods" (Kumar, 1999).*

According to Sampson (1986) the most common situations in which qualitative methods are employed could be:

- to obtain background information where nothing is known about the problem or product field in question;
- in concept identification and exploration;
- to identify relevant or 'salient' behaviour patterns, beliefs, opinions, attitudes, motivations, etc.;
- in establishing priorities amongst categories of behaviour and psychological variables;
- in defining problem areas more fully and formulating hypothesis for further investigation/quantification;
- during preliminary screening process;

- to obtain large amounts of data about beliefs, attitudes, etc. for multivariate analysis studies;
- conducting post research investigations to amplify or explain certain points emerging from some major study, without having to repeat on a large scale;
- in piloting questionnaires
- where it cannot be discovered in a straightforward way why people behave as they do.

Kumar *et al.* (1999) considers that some uses of qualitative research include:

- defining problems in more detail;
- suggesting hypothesis for further research;
- for generating new concepts, problem solutions, lists of product features;
- getting preliminary reactions to new product concepts;
- pre-testing questionnaires;
- learning the consumers' vantage point and vocabulary;
- educating the researcher to an unfamiliar environment: needs, satisfactions, usage situations and problems;
- gaining insights into topics that otherwise might be impossible to pursue with structured research methods.

The joint pursuit of qualitative and quantitative research is also supported by authors such as Bryman (1988) who states that such an approach is more likely to yield a complete picture of a phenomenon by drawing on the respective strengths of each method. Other authors (e.g. Jarrat, 1996) also support this approach. Some of the most popular approaches to qualitative research ( Sampson, 1986; Kumar *et al.*, 1999) are:

- individual 'depth' interview, lasting upwards of one hour;
- group interview, focus groups, or group discussion, lasting between one and two hours;
- semi-structured interviews and shorter interviews of the elicitation type, lasting 20-30 minutes;
- decision protocol interviews;
- repertory grid interviews.



Considering the literature approach and the need for further insights into what Romanian consumer expectations are in relation to the apple industry, it was decided upon the focus groups approach as being the most suitable for this aim from the former enumerated alternatives.

#### **4.11 THE FOCUS GROUPS**

Focus groups are one of the techniques most often associated with qualitative research. According to Kumar *et al.* (1999) a focus group discussion is “the process of obtaining possible ideas or solutions to a ... problem from a group of respondents by discussing it”. Other authors (Beaudin and Pelletier, 1996) have described focus groups as being “...group interviews...on a specific topic... that are time limited, open ended, and flexible”.

The aim of focus groups is mainly to go ‘beneath the surface’, its open-ended interaction leading to stimulation of thoughts and emotions (Market Navigation Inc., 2000). Basically, focus groups are small groups of people brought together and guided by a moderator through an unstructured, spontaneous discussion about some topic (Burns and Bush, 1995). The name of the technique derives from its ‘focused’ approach; the moderator serves to focus the discussion on a certain topic and avoids the group moving onto irrelevant areas for the research. The prime concern in a focus group is interaction, each participant being encouraged to express his/her views in relation to other exposed views of the group members. Researchers such as Denscombe (1998) emphasise the particular value of the interaction within the group as a means for eliciting information, rather than just collecting each individuals’ point of view.

The number of participants in a focus group is often debated. However, the most efficient groups should have a number of participants between 5 to 12 (Sampson, 1986; Morgan 1988; Frey and Fontana, 1993; Burns and Bush, 1995; Beaudin and Pelletier, 1996; Denscombe 1998; Kumar *et al.*, 1999). Nevertheless, small groups (under 7-8 participants) are not able to generate the group dynamic needed and often in spite of moderator efforts one or two of the participants will do most of the talking. Similar

issues emerge with groups larger than 12, when the discussion is in peril of becoming fragmented (Burns and Bush, 1995; Greenbaum 1998). Leaving aside the debates as to which number is the most appropriate one, it is important to remember that the value of any particular group is independent of its size and more dependent on the moderator skills and the fluency, articulation and finally the interaction of the participants (Sampson, 1986).

According to Burns and Bush (1995) there are four main objectives of focus groups:

- to generate ideas;
- to understand consumer vocabulary;
- to reveal consumer needs, motives, perceptions;
- to understand findings from quantitative studies.

Other researchers (Morgan, 1988; Beaudin and Pelletier, 1996, Greenbaum, 1998) also mention the appropriateness of such a method in generating ideas about a certain topic. Furthermore, authors such as Wolff *et al.* (1993) encourage the conducting of focus groups after the survey results have been analysed, with the aim to confirm findings or explore in greater depth the relationships suggested by the quantitative analysis. Fuller *et al.* (1993) and Morgan (1988) give examples of studies which have used very effectively the focus group to provide further insights into questions which remained after survey data analysis and acknowledge the benefits of combining these methodologies.

The focus group technique was chosen in the present research mainly to generate ideas on how the Romanian apple industry can be improved and to reveal consumer needs and perceptions. This particular approach flowed naturally from the questionnaire based approach and was later supplemented by in-depth interviews with some key players of the Romanian apple industry. However, the main conclusions drawn from the analysis of the quantitative data were taken as reference points for the focused discussions.



In order to maximise the effectiveness of focus groups, a series of considerations have to be taken prior as well as during running the focus groups (Morgan 1988; Kent 1993; Burns and Bush 1995; Greenbaum, 1998).

The main considerations before running the groups involve issues such as:

- the type of group to be run;
- the composition of the group;
- the number of groups;
- the size of groups;
- recruitment;
- location of the focus groups;
- developing the moderator guide.

The question as to which type of group to run arises from the existence of several variations on the topic, such as mini-groups, extended groups, reconvened groups, sensitivity panels and creativity groups (Kent 1993), each of which has different characteristics of number of participants, time and approach mode. This study worked with standard groups, involving 7 to 12 participants and a moderator, with a length of discussion of 100-150 minutes.

The composition of the groups is an important issue because it is believed that the best results arise from groups with homogenous characteristics (Burns and Bush, 1995). As it is undesirable to mix participants from different classes and age groups (Kumar *et al.*, 1999) because of differences in perceptions, experiences and verbal skills, it was decided to run four groups with similar characteristics within the group. The groups comprised participants as following:

- one group consisting of both males and females with primary and further education similar age group and low income (30-40 years);
- one group consisting of both males and females with higher education, similar age group and medium income (25-35 years);
- one convenience group of students;
- one group consisting of males with higher education, similar age group (40-55 years) and high income group.

These considerations were based on taking product usage, age, education and income as key variables in the screening of participants. Typically, in a focus group participants are total strangers to each other and sharing similar characteristics will make them more comfortable and ultimately more communicative. In Romanian society significant deference is given to older people, hence including a broad range of age groups within the focus group would make contradictions and open discussions less likely. Introducing different education and income groups within the same focus group will lead to inhibitions as well, therefore it was decided upon the above structure of the groups.

The number of focus groups was decided upon accordingly advice in the literature but other factors as well, amongst which timing, budget and finding a suitable location. Four focus groups were held in Romania at the Agronomic University of Iasi. According to Kumar *et al.* (1999):

*“As a rule, three or four focus group sessions usually are sufficient. The analyst invariably learns a great deal from the first discussion. The second interview produces much more, but less is new...by the third or fourth session, much of what of what is said has been heard before, and there is little to be gained from additional focus groups”.*

As observed earlier, the number of participants in each group is subject to debate in the literature. In order to ensure the minimum of participants in each of the groups (6-7) a larger number of participants (12-14) were approached for each of the groups, to allow for the rate of non-response. “No shows” are a frequent occurrence in running focus groups and it is difficult to assess an exact number of participants. There is no method that will ensure 100% participation, this particular variable is most unpredictable (Burns and Bush, 1995). However, the idea of inviting more participants for the same group was taken accepting the risk of sending some of the participants home in the case of overcrowding.

The recruitment of the group participants was a concession to logistics. Participants were recruited mainly from around the location where focus groups were held - The Agronomic University of Iasi. It is important now to stress that in Romania lower income and education groups rarely possess motor vehicles and having to travel by relatively expensive public transport means would have been a considerable deterrent



in attending the focus groups at a single interview site. However, taking a non-representative sample of participants to attend a focus group is not a problem since focus groups are rarely, if ever, composed of random samples (Fuller *et al.*, 1993).

Participants were screened according to product usage, age, income and education group prior to the invitation to take part in the focus groups. In order to increase participation rate some researchers propose various incentives, from monetary compensation to free samples and meals (Burns and Bush, 1995; Greenbaum, 1998). However the employment of such rewards was not feasible within the limitations of this research work. Nonetheless the participants were ensured an open discussion in a pleasant environment emphasizing the important role of each particular person for the research. Much emphasis was also set on developing from the very beginning a good rapport between the recruiter and the participant. Some researchers acknowledge this particular aspect as being one of the most important ones in attracting participants, behind the curiosity of the respondents; few participants take part in groups only for monetary compensation (Kent, 1993).

The selection of the site where the research was conducted was made bearing in mind to balance the needs of the participants and the needs of the researcher. Western states often offer a large array of locations specifically designed and available for renting with the specific purpose of running focus groups. This is not however the case in Romania. The Agronomic University of Iasi was selected more on a subjective basis by the researcher as an appropriate site, based on former collaboration with this particular institution. Recruiting respondents from the same area also met their needs of ease of meeting at a close location and avoid various other inconveniences.

The location selected for the interviews was one of the University's laboratories meeting many of the requirements of an ideal setting. Situated in a quiet wing, the location benefited from very low levels of noise, adequate lighting, appropriate size and furniture, providing a friendly, relaxing atmosphere. The furniture was pre-arranged before the interviews in a format that would allow participants to face each other, not only for ease of communication and developing rapport, but also for ease of recording.

One of the last arrangements before running the focus groups is developing the moderator guide. Usually trained moderators are employed for doing particular parts of research, since they play one of the most important roles in the outcomes of a focus group (Burns and Bush, 1995; Greenbaum, 1998). However, in the present study the researcher played the moderator role after having accustomed himself with some of the subtleties and demands of such a task. Nothing can replace the experience of a trained moderator, but one of the advantages in the present case was the personal knowledge and involvement of the researcher in the particular topic approached, not to mention that trained moderators are for now somewhat of a rarity in Romania. Furthermore, the moderator's lack of knowledge in some topical issues might affect the validity of the data and often a so-called "insider" is employed to join in leading the focused discussions (Baker and Hinton, 1999).

The moderator guide consists of an outline of the discussion to be held during the focus groups. Some key points (or sections) are differentiated within the guide (Greenbaum, 1998):

- introduction section
- warm-up section
- details section
- key content section
- summary

All the above sections were covered in the developing of the actual guide with special reference to the topic studied.

Other considerations to be taken account of at the focus group facility include aspects such as time of running the groups, providing food, managing the noise level, providing name cards, proper set up of the room, etc.

All focus groups, with the exception of the student group were held during weekends (Saturdays) beginning at 10 a.m. for the convenience of working participants. The



student focus group was run during week time after participants expressed their preference to attending at a particular time and day of the week.

Clear instructions were given to each participant over the exact location of the selected facility. Extra time was also allowed in order to handle late arrivals. Refreshments were provided on arrival and during the discussion. Extra time also allowed the development of an early rapport during the “small-talk” prior discussion and dissipated some of the inherent inhibitions.

No routine has been generally developed for getting the discussion going (Kent, 1993). The focused discussion began with the moderator introducing himself and explaining the rationale of the discussion and the main topics to be covered. Participants also introduced themselves and briefly explained what they were doing. During this introduction section “tent-like” name cards with the first name of the participant were provided. This is also one of the techniques meant to make the environment less formal and relaxed (Greenbaum, 1998). Participants were reassured about the confidentiality of all responses and made aware of the tape recorder used for keeping the record of the conversation.

Other alternative methods of keeping the conversation records such as videotaping were not employed. The main reasons behind video taping avoiding were the intrusiveness of such a method (especially in Romania where techniques such as focus groups are unknown and hence the participants are not accustomed to it) and the lack of specialized rooms containing one way mirrors. However, the whole focus groups analysis approach is based on transcripts and tape recording is necessary even if the interview is video recorded.

During the interview the moderator can adopt various positions, from observing what is happening with little intervention to becoming one of the group or continuing to be the focus of attention (Kent, 1993). The technique preferred by the moderator in the present research was group integration in order to wind up the discussion and keep group dynamics under control. The moderator also directed the flow of the discussion onto issues important for the research, encouraged groups to explore this issues and

tried to keep a friendly relaxed atmosphere over the whole period of the discussions. Some stimulus materials such as fresh apples purchased the same day straight from various private and state producers were also employed. These stimuli had the role of increasing participant involvement and testing reactions to specific issues. The results of the focus group discussions are presented in more detail under later chapters.

#### **4.12 IN-DEPTH INTERVIEWS**

In-depth interviews with key players in the Iasi county apple industry were the last stage of primary research. The combined results of questionnaires and focus groups were taken as a basis for the in-depth interviews, by expressing consumer demands and expectations to the interviewees. Difficulties encountered by each player at the time of the interview were also discussed.

In-depth interviews, in simple terms, involve a meeting between one researcher and one informant in order to explore the subject matter of the interview in detail (Denscombe, 1998; Kumar *et al.*, 1999). One of the main goals of such interviews is to ensure that the results are “deep, detailed, vivid and nuanced” (Rubin and Rubin, 1995). Luck and Rubin (1987) also consider that “...depth means getting a thoughtful answer based on considerable evidence as well as getting full consideration of a topic from diverse points of view”.

Burns and Bush (1995) define an in depth interview as being

*“...a set of probing questions posed one-to-one to a subject by a trained interviewer so as to gain an idea of what the subject thinks about something...the objective is to obtain unrestricted comments or opinions and to ask questions that will help the ...researcher better understand the various dimensions of these opinions as well as the reasons they exist...”*

As opposed to group interviews, the main lines of communication are between the interviewer and the respondent, rather than between respondents themselves. The open nature of in-depth interviews ensures that unexpected facts can be pursued easily since the respondent is given maximum freedom to respond (Kumar *et al.*, 1999). Arksey and Knight (1999) also stress that “...interviewing is a powerful way of helping people



to make explicit things that have hitherto been implicit - to articulate their tacit perceptions, feelings and understandings”.

In-depth interviews can be particularly useful when the researcher tries to understand decision making on the individual level or identifying key product benefits and their improvement (Burns and Bush, 1995; Kumar *et al.*, 1999). In the present research not only the ways of improving the product and its characteristics were researched, but also the barriers encountered by specific players were assessed.

In selecting the in-depth interview as a qualitative method of data collection from the Iasi county apple industry, some prior issues were considered. Firstly, the advantages of such a method for the present research were identified as:

- the familiarity of the researcher with the Romanian apple industry;
- personal contacts within the industry;
- geographical scatter of the sample;
- detail probing into the researched issue;
- an easier, narrative approach of informal style;
- a closer interaction between the interviewee and interviewer.

The main disadvantages encountered were the time and cost involved in conducting the interviews, including the analysis of the transcripts. The prior considerations to approaching depth interviews are somewhat similar to focus groups. When planning depth interviews, some of the main considerations which have to be given special attention are (Kent, 1993):

- who to talk to;
- the number of interviews;
- selection of respondents;
- the actual type of interview;
- the degree of depth;
- the location of data capture.

The interviews took place during the summer of 1999 in the county of Iasi, Romania. As the topic of the research revolves around the apple industry, a wide array of

managers and farmers involved directly or indirectly with the industry were selected. The number of interviews was limited to 17 by the amount of time and finances required by in-depth interviews, a situation similar to the restrictions encountered in previous qualitative and quantitative data collection methods. However, researchers such as Kent (1993) argue that given the length of time such a technique takes, 10 to 15 interviews are all that is needed for completing data collection and gathering the main views expressed.

The respondents were selected by contacting the Fruit Tree Research Station Iasi and further by personally contacting private producers, store managers and processing plant managers. The respondents can be structured into the following categories:

- two managers of fruit tree research stations;
- two researchers within the state apple growing industry;
- four apple growers within the state sector;
- three apple growers within the private sector;
- two supermarket managers;
- two state owned processing and storage plant managers;
- one fruit tree nursery manager within the state sector.

The respondents were mainly selected from the Iasi county region. However, one of the private farmers and one Research Station manager were selected from the immediate vicinity of the county boundaries. All apple growers within the state sector, as well as the researchers, belonged to the Iasi Fruit Tree Research Station since this organisation is the biggest horticultural state owned enterprise in the county.

The two processing plant managers were selected from the “Vitalef” processing plant Iasi, also what used to be the largest fruit and vegetable processing plant in the county before 1989. Each of the managers was in charge of different sectors of the plant; the general manager and the marketing and distribution manager.

The supermarket managers were also selected from the city of Iasi, one of the interviewees being the manager of the biggest food supermarket in Iasi, “Hala Centrala”, and the second the manager of a successful developing food supermarket, “Unic”.



The inclusion of a fruit tree nursery manager in the sample was mainly the discussion of varietal range improvement, since such nurseries are the main providers of quality apple trees for establishing new orchards.

The literature mentions different types of approaching an in-depth interview from completely ethnographical (of open ended and inquisitive nature) to a more directional, detail guided nature, all at the discretion of the researcher. The type of interview is also based on the role the interviewee plays, which could be either informant or respondent. In interviews of the informant type interviewees give information about their organisation and many executive interviews are of this kind (Kent, 1993). In the present research the open-ended informant type of interview has been chosen. The schedule of themes to be covered in the interview was contained within a check-list, but the bulk of the conversation consisted of follow-up questions. As in other interviewing strategies (Alasuutari, 1998), the idea behind is “negotiating an internally consistent explanation in accordance with other facts and observations about the issue under question”.

The degree of “depth” is very much a subjective matter. Some interviews can be superficial and journalistic in nature, while more considered genuine in-depth interviews go further past the surface looking for patterns and frameworks, and trying to interpret the meanings and implications of what was said (Kent, 1993). The magnitude of the interview is a mixture of the interviewers’ skills and the interviewee readiness to communicate. Continuous decisions and adaptation have to be made with each individual participant and sometimes the depth coverage of some issues has to be sacrificed in favour of other considered more critical for the research (Mason, 1997).

The degree of depth is also influenced by the time allocated for each interview, ‘standard’ interviews lasting around 45 minutes while ‘extended’ depths can run up to two and a half to three hours. All in-depth interviews undertaken during the present research were of the ‘extended’ type, with a time duration varying between 1.5 to 3 hours each.

All interviewees were approached either personally or by phone prior to interviews. A convenient date and time were set with each of the respondents and the researcher travelled to them. The researcher obviously had to be flexible in order to meet the respondents' time limitations inherent in such situations. The participants were also briefed upon the topic of the discussion and reassured over the confidentiality of the interview.

The approach to in-depth interviews for getting the discussion going was somewhat similar to focus groups. After the interviewer and interviewee introduced themselves and passed over the "warming up" session the issues to be covered were discussed in a logical order according to the check list developed by the researcher. The check list is similar to the guide moderator; however in in-depth interviews it serves more as a reminder and it does not have to be followed strictly, the conversation being free to move to any areas of interest for the research. Hence, the check list in this case was considered as a flexible guide rather than a rigid framework.

The interviewees were also made aware of the tape recorder and reassured about the confidentiality of the discussion. Recording in-depth interviews is more sensitive than recording focus groups raising various ethical issues (Kent, 1993; Mason, 1997; Arskey and Knight, 1999). It can increase respondent nervousness and reduce frankness, hence in such techniques it is vital to gain respondents' confidence from the very beginning. Researcher self-disclosure, maintaining eye contact, saying encouraging things and being sensitive to various signs of emotional reactions are only some of the ways of fostering a climate of trust (as mentioned by Arskey and Knight, 1999) which were employed. After running all interviews the results were further recorded under the form of transcripts and will be discussed under chapter 6.



### **4.13 QUALITATIVE DATA ANALYSIS, INTERPRETATION AND REPORTING**

The purpose of carrying out supplementary qualitative inquiries as part of this research was to supplement the quantitative findings. The end of qualitative data collection is actually only the beginning of another process, namely to make sense out of the extensive amounts of data at hand and communicating only the essence after having reduced the amounts of data and having identified significant patterns (Patton, 1990).

Authors such as Patton (1990) also suggest that there are no strict rules and no dedicated formulas for qualitative research; however, given the uniqueness of every qualitative research approach it is the researcher's duty to do his very best in order to honestly represent the data and communicate what the data reveal given the purpose of the study.

Until recently (1980's), few authors were proposing clear approaches to analysing qualitative data. These sort of analytic techniques were perceived more as a "learned skill" achieved by practice, not as "reproducible technology" with direct application (Frankland and Bloor, 1999).

Nonetheless, more recently a series of guidelines have been proposed for researchers' attempting to analyse such data. The approaches suggested are multiple, ranging from categorising the data, conversation analysis, content analysis, discourse analysis, analysis of talk, to analytic induction and computer assisted analysis (such as the Ethnograph package) (Frankland and Bloor, 1999; Myers and Macnaghten, 1999; Seale, 1999; Shaw, 1999; Dey, 1993; Silverman, 1993; Miles and Huberman, 1994; Miller and Crabtree, 1992; Patton, 1990; Stewart and Shamdasani, 1990; Strauss, 1987; Jones, 1985; Hedges, 1985).

All the above procedures range from quick and simple approaches, to more time consuming and complex ones, from deductive to inductive styles of analysis. As Miller and Crabtree (1992) state, even if "...as many strategies exist as qualitative researchers", almost all strategies are situated along a continuum ranging from analytic

techniques (more objective) to subjective techniques (which emerge from the researcher).

However, before actually deciding upon the most appropriate method, it is imperative for the researcher to make sure that all data are organised and collated. These procedures include collating all interview notes, field notes, getting a general sense of the data and, not least, making sure that all the transcriptions are complete.

Transcriptions are often regarded as the “basis” of qualitative research, as they represent a very rich data which may be analysed by employing the methods mentioned above. Detailed transcripts record in written detail the interview conversation. They are also an extremely convenient way of making annotations, comparisons, identifying patterns and, basically, permitting the researcher to permanently have a large amount of printed conversation text at hand for analysis. Silvermann (1993) mentions some of the advantages of transcripts:

- detailed recording of working notes;
- transcripts are essential correctives to the limitations of intuition and recollection;
- transcripts permit the extension of the range and precision of the observations which can be made;
- transcripts permit other researchers to have direct access to the data about which claims are being made;
- as the data is recorded in raw form, it can be re-used for further research and can be re-examined in the context of new findings.

Transcription services are normally available, but sometimes utilising such services is to the detriment of the accuracy of the data. Authors such as Stewart and Shamdasani (1990) or Patton (1993) mention cases when the information was distorted by the person transcribing the tape in their attempt to keep phrases complete or grammatically correct.

It is therefore desirable, despite transcription being such a lengthy procedure increasing the time frame of the analysis, for it to be undertaken if possible by the interviewer or, as in the present case, the person carrying out the research. Moreover,



the interviewer may supplement the data with personal observations during the interview. Transcribing the interviews personally, as Silverman (1993) noticed, gives the interviewer the occasion for repeated listenings to recordings which often reveal previously undetected recurring features.

Given the above recommendations, the discussions were transcribed by the researcher. Furthermore, in order to avoid predetermined bias occurring with translation, the transcripts were undertaken in Romanian. Quotations made during the analysis were however translated in English, keeping the meaning of the discussion as accurate as possible. Once all the interviews were transcribed, the actual analysis could begin.

From the multitude of approaches earlier reviewed, the “cut-and-paste technique” was determined to be the most appropriate. Described by authors such as Stewart and Shamdasani (1990) or Miller and Crabtree (1992), the technique is relatively quick and cost effective. Situated in the middle of the continuum which ranges from analytic to subjective techniques, this method is one of the most commonly used (Miller and Crabtree, 1992).

The method is based upon identifying categories of topics and it was used to separate and present aspects related to apple consumption (as resulting from the Focus Groups discussions), as well as grouping the potential factors which could assist in the revitalisation of the Romanian apple industry (resulting from the interviews with producers, processors, retailers).

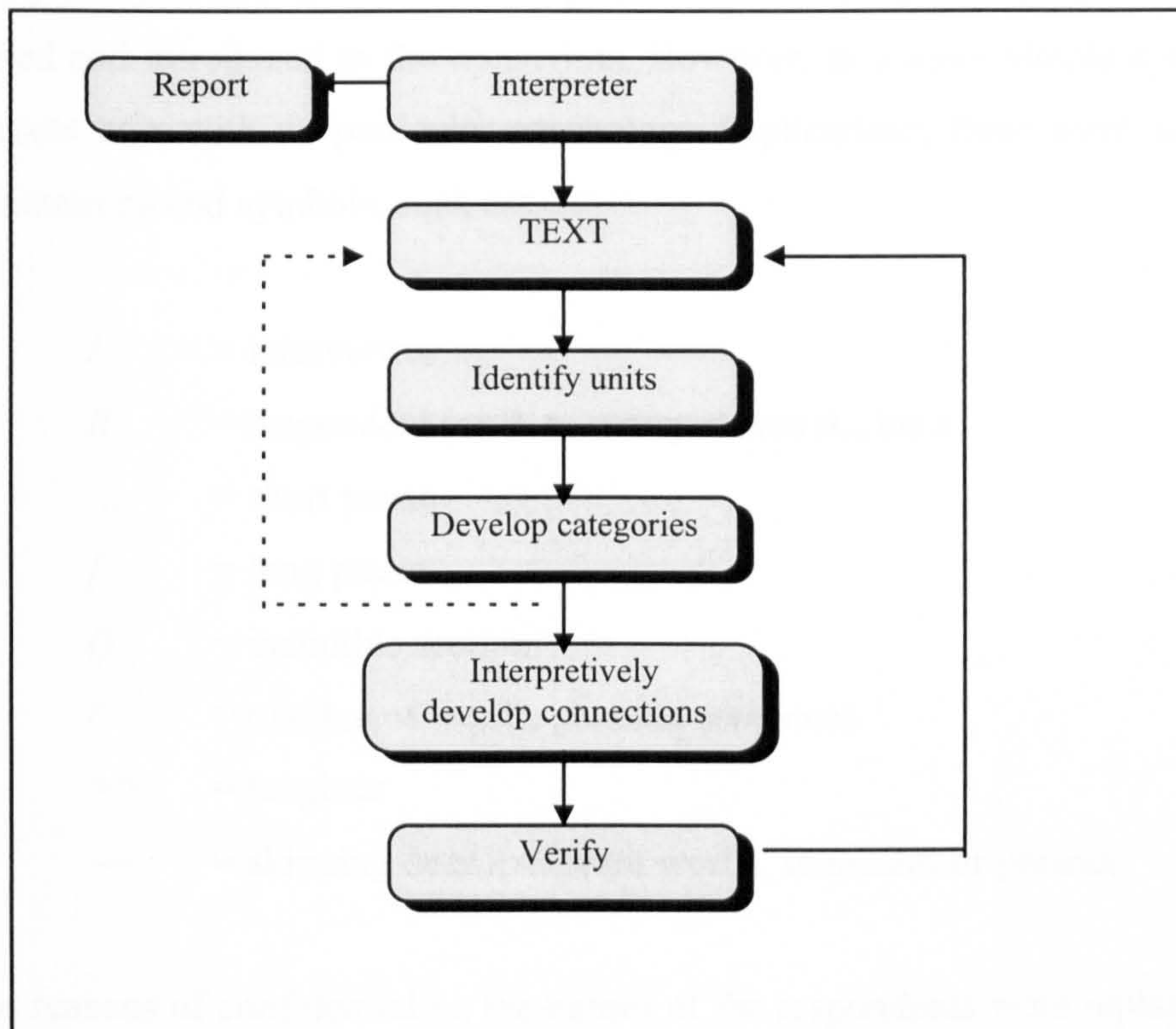
The method itself involves a series of steps, well depicted by Stewart and Shamdasani (1990). Figure 4.9 synthesises this particular method. Firstly the researcher goes through the transcript thoroughly identifying paragraphs relevant to the research. As such, the major topics are identified in each transcript. Secondly, a code of colours or symbols are employed to mark and separate the topics within the text; coded material can consist of sentences, phrases or entire paragraphs. This step is repeated a number of times, as at each re-reading new categories can emerge together with the greater insights gained by the researcher. After the completion of the coding, the third stage involves the actual “cutting” of all relevant material for a certain topic and “pasting” it



together (hence the name of the method), ending up with sets of materials ready to develop the summary report.

**Figure 4.9: Cut-and-paste analysis method**

(Source: Miller and Crabtree 1992)



Although recognised to be a very useful approach (Steward and Shamdasani, 1990), it has to be acknowledged that the method is relatively subjective, being the product of only one analyst (the researcher). The suggestions made by Steward and Shamdasani (1990) as to the desirability of using at least two analysts was not possible. One very simple reason which can be brought as an argument is the lack of Romanian speaking colleagues at Bournemouth University.

Using various quotations as supportive materials, translated as accurately as possible into English, each topic which emerged from the cut-and-paste technique was treated individually after a brief introduction. Special attention was given on maintaining the focus and balancing the description and interpretation, as suggested by Patton (1990).



Before giving some relevant examples (as seen in the results section), it is necessary to mention some annotations and symbols which were employed for transcribing the interviews. Annotations and symbols like these are frequently used in the field of qualitative research. Even if a series of symbols are suggested, every researcher is free to employ any and as many symbols as necessary. More complex analysis require more complex symbols; sometimes even pauses between propositions, phrases or words are timed and introduced in the transcripts. However, in a more simple approach like the present one, with no particular psychology implications, there were used only a few annotations and symbols, such as:

<i>I</i>	= interviewer
<i>R</i>	= respondent (or R.A. = respondent A., etc.)
...	= short pause
[	= long pause
()	= inaudible section
/	= overlap of words, phrases, sentences
>>	= laughter
~	= skipping over irrelevant words, sentences or phrases

For reasons of confidentiality, the names of the respondents were replaced with letters of the alphabet in the examples given. However, respondent “A” or respondent “B” are not the same respondents in all examples given. “A”, “B”, “C” replace the names of any respondent in the particular examples given and show the order of intervening in the discussion. The letters also help in understanding the interaction of the respondents, as well as who said what and to whom. When only letter “R” is employed, the response or comment from only one interviewee is included.

## **5.0 RESULTS OF QUANTITATIVE SURVEYS**

The results of the questionnaire data analysis (quantitative data), and focus groups and in depth interviews (qualitative data) are presented as distinct chapters. The present chapter introduces the results of the questionnaire data analysis in two separate sections: fresh apples and apple juices. At the beginning of each of these sections the profile of the participants taking part in the surveys is presented in comparison for the three countries. As the Romanian samples were more substantial and also the most important for the subsequent focus groups discussions and depth interviews, the results for this country are presented first, followed by the results in the united Kingdom and Germany. The same pattern of presentation is applied both to fresh apples and apple juices.

### **5.1 FRESH APPLE RESULTS**

Within the subsections, the order of presentation differs somewhat from the order of the questions within the questionnaires. Socio-economic data was separated out and is presented first. Various other aspects related to fresh apple consumption, the characteristics of the apple varieties studied and some attitudes held towards fresh apple consumption and other related issues are subsequently presented separately for each studied country. These descriptive statistics are supplemented by tests such as ANOVA, Bonferroni, T-tests, Chi square and Adjusted residuals, as well as in few special cases by calculating the odds of some events occurrence.

It should be now recalled that in order to collect the data, hall tests were carried out in the three study locations within the selected countries. The locations and numbers of valid obtained questionnaires for fresh apples were:

- **United Kingdom** - 159 questionnaires

location: Wimborne market-Wimborne and Bournemouth University-Poole

- **Germany** - 108 questionnaires

location: Geisenheim market- Geisenheim and Wiesbaden market-Wiesbaden



- **Romania** - 300 questionnaires
- location: Hala Centrala market-Iasi

Specifically designed questionnaires, covering demographic, attitudinal and preference aspects were self administered within hall tests. Respondents were recruited at these locations by trained recruiters, mainly employing convenience sampling.

**5.1.1. Comparative socio-economic description of the fresh apples survey participants**

As previously mentioned, the presentation of the fresh apples survey results begins with presenting the actual profile of the respondents. The selected consumers and their socio economic profile is shown in comparison for the three selected countries. Tables are also provided for ease of comparison and data presentation. Every socio-economic aspect studied is highlighted separately and discussed in comparison. This simple descriptive presentation displays the results as percentages. However, it is important to mention at this point that some percentages do not always round up to 100% due to certain participants non response, refusal or their omitting to respond to certain questions.

**Gender.** The majority of respondents were female in all three cases (Table 5.1). Since the surveys were carried out mainly in the market place, the result may lead to the conclusion that females are more likely to shop for food than men in all three countries. However, the highest female participation was registered in the UK (62.2%) followed by Romania (57.7), while the lowest was registered in Germany (55.7%).

Table 5.1: Gender distribution

	United Kingdom %	Germany %	Romania %
male	37.8	44.3	42.3
female	62.2	55.7	57.7

**Age group.** The higher percentage of younger respondents (18-25 years) in Romania (Table 5.2) is noticeable. However, the high percentage could probably be a result of student presence in large numbers as Iasi is an important student centre. The 18-25



years group was hence the predominant one in the Romanian sample (35.3%). Germany was mainly represented by the 26-40 years group (31.8%) and the UK by the 41-65 years group (39.6%). It was also noticeable the high percentage of older people visiting the markets in the UK. Compared to Romania, for example, the total percentage of people over 41 years is almost double.

**Table 5.2: Age group distribution**

	United Kingdom %	Germany %	Romania %
<b>up to 18 years</b>	8.8	1.9	6.7
<b>18-25 years</b>	10.7	21.5	35.3
<b>26-40 years</b>	20.1	31.8	26.3
<b>41-65 years</b>	39.6	29.0	24.3
<b>over 65 years</b>	20.8	15.9	7.4

**Marital status.** There were obvious differences between countries with respect to marital status (Table 5.3), the UK having the lowest percentage of single respondents (28.9%) while Germany had the highest (43.9%). Comparing this data with the age groups, a direct link between the two sets could be stipulated - the high percentage of married respondents taking part in the UK survey could probably be correlated with the high percentage of mature and older respondents from the same sample.

**Table 5.3: Marital status**

	United Kingdom %	Germany %	Romania %
<b>single</b>	28.9	43.5	39.7
<b>married</b>	62.9	49.1	53.0
<b>divorced</b>	2.5	3.7	4.0
<b>widowed</b>	5.7	2.8	3.0

**Number of people in household.** As a main observation, the majority of respondents in the Western countries lived in households comprising of 1-4 persons (Table 5.4). The higher number of persons living in Romanian households should be noted, as well as the isolated cases of very large families, probably occurring due to a higher percentage of extended families in this country.



Table 5.4: Number of people in household

No. of members	United Kingdom %	Germany %	Romania %
1-2	50.9	67.3	23.4
3-4	36.5	24.0	54.3
5-6	12.6	3.8	16.3
7-8	-	2.9	3.0
9-10	-	1.9	2.0
11-12	-	-	1.0

**Children.** In the UK and Romania over 50% of the respondents had children (Table 5.5). The lowest percentage of respondents with children was noticed in Germany (47.2%).

Table 5.5: Respondents with children

	United Kingdom %	Germany %	Romania %
yes	62.3	47.7	54.0
no	37.7	52.3	46.0

**Number of children.** In all three countries the majority of respondents had one or two children (Table 5.6). A higher percentage of respondents with three or four children was noticed in the UK (26.4%). Some isolated cases (1.9%) of very large families (7-10 children) in Romania were recorded. The results presented do not include respondents without children (hence results do not add up to 100%).

Table 5.6: Number of children

No. of children	United Kingdom %	Germany %	Romania %
1-2	34.6	35.3	37.7
3-4	26.4	10.5	11.7
5-6	1.3	1.9	2.7
7-8	-	-	1.6
9-10	-	-	0.3

**Dependent children.** The highest percentage (41.6%) of respondents with one or two dependent children was characteristic for Romania (Table 5.7). In comparison, the UK and Germany had generally much lower percentages of dependent children, respectively 28.9% and 19.2%. However, in all three countries the majority of respondents did not have dependent children.



Table 5.7: Number of dependent children

No. of children	United Kingdom %	Germany %	Romania %
none	71.1	80.0	55.7
1-2	21.4	14.4	41.6
3-4	7.5	4.8	2.0
5-6	-	-	0.7

**Other dependents.** Besides having the largest number of dependent children, 28% of the Romanian respondents had other dependents too (Table 5.8). It is also noticeable the high percentage of respondents with other dependents in Germany (19.8%) compared to the UK (only 4.4%).

Table 5.8: Respondents with other dependants

Other dependents	United Kingdom %	Germany %	Romania %
yes	4.4	19.8	28.0
no	95.6	80.2	72.0

Supplemented by a question related to the actual number of dependents, the survey has revealed a much higher percentage of respondents with more than one dependant in Romania compared to the UK and Germany. In fact, approximately 2% of the Romanian respondents had up to four other dependents (mainly family related ) to look after.

**Main earner.** The majority of respondents were not the main family earner in any of the countries (Table 5.9). It was also noticeable the percentage in Western countries which preferred not to answer the question.

Table 5.9: Main earners

Main earner	United Kingdom %	Germany %	Romania %
yes	36.5	35.2	39.7
no	58.5	55.6	60.3
missing data	5.0	9.3	-

**Income.** Due to differences in currency five income groups were selected for each country, labelled in ascending order from one (I) to five (V). The income groups, reflecting the monthly net income, were as presented in Table 5.10. In the UK and



Germany the majority of subjects belonged to the first two income groups (lower income groups), while in Romania, the majority belonged to the second and third group (Table 5.11). The high percentage of respondents with no income in Romania and the relatively high percentage of respondents in the UK and Germany who refused to answer such question should be noted.

**Table 5.10: Monthly income grouping in the selected countries**

Income group	United Kingdom (£)	Germany (DM)	Romania (thousand Lei)
<b>I</b>	under 1000	under 2000	under 200
<b>II</b>	1001-2000	2001-3000	201-400
<b>III</b>	2001-2500	3001-4000	401-600
<b>IV</b>	2501-3000	4001-5000	601-800
<b>V</b>	over 3000	over 5000	over 800

**Table 5.11: Income profile**

Income group	United Kingdom %	Germany %	Romania %
<b>no income</b>	5.6	-	18.3
<b>I</b>	26.4	32.4	13.3
<b>II</b>	25.8	14.8	22.3
<b>III</b>	6.9	12.0	21.7
<b>IV</b>	6.3	11.1	9.7
<b>V</b>	10.7	12.0	14.7
<b>missing data</b>	18.6	17.6	-

**Occupation.** The occupation grouping presents some similarities in the three studied locations. It is notable that all employed respondents mainly belonged to the “full time employed” group in all countries (Table 5.12).

**Table 5.12: Occupation grouping**

Occupation	United Kingdom %	Germany %	Romania %
<b>full time employed</b>	21.9	35.7	35.0
<b>part time employed</b>	11.6	4.0	1.7
<b>self-employed/employer</b>	7.7	4.0	13.0
<b>housewife/-husband</b>	9.7	10.9	7.3
<b>unemployed</b>	2.6	-	7.3
<b>pupil/student</b>	16.7	24.8	29.7
<b>retired</b>	29.7	20.8	14.7



Romania and Germany had however a higher percentage of full time employed subjects. It is also notable the higher percentage of part time employed respondents in the UK compared to Germany and especially Romania. A particular aspect that should be noted with respect to the Romanian sample is the relative high percentage of the “self-employed/employer” group in this country. The high percentage is a direct result of privatisation and new legislation allowing the establishment of private businesses. Other aspects to be mentioned are the high percentages of students and retired respondents included in the sample as well as the notably higher percentage of unemployed subjects in Romania.

**Education level.** In the UK and Germany, the majority of respondents had secondary education, while in Romania the highest percentage (45.7%) belonged to the further educated group (Table 5.13).

Table 5.13: Education level profile

Education level	United Kingdom %	Germany %	Romania %
secondary	34.6	41.7	19.3
further	19.5	21.3	45.7
higher	27.7	26.9	35.0
missing data	18.2	10.2	-

The high percentage of highly educated respondents in Romania is a result of former socialist politics, which promoted free and affordable education to all social categories.

5.1.2 Results emerging from the Romanian consumers survey with fresh apples

The results presented in this section concern the fresh apple consumption patterns identified within the Romanian sample. The results include the observations resulting from performing some statistical tests (ANOVA, Bonferroni, T-tests, Chi-square and Adjusted residuals) related to various apple consumption variables, some attitudes held towards fresh apple consumption and other related issues, as well as the fresh apples studied characteristics. As the survey started with a screening question posed by the recruiters, only the respondents who generally consumed apples were invited to take part in the survey. However, the initial screening question was supplemented in the



questionnaire by another question related to the actual “like” of apples, as some respondents may consume apples for other reasons than the pure “like” of the product.

The general “like” of apples as fresh fruits was shown to be very high in Romania. In fact all Romanian respondents (100%) liked apples as fresh fruits. The results were also recorded on a 10 point hedonic scale in which the mean and standard deviation were calculated as being 8.63 and 1.59 respectively, reinforcing once again the high “liking” for fresh apples of the Romanian consumers.

With respect to the fresh apple consumption frequency, most of the Romanian participants apparently consumed apples daily (66.0%) or 4 to 5 times per week (24.7%). Only a small percentage, 9.3% consumed apples less frequently than 2-3 times per week.

After the introductory section consisting of the earlier presented socio-economic aspects and some apple consumption related variables, respondents were presented with a list of statements (Table 5.14) and asked to express their opinion to various aspects affiliated to apple consumption and related issues. These were recorded on a five point Likert scale in an attempt to establish their overall attitudes towards the product.

A series of supplementary statements (Table 5.15), thought to be relevant for the Romanian context, were introduced in the Romanian survey to complement the statements otherwise used in all three countries. These supplementary issues were mostly related to the perception of private versus state produce and the retailing of apples on the Romanian market.

The results (Tables 5.14) showed that the statements related to apples being rich in vitamins and healthy for the family scored over 98% of the responses as being positive towards such health related aspects. A high percentage (96.3%) also agreed that they buy apples because the family likes fresh apples, besides apples being considered



Table 5.14: Romanian respondents ratings on attitudinal statements

Statement	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree	Mean	SD*
1. Apples are amongst the easiest fruits to purchase	39.7	51.0	5.3	3.7	.3	1.74	.74
2. Apples are rich in vitamins	61.0	38.0	.7	.3	.0	1.40	.52
3. I buy apples because my family likes them	45.3	51.0	2.7	1.0	.0	1.55	.59
4. I consider apples are important for my family's health	59.7	38.7	1.0	.7	.0	1.42	.55
5. I am satisfied with the apple range on the market	29.0	42.7	15.7	11.0	1.7	2.13	1.01
6. Importing apples to Romania is unnecessary	35.3	33.7	8.0	17.0	6.0	2.24	1.26
7. When I buy apples I am not interested in which variety I buy	16.7	21.3	8.0	44.0	10.0	3.09	.31
8. Romanian apples are the best	37.3	40.7	17.0	4.3	.7	1.90	.87
9. I am worried about the pesticide levels in apples	28.3	33.3	23.3	14.0	1.0	2.26	1.05
10. We should give more consideration to Romanian apple varieties	54.0	41.3	4.0	.7	.0	1.51	.60
11. The apple range on the market is too limited	25.0	46.0	17.0	11.7	.3	2.16	.94
12. Increasing the number of varieties available on the market is good	35.0	50.3	10.7	3.7	.3	1.84	.78
13. If I could afford to buy other exotic fruits, I would not buy apples	6.7	12.3	12.0	53.3	15.7	3.59	1.09
14. I can recognise most apple varieties in the shops or on the market	12.3	29.7	34.7	31.0	4.3	2.71	1.01
15. For me all apple varieties are alike	4.3	14.3	7.7	58.7	15.0	3.65	1.03
16. Apples are an expensive fruit	6.3	29.0	12.0	47.0	5.7	3.16	1.10
17. The apple price is highly related to their quality	29.7	60.3	4.3	5.0	.7	1.86	.76
18. I do buy often more than one kilo of apples at one time	16.7	39.7	9.7	30.0	4.0	2.65	1.18
19. I buy only certain apple varieties	21.3	60.0	8.7	9.3	.7	2.08	.85
20. I will never buy genetically engineered fruits	14.3	26.3	35.0	20.7	3.7	2.73	1.05
21. Farmers should be aware of any changes in consumers' preferences	33.0	59.0	5.0	2.7	.3	1.78	.68
22. Apple growing is a tradition in Romania	39.7	49.7	9.0	1.3	.3	1.73	.70
23. The way apples are sold contributes highly to their sale	31.0	48.7	12.7	6.0	1.7	1.98	.91
24. Compared to other products, fruits in general and apples in particular are not advertised and promoted	31.7	50.7	7.3	7.3	3.0	1.99	.97

\*SD = standard deviation



Table 5.15: Supplementary statements for the Romanian participants and their ratings

Statement	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree	Mean	SD*
1. I believe EU hardly accepts Eastern European products	9.7	13.3	37.7	31.0	4.3	3.03	1.02
2. There are no specialised stores for fresh produce	18.3	52.7	14.3	14.0	.7	2.26	.93
3. Apple varieties are not labelled at sale points	30.0	49.0	9.7	11.0	.3	2.02	.93
4. I would like to know what apple variety I buy	39.3	55.3	4.0	1.0	.3	1.67	.63
5. I think Romanian varieties could be successful on external markets	45.0	46.0	7.7	1.0	.3	1.65	.69
6. Apples from private producers are better than the ones from the state	7.0	27.0	35.0	26.0	5.0	2.95	1.00
7. I buy apples only from private producers (free markets)	3.3	15.0	21.7	54.0	6.0	3.44	.93
8. I buy apples only from the state sector	8.0	19.3	22.3	46.7	3.7	3.18	1.04
9. I buy apples from the free market because they are cheaper	10.7	39.0	17.3	30.0	3.0	2.75	1.08
10. I think Romanian apples would hardly penetrate the EU market	6.3	16.7	33.0	38.3	5.7	3.20	.99
11. I prefer buying from a certain person, market, store	9.3	29.0	16.7	43.3	1.7	2.99	1.08

\*SD = standard deviation



important for the overall health of the family (98.4%). However, a noticeable percentage considered apples expensive (35.3%), and an important percentage would also have switched to other exotic fruits if they could afford to buy such products (19%). Nonetheless the majority of Romanian respondents (90%) acknowledged the direct correlation which existed between the price and the quality of fresh apples.

Even if 71.7% of interviewees initially declared themselves satisfied with the available apple range, they later contradict this opinion; 71% also declared that the apple range available on the Romanian market is too limited and 85.3% would welcome an increase in the available range.

In relation to apple imports, Romanian respondents had negative attitudes, 69% considering them not necessary and agreeing that more attention should be given to Romanian apple varieties (95.3%). Regarding the local product 78% also considered Romanian apples as being the best, 89.4% agreed that apple growing is traditional in Romania, and 91% thought Romanian apples could be very successful on external markets. However, in their personal opinion, 23% of interviewees believed that EU hardly accepted Eastern European produce and the same percentage anticipated Romanian apples would encounter difficulties in penetrating the EU market.

A series of contradictions occurred later between some statements; 36% of the respondents initially stated that they were not interested in what variety they buy, while later 81.3% acknowledged that they buy only certain varieties. Forty two percent of Romanian participants believed they recognise most available apple varieties while for only 18.6% all varieties were alike. Of the Romanian respondents 56.4% bought larger amounts of apples at a time, a reflection of the widespread practice of apples in order to evade increases in price when the products are out of season.

Concerns towards the levels of pesticides and genetic manipulation occurred within the Romanian survey; 61.6% of participants were worried about the pesticide levels in apples, while 40.3% stated they would never buy genetically engineered products.



The disappearance of specialised retailers for fresh produce was reflected by the affirmations of 71% of the interviewees, who agreed that such stores did not exist anymore.

The lack of proper retailing was also emphasised when 79% of respondents agreed that apple varieties were not labelled at the sale point, 94.6% being eager to know what variety they buy. The result for this statement is once again in contradiction with a former one when 42% of the respondents stated they can recognise most available apple varieties.

The opinions over the quality by provenance of the products were almost equally divided. A relatively high percentage (34%) considered that apples from private producers were superior to the state sector. A large percentage however preferred purchasing their fresh apples only from the state sector (27.3%) as opposed to 18.3% who preferred purchasing from the free markets (peasant markets - private sector). The remainder (54.4%) of the respondents presumably oscillated between the private and state sectors. Apparently one of the important reasons for buying in the private sector was the cheaper price (49.7%). Furthermore, 38.3% of respondents preferred buying from a certain person, store or market.

Beginning to understand the importance of advertising, 82.4% of Romanian interviewees agreed that compared to other products fruits generally and apples particularly were not advertised. They also agreed (79.7%) that the way apples are sold contributes to their sale success, as well as that farmers should be more aware of the continuous changes in consumer preferences (92%).

These descriptive results were completed by ANOVA analysis supplemented by Bonferroni tests for the variables with more than two conditions, in which selected independent variables (mainly socio-economic) and their categories were observed to determine if they have any particular relation with the dependent variables, namely the attitudes held. It is relevant at this point to recall that ANOVA just records the existence of such differences, while Bonferroni tests actually show where the main differences lie. Eleven independent variables were chosen for all the surveys in the

selected locations: gender, age group, marital status, number of persons in household, presence of children, number of children, number of dependent children, main earner, monthly net income, occupation and education level. These eleven independent variables were labelled from one (I) to eleven (XI) and all significant relationships are highlighted in Tables 5.16 and 5.17. The detailed results, including the values of the F ratios and the significance levels are presented as Appendices in order to minimise interruptions in the flow of the text.

The independent variable *gender* was proven to have influence over six of the studied attitudinal statements (Table 5.16, 5.17 and Appendix C1). Males and females held significantly different attitudes in relation to Romanian apples being the best, diversifying the available apple range, recognising different available varieties, the amount of apple purchased, farmers' awareness of consumers' preferences and the preferred purchase outlet. Holding only two conditions, this variable could not be supplemented by Bonferroni tests.

Various *age groups* have shown significantly different attitudes with respect to nine of the statements (Table 5.16 and Appendix C2). Firstly, there were encountered significant differences between all age groups and the "18-25 years" group in relation to statement "*apples are amongst the easiest fruits to purchase*". It was noticed that the older the respondents, the easier they found it to purchase fresh apples.

The richness of apples in vitamins was perceived significantly different by the "up to 18 years" group and the "41-65 years" group; according to the younger group apples were perceived as less rich in vitamins.

In relation to statement three, "*I buy apples because my family likes them*" all respondents over 26 years agreed more than respondents up to 18 years that they buy apples because their family likes the product. Another significant difference occurred in the opinion of the age group "41-65 years" which tended to agree more with the same statement than the younger "18-25 years" group. The same significant differences recorded for the above statement, were also recorded for statement "*I consider apples are important for my family's health*".



Table 5.16: ANOVA summary table for identified relationships with respect to the fresh apple attitudinal survey in Romania

Statement	Gender	Age group	Marital status	Household size	Presence of children	No. of children	Dependent children	Main earner	Income group	Occupation	Education level
1. Apples are amongst the easiest fruits to purchase		✓			✓	✓					
2. Apples are rich in vitamins		✓									✓
3. I buy apples because my family likes them		✓	✓		✓	✓		✓		✓	
4. I consider apples are important for my family's health		✓									✓
5. I am satisfied with the apple range on the market					✓			✓			
6. Importing apples to Romania is unnecessary											
7. When I buy apples I am not interested in which variety I buy			✓		✓			✓		✓	✓
8. Romanian apples are the best	✓	✓	✓		✓	✓	✓			✓	
9. I am worried about the pesticide levels in apples		✓							✓		✓
10. We should give more consideration to Romanian apple varieties		✓								✓	✓
11. The apple range on the market is too limited		✓			✓	✓		✓		✓	
12. Increasing the number of varieties available on the market is good	✓	✓		✓		✓				✓	
13. If I could afford to buy other exotic fruits, I would not buy apples					✓			✓			✓
14. I can recognise most apple varieties in the shops or on the market	✓		✓		✓						
15. For me all apple varieties are alike					✓	✓	✓				✓
16. Apples are an expensive fruit			✓		✓	✓	✓	✓		✓	
17. The apple price is highly related to their quality									✓	✓	
18. I do buy often more than one kilo of apples at one time	✓				✓					✓	
19. I buy only certain apple varieties									✓	✓	
20. I will never buy genetically engineered fruits								✓		✓	
21. Farmers should be aware of any changes in consumers' preferences	✓								✓	✓	✓
22. Apple growing is a tradition in Romania											
23. The way apples are sold contributes highly to their sale											
24. Compared to other products, fruits in general and apples in particular are not advertised and promoted				✓		✓					✓



Table 5.17: ANOVA summary table for identified relationships with respect to the fresh apple attitudinal survey in Romania, supplementary statements

Statement	Gender	Age group	Marital status	Household size	Presence of children	No. of children	Dependent children	Main earner	Income group	Occupation	Education level
1. I believe EU hardly accepts Eastern European products					✓			✓			
2. There are no specialised stores for fresh produce					✓				✓		
3. Apple varieties are not labelled at sale points									✓		
4. I would like to know what apple variety I buy									✓	✓	✓
5. I think Romanian varieties could be successful on external markets											
6. Apples from private producers are better than the ones from the state sector											
7. I buy apples only from private producers (free markets)											
8. I buy apples only from the state sector					✓	✓		✓		✓	✓
9. I buy apples from the free market because they are cheaper										✓	✓
10. I think Romanian apples would hardly penetrate the EU market								✓			
11. I prefer buying from a certain person, market, store	✓										



The statement related to Romanian apples as being the best was perceived significantly different by the “under 18 years” age group, which tended to agree with this particular aspect less than all other respondents.

The concern about the pesticide levels in apples was observed to be perceived significantly different by all groups over 18 years compared to the “under 18 years” group, which were less concerned with such issue.

The same young group (under 18 years) tended to disagree significantly more with the statement “*we should give more consideration to Romanian apple varieties*” compared to all respondents over the age of 41. Nonetheless, respondents under 18 years appeared to be more satisfied with the available fresh apple range compared to all respondents over 26 years of age.

Finally, respondents over 65 years of age agreed significantly more with the potential benefits of increasing the number of available varieties than the group “41-65 years”. However the latter group tends in turn to agree significantly more with the same statement than the “under 18 years” respondents.

Respondents with different *marital status* perceived differently five of the studied statements (Table 5.16 and Appendix C3). With respect to statement “*I buy apples because my family likes them*”, divorced respondents tended to agree more than single respondents, while in relation to statement “*when I buy apples I am not interested in what variety I buy*”, married and divorced respondents seemed to be more interested in what variety they buy compared to single respondents. Married respondents also agreed more that Romanian varieties are the best and seemed to be more familiar with the varieties available on the market compared to single respondents, while single respondents tended to find apples more expensive compared to married participants.

The *number of persons* in household influenced the independent variables with respect to some attitudes in only two cases (Table 5.16 and Appendix C4). The main differences in held attitudes occurred within the “7-8 members” group which agreed more with the idea of diversifying the available fresh apple range compared to the “1-2

members” group. The “5-6 members” households also disagreed more with the statement as to which apples were not promoted compared to “3-4 members” households.

The *presence of children* in the family also influenced the replies to no less than 14 attitudinal statements; however due to the variable presenting only two conditions, Bonferroni tests could not be performed. The results and relationships can be observed in Tables 5.16, 5.17 and Appendix C5.

The independent variable *number of children* influenced the attitudes held in nine cases out of the total number of statements (Table 4.16, 4.17 and Appendix C6). Observing the Bonferroni tests results it was noticed that respondents with no children disagreed significantly more than respondents with 1-2 children that apples are easy to purchase, while the respondents with 1-2 children agreed significantly more with statement “*I buy apple because my family likes them*” compared to all other groups.

In relation to the Romanian apple varieties being perceived as the best, respondents with 1-2 children agreed more over the statement than respondents with no children; however respondents with 1-2 children found that the apple range was more limited compared to the participants without children.

The same group with 1-2 children agreed significantly more that diversifying the apple range would be welcome compared to the 5-6 children group. The respondents without children were also less discerning about the apple varieties, finding them “more alike” than all other respondents with children; nonetheless respondents without children also thought apples were less expensive compared to respondents with children.

Interviewees with 1-2 children seemed to be significantly more loyal to the state sector than respondents without children, buying apples mainly from the state sector. Finally, all respondents with 3 to 6 children tended to agree less that apples were not promoted compared to all respondents without children.



With respect to the *number of dependent children*, three relationships were identified (Table 5.16 and Appendix C7). Families with one child agreed significantly more that Romanian apples are the best compared to all other respondents, families with 2 dependent children found apple varieties more “alike” than all other groups, and, as earlier encountered, families without dependent children found apples cheaper than all families with dependent children.

The independent variable *main earner* influenced the perception to the 10 statements presented in Tables 5.16, 5.17 and Appendix C8. However, having only two conditions, Bonferroni tests were not performed.

Concerning the different *income groups*, some differences in the attitudes held by the various conditions of this variable were identified (Tables 5.16, 5.17 and Appendix C9). With regard to the concern on pesticide levels in apples, respondents with no income seemed to worry significantly less than respondents with high incomes (over 800 thousand lei). Respondents with low income (around 200 thousand lei) disagreed more with statement “*the apple price is related to their quality*” (Table 5.16), finding the apple price and their quality significantly less correlated compared to respondents with higher incomes (over 800 thousand lei).

In relation to statement “*I buy only certain apple varieties*” (Table 5.16), participants with low and average incomes seemed to be significantly more choosy than participants without income. The same participants with low and average income appeared to agree significantly more with statement “*farmers should be aware of any changes in consumers’ preferences*” (Table 5.16) than respondents with no income, while respondents with high incomes seemed to have noticed more than all other income groups the disappearance of specialised fresh produce stores.

Statement “*apple varieties are not labelled at sale points*” (Table 5.17) associated with the poor apple labelling in Romania, appeared to appeal particularly to the average income groups (401-600 thousand lei) which agreed with the issue significantly more than respondents without income; the same average income group

also appeared to be significantly more interested to know what variety they buy compared to the “no income” group.

ANOVA analysis supplemented by Bonferroni tests have also shown significant differences in the opinions that some of the different *occupational groups* held (Table 5.16, 5.17 and Appendix C10). Looking at the results it was observed that students agreed less than retired respondents that they bought apples because their family likes this fresh product. They also appeared to be less interested in which variety they bought compared to all other occupational groups.

Full time employed respondents agreed more than students with the statement as to which Romanian apples are the best and, together with the retired respondents, also agreed significantly more that superior consideration should be given to Romanian apple varieties compared to the opinions of the unemployed respondents and housewives/househusbands.

With respect to the available apple varieties, the student group found the range less limited than the retired respondents group, which in turn agreed more with increasing the number of available apple varieties. The retired group also found apples significantly more expensive than the student group, while the unemployed group saw less correlation between the price of the product and its quality.

Self employed and ‘employer’ respondents appeared to often buy significantly higher amounts of fresh apples compared to full time employed respondents, while retired interviewees were significantly more choosy when purchasing fresh apples compared to housewives/househusbands.

Genetically engineered fruit appeared to appeal less to self employed and employer respondents compared to the students and the full time employed, while housewives/househusbands disagreed significantly more than all other groups with statement “*farmers should be aware of any changes in consumers’ preferences*” (Table 5.16).



In relation to the actual interest in the varieties that the respondents bought, unemployed and housewives/househusbands were significantly less interested than any other occupational groups in what varieties they purchased. The state sector appealed less to students, full time employed and retired respondents, while part time employed and unemployed preferred significantly more the free market based on price considerations.

*Education level* also affected the perception of the 12 statements as observed in Tables 5.16, 5.17 and Appendix C11, different educated respondents holding significantly different attitudes. Firstly, the higher educated group agreed significantly more with the fact that fresh apples are rich in vitamins compared to the secondary educated group; higher educated respondents also agreed that apples were more important for the family's overall health than secondary educated respondents.

Further and higher educated respondents were significantly more interested in what varieties they bought compared to secondary educated interviewees, while higher educated respondents were also more concerned about the pesticide levels in apples compared to the secondary educated group. According to the higher educated respondents more had to be done in relation to Romanian apple varieties. Secondary educated respondents were also significantly more prone to switching to other fruit if they could afford it financially compared to further and higher educated groups. Secondary educated respondents also appeared to perceive less differences between the available varieties.

With respect to statement *"I am worried about the pesticide levels in apples"*, higher educated respondents agreed significantly more than the further educated respondents. In turn, the further educated respondents agreed more than the secondary educated respondents that farmers should be more aware of the continuous changes in consumers' preferences.

The same differences as above occurred within statement *"I would like to know what variety I buy"* (Table 5.17); higher educated respondents were apparently more

interested to know what variety they actually buy compared to further and secondary educated respondents.

In relation to purchasing fresh apples only from the state sector, the secondary educated group was more loyal to such retailers compared to the other two groups, while the secondary and further educated respondents tended to agree more that if they bought produce originating from the free market it was mainly on price considerations (these outlet being cheaper). Finally, higher educated respondents tended to agree significantly more than further and secondary educated interviewees that compared to other products fruits and apples particularly were less promoted.

As can be observed in Appendix A, the questionnaire's attitudinal section was followed by a preference section in which respondents were asked to express their preference towards certain characteristics of the selected Romanian fresh apple varieties. Preference was recorded on 10 point open hedonic scales, as interval data. The data is firstly described after calculating the means and standard deviations (SD) for every studied characteristic, namely overall appearance, size, colour, scent, taste, texture and overall preference (Appendix C 12). It should be also recalled at this point that the four studied apple varieties were Patul, Frumos de Voinesti, Generos and De Falticeni.

The preferred appearance in Romania was registered for variety Generos, followed by varieties Frumos de Voinesti, De Falticeni, and situated the last, variety Patul. Size was one characteristic which favoured again variety Generos within the Romanian sample. Having the biggest average size amongst the varieties studied, the result is in accordance with personal observations which suggested that Romanian consumers prefer big apple fruits. Varieties De Falticeni and Frumos de Voinesti came second in the size rating, very close to each other, while the smallest variety, Patul, was the last in the size preference of Romanian consumers. In terms of colour the general preference of Romanian consumers favoured again variety Generos. Variety Patul was rated as the last for this characteristic. The scent of apple fruits often plays an important role in the purchase of these fruits, particularly in Romania. Romanian consumers are often seen assessing the aroma of apples before the purchase, either in



the “free markets” or in the more recently opened supermarkets. Generos was the preferred variety, being rated as the favourite for both scent and taste by the Romanian consumers. The preference for the texture and the taste of the studied varieties on the Romanian market followed the same pattern: Generos, Frumos de Voinesti, De Falticeni, Patul. Finally, the overall preferred variety within the Romanian survey was for Generos.

**Table 5.18: ANOVA summary table for identified relationships with respect to the fresh apple characteristics studied in Romania**

Characteristic	Gender	Age group	Education
overall appearance <i>Patul</i>			✓
overall appearance <i>Frumos de Voinesti</i>			
overall appearance <i>Generos</i>			
overall appearance <i>De Falticeni</i>	✓		
size <i>Patul</i>			
size <i>Frumos de Voinesti</i>			
size <i>Generos</i>			
size <i>De Falticeni</i>			
colour <i>Patul</i>			✓
colour <i>Frumos de Voinesti</i>			
colour <i>Generos</i>		✓	
colour <i>De Falticeni</i>	✓		
scent <i>Patul</i>			✓
scent <i>Frumos de Voinesti</i>			
scent <i>Generos</i>			
scent <i>De Falticeni</i>			
taste <i>Patul</i>			
taste <i>Frumos de Voinesti</i>			
taste <i>Generos</i>			
taste <i>De Falticeni</i>			
texture <i>Patul</i>			
texture <i>Frumos de Voinesti</i>			
texture <i>Generos</i>			
texture <i>De Falticeni</i>	✓		
overall like <i>Patul</i>			
overall like <i>Frumos de Voinesti</i>			
overall like <i>Generos</i>		✓	
overall like <i>De Falticeni</i>	✓		

In order to identify if various socio-economic characteristics of the consumers have influenced the perception of the studied fresh apple characteristics, a series of ANOVA tests were run. The independent variables considered more likely to be important for the present research were gender, age group and education level. The summary for the



few identified relationships is presented in Table 5.18. The three independent variables selected are labelled from 1 (I) to 3 (III). Bonferroni tests supplemented the ANOVA analyses.

As it was observed, *males and females* perceived significantly different the overall appearance and overall like of variety De Falticeni, and the colour and texture of the same variety (Table 5.18).

The *age group* influenced the perception of only two characteristics: the colour and overall like of variety Generos. Bonferroni tests showed that the main differences occurred between the “up to 18 years” group which appreciated significantly less the colour of variety Generos compared to the “18-25 years” group and the “over 65 years” group. Similarly, the “up to 18 years” group appreciated the overall like of the same variety significantly less than all other age groups.

The *education level* affected the perception of three of the characteristics studied for variety Patul (Table 5.18): the overall appearance, colour and scent. Bonferroni tests showed that the main differences occurred as following: the secondary educated consumers appreciated the overall appearance and scent of variety Patul significantly more than the further and higher educated consumers, while the same secondary educated respondents appreciated the colour of variety Patul significantly more than the higher educated respondents.

On the same studied characteristics a series of paired samples T-tests were run in order to identify if there were any linear relations in the assessment of the different fresh apples characteristics. The correlations observed within T-tests can be said to occur more often for characteristics such as scent, taste and texture, and less often for characteristics such as size, colour, overall like and especially overall appearance. Only the correlations which differ significantly from 0 are presented; such correlations show that these characteristics of the fresh apples were clearly perceived as being different amongst the sample surveyed. For example, the overall appearance of variety Patul was perceived as being very different from the overall appearance of variety Frumos

de



Table 5.19: Observed correlations between the ratings of the Romanian respondents for the fresh apple characteristics studied

Characteristic	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	£	\$
A. overall appearance <i>Patul</i>		✓		✓																								
B. overall appearance <i>Frumos de Voinești</i>	✓																											
C. overall appearance <i>Generos</i>																												
D. overall appearance <i>De Falticeni</i>	✓																											
E. size <i>Patul</i>					✓																							
F. size <i>Frumos de Voinești</i>				✓		✓		✓																				
G. size <i>Generos</i>						✓		✓																				
H. size <i>De Falticeni</i>						✓																						
I. colour <i>Patul</i>									✓																			
J. colour <i>Frumos de Voinești</i>								✓		✓																		
K. colour <i>Generos</i>									✓		✓																	
L. colour <i>De Falticeni</i>										✓																		
M. scent <i>Patul</i>													✓			✓												
N. scent <i>Frumos de Voinești</i>													✓		✓													
O. scent <i>Generos</i>														✓														
P. scent <i>De Falticeni</i>														✓														
Q. taste <i>Patul</i>																	✓			✓								
R. taste <i>Frumos de Voinești</i>																	✓		✓	✓								
S. taste <i>Generos</i>																		✓		✓								
T. taste <i>De Falticeni</i>																	✓		✓									
U. texture <i>Patul</i>																		✓		✓		✓	✓	✓				
V. texture <i>Frumos de Voinești</i>																					✓	✓	✓	✓				
W. texture <i>Generos</i>																					✓	✓		✓				
X. texture <i>De Falticeni</i>																					✓	✓		✓				
Y. overall like <i>Patul</i>																						✓				✓		
Z. overall like <i>Frumos de Voinești</i>																										✓		
£. overall like <i>Generos</i>																										✓		✓
\$ . overall like <i>De Falticeni</i>																											✓	



Voinesti. For allowing the data presentation in Table 5.19, the rows and columns of the table were labelled with alphabet letters as well as symbols.

Hence, for example, letter A on the horizontal characteristic row represents “overall appearance Patul”, symbol £ represents “overall like Generos” etc. The minimum value encountered was .120 for the correlation between the texture of variety Patul and the texture of variety Generos, and a maximum value of .262 for the correlation between the taste of variety Frumos de Voinesti and the taste of variety Generos.

The chi-square analysis further performed for the remainder of the nominal data have shown no other relationships between the variables studied within the results recorded for the fresh apple survey with Romanian respondents.

Finally, returning to the consumers’ choice for one of the varieties studied, the results were as following: 47% of Romanian respondents stated they would prefer to buy variety Generos, 25% variety Frumos de Voinesti, 21% variety De Falticeni and only 7% variety Patul. A supplementary ANOVA test has shown that the greatest impact over the choice of variety Generos was given by characteristics “overall like”, “texture” and “taste”, followed by “colour” and “overall appearance” (Appendix C13). According to the same results, the choice of this particular variety was less likely to have been influenced by size nor by scent.

### ***5.1.3 Results emerging from the English consumers survey with fresh apples***

The results presented in this section follow the same pattern which was employed to present the results in Romania. The section begins with a descriptive presentation of some data about apple consumption within the UK sample, continues with the analysis of various attitudes held by the English consumers towards fresh apple consumption and related topics, and describes the results obtained for the assessment of the fresh apple varieties studied.

The overall like of apples was also high within the UK sample. However in this case only 97% of the participants stated that they actually like fresh apples, the remainder of



3% possibly consuming these fruits for other reasons. Recorded on the hedonic scales, the actual “degree of like” was also high (mean = 8.35, SD = 1.81) for this sample.

The apple consumption frequency was in favour of the consumers who ate fresh apples daily (41.5%). However, 15.7% consumed this fresh product 4-5 times per week, 25.2% ate apples 2-3 times per week, while 17.6% only consumed fresh apples once or less per week.

Following the overall pattern, the respondents were subsequently asked to express their opinion towards a series of attitudinal statements. The results are presented in Table 5.20. More than 95% of the UK respondents believed that apples are amongst the easiest fruits to purchase; they likewise stated that apples were not expensive fruits (71%). These respondents also bought apples for the pure reason of the family’s like of the product (86.2%) and stated that even if they could afford to buy other exotic fruits they would still consume apples (80.8%).

Nonetheless, the awareness of apples being healthy products was also high amongst the British respondents, 93.1% considering such fruits rich in vitamins, and 98.1% considering apples important for their family health. It is relevant to note the moderate standard deviation (Table 5.20) which indicates a low variability and hence the general agreement of respondents with these topics.

Most participants seemed to be satisfied with the available apple range; however an important percentage (27.3%) claimed to be dissatisfied. In contrast with a later statement, respondents did not show constancy in their affirmations, a percentage of 47.1 stating they considered the apple range on the market too limited. Furthermore, 70% of the respondents anticipated that increasing the number of available apple varieties on the market would be beneficial. Nonetheless, 45.3% were against apple imports to the UK, considering such action unnecessary.



Table 5.20: English respondents ratings on attitudinal statements

Statement	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree	Mean	SD*
1. Apples are amongst the easiest fruits to purchase	45.3	50.3	3.1	1.3	.0	1.60	.61
2. Apples are rich in vitamins	36.1	57.0	5.7	1.3	.0	1.72	.62
3. I buy apples because my family likes them	27.0	59.2	6.6	6.6	.7	1.94	.81
4. I consider apples are important for my family's health	47.1	51.0	.6	.6	.6	1.56	.61
5. I am satisfied with the apple range on the market	17.8	38.9	15.9	19.7	7.6	2.60	1.20
6. Importing apples is unnecessary in the UK	21.7	23.6	24.8	24.2	5.7	2.68	1.21
7. When I buy apples I am not interested in which variety I buy	7.0	9.5	3.8	44.3	35.4	3.91	1.18
8. English apples are the best	30.4	27.8	24.1	13.3	4.4	2.33	1.17
9. I am worried about the pesticide levels in apples	35.0	31.2	19.1	12.1	2.5	2.15	1.11
10. We should give more consideration to English apple varieties	52.9	33.1	10.2	3.2	.6	1.65	.83
11. The apple range on the market is too limited	20.0	27.1	21.9	27.7	3.2	2.67	1.17
12. Increasing the number of varieties available on the market is good	25.5	44.6	17.8	8.3	3.8	2.20	1.03
13. If I could afford to buy other exotic fruits, I would not buy apples	4.5	3.8	6.4	55.8	29.5	4.01	.96
14. I believe apples from Eastern Europe have a higher pesticide level	3.2	14.3	66.9	14.3	1.3	2.96	.68
15. I can recognise most apple varieties in the shops or on the market	9.7	38.7	29.0	16.1	6.5	2.71	1.05
16. For me all apple varieties are alike	2.6	5.9	7.2	50.0	34.2	4.07	.93
17. Apples are an expensive fruit	4.7	10.1	14.1	53.0	18.1	3.69	1.03
18. I prefer buying organically grown apples	18.2	26.4	25.0	25.0	5.4	2.73	1.18
19. I do not buy often more than one pound of apples at one time	12.0	31.3	13.3	29.3	14.0	3.02	1.28
20. I buy only certain apple varieties	20.7	46.0	8.0	20.7	4.7	2.42	1.16
21. I will never buy genetically engineered fruits	21.1	20.4	38.1	14.3	6.1	2.63	1.14
22. Farmers should be aware of any changes in consumers' preferences	34.4	53.0	7.3	4.0	1.3	1.84	.82
23. Apple growing is a tradition in England	41.2	39.9	14.4	3.9	.7	1.83	.86
24. I would avoid apples from Eastern Europe	9.6	13.0	27.4	35.6	14.4	3.32	1.62
25. Organically grown apples are too expensive	21.9	37.7	29.8	8.6	2.0	2.31	.97
26. I would buy new apple varieties proven they satisfy my taste	25.5	61.4	9.8	13.0	2.0	1.92	.76
27. Advertising is very important for apple sales	24.2	39.9	19.6	12.4	3.9	2.32	1.39

\*SD = standard deviation



Over 60% of the participants considered that English apples were the best, expressing confidence in their national product. Some 81% also thought apple growing was traditional in the UK and 86% further agreed that more consideration should be given to English apple varieties.

A percentage of 48.4 respondents supposed they could recognise most available apple varieties, 67% buying only certain apple varieties and 84.2% being able to distinguish between characteristics of the different varieties. A large percentage (87%) stated they would purchase new apple varieties, provided that these satisfy their taste. Half of the UK respondents mainly bought fresh apples in small amounts, under one pound, (43.3%), while a similar percentage often bought amounts over this quantity (Table 5.20).

Related to Eastern European produce, 17.5% of respondents believed that apples from Eastern Europe have a higher pesticide level, while almost 70% were uncertain with respect to this statement. However 22.6% stated they would avoid Eastern European produce. An important 66.2% were also generally worried about the pesticide levels in apples generally.

On the UK market, organic produce appeared to appeal to the average consumer. An important percentage (44.6%) generally preferred buying organic apples even if 59.6% perceived these products as being too expensive. However this point of view is emphasised by the aversion towards genetically manipulated produce, 41.5% of respondents stated they will never buy such produce, while 38.1% were undecided with respect to the statement.

Finally 87.4% of the UK participants agreed that farmers should be aware of the continuous changes in consumer preferences, and that advertising was a vital factor in apple sales (64.1%).

ANOVA analysis have shown a number of significant differences between the conditions of some independent variables in relation to certain attitudinal statements. ANOVA were supplemented by Bonferroni tests in order to specifically identify which



Table 5.21: ANOVA summary table for identified relationships with respect to the fresh apple attitudinal survey in the UK

Statement	Gender	Age group	Marital status	Household size	Presence of children	No of children	Dependent children	Main earner	Income group	Occupation	Education level
1. Apples are amongst the easiest fruits to purchase											
2. Apples are rich in vitamins											
3. I buy apples because my family likes them		✓			✓						
4. I consider apples are important for my family's health								✓			
5. I am satisfied with the apple range on the market		✓		✓							
6. Importing apples is unnecessary in the UK											
7. When I buy apples I am not interested in which variety I buy		✓									
8. English apples are the best	✓	✓		✓	✓					✓	
9. I am worried about the pesticide levels in apples		✓				✓					
10. We should give more consideration to English apple varieties							✓				
11. The apple range on the market is too limited		✓		✓		✓					
12. Increasing the number of varieties available on the market is good											
13. If I could afford to buy other exotic fruits, I would not buy apples											
14. I believe apples from Eastern Europe have a higher pesticide level								✓			
15. I can recognise most apple varieties in the shops or on the market											
16. For me all apple varieties are alike		✓		✓							
17. Apples are an expensive fruit											
18. I prefer buying organically grown apples											
19. I do not buy often more than one pound of apples at one time		✓				✓					
20. I buy only certain apple varieties		✓									
21. I will never buy genetically engineered fruits	✓				✓		✓				
22. Farmers should be aware of any changes in consumers' preferences					✓						
23. Apple growing is a tradition in England		✓	✓		✓	✓					
24. I would avoid apples from Eastern Europe		✓				✓					✓
25. Organically grown apples are too expensive					✓						✓
26. I would buy new apple varieties proven they satisfy my taste											
27. Advertising is very important for apple sales											



of the conditions differed significantly. As previously, eleven independent variables were selected, and the summary obtained results are presented in Table 5.21.

The conditions of variable *gender* (males and females) were shown to have different opinions over the statements related to English apples as being the best and the purchase of genetically engineered fruits (Table 5.21 and Appendix C14).

The independent variable *age* group was related to no less than eleven statements (Table 5.21 and Appendix C15). ANOVA and Bonferroni tests have shown the following significant differences. The “over 65 years” group showed a significant difference compared to the “18-25 years” group, being more positive about purchasing apples by reason of the rest of the family enjoying the product.

The satisfaction with the available range was also shown to decrease with age, the older the respondents, the less satisfied they were with this particular topic. The “41-65 years” group was also more interested in the variety that they bought compared to the “up to 18 years” group. Older age groups, such as “26-40 years” and “over 65 years” agreed more with the statement as to which English apples were the best compared to the “18-25 years” group. In relation to the concern about pesticide levels, the “41-65 years” group seemed to be significantly more worried about this issue compared to the “18-25 years” group.

Statements “*the apple range on the market is too limited*” and “*for me all apple varieties are alike*” were also perceived significantly different amongst the age conditions. Related to statement “*I do not buy often more than one pound of apples at a time*”, the age group “41-65 years” seemed to buy higher amounts than the “18-25 years” group. The young “under 18 years” group also appeared to be less interested in purchasing only certain varieties compared to the “over 65 years” group. Furthermore the older the age group, the more the respondents agreed that apple growing was a tradition in England.

Finally, in relation to statement “*I would avoid apples from Eastern Europe*”, the “26-40 years” group was significantly more reticent towards buying Eastern European apples than the “over 65 years” group.

Different conditions of the independent variable *marital status* held significantly different opinions only towards one of the attitudinal statements; married respondents tended to agree more that apple growing was a tradition in England compared to divorced respondents.

With respect to the *number of people in household*, all differences towards the statements presented in Table 5.21 (and Appendix C16) occurred between the “1-2 persons” households and the “3-4 persons” households. The households with 3-4 persons seemed to be more satisfied with the available apple range than the households consisting of 1-2 persons, which in return agreed more that English apples were the best. The results for statement “*the apple range on the market is too limited*” are in opposition to statement “*I am satisfied with the apple range on the market*”, households with 3-4 persons being significantly more satisfied with the range than all other groups and finding the available range not to be limited. Finally, households consisting of 1-2 persons appeared to be more discerning when buying certain apple varieties compared to the 3-4 persons households.

The *presence or absence of children* in the family has influenced the response to the statements in Table 5.21 too (Appendix C17). However, Bonferroni tests could not be performed since the independent variable had only two conditions, namely “yes” and “no”.

The *number of children* has influenced the replies to certain statements (Table 5.21 and Appendix C18). Akin to the first statement, the respondents with 5-6 children seemed to be less concerned about the pesticide levels in apples compared to the respondents with less or no children. The respondents with 5-6 children also appeared to buy less apples than the respondents with 1-2 or 3-4 children. The analysis of statement “*the apple range on the market is too limited*” reflects that respondents with 5-6 children agreed significantly less with such statement compared to all other groups.



These particular respondents also agreed more that apple growing is traditional in England compared to all other groups, while in relation to statement “*I would avoid apples from Eastern Europe*”, respondents with 5-6 children tended to be significantly less likely to buy Eastern European apples.

The number of *dependent children* (Table 5.21 and Appendix C19) was also proven to have an impact over two of the statements. Respondents with 3-4 dependent children believed that more consideration should be given to English apple varieties, while all respondents with children had a stronger opinion against the purchase of genetically engineered products compared to the respondents without children.

Being the *main earner* affected the attitudes towards the statements presented in Table 5.21 and Appendix C20. As this variable has also only two conditions, Bonferroni tests could not be performed.

Variable *occupation* showed a significant difference only in relation to one of the statements; retired respondents tended to agree significantly more with the statement as to which English apples are the best ( $F=3.096$ ,  $\text{significance}=.005$ ) compared to full time employed interviewees.

The *education level* (Table 5.21 and Appendix C21) had a significant impact only over two statements. Respondents with higher education seemed to be less reticent towards apples from Eastern Europe compared to secondary educated respondents. The same higher educated participants seemed to find organically grown apples less expensive compared to secondary educated counterparts.

With respect to the characteristics studied for the selected apple varieties, the results were also recorded on hedonic scales. Descriptive statistics were run first (Appendix C22). The preferred variety for overall appearance in the UK was Frumos de Voinesti, which presented the highest mean and lowest standard deviation. In terms of size, the aforementioned variety was the one preferred as well.



The preferred colour resulting from the study of the four varieties on the British market favoured again variety Frumos de Voinesti, possibly emphasising the preference of these particular consumers for bi-coloured varieties (similar appearance to Cox).

However for characteristic “scent”, the British consumers changed their opinion in favour of variety Generos. Nonetheless, they reconsidered in rating again variety Frumos de Voinesti as their overall favourite for taste. Generos was also the favourite variety for the pulp texture, but nevertheless variety Frumos de Voinesti was preferred overall.

Table 5.22: ANOVA summary table for identified relationships with respect to the fresh apple characteristics studied in the UK

Characteristic	Gender	Age group	Education
overall appearance <i>Patul</i>			
overall appearance <i>Frumos de Voinesti</i>			
overall appearance <i>Generos</i>			
overall appearance <i>De Falticeni</i>	✓		
size <i>Patul</i>			
size <i>Frumos de Voinesti</i>			
size <i>Generos</i>			
size <i>De Falticeni</i>			✓
colour <i>Patul</i>			
colour <i>Frumos de Voinesti</i>			
colour <i>Generos</i>			
colour <i>De Falticeni</i>			
scent <i>Patul</i>			
scent <i>Frumos de Voinesti</i>			
scent <i>Generos</i>			
scent <i>De Falticeni</i>			
taste <i>Patul</i>			
taste <i>Frumos de Voinesti</i>			
taste <i>Generos</i>			
taste <i>De Falticeni</i>			
texture <i>Patul</i>			
texture <i>Frumos de Voinesti</i>			
texture <i>Generos</i>	✓		
texture <i>De Falticeni</i>			
overall like <i>Patul</i>			
overall like <i>Frumos de Voinesti</i>		✓	
overall like <i>Generos</i>			
overall like <i>De Falticeni</i>			

Aiming to identify if, and which socio-characteristics have influenced the perception of the studied apple varieties within the British sample, ANOVA tests were run. The independent variables chosen were gender, age group and education level, similar to the



ones selected for the Romanian sample. The summary for the few identified relationships is presented in Table 5.22.

The first variable *gender*, and its conditions (males and females) assessed differently the overall appearance of variety De Falticeni and the texture of variety Generos. The *age group* was shown to have influenced only the assessment of the overall liking of variety Frumos de Voinesti. Bonferroni tests showed that the main differences occurred between the age group “41-65 years” which rated this characteristic significantly higher compared to the “up to 18 years” and the “26-40 years” age groups.

*Education level* has also affected the perception of one studied characteristic, namely the size of variety De Falticeni. In this case, secondary educated consumers rated this particular characteristic significantly better compared to consumers with higher education, as shown by Bonferroni tests.

A series of paired samples T-tests were also run in order to identify if there were any differences in the ratings of the UK respondents with respect to the perception of the characteristics studied. The correlations identified, which differ significantly from zero, are presented in Table 5.23. These correlations prove that particular characteristics of the fresh apple varieties studied were assessed significantly differently within the UK sample. The significance level chosen was .05 (hence 95% confidence interval). The strength of the correlations varied between a minimum of .180 with respect to the colour of varieties Generos and De Falticeni and a maximum of .516 for the size of varieties Patul and Generos. Most of the correlations were registered for the characteristic “scent” (5) and “size” (4), but less for other characteristics.

The remaining nominal data was assessed by employing *chi-square* tests, to observe if there are any differences in the relative frequencies of the variables studied. All socio-economic variables were superimposed with the overall liking of apples, the apple consumption frequency and with the consumers’ final choice for one of the apple varieties studied. However, no relationships were identified.



Table 5.23: Observed correlations between the ratings of the UK respondents for the fresh apple characteristics studied

Characteristic	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	£	\$
A. overall appearance <i>Patul</i>			✓																									
B. overall appearance <i>Frumos de Voinesti</i>				✓																								
C. overall appearance <i>Generos</i>	✓																											
D. overall appearance <i>De Falticeni</i>		✓																										
E. size <i>Patul</i>																												
F. size <i>Frumos de Voinesti</i>						✓	✓																					
G. size <i>Generos</i>						✓		✓																				
H. size <i>De Falticeni</i>						✓	✓																					
I. colour <i>Patul</i>											✓																	
J. colour <i>Frumos de Voinesti</i>									✓																			
K. colour <i>Generos</i>												✓																
L. colour <i>De Falticeni</i>											✓																	
M. scent <i>Patul</i>														✓		✓												
N. scent <i>Frumos de Voinesti</i>													✓		✓	✓												
O. scent <i>Generos</i>													✓															
P. scent <i>De Falticeni</i>													✓															
Q. taste <i>Patul</i>																												
R. taste <i>Frumos de Voinesti</i>																			✓	✓								
S. taste <i>Generos</i>																		✓										
T. taste <i>De Falticeni</i>																		✓										
U. texture <i>Patul</i>																						✓						
V. texture <i>Frumos de Voinesti</i>																					✓			✓				
W. texture <i>Generos</i>																							✓					
X. texture <i>De Falticeni</i>																												
Y. overall like <i>Patul</i>																												
Z. overall like <i>Frumos de Voinesti</i>																											✓	
£. overall like <i>Generos</i>																										✓		
\$ . overall like <i>De Falticeni</i>																												



With respect to the British consumers' choice for one of the varieties, the order of choices was as following: 32.0% of the participants preferred variety Frumos de Voinesti, 28.0% preferred Generos, 24.0% De Falticeni, 12.7% Patul while only 3.3% preferred to chose none of the studied varieties. ANOVA tests which selected as the independent variable the final consumers' choice and as dependent variables the characteristics of the chosen variety by the majority of consumers (Frumos de Voinesti), have shown that the choice was mainly made on reasons of superior assessment for taste, texture, overall liking, overall appearance and size. The choice was apparently not influenced by neither the colour nor the scent of this particular variety (Appendix C23).

#### *5.1.4 Results emerging from the German consumers survey with fresh apples*

The results for the German sample are presented in the same order and following the same pattern as for Romania and the UK. General data about apple consumption is presented at first, followed by a look at the attitudinal study and concluding with a short discussion referring to the preferred variety by the German consumers.

The overall liking of apples was shown to be high within the German sample with 95% of the consumers stating they liked this fresh product. Recorded also on the preference scale, the results are confirmed, the high degree of liking being supported by the resulting data (mean = 8.77, SD = 1.40).

The majority of German respondents consumed fresh apples relatively frequent: daily (43%) and 4-5 times per week (15.9%). The remainder consumed the product 2-3 times per week (31.8%), once per week (3.7%) or even less (5.6%). The total percentage of low consuming respondents was almost 10% (9.3%), with a frequency of consumption of once per week or less.

Examining further the results for the attitudinal survey in Germany, a summary is presented in Table 5.24. In Germany, the average consumer also found apples as being amongst the easiest fruits to purchase, even if in a lower percentage (71.4%) compared



Table 5.24: German respondents ratings on attitudinal statements

Statement	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree	Mean	SD*
1. Apples are amongst the easiest fruits to purchase	45.7	25.7	21.9	5.7	1.0	1.90	.99
2. Apples are rich in vitamins	59.4	27.4	11.3	1.9	.0	1.55	.76
3. I buy apples because my family likes them	50.0	19.4	17.3	8.2	5.1	1.99	1.21
4. I consider apples are important for my family's health	61.6	24.2	12.1	2.0	.0	1.54	.78
5. I am satisfied with the apple range on the market	37.0	21.0	26.0	15.0	1.0	2.22	1.13
6. Importing apples to Germany is unnecessary	49.5	17.5	18.6	9.3	5.2	2.03	.23
7. When I buy apples I am not interested in which variety I buy	2.9	4.9	2.9	20.6	68.6	1.59	.98
8. German apples are the best	44.0	17.0	28.0	6.0	5.0	2.11	1.18
9. I am worried about the pesticide levels in apples	52.0	13.0	16.0	10.0	9.0	2.11	1.37
10. We should give more consideration to German apple varieties	43.1	15.7	20.6	11.8	8.8	2.27	1.35
11. The apple range on the market is too limited	11.2	8.2	28.6	29.6	22.4	3.43	1.24
12. Increasing the number of varieties available on the market is good	19.0	16.0	29.0	19.0	18.0	3.01	1.36
13. If I could afford to buy other exotic fruits, I would not buy apples	3.0	2.0	7.0	22.0	66.0	4.46	.63
14. I believe EU should facilitate imports from Eastern Europe	14.7	6.3	32.6	22.1	24.2	3.34	1.31
15. I can recognise most apple varieties in the shops or on the market	28.0	27.0	29.0	12.0	4.0	2.37	1.13
16. For me all apple varieties are alike	1.0	5.2	5.2	10.3	78.4	4.59	.48
17. Apples are an expensive fruit	5.0	12.9	36.6	28.7	16.8	3.39	1.08
18. The apple price is highly related to their quality	30.1	29.1	25.2	13.6	1.9	2.28	1.09
19. I do buy often more than one kilo of apples at one time	21.8	24.8	17.8	18.8	16.8	2.84	1.40
20. I buy only certain apple varieties	53.8	29.8	8.7	3.8	3.8	1.74	1.03
21. I will never buy genetically engineered fruits	47.4	16.5	11.3	12.4	12.4	2.25	1.46
22. Farmers should be aware of any changes in consumers' preferences	29.5	25.3	31.6	9.5	4.2	2.33	1.12
23. I would avoid apples from Eastern Europe	12.6	8.4	27.4	26.3	25.3	3.42	1.30
24. Advertising is very important for apple sales	24.5	22.4	26.5	19.4	7.1	2.62	1.24
25. I believe apples from Eastern Europe have a higher pesticide level	21.7	22.8	30.4	17.4	7.6	2.66	1.21

\*SD = standard deviation



to the British consumers for example. More than 46% of the German respondents often bought higher amounts of apples at a time (over one kilogram). Respondents were also aware of the fruits' richness in vitamins (86.8%), of its value towards general health (85.8%) and liking of the family (69.4%). Given the opportunity to afford buying other exotic produce, only 5% of the German respondents would switch their preference from apples. The moderate standard deviation for the statements related to apples' richness in vitamins and importance for family health (Table 5.24) should be noted.

Apples were perceived as expensive by almost 18% of interviewees who were also aware of the high correlation between price and quality (59.2%). However, 15.5% of the respondents found no relation between these two factors.

A considerable percentage (58%) were satisfied with the available apple range; only 19.4% believed the apple range was too limited. However, even if 35% of participants agreed that increasing the available range would be positive, 67% also consider imports unnecessary. Confident in their national product (61%), Germans agreed that more should be done to support local apple varieties (58.8%).

The majority of participants (55%) stated that they were able to recognise most apple varieties on the market. An important percentage also appeared to buy preferentially amongst the available varietal range (83.6%). Only 6.2% of respondents considered all apple varieties as being alike.

German consumers were concerned about pesticide levels in apples, 65.% stating that this issue was a factor of concern. Eastern European apples were regarded as containing higher levels of pesticides (44.5%). However only 21% would avoid buying such product while a similar percentage believed EU should not facilitate imports from Eastern Europe. Germans also voted in a high percentage (63.9%) against the purchase of genetically engineered fruit.

Advertising was considered very important for apple sales by 46.95 of participants, while 54.8% of the interviewees considered that farmers should be permanently aware of the consumer changing preferences.



Table 5.25: ANOVA summary table for identified relationships with respect to the fresh apple attitudinal survey in Germany

Statement	Gender	Age group	Marital status	Household size	Presence of children	No of children	Dependent children	Main earner	Income group	Occupation	Education level
1. Apples are amongst the easiest fruits to purchase		✓									
2. Apples are rich in vitamins		✓									✓
3. I buy apples because my family likes them		✓	✓		✓	✓		✓		✓	✓
4. I consider apples are important for my family's health		✓	✓		✓					✓	✓
5. I am satisfied with the apple range on the market		✓						✓		✓	
6. Importing apples to Germany is unnecessary					✓						✓
7. When I buy apples I am not interested in which variety I buy			✓								✓
8. German apples are the best		✓	✓		✓	✓				✓	✓
9. I am worried about the pesticide levels in apples		✓			✓					✓	
10. We should give more consideration to German apple varieties			✓								
11. The apple range on the market is too limited											
12. Increasing the number of varieties available on the market is good											
13. If I could afford to buy other exotic fruits, I would not buy apples					✓						
14. I believe EU should facilitate imports from Eastern Europe									✓		
15. I can recognise most apple varieties in the shops or on the market		✓	✓		✓					✓	
16. For me all apple varieties are alike	✓										
17. Apples are an expensive fruit											
18. The apple price is highly related to their quality											
19. I do buy often more than one kilo of apples at one time					✓						
20. I buy only certain apple varieties										✓	
21. I will never buy genetically engineered fruits	✓		✓								
22. Farmers should be aware of any changes in consumers' preferences											
23. I would avoid apples from Eastern Europe					✓	✓	✓				✓
24. Advertising is very important for apple sales								✓		✓	
25. I believe apples from Eastern Europe have a higher pesticide level											✓



The ANOVA analysis which considered the independent variables as seen in Table 5.25 has shown a series of differences in the opinions various conditions held with respect to the studied statements; Bonferroni tests were also performed when possible.

According to table 5.25 the most influential variable over the attitudinal statements was “presence of children” which has influenced the replies to no less than 9 attitudinal statements. In order of importance, the influence of the rest of the variables was as following: “age group”, occupation group” and “education level” (8), “marital status” (7), “number of children” and “main earner” (3), “gender” (2), “income group” and “number of dependent children” (1), and finally “number of persons in household” (no influence over any statements). From Table 5.25 it can also be observed that some of the statements were actually not influenced at all by any of the socio-economic variables.

The variable *gender* has influenced the response to only two attitudes, as observed in Table 5.25 and Appendix C24. Different *age groups* also held significantly different opinions with respect to some of the attitudinal statements (Appendix C25). Respondents over 65 years of age agreed more than respondents between 18 and 40 years that fresh apples were relatively easy to purchase. The age group “41-65 years” believed significantly more that fresh apples were richer in vitamins compared to respondents under 25 years, while all respondents over 25 years agreed more with their family playing an important role in apple purchase compared to all respondents under this age. Participants over 41 years found fresh apples more important for the general health of the family than all respondents under the age of 41. The satisfaction with the available apple range was significantly higher within the “over 65 years” group compared to the respondents aged between 18 and 25 years. The “18-25 years” group also agreed less with the fact that German apples were the best, and worried less about pesticides, and knew the available varieties less well compared to all other age groups.

With respect to the independent variable *marital status* all differences encountered (Appendix C26) occurred between married and single respondents. As such, single respondents tended to agree less with statements “*I buy apples because my family likes them*” and “*I consider apples are important for my family's health*”, and seemed to be

less choosy with respect to the apple varieties that they purchased compared to married respondents. Single respondents agreed less with the fact that German apples were the best and that more consideration should be given to local varieties. Such participants were also less familiar with the available varietal range and less concerned about the genetic manipulation of fruits.

The variable reflecting the *presence of children* within the family has influenced the replies to no less than 9 attitudinal statements (Appendix C27). However, holding only two conditions (namely “yes” and “no”), Bonferroni tests could not be performed.

With respect to the *number of children* (Appendix C28), respondents with 1 or 2 children agreed significantly more with statement “*I buy apples because my family likes them*” compared to respondents without children. Respondents with no children disagreed more with the statement as to which German apples were the best compared to respondents with 3 or 4 children, while the latter group appeared to avoid Eastern European apples more compared to the respondents without children.

The number of *dependent children* also influenced the replies towards only one of the studied attitudes (Appendix C29); it was observed that the more dependent children there were within families, the more such families tended to avoid apples of Eastern European origin. Being the *main earner* within the family also affected the held attitudes towards three statements as presented in Table 4.25 and Appendix C30. However, as well as in other cases when there are only two conditions Bonferroni tests could not be performed.

The *income grouping* has influenced the studied attitudinal statements with respect to only one statement (Appendix C31). German respondents with average incomes (3000 DM) agreed significantly less with the European Union facilitating imports from Eastern Europe compared to all respondents earning under this sum.

The *occupation* grouping had a significant effect over eight of the studied attitudinal statements (Appendix C32). In relation to the impact over the statement “*I buy apples because my family likes them*”, Bonferroni tests have shown that part-time employed



Germans agreed significantly more than all other groups. Within respect to the same statement, pupils and students also agreed significantly less compared to housewives/househusbands and retired German respondents. The same pattern was followed in the response of different occupation groups with respect to statement "*I believe apples are healthy for my family*". The statement related to the satisfaction with the available apple range has shown that retired German respondents were significantly more satisfied with the fresh apple range compared to both part time and full time participants, while both housewives/househusbands and retired interviewees agreed significantly more with the statement as to German apples being the best.

Within the German sample, worries about the pesticide levels in apples were also significantly higher amongst the housewives/househusbands group compared to self-employed respondents, while pupils and students were apparently significantly less familiar with the available apple varieties on the market.

Finally, housewives/househusbands were more oriented towards buying only certain apple varieties compared to self-employed German respondents. Self-employed respondents tended however to agree more with the statement as to which advertising is very important for apple sales compared to the same housewives/househusbands group.

The *education level* also influenced the attitudes different respondents held with respect to eight statements (Appendix C33), as shown below. Higher educated respondents found apples less rich in vitamins and considered apples less important for the family health compared to secondary educated respondents. Further educated participants agreed significantly more with statement "*I buy apples because my family likes them*" compared to the remaining two groups. Respondents with secondary education agreed more with the statement as to apple imports not being necessary compared to both further and higher educated groups. Higher educated respondents seemed to be significantly more choosy when buying certain apple varieties than secondary educated respondents. Participants with secondary education agreed more with the statement as to German apple varieties being the best. Finally, higher educated respondents seemed to avoid apples originating from Eastern Europe less compared to

secondary educated respondents, and also disagreed more with the statement as to Eastern European apples having higher pesticide levels.

The presentation of the results within the German sample continues with a description of the preference towards the studied varieties (Appendix C34). The most appreciated variety for *overall appearance* in Germany was Frumos de Voinesti, the variety for which the highest mean and lowest standard deviation were registered. De Falticeni and Generos were second in the overall appearance rating, while Patul registered both the lowest mean and the highest standard deviation. For *size, colour, taste* and *overall preference*, the highest mean was registered for variety De Falticeni. Different ratings were encountered for the characteristics of *scent* and *texture*, where the best ratings in both cases were given to variety Generos. Nevertheless, there should be noted that variety Patul came last in the preference of all characteristics as assessed by German consumers, with the exception of texture.

In order to see how various socio-economic characteristics have influenced the perception of the fresh apple characteristics studied in Germany, a series of *ANOVA* tests were also run taking as independent variables gender, age group and education level. The summary for the identified relationships is presented in Table 5.26. These analyses were supplemented with Bonferroni tests where possible.

It can be observed that amongst the characteristics which were influenced the most were the taste of variety Generos (influenced by all three independent variables) followed by the overall appearance of variety Patul (influenced by both age group and education level), the size of variety Patul (also influenced by age and education group) and the overall like of variety Generos (influenced by gender and education level).

In terms of gender, it can be observed that *males and females* perceived significantly different two characteristics of the same variety: the taste and overall like of variety Generos.



**Table 5.26: ANOVA summary table for identified relationships with respect to the fresh apple characteristics studied in Germany**

Characteristic	Gender	Age group	Education
overall appearance <i>Patul</i>		✓	✓
overall appearance <i>Frumos de Voinesti</i>			
overall appearance <i>Generos</i>			✓
overall appearance <i>De Falticeni</i>			✓
size <i>Patul</i>		✓	✓
size <i>Frumos de Voinesti</i>			
size <i>Generos</i>		✓	
size <i>De Falticeni</i>		✓	
colour <i>Patul</i>		✓	
colour <i>Frumos de Voinesti</i>			
colour <i>Generos</i>			✓
colour <i>De Falticeni</i>			
scent <i>Patul</i>			
scent <i>Frumos de Voinesti</i>			
scent <i>Generos</i>			
scent <i>De Falticeni</i>			
taste <i>Patul</i>			
taste <i>Frumos de Voinesti</i>			
taste <i>Generos</i>	✓	✓	✓
taste <i>De Falticeni</i>			
texture <i>Patul</i>			✓
texture <i>Frumos de Voinesti</i>			✓
texture <i>Generos</i>			✓
texture <i>De Falticeni</i>			
overall like <i>Patul</i>			
overall like <i>Frumos de Voinesti</i>			
overall like <i>Generos</i>	✓		✓
overall like <i>De Falticeni</i>			

In terms of *age groups*, most differences occurred between the “over 65 years” age group and the other age groups (especially the “18-25 years” group) as indicated by Bonferroni tests. These differences could be summarised as following:

- the “over 65 years” group appreciated the overall appearance of variety *Patul* significantly more than both “18-25 years” and “26-40 years” groups;
- the “over 65 years” group appreciated the size of variety *Patul* significantly higher than the “18-25 years” group;
- the “41-65 years” group appreciated the size of variety *Generos* significantly more than the “18-25 years” group;
- all groups over 26 years appreciated the size of variety *De Falticeni* less than the “18-25 years” group;
- the “over 65 years” group rated the colour of variety *Patul* significantly higher than the “18-25 years” group;



- the “over 65 years” group rated the taste of variety Generos significantly higher than the “18-25 years” group.

With respect to the influence of the *education level* on the studied characteristics, Bonferroni tests have revealed that all differences occurred between the secondary educated group and the other groups. These differences can be summarised as following:

- the secondary educated respondents appreciated the overall appearance of varieties Patul and Generos significantly higher than both further and higher educated groups;
- the secondary educated group appreciated the overall appearance of variety De Falticeni significantly higher than the higher educated respondents;
- the secondary educated respondents appreciated the size of variety Patul significantly higher than both further and higher educated groups;
- the secondary educated group appreciated the colour of variety Generos significantly higher than the higher educated respondents;
- the secondary educated respondents appreciated the taste of variety Generos significantly higher than further educated respondents;
- the secondary educated respondents appreciated the texture of variety Patul significantly higher than further educated respondents;
- the secondary educated respondents appreciated the texture of variety Frumos de Voinesti significantly higher than both further and higher educated groups;
- the secondary educated respondents appreciated the texture of variety Generos significantly higher than further educated respondents;
- the secondary educated respondents appreciated the overall like of variety Generos higher than further educated respondents.



Table 5.27: Observed correlations between the ratings of the German respondents for the fresh apple characteristics studied

Characteristic	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	£	\$
A. overall appearance <i>Patul</i>			✓	✓																								
B. overall appearance <i>Frumos de Voinesti</i>				✓																								
C. overall appearance <i>Generos</i>	✓																											
D. overall appearance <i>De Falticeni</i>	✓	✓																										
E. size <i>Patul</i>					✓	✓																						
F. size <i>Frumos de Voinesti</i>						✓	✓																					
G. size <i>Generos</i>						✓		✓																				
H. size <i>De Falticeni</i>						✓	✓																					
I. colour <i>Patul</i>									✓	✓																		
J. colour <i>Frumos de Voinesti</i>								✓	✓		✓																	
K. colour <i>Generos</i>								✓	✓	✓																		
L. colour <i>De Falticeni</i>																												
M. scent <i>Patul</i>													✓	✓		✓												
N. scent <i>Frumos de Voinesti</i>													✓															
O. scent <i>Generos</i>													✓															
P. scent <i>De Falticeni</i>													✓															
Q. taste <i>Patul</i>																		✓			✓							
R. taste <i>Frumos de Voinesti</i>																	✓											
S. taste <i>Generos</i>																												
T. taste <i>De Falticeni</i>																	✓											
U. texture <i>Patul</i>																					✓	✓	✓	✓	✓			
V. texture <i>Frumos de Voinesti</i>																					✓			✓	✓			
W. texture <i>Generos</i>																								✓	✓			
X. texture <i>De Falticeni</i>																					✓	✓						
Y. overall like <i>Patul</i>																						✓	✓				✓	✓
Z. overall like <i>Frumos de Voinesti</i>																										✓		
£. overall like <i>Generos</i>																												
\$ . overall like <i>De Falticeni</i>																										✓		



A series of paired comparison T-tests were run in order to identify differences in the perceptions of the characteristics studied for the selected varieties. The summary results are presented in Table 5.27. The value of the calculated correlations varied between a maximum of .508 for the size of Generos and the size of De Falticeni, and a minimum of .198 for the texture of Patul and the texture of De Falticeni". All correlations are significant at a .05 level. Most correlations were identified for characteristics size and taste (4), followed by overall appearance and colour (3).

For the remainder of the nominal data a series of chi-square analysis were performed. No other relationships were identified, most probably due to the limited number of respondents in Germany.

Finally, the choice of the German respondents was as following: 42.4% stated they would prefer to buy variety De Falticeni, 33.7% variety Generos, 13.5% variety Frumos de Voinesti, 5.7% variety Patul, while 3.8% stated they would prefer not to buy any of the assessed samples. The supplementary ANOVA test performed (Appendix C35) showed that the main impact over the choice of variety De Falticeni was given by taste, overall like and texture, while the other characteristics had little or no impact.

#### ***5.1.5 Brief comparison of the fresh apple consumers surveyed***

The quantitative approach has revealed a series of remarks with respect to fresh apple consumers in the selected locations. As observed, both similarities and differences were encountered. The similarities identified are presented below.

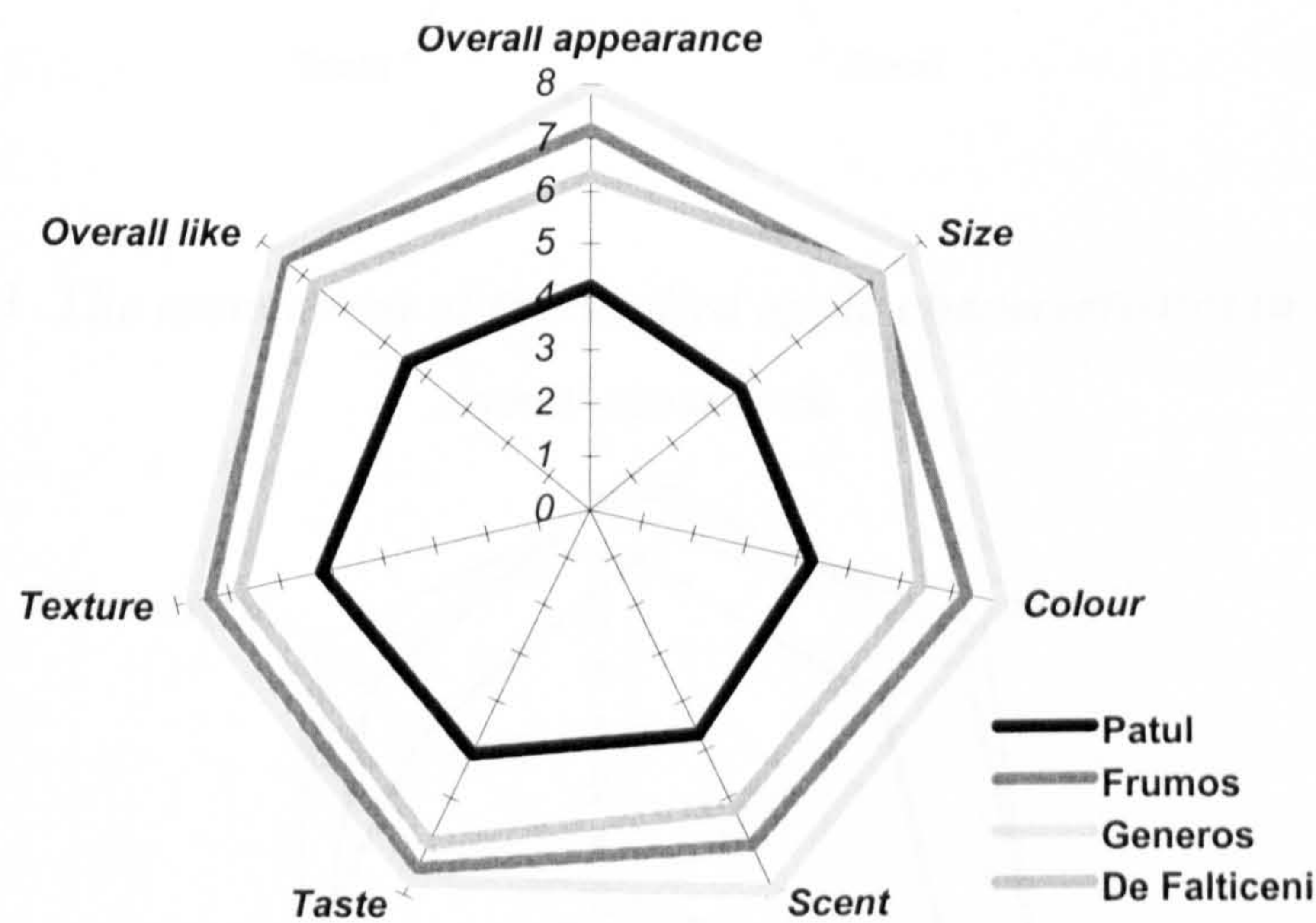
Amongst the first observations to be made was the high stated "like" of apples in the three locations surveyed. The registered means of 8.63 in Romania, 8.35 in the UK and 8.77 in Germany, measured on the hedonic scales, were actually very close. Similar consumption frequencies were registered in the UK and Germany. In the UK 41% of the respondents consumed apples daily compared to 43% in Germany; referring to the consumption frequency of 4-5 times per week, the percentages were 15.7% in the UK and respectively 15.9% in Germany.



With regard to the perceptions held, the most influential factor in all countries was the age of the respondents, followed by the presence of children and the education level (Tables 4.16, 4.21, 4.25). The perception that indigenous apples are the best was influenced by all of these factors in all three locations. The age group was also demonstrated to have influenced the perceptions as to which apples were purchased because of the like of the family in all three countries, and also the consumers concerns on the pesticide levels in apples. The number of dependent children and education level influenced the statement as to why both Germans and English respondents would avoid products from Eastern Europe. With respect to the perceptions held and the factors that influenced them, there were no other similarities between the three countries.

With respect to the preference questionnaire and the studied aspects of the four apple varieties, a number of conclusions were drawn. Based on the responses (calculated means), the assessment of the characteristics was plotted as in Figures 5.1, 5.2 and 5.3.

**Figure 5.1** *The assessment of the studied apple characteristics in Romania*

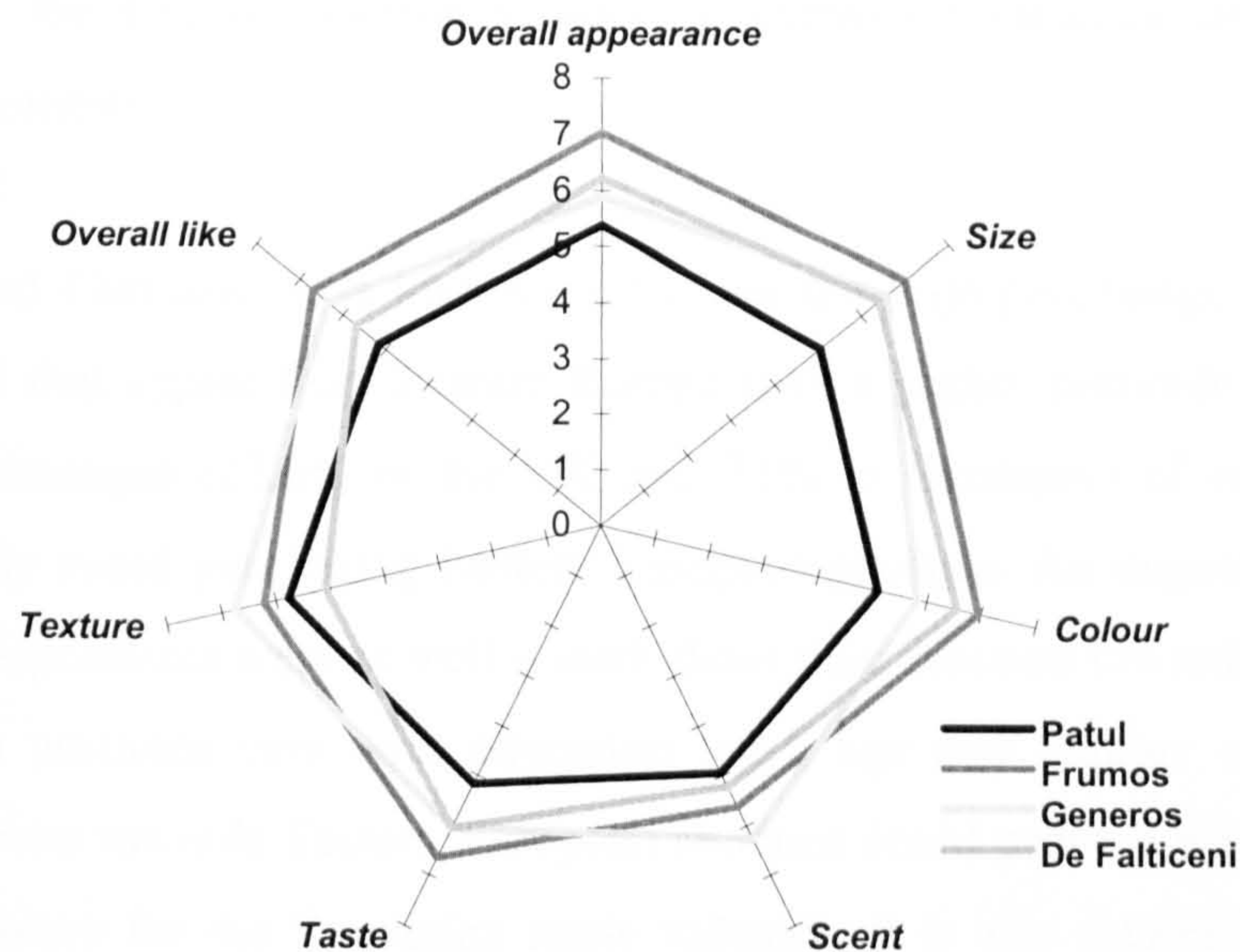


The assessment of the characteristics of the four apple varieties in Romania showed a very strict differentiation within the sample. Three of the varieties (Frumos de Voinesti, Generos and De Falticeni) were rated closely to each other, while the fourth variety, Patul, was clearly preferred less. By looking at Figure 5.1, the assessment of the characteristics could almost be described as being “concentric”, with a preference for variety Generos, followed by the other varieties.

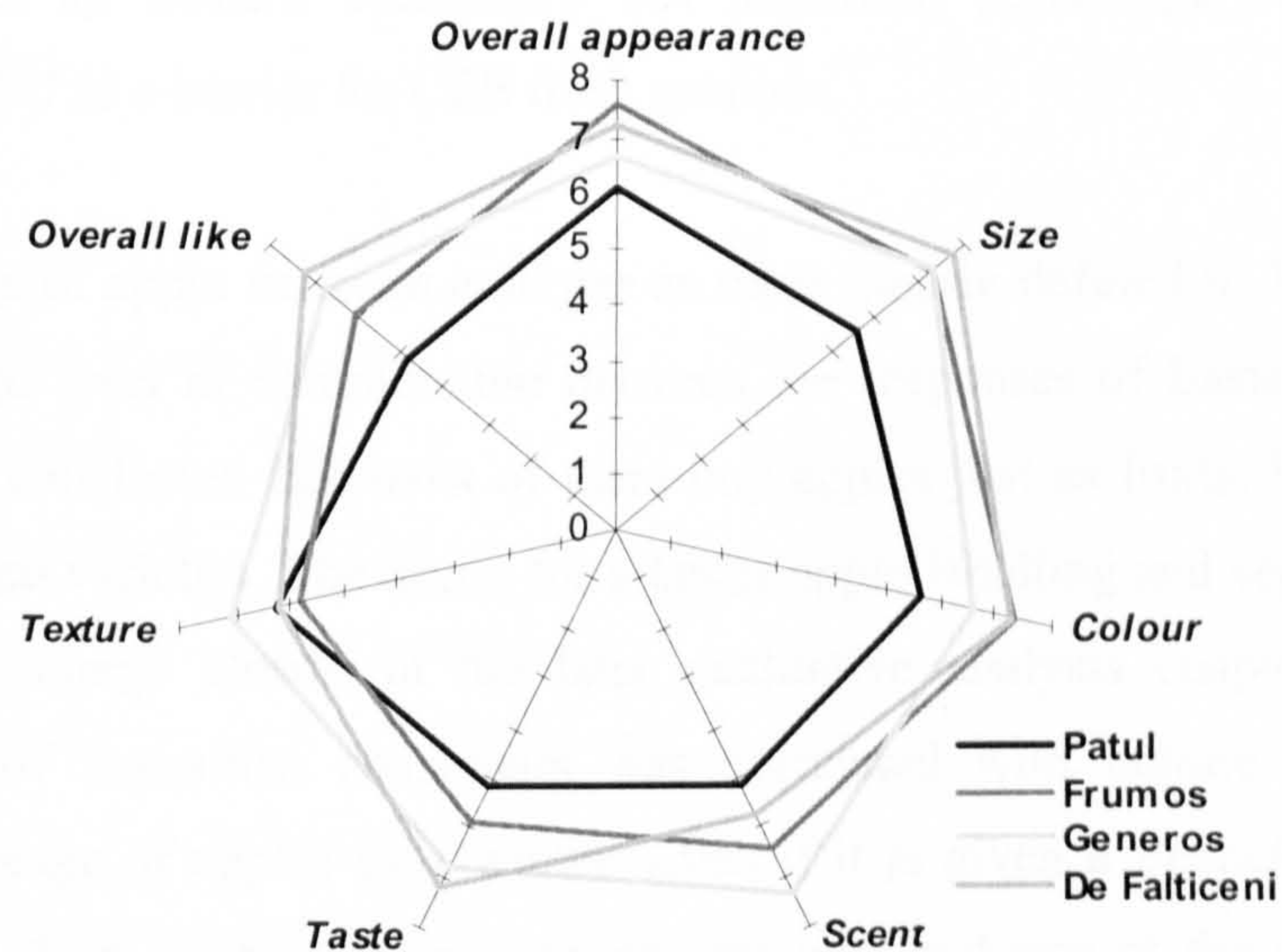


In the UK, the assessment of the characteristics appears to be more intertwined (Figure 5.2). There were clearly some varieties rated better for certain characteristics and less for others. The plotted data does not have a concentric appearance. While the preferred variety in the UK, namely Frumos de Voinesti, was rated well for overall appearance, size, colour and taste, Generos for example was rated higher for both scent and texture.

**Figure 5.2** *The assessment of the studied apple characteristics in the UK*



**Figure 5.3** *The assessment of the studied apple characteristics in Germany*





In Germany, the graphic (Figure 5.3) looks similar to the one in plotted for the UK. However within this sample variety Frumos de Voinesti (preferred in the UK) was replaced by variety De Falticeni. De Falticeni was rated as the best for size, taste and colour (even if Frumos de Voinesti was rated almost equal for this characteristic) while Generos was again preferred for scent and texture, and Frumos de Voinesti for overall appearance. It should be noted that even if it was rated as the last variety for overall like in all locations, the most appreciated quality of variety Patul was its texture, especially in the UK and Germany where it surpassed varieties De Falticeni and Frumos de Voinesti.

In the UK and Germany, it is interesting to note the high percentage of respondents who believed that apples from Eastern Europe have a higher pesticide level, and also the high percentages (22.6% in the UK and 21% in Germany) of respondents that would actually avoid purchasing Eastern European produce. An important percentage of Western respondents were as well unsure about their reaction towards such produce. Even if such attitudes vary with education level, age and number of children, the adverse opinions towards Eastern European produce could prove a barrier difficult to pass in the future for the Romanian apple industry. It is also interesting to note the confidence such consumers have in the national product, and the general disapproval with respect to imports. The opinions of the Western consumers were almost mirrored in this respect by Eastern consumers. An important percentage of interviewees perceived the EU as a barrier for CEE fresh produce.

The knowledge of apple varieties emerges as more clearly defined in Western states. There is a high level of contradiction between the responses of Eastern consumers, leading to the conclusion that most of them buy apples just as fruits, but not also as clearly separated varieties. The desire for a better apple labelling and separate sales on varieties will emerge clearly in the later qualitative analysis chapters. A unique characteristic of Romanian consumers was correlated with culture and tradition, namely the storage of apples over winter. Even if it is given a financial explanation during present days, such practice is an ancient one, and one of the apple varieties studied (Patul) actually bears the name of such practice.

Most of the analysed data has revealed that consumers in the three countries were different, emphasising the differences in culture, the different influence of the socio-economic factors upon the purchase of apples, the differences in taste and preference. This brief conclusion almost summarises one of the key findings of the research, namely that there is no universal consumer of apple fruits. Researchers in the field, as well as growers and business managers should strive to comprehend consumers in their own environment and culture if they wish to expand to markets beyond the domestic. While in the West such conclusion is accepted for a long time, in Romania, and in particular in the Romanian apple industry, such concept is still alien. Nonetheless, chapter conclusions will expand upon this particular issue.

## **5.2 *APPLE JUICE SURVEY RESULTS***

The socio-economic datum concerning apple juice consumers is also presented in comparison for the three countries. It should be recalled at this point that one of the apple varieties, namely De Falticeni, was eliminated from the apple juice survey, due to an increased content in mycotoxins (Patulin), hence only three types of apple juices were assessed as opposed to previously four apple varieties. The order of presentation is similar to the fresh apple data; socio-economic aspects were drawn out and are presented at first in comparison, followed by the separate aspects of apple juice consumption and the characteristics of apple juices assessed in the three locations.

In order to collect the data hall tests were also carried out during the spring and summer of 1999 in the three study locations. These locations were identically to those employed to select respondents for the fresh apple survey. The number of questionnaires collected and locations used for the apple juice survey were:

- **United Kingdom** - 100 questionnaires

location: Wimborne market-Wimborne and Bournemouth University-Poole

- **Germany** - 80 questionnaires

location: Geisenheim market- Geisenheim and Wiesbaden market-Wiesbaden

- **Romania** - 530 questionnaires

location: Hala Centrala market-Iasi



Attitudinal studies were not carried out as part of the apple juice survey; the questionnaires were administered within hall tests, the respondents approached by trained recruiters. Time and financial limitations led to low numbers of questionnaires in Germany and the UK. However in Romania the number was significantly higher due in part to a large recruiting team, working in a prime location and consumers eager to co-operate.

5.2.1 Comparative socio-economic description of the apple juice survey participants

The presentation of the apple juice survey results begins with the profile of respondents. This descriptive presentation employs percentages as the main mean of expressing the results.

**Gender.** Most of the subjects responding the survey were female in all the three countries. The result was similar in this respect to the fresh apple survey. However, the percentages are different in this survey; for example Germany which had the lowest percentage of female respondents for fresh apples, registered the highest percentage (Table 5.28).

Table 5.28: Gender distribution

	United Kingdom %	Germany %	Romania %
male	47.5	41.8	46.8
female	52.5	58.2	53.2

**Age.** The majority of respondents belonged to young age groups. The high percentages within the “18-25 years” group in both the UK (39.4%) and Romania (40.5%) are due to the large numbers of students. In the case of the Romanian survey, it is known that the city of Iasi is an important student centre, while in the case of the UK students were included for matters of convenience in the sample. Another noticeable aspect was the high percentage of “under 18 year” odds in Germany (Table 5.29).



Table 5.29: Age group distribution

	United Kingdom %	Germany %	Romania %
up to 18 years	5.0	19.0	6.5
18-25 years	39.4	5.1	40.5
26-35 years	11.1	22.8	19.6
36-45 years	9.1	16.5	14.4
46-65 years	21.2	29.1	16.0
over 65 years	14.2	7.6	3.0

*Marital status.* In the UK and Romania, respondents were mainly single, while in Germany, the majority were married (Table 5.30). Such differences between countries, could again be probably explained by the high percentage of students within the first two locations.

Table 5.30: Marital status

	United Kingdom %	Germany %	Romania %
single	48.5	36.7	50.4
married	44.4	53.2	43.5
divorced	1.0	3.8	2.9
separated	3.0	0.0	0.0
widowed	3.0	6.3	3.2

*Number of people in household.* The size of the respondents’ families was noted to be similar in the UK and Germany, where the average household consisted mainly of two persons (Table 5.31). Romania was different particularly with respect to “one person households” (only 5%). In Romania most respondents also lived in families consisting of four or more persons.

Table 5.31: Number of people in household

	United Kingdom %	Germany %	Romania %
one person	10.2	15.2	5.1
two persons	33.7	32.9	19.2
three persons	17.3	22.8	25.6
four persons	25.5	17.7	31.3
five persons	10.2	7.6	13.3
more	3.1	3.8	5.5



**Children.** In all three countries, the majority of subjects had no children (Table 5.32). However, the majority of those respondents with descendants had two children in the UK (21%) and respectively one child in Germany and Romania (18%).

*Table 5.32: Respondents with children*

	United Kingdom %	Germany %	Romania %
<b>none</b>	57.6	55.7	62.6
<b>one child</b>	11.1	17.7	17.8
<b>two children</b>	21.2	12.7	13.5
<b>three children</b>	7.1	12.7	4.2
<b>more</b>	3.0	1.3	1.9

**Dependent children.** The majority of respondents had no dependent children (Table 5.33). However, where dependants were present, they were mainly represented by one child in all three countries. The higher total percentage (32%) of dependent children in Romania compared to the other Western countries studied is noticeable.

*Table 5.33: Number of dependent children*

	United Kingdom %	Germany %	Romania %
<b>none</b>	77.8	73.4	67.9
<b>one dependent</b>	13.1	12.7	16.7
<b>two dependants</b>	9.1	7.6	11.4
<b>three dependants</b>	0.0	3.8	2.7
<b>more</b>	0.0	2.6	1.3

**Occupation.** In Germany and Romania the majority of respondents were in full time employment, while in the UK the majority were students.

*Table 5.34: Occupation grouping*

	United Kingdom %	Germany %	Romania %
<b>full time employed</b>	14.3	25.3	43.7
<b>part time employed</b>	19.4	9.3	1.9
<b>self employed</b>	5.1	9.3	0.0
<b>housewife/-husband</b>	5.1	8.0	1.3
<b>employer</b>	1.0	2.7	5.7
<b>unemployed</b>	1.0	0.0	3.4
<b>student</b>	33.7	23.0	36.7
<b>retired</b>	19.4	20.0	7.2
<b>other</b>	1.0	2.3	0.0



There were high percentages of students both in the UK and Romania (Table 5.34).

**Education.** In Germany the majority of participants (56.5%) had gone through further education, while in the UK and Romania, they were predominantly highly educated (Table 5.35).

*Table 5.35: Education grouping*

	United Kingdom %	Germany %	Romania %
<b>secondary education</b>	25.8	11.8	7.2
<b>further education</b>	22.6	56.5	33.6
<b>higher education</b>	49.5	31.6	59.2

**Main earner.** In all the three countries, most participants were not the households main earners, a similar situation to the fresh apples survey. The high percentages under the “not applicable” categories in the UK and Romania are possibly again a result of the important numbers of students included in the samples (Table 5.36).

*Table 5.36: Main earner*

	United Kingdom %	Germany %	Romania %
<b>yes</b>	27.8	43.0	33.3
<b>no</b>	46.4	57.0	46.4
<b>not applicable</b>	25.8	0.0	20.3

**Income.** Five income groups were again selected for each country, labelled in ascending order from one (I) to five (V) as presented in Table 5.37. Additionally one more group was added; besides the “no income” group, a “not applicable” group was included giving both unemployed and students the possibility to reply. However, while the income groups remained stable for the Western countries, in Romania the income groups have “apparently” increased compared to the fresh apples survey, reflecting the high levels of inflation from one year to another.

The peaks towards the “no income” group In Germany and Romania may be related to the high percentage of students in the case of Romania and the respondents under 18 years in the case of Germany. Furthermore, the results can also possibly depict the high level of unemployment at the time of the research.



*Table 5.37: Income grouping in the selected countries*

Income group	United Kingdom (£)	Germany (DM)	Romania (thousand Lei)
<b>I</b>	under 800	under 2000	under 600
<b>II</b>	801-1500	2001-3000	601-800
<b>III</b>	1501-2500	3001-4000	801-1000
<b>IV</b>	2501-3000	4001-5000	1001-1200
<b>V</b>	over 3000	over 5000	over 1200

Concerning the UK and Germany the high percentage of respondents that have defined themselves as belonging to category “not applicable” was also noticeable. However, in the UK and Romania the majority of respondents belonged to the medium and low income groups.

*Table 5.38: Income profile*

Income group	United Kingdom (%)	Germany (%)	Romania (%)
<b>no income</b>	1.1	19.4	23.6
<b>I</b>	14.6	7.5	19.8
<b>II</b>	17.0	16.4	20.6
<b>III</b>	18.2	11.9	5.1
<b>IV</b>	9.1	9.0	15.0
<b>V</b>	15.9	22.4	15.8
<b>not applicable</b>	23.9	13.4	0.0

The income grouping is slightly different in Germany where the percentages were more evenly distributed (Table 5.38).

### *5.2.2 Results emerging from the apple juice survey in Romania*

The results presented in this section follow the fresh apple juice consumption patterns identified within the Romanian survey. The results initially present the observations purely from a descriptive point of view, followed by additional results obtained after performing a series of tests (ANOVA, Bonferroni, T-tests, Chi-square and Adjusted residuals), similarly to the fresh apple data presentation.

The *preferred apple product* in Romania was without doubt the fresh apple; consumers were asked to rank the first two apple products they preferred. In 85.3% of the respondents selecting a first choice, this choice was represented by fresh apples. The second preferred apple product in Romania was apple desserts, with 46% of the



consumers selecting a second choice being oriented towards such product. Apple juice was mentioned as a second choice by only 22.2% of the respondents.

Nonetheless, the *overall “like”* of apple juice was shown to be quite high in Romania; the results recorded on the hedonic scale indicated a mean of 7.32 and a standard deviation (SD) of 2.17.

The stated apple juice *consumption* was also high, 73% of the Romanian respondents stating that they generally consumed apple juice. However, there appeared to be an important percentage to ignore this drink (27%). A supplementary question revealed that orange juice was the most popular alternative to apple juice in Romania, 10.2% of the respondents mentioning it as an alternative drink. The multitude of alternative natural drinks that the Romanian consumers mentioned was also noticeable: peach (4%), pineapple (3%), grapefruit (2.1%), grape (1.3%), tropical fruits (1.3%), black currant (0.9%), pear (0.4%), sour cherry (0.4%).

The general consumption of apple juice was supplemented with a more specific question on household apple juice *consumption frequency*, hence even if a certain respondent did not consume apple juice, it is hereby stated as consumed by the family. Only 6.9% of the Romanian households sample consumed apple juice daily, 44.8% consumed apple juice a few times per week, 17% consumed the product only once per week, while 29% less. An important percentage of households (12.4%) stated they never consumed apple juice.

Within the Romanian sample, apple juice was stated to be consumed at *various times* during the day; however a small percentage of 12.4% associated the product only with meal times.

With respect to the *preferred packaging*, almost 50% of the interviewees preferred plastic bottles. The following choices in order were glass bottles (24.6%), tetra-packs (20.7%) and cans (4.8%).



As the main two types of apple juices encountered on the market are *clear and cloudy* apple juice, a question was asked in respect to preference for such juices. In Romania the preference for such products was almost equally distributed, 51.1% of the consumers preferred cloudy apple juice while 48.9% preferred the clear alternative.

The *range satisfaction* for the available apple juices within the Romanian sample was also disputed: 44.4% of the respondents found it very good and good, 29% fair, 19.6% poor and 7% very poor.

Romanian respondents stated that amongst the most important characteristics they considered when purchasing an apple juice were: the concentration of pure juice (36.9%) and price (28.1%), while the most appreciated quality of an apple juice was its “apple flavour” (45.7%). Amongst the main factors more likely to determine the purchase of a new brand of apple juice, Romanian consumers stated curiosity (58%) and price (27%).

Apple juice *purchase frequency* in Romania was shown to be very low. In fact none of the respondents purchased the product daily. However 23.2% purchased apple juice a few times per week, 23.9% stated they purchase it once per week, 18.5% a few times per month, while 34.4% purchased apple juice even less frequently.

The questionnaire also included aspects related to the main reasons for consuming apple juice. The answers to this particular open question could, after collating the results, be classified into five groups: like, health related issues, refreshing feeling, a non alcoholic beverage alternative and a change from other drinks. In Romania, the main consumption reasons stated were the perception of apple juice being a healthy drink (68% of the respondents mentioning this as a first reason) and a general “liking” (44.3% of the respondents mentioning ‘like’ as a second reason).

The preferred apple juice *amount bought* was shown to be one litre in general (51.9%). Nonetheless, 24.6% also preferred quantities of two litres, 19.9% amounts less than one litre, while 3.5% even preferred amounts over two litres.

Even if the market for organic products is at an early stage in Romania, 46% of the respondents stated they would buy *organic apple juice*. Conversely, 23.9% wouldn't buy such a product, while an important percentage (30.1%) were undecided.

A series of supplementary questions thought to be relevant were addressed through the questionnaires only to the Romanian respondents. Being aware of the limited range and sometimes availability of the product, these specific issues were related to reasons for not consuming apple juice, home made apple juice, and the perception of home made apple juice.

The main reason for *apple juice non-consumption* was stated to be the product non availability on the market (51.5%). It appears as a major contradiction, since a total of 73% of subjects were satisfied with the available range. The second important reason was the preference for other exotic fruit juices (14%). Other less important reasons were the preference of other soft drinks (4.4%), the preference of other domestic fruit juices (2.0%), the distrust in the product (1.5%) and its dislike (1.2%).

Home *apple juice* pressing is relatively common in Romania. The juice is consumed fresh, rarely preserved. Also, as previously observed, another apple product popular among the Romanian respondents were apple deserts. Apple juice resulting from the pressing of apples for deserts is one of the products commonly consumed. Home pressed apple juice is also popular with families with young children; apple juice is considered as one of the most important vitamin supplements. As expected, 64% of the respondents stated they prepare or have prepared apple juice at home. The home made apple juice is perceived as "more natural" (30%), cheaper (23%), more tasty (10.5%) and benefited by a higher level of "trust" compared to other similar products available on the market.

The socio-economic and consumption related section of the questionnaire was followed in the apple juice survey by a preference section (Appendix B). The preference of consumers was also recorded on 10 point hedonic scales. The preference results are firstly described by employing the means and standard deviations (SD) for every studied characteristic (Appendix C35). The studied characteristics for apple



juices were: colour, scent, apple flavour, sweetness, sharpness and overall preference. It should be recalled that the apple juices were processed from the fresh apple varieties previously researched, each apple juice being labelled in correspondence with the fresh apple variety of origin. However, after thorough analyses run at the Forschungsanstalt Geisenheim Institute in Germany, De Falticeni juice was eliminated from trials on the basis of a very high concentration in the mycotoxin Patulin.

The most appreciated sample for colour in Romania was Patul, followed by Generos and Frumos de Voinesti. The preference for scent was in opposition with the preference for colour. Romanian subjects rated Frumos de Voinesti as the first in their preference followed by Generos and finally by Patul. The apple flavour and sweetness assessment followed the same pattern as the scent preference. The preferred apple juice for flavor was Frumos de Voinesti followed by Generos and Patul. The preferred juice for sweetness was also Frumos de Voinesti while the least appreciated for this characteristic was Patul.

With respect to sharpness preference, the respondents chose sample Generos followed by Frumos de Voinesti and once more Patul as the last. The final assessment, namely the overall preference has shown that most of the Romanian participants preferred sample Frumos de Voinesti. The second overall preferred sample was Generos while the least appreciated was sample Patul.

A series of ANOVA tests were run with the aim of identifying if some socio-economic characteristics of the Romanian sample had an impact over the perception of the studied apple types. Three independent variables, thought to be relevant, were selected in this case: gender, age group and education level. The identified relationships are presented as a summary in Table 5.39.

The analysis were supplemented by Bonferroni tests (where possible), to actually identify where the main differences lie. The independent variable *gender* influenced the perception of Patul apple juice colour, and the perception of the sharpness of Generos and Frumos de Voinesti; however, given the variable's two conditions (males and females), Bonferroni tests could not be performed.



In Romania the *age group* influenced the overall “liking” for apple juice (i.e. the “like” varied with age) and the assessment of sweetness and sharpness of Patul. The age group also influenced the assessment of the sharpness of Generos apple juice.

*Table 5.39: ANOVA summary table for identified relationships with respect to the apple juice characteristics studied in Romania*

Characteristic	Gender	Age group	Education
general apple juice “like”		✓	
colour <i>Patul</i>	✓		
colour <i>Frumos de Voinesti</i>			
colour <i>Generos</i>			✓
scent <i>Patul</i>			✓
scent <i>Frumos de Voinesti</i>			
scent <i>Generos</i>			
apple flavour <i>Patul</i>			✓
apple flavour <i>Frumos de Voinesti</i>			
apple flavour <i>Generos</i>			
sweetness <i>Patul</i>		✓	✓
sweetness <i>Frumos de Voinesti</i>			
sweetness <i>Generos</i>			
sharpness <i>Patul</i>		✓	
sharpness <i>Frumos de Voinesti</i>	✓		
sharpness <i>Generos</i>	✓		
overall preference <i>Patul</i>			✓
overall preference <i>Frumos de Voinesti</i>			
overall preference <i>Generos</i>			

The Bonferoni test has actually shown where the differences lie. In the case of the apple juice “like”, the differences occurred within the “18-25 years” and “36-45 years” groups. The first group had a lower general liking for apple juice, while the latter had a higher liking for apple juice compared to the rest of the age groups.

The sweetness of variety Patul was appreciated more by the “46-65 years” group, and less by the “18-25 years” group compared to the other age groups. The sharpness of Patul was also more appreciated by the “46-65 years” group compared to all lower age groups. The same characteristic of Patul was furthermore appreciated significantly higher by the “over 65 years” group compared to “26-35 years” group. All these differences were significant at the 0.05 level.

Some of the studied characteristics were also influenced by the *education level* of the Romanian respondents. With respect to colour, different levels of preference were



identified only within sample Generos. An interesting observation can be made about variety Patul, which had four of its characteristics assessed different at different levels of education. Bonferroni tests indicated that both further and higher educated groups rated significantly lower for the colour of sample Generos and the sweetness of variety Patul than did the secondary educated group. The secondary educated group also rated significantly higher for the scent, flavour and overall like of Patul compared to the higher educated group.

A series of paired samples T-tests were run in order to identify any correlation in the assessment of the apple juice samples, reflecting a linear relation between the variables and hence a significantly different perception of the studied characteristic. Every sample was cross compared with the two remaining samples for every studied characteristic and the summary results are presented in Table 5.40.

Most of the characteristics were found to have been perceived differently, with the exception of the scent of Patul and Frumos de Voinesti and the overall preference for Patul and Frumos de Voinesti samples. The value of the correlations varied between a maximum of .496 and a minimum of .140, and were all significant at .05 level.

For the remainder of the nominal data a series of *chi-square tests* were run additionally. The influence of socio-economic variables is presented first, followed by the few other relationships identified between other nominal variables.

The following relationships have been revealed as a result of chi-square tests:

- between gender and: likelihood of buying organic apple juice, the most appreciated characteristics in apple juices, main earner;
- between age group and: the available apple juice range satisfaction, important characteristics when buying apple juice, the given reasons for apple juice consumption, home made apple juice perception, likelihood of buying organic;



Table 5.40: Observed correlations between the ratings of the Romanian respondents for the apple juice characteristics studied

Characteristic	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
A. colour <i>Patul</i>		✓	✓															
B. colour <i>Frumos de Voinesti</i>	✓		✓															
C. colour <i>Generos</i>	✓	✓																
D. scent <i>Patul</i>						✓												
E. scent <i>Frumos de Voinesti</i>						✓												
F. scent <i>Generos</i>				✓	✓													
G. apple flavour <i>Patul</i>							✓	✓										
H. apple flavour <i>Frumos de Voinesti</i>						✓	✓	✓										
I. apple flavour <i>Generos</i>						✓	✓											
J. sweetness <i>Patul</i>										✓	✓	✓						
K. sweetness <i>Frumos de Voinesti</i>										✓		✓						
L. sweetness <i>Generos</i>										✓	✓							
M. sharpness <i>Patul</i>														✓	✓			
N. sharpness <i>Frumos de Voinesti</i>													✓	✓	✓			
O. sharpness <i>Generos</i>													✓	✓				
P. overall preference <i>Patul</i>																		✓
Q. overall preference <i>Frumos de Voinesti</i>																		✓
R. overall preference <i>Generos</i>															✓	✓	✓	



- between the presence of children and: preferred packaging, preference for clear or cloudy apple juice, important characteristics when buying apple juice, opinion on home made apple juice, potential purchase of organic apple juice;
- between the person buying the food in the household and: preferred packaging, potential purchase of apple juice;

between education level and: frequency of apple juice consumption, the available apple juice range satisfaction, likelihood of buying organic apple juice, the person purchasing the food in the family.

In order to obtain more accurate results and increase the number of relationships detected which subscribe to chi-square requirements, some categories were either merged or excluded from analysis. Details are given in the text where this particular situations occurred.

The variable *gender* was found to be associated with the purchase of organic apple juice at a significance level (Sig.) of .036. Under variable “Would you buy organic apple juice”, the category “do not now” was omitted. The cross tabulation allowed a closer look to the numbers and percentages of males and females in relation to their likelihood of buying organic apple juice (Appendix C37). Of the 365 replies to this question, 171 belonged to males and 194 to females. From the 2x2 table (see Appendix C37) the odds that males who would buy organic could be calculated as 2.63 (124/47) (or for 2.63 males, 1 was not expected to buy organic). Similarly, for women the estimated odds they would buy organic were 1.48 (116/78). The odds ratio is the ratio of these odds, calculated to be 1.774. As a result, we can affirm that within the Romanian studied sample, males were approximately 1.8 times more likely to buy organic than females.

Other variables found to be associated with gender were those related to some apple juice characteristics appreciated by consumers. After running a first chi square test, 4 cells (33.3%) fell out of the excess guideline of 20% with expected values less than 5. Data has been reduced by eliminating from the analysis the categories that did not satisfy the above condition (sharpness and color). The new resulting chi square indicated the association between gender and the studied variable (Sig.=.028). It was



also observed (Appendix C38) that the most appreciate characteristic was the “apple flavour”, followed by taste, concentration in pure juice and sweetness. As the chi square provided little information about how the variables are related (note that odds can only be calculated for a 2x2 table) the adjusted residuals were computed as well.

The adjusted residuals values can be read approximately as z scores (looking for values below -2 or above +2) in order to identify cells departing notably from the independence model. In the present case the most extreme residual was encountered for “taste”, both for males (2.9) and for females (-2.9). The residual for “concentration” is also close to the value of 2, but in this case registering a positive value for females and negative for males. As a result we may state that males appreciated the “apple taste” more than females, while females appreciated the concentration in pure juice more than their male counterparts.

A few other relationships were identified between gender and other variables, but since they do not present interest to the actual research, they will not be highlighted. However, as a general matter of interest, the interaction between gender and the main earner is given. Calculating the odds for a 2x2 table, males within the Romanian sample were almost four times (3.85) more likely to be the main income earners.

*Age group* was also shown to have influenced opinions on: available range satisfaction, juice characteristics and packaging. In relation to the perception of the available apple juice range (Appendix C39) as the age category “over 65 years” had 4 cells under the value of 5, it was excluded from the analysis. Even so, 4 cells still had values under 5, but their percentage accounted only for 16% of the total number of cells (the guideline of 20% is not exceeded), hence the result can be regarded as trustworthy. The main significance lied in the perception of the “under 18 years” group, which had the best opinion regarding the available range. The least good opinion belonged to the “18-25 years” group.

Another variable influenced by age group was the perception of important characteristics when buying apple juice (Appendix C40). Some categories within both studied variables have been omitted before computing the chi-square, in order to avoid



low number of counts (less than 5) in each of those categories. The most important characteristics were the concentration of pure juice and the brand. The highest extreme residual (-2.9) was found for the age group “46-65 years” with respect to the concentration in pure juice; there was apparently less interest within this group for the above characteristic compared to other age groups. In contrast, the “46-65 years” group was more interested in the origin and packaging and labelling of the apple juice. Other differences were observed within the group “18-25 years” which appreciated packaging more than other groups.

The reasons as to why respondents consume apple juice also vary with age (Appendix C41 ). The answers to this open question could be grouped under two main categories: the “healthy” perception and the “liking” of the juice. Other categories have not been analysed due to the low number of respondents, and the “over 65 years” group was excluded from analysis. The main differences occurred in age groups “26-35 years” and “46-65 years”. The former group consumed apple juice mainly because the product was “liked”, while the latter because it was considered “healthy”.

The perception of home made apple juice was found to be influenced by age (Appendix C42). For example the under 18 years group as well as the “46-65 years” group considered it tastier. The “18-25 years” group considered home made apple juice more natural while the “36-45 years” group considers it cheaper.

The likelihood of purchasing organic apple juice was proved to be related with age as well as with gender (Appendix C43). The analysis has focused mainly on the “yes” and “no” responses, while the undecided group was eliminated. The “under 18 years” group and the age group “46-65 years” were the most unlikely to buy organic apple juice. The most likely group to buy was the oldest age group.

Relationships were identified with respect to the *presence of children* within the family and some apple juice consumption aspects, amongst the first ones being the preferred packaging (Appendix C44). The adjusted residuals show that the main differences appeared in regard to the preference for cans; respondents with no children had



generally a higher preference for such packaging compared to respondents with children.

The presence of children was also associated with the preference for clear or cloudy apple juice (Appendix C45). The actual cross tabulation permitted a better assessment of the numbers and percentages of respondents with children in relation to their preference for these juices. As in earlier examples, some odds can be calculated. The odds that participants with children preferred clear apple juice were 1.39, while the odds that respondents without children prefer the same product were 0.77. The odds ratio was calculated to be 1.805. Hence within the Romanian sample, participants with children were 1.8 more likely to choose a clear apple juice compared to respondents without children.

The presence of children had a certain influence over the characteristics perceived as important when purchasing a certain apple juice (Appendix C46). According to the adjusted residuals, the main difference occurred for the importance of the product's origin. When purchasing apple juice, respondents with children apparently place a higher emphasis on the origin of the product compared to respondents without children.

The presence of children was found to have a significant relationship also with the likelihood of buying organic apple juice (Appendix C47). Two extreme adjusted residuals were encountered. Surprisingly, Romanian respondents with children were theoretically less likely to purchase organic apple juice compared to other respondents without children. However, respondents without children were less decided upon this particular issue compared to respondents with children.

Finally, the presence of children within the family was identified to have a relationship with the perception of home made apple juice (Appendix C48). The most extreme residual, was registered for the respondents with children in relation to the “natural” perception of the home made product; participants without children found this product apparently more “natural” compared to participants with children. Participants with children found in turn the home made juice as being tastier.



A fourth social variable found to be in relation with other apple juice consumption variables was the *person purchasing the food for the family*. Two significant relationships were identified for this variable, firstly with the preferred apple juice packaging (Appendix C49) and secondly with the likelihood of purchasing organic apple juice (Appendix C50). According to the adjusted residuals the main differences were encountered for the persons purchasing the food for the family and their preference for canned juices; apparently persons who are not the main food buyers for the family were more likely to prefer cans compared to respondents who were the main food buyers.

With respect to the likelihood of purchasing organic apple juice, the adjusted residuals have emphasised some significant differences. Firstly, the most extreme residual encountered showed that the persons who are only occasional food shoppers were also the most undecided with regard to the purchase of organic apple juice. Secondly, the most decided upon this issue seemed to be the permanent food shoppers. Thirdly, a significant percentage of occasional shoppers were also firmly decided not to buy such a product.

Another of the studied social variables, the *education level*, was found to have a relationship with the frequency of apple juice consumption in the family (Appendix C51). The most extreme residual was encountered for the secondary education group with respect to daily apple juice consumption. It appeared that the respondents with secondary education consumed apple juice daily more often than further and higher educated groups.

The range satisfaction was also different with respect to the education level (Appendix C52). The most pleased with the available range were respondents with secondary and further education. The most dissatisfied were respondents with higher education that found the available range mainly poor and very poor compared to the other groups.

Besides being influenced by gender and age, the likelihood of purchasing organic apple juice was influenced by the education level too, being the only variable



influenced by all three social factors analysed (Appendix C53). Organic apple juice was less likely to be bought by subjects with secondary and further education, but more likely to be bought by the higher educated respondents.

Many other significant associations were found between other variables, but only the ones considered relevant to the present research will be highlighted.

The overall consumption of apple juice was found to be associated with the preference for pure or blended apple juice (Appendix C54). The odds of the association between the two variables could be calculated. The odds that a consumer who generally drinks apple juice prefers pure apple juice was found as 3.25 (195/60), while the odds that a consumer which does not generally drink apple juice prefers pure juice was 1.13 (25/22).

Since the odds ratio is the ratio of the two former odds, its value is 2.87. We can affirm that for every 3.25 respondents that generally consume apple juice, only one consumer preferred blended apple juice. The odds ratio also indicates that a regular consumer of apple juice was almost 3 times more likely to consume pure apple juice than compared to non-regular consumers.

The perception of the available apple range was found to have a direct relationship with the frequency of apple juice consumption within the family (Appendix C55). Respondents that found the available range very good or good were found to consume apple juice more often compared to other respondents. The apple juice consumption within families generally decreases hence in direct relationship with the opinion upon range: the poorer the range perception, the lower the consumption.

With respect to the perception of available apple juice range in relation to clear or cloudy apple juice preference (Appendix C56), it was also noticed that subjects perceiving the range as very good preferred clear apple juice, while the ones that

perceived the range as poor, prefer cloudy apple juice. The above relation may well be caused by the absence of cloudy apple juice on the Romanian market.



Finally, most of the respondents (Appendix C 57) decided that they would prefer to buy for themselves Frumos de Voinesti apple juice, followed by Patul and Generos, while few respondents would not buy any of the samples. A supplementary ANOVA analysis has shown that all the studied characteristics had a major impact upon the choice of Frumos de Voinesti.

### ***5.2.3 Results emerging from the apple juice survey in England***

The results presented for the UK sample follow the overall presentation pattern: firstly a few descriptive aspects are briefly discussed, followed other results resulting from more detailed statistical analysis.

The *preferred apple product* in the UK was the fresh apple, followed by apple juice and apple deserts. Within the respondents selecting a first choice 80% stated the fresh apple, while 44.8% of the respondents selecting a second choice mentioned the apple juice and 13.8% apple deserts.

The overall “*liking*” for apple juice was also high in the UK. Measured on a hedonic scale, the stated general “like” had a calculated mean of 7.47 and a standard deviation (SD) of 2.03.

*General apple juice consumption* was however low, with only 53% of the respondents stating that they generally consume apple juice, while the remainder of 47% were not regular consumers of the product. Furthermore, 41% of the respondents stating they preferred an *alternative juice*, were consumers of orange juice. It should be also underlined that the only other alternative drink besides orange juice mentioned by the British consumers were tropical drinks.

*Apple juice consumption* frequency in the respondents households could be summarised as following: in 8.2% of the households there was registered a daily consumption of apple juice, 24.4% consumed apple juice a few times per week, the vast majority of 40.8% consumed such drinks less, while an important 10.2% never



consumed apple juice. Amongst the English respondents 89.9% consumed apple juice at various times over the day, while 10.1% associated this drink only with meal times.

With respect to the *preferred packaging*, most of the British respondents preferred tetra packs (44.9%), while the rest preferred glass and plastic bottles in an equal measure, 27.0%. Only a very small percentage preferred cans (1.1%).

The preference for the *type of apple juice* consumed was divided almost equally; 48.8% preferred clear apple juice, while 51.3% preferred cloudy apple juice.

The perception of the available *apple juice range* was mostly positive: 9% of respondents found the available apple range very good, 51.7% good, 33.7% fair while only 5.6% were dissatisfied, finding the range poor.

The most *important characteristic* that British consumers look for when purchasing apple juice was price (40%), while the most appreciated characteristic in an apple juice was its “apple flavour” (50.5%). The majority of British respondents also stated that they would be more likely to be influenced in a new apple juice purchase by curiosity (37%) and price (21%).

The apple juice *purchase frequency* was fairly low amongst the UK respondents: none of the respondents purchased apple juice daily, 5.7% purchased the product 2-3 times per week, 35.2% purchased apple juice once per week, while 26.1% admitted to purchasing the product few times per month or less (31.1%).

The *main reasons for drinking apple juice* mentioned by British respondents were the actual “liking” of the product (55%) and its refreshing effect (33%). The preferred *amount purchased* was one litre, as mentioned by 67% of the respondents. Fifteen percent also preferred amounts less than one litre, while the same percentage generally prefer purchasing two litres at one time. Only a small 1.1% preferred quantities higher than two litres.



With respect to the *organic apple juice* demand, the majority of respondents (56.1%) stated that they would buy such product, 32.7% were uncertain while 11.2% would not buy such product.

The descriptive results for the apple juice characteristics assessed have revealed the following results (Appendix C58). The most appreciated sample for colour in the UK was Generos, followed by samples Patul and Frumos de Voinesti. The preference for scent has brought out as the favourite sample Generos as well, followed by samples Patul and Frumos de Voinesti.

The flavour rating was similar to the results for the previous two analysed characteristics; Generos was once again the favourite sample with a mean of 6.48 and a SD of 2.40. The rating for sweetness was slightly different; Generos was proven once again the favourite but followed in this case by Frumos de Voinesti and Patul.

The preference order for sharpness follows the pattern for the first three analysed characteristics: Generos as the favourite, Patul as second and Frumos de Voinesti as a third preference. The same order was followed for the overall liking: sample Generos was one more time the preferred, Patul the second choice and Frumos de Voinesti as the third and last.

The supplementary run ANOVA tests run with the independent socio variables gender, age and education group, have shown the influence of these factors over the assessment of some apple juice characteristics as briefly presented in Table 5.41.

In the UK the null hypothesis could be rejected for variable gender only in the cases of the following characteristics of the analysed juices: the colour of Generos apple juice, flavour of Frumos de Voinesti apple juice, and the overall like of the same juices. Rejecting the null hypothesis in the above cases meant that the perception of these particular characteristics was different for the two conditions studied (males and females).



Table 5.41: ANOVA summary table for identified relationships with respect to the apple juice characteristics studied in the UK

Characteristic	Gender	Age group	Education
general apple juice “like”			✓
colour <i>Patul</i>			
colour <i>Frumos de Voinesti</i>			
colour <i>Generos</i>	✓		
scent <i>Patul</i>			
scent <i>Frumos de Voinesti</i>			✓
scent <i>Generos</i>			
apple flavour <i>Patul</i>			
apple flavour <i>Frumos de Voinesti</i>	✓		
apple flavour <i>Generos</i>			✓
sweetness <i>Patul</i>			
sweetness <i>Frumos de Voinesti</i>			
sweetness <i>Generos</i>			
sharpness <i>Patul</i>			
sharpness <i>Frumos de Voinesti</i>			
sharpness <i>Generos</i>			
overall preference <i>Patul</i>			
overall preference <i>Frumos de Voinesti</i>	✓		
overall preference <i>Generos</i>	✓		

The factor *age* did not have any influence over the studied apple juice characteristics in the UK. However, the education level influenced three of the studied aspects.

In the UK the *education level* had an important impact over the general “liking” for apple juice. Bonferroni tests indicated that the secondary educated group had a significant lower “liking” for apple juice compared to the further educated group. The scent of *Frumos de Voinesti* and flavour of *Generos* were also influenced by the education level. Consequently, the scent of *Frumos de Voinesti* was rated better by the further educated group compared to the higher educated group, while the flavour of sample *Generos* was rated significantly higher by the secondary educated group compared to both further and higher educated groups.

The T-tests, cross-comparing the samples for the studied characteristics, have shown the results summarised in Table 5.42. Only six correlations were observed in this case, indicating that in the rest of the cases the studied characteristics were perceived similarly by the respondents. There should be noted that in almost all cases the differences occurred between the characteristics of *Patul* and *Frumos de Voinesti*. The



Table 5.42: Observed correlations between the ratings of the UK respondents for the apple juice characteristics studied

Characteristic	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
A. colour <i>Patul</i>		✓																
B. colour <i>Frumos de Voinesti</i>	✓																	
C. colour <i>Generos</i>																		
D. scent <i>Patul</i>																		
E. scent <i>Frumos de Voinesti</i>																		
F. scent <i>Generos</i>																		
G. flavour <i>Patul</i>							✓											
H. flavour <i>Frumos de Voinesti</i>						✓												
I. flavour <i>Generos</i>																		
J. sweetness <i>Patul</i>										✓								
K. sweetness <i>Frumos de Voinesti</i>										✓								
L. sweetness <i>Generos</i>																		
M. sharpness <i>Patul</i>														✓				
N. sharpness <i>Frumos de Voinesti</i>													✓		✓			
O. sharpness <i>Generos</i>														✓				
P. overall preference <i>Patul</i>																	✓	
Q. overall preference <i>Frumos de Voinesti</i>																✓		
R. overall preference <i>Generos</i>																		



highest correlation was .400 for the colour of these two varieties, while the lowest was 270 for the sharpness of the same two varieties.

The chi square tests demonstrated links between some socio-economic variables and the variables selected for study, and between some other various variables as well. However, these relationships involved mainly the socio-economic variables themselves (relationships were identified between age and marital status, number of children and education level, etc.) As these results were not considered relevant for the research, they are therefore not reported.

The socio-economic variables shown to have influence over some of the variables studied were gender, number of people in household, presence of children and main earner. The following relationships were identified:

- between gender and: preference for clear or cloudy apple juice, the person purchasing the food in the family;
- between number of people in household and the overall apple juice consumption;
- between the presence of children and the satisfaction with the available juice range;
- between being the main income earner and the preferred packaging.

Due to relatively small number of respondents in some cases, a large number of associations could not be regarded as trustworthy as many had percentages of cells with counts less than 5 (over the 20% recommended limit). These results are not presented and the impact of the small number of respondents within this survey has to be acknowledged as a major limitation.

The first observation concerned *gender* in relation to the preference for clear or cloudy apple juice (Appendix C59). Chi square tests have shown that the relative frequency of males and females differed with respect to their preference for clear or cloudy apple juice. The proportion of males preferring cloudy apple juice clearly differed from that of females. In fact 88.9% of the subjects who preferred cloudy juice were males, as opposed to 11.1% females. With respect to clear apple juice, it was preferred by 43.2% of males, as opposed to a 56.8 % of females. As this is the case of a 2x2 table the odds could be computed. The odds that a male preferred clear juice were



2.0 while the odds that a female preferred clear apple juice were 21.0. The resulting odds ratio was 10.5., females being hence 10.5 times more likely to buy clear apple juice than males. As to the odds for cloudy apple juice they were 0.5 for men and 0.05 for women. The ratio, with a 10.63 value, indicated that males were 10 times more likely to buy cloudy juice than females.

The second observation concerned gender in relation to the person purchasing the food for the family (Appendix C60). According to the adjusted residuals calculated, females were far more likely to being regular food shoppers for the family in the UK compared to men.

A third observation was made in relation to the *number of people in the household* and the general apple juice consumption (Appendix C61). The category “more than 5 persons” was excluded due to small number of respondents. The main differences were observed in one person households and two person households. As such, apparently “two person” households were less likely to be regular apple juice consumers compared to “one person households”.

Another relationship was identified between the *main income earner* and the preference for packaging (Appendix C62). Due to the small number of responses, category “cans” (metal containers) was excluded from the analysis. A larger number of main income earners appeared to prefer the tetra-pack packaging, while a larger number of respondents under category “not applicable” preferred plastic bottles. As the category “not applicable” mainly consisted of students and young respondents, we can assume their higher preference for plastic bottle packaging.

Another association was noticed between the *participants with children*, with respect to their satisfaction towards the available range (Appendix C63). Categories “poor” and “very poor” were excluded. In this case respondents with children appeared generally more satisfied with the available range compared to the ones without children. There was also found a strong relationship between the respondents who generally consumed apple juice and the frequency of purchase (Appendix C64) which is actually the last reported correlation within the UK sample. The first two categories,



“2/3 times per week” and “once per week”, have been merged under new label “weekly”. It was noticed that regular consumers of apple juice bought the product at least weekly, while non-regular consumers bought the product a only a few times per month or less.

The end question revealed that 51.6% of the respondents would prefer to buy for themselves sample Generos, 22.5% sample Patul and 18% Frumos de Voinesti (Appendix C65). Nonetheless, an important 7.9% would not buy any of the offered samples. ANOVA analysis (Appendix C66) showed that the main impact over the choice of variety Generos was given by the assessment of characteristics flavour, smell, overall like, followed by sharpness and scent. No impact was registered for characteristic colour.

#### ***5.2.4 Results emerging from the apple juice survey in Germany***

The results from the survey with apple juices are finally presented for Germany. The same order of presentation is followed, as previously employed: a description of the apple juice consumption patterns, a description of the preference for the assessed apple juices and their characteristics supplemented by ANOVA and Bonferroni tests, correlation tests and ultimately chi-square supplemented by adjusted residuals.

The most *preferred apple product* in Germany was the fresh apple. A percentage of 73.8 within the German sample mentioned this product as their first choice. With respect to the respondents mentioning a second choice, 50% opted for apple juice and 9.7% for apple sauces.

The *general liking* for apple juice recorded on the hedonic scales was high amongst the German subjects, with a mean of 8.68 and a standard deviation (SD) of 1.65. Within the selected interviewees, 95% acknowledged that they were regular apple juice consumers, while only a minor 5% did not consume this product regularly. Additionally, only 1.2% mentioned an *alternative preferred drink*, which in this case referred only to orange juice.



The household apple juice *consumption frequency* could be summarised as following: in 20% of the respondents' households apple juice was consumed daily, 17.5% consumed apple juice four to five times per week, 28.8% consumed the product two to three times per week, 17.5% once per week, while 16.3% consumed the beverage less than once per week. It should be mentioned that no respondents have identified themselves with category "never" in this case. Germans consumed apple juice mainly at various times over the day, and only a small 6.3% associated the product exclusively with a meal.

The *preferred packaging* in Germany was the glass bottle, most of the respondents voting for this choice (75.9%). However, an important percentage (13.9%) has also opted for cans. Other small percentages preferred tetra packs (8.9%) and plastic bottles (1.3%).

With respect to the *type of apple juice*, the majority of German respondents preferred cloudy apple juice (80.9%) while the remainder (19.1%) preferred the clear alternative. Germans were also highly satisfied with the *available apple juice range*: 24.7% found the range very good, 50.6% found the range good, 19.5% perceived the range as fair, 3.9% poor and only 1.3% as very poor.

When buying apple juice, the most *important characteristics* of the beverage for German participants was labelling (36.4%) followed by price. As the most *appreciated characteristic* in an apple juice, Germans mentioned its "apple flavour", while the main factors likely to determine the purchase of a new juice were friends' advice (44%) and shop advertising (36%).

With respect to apple juice *purchase frequency*, 1.3% of the German respondents bought apple juice daily, 14.3% a few times per week, 33.8% once per week, 24.7% few times per month while 26% less. The main *reason for apple juice consumption* quoted by German respondents was its "liking" (50.8%) followed by the perception of the beverage as being a healthy drink (23.8%).



Referring to the *amounts purchased*, only 7.7% of the respondents bought amounts under one litre. The rest preferred purchasing at least one litre or higher amounts: 39.7% generally purchased one litre, 21.8% two litres, 5.1% four litres and an important 25.6% purchased amounts higher than four litres. The demand for *organic apple juice* was apparently very high in Germany, 91.9% of the respondents stating that they would buy such product.

The analysis of the German consumers' preference for the tested apple juice samples has shown (Appendix C67) that the most appreciated sample for colour in Germany was Patul. Following in order, the second choice was for Generos and third choice for Frumos de Voinesti. The same preference order was expressed for characteristic scent. However, for apple flavour Germans voted for Generos as their favourite, followed by Patul and Frumos de Voinesti. The rating for sweetness is similar with the rating for the previously analysed character: most preferences were for Generos, followed by Patul and Frumos de Voinesti. The rating for sharpness brought once again sample Patul as the favourite, followed by Generos and Frumos de Voinesti. Finally, the overall like rating mentions Patul as the first choice, Generos as the second choice and Frumos de Voinesti as the last preferred.

The ANOVA analysis supplemented by Bonferroni tests have also shown the few results summarised in Table 5.43. Variable *gender* did not influence any of the studied characteristics, hence there were no differences in the perception with respect to gender; males and females assessed the studied characteristics similarly.

In Germany, *age* influenced only the 'overall like' of Generos apple juice. The Bonferroni test indicated that the main difference occurred within the group "under 18 years" which generally appreciated more the 'overall like' of sample Generos than the "26-35 years" group.

The *education level* had an influence over the scent and sweetness of sample Frumos de Voinesti in Germany. In both cases respondents with secondary education rated these characteristics higher, significantly different to further educated respondents, as indicated by Bonferroni tests.



Table 5.43: ANOVA summary table for identified relationships with respect to the apple juice characteristics studied in Germany

Characteristic	Gender	Age group	Education
general apple juice “like”			
colour <i>Patul</i>			
colour <i>Frumos de Voinesti</i>			
colour <i>Generos</i>			
scent <i>Patul</i>			
scent <i>Frumos de Voinesti</i>			✓
scent <i>Generos</i>			
apple flavour <i>Patul</i>			
apple flavour <i>Frumos de Voinesti</i>			
apple flavour <i>Generos</i>			
sweetness <i>Patul</i>			
sweetness <i>Frumos de Voinesti</i>			✓
sweetness <i>Generos</i>			
sharpness <i>Patul</i>			
sharpness <i>Frumos de Voinesti</i>			
sharpness <i>Generos</i>			
overall preference <i>Patul</i>			
overall preference <i>Frumos de Voinesti</i>			
overall preference <i>Generos</i>		✓	

The *T-tests* performed have shown a number of correlations, as presented in Table 5.44. The apple juices and the characteristics which were perceived differently are presented highlighted. The correlations registered a maximum value of .380 for the scent of Patul and Frumos de Voinesti and a minimum of .229 for the colour of Generos and Frumos de Voinesti. The remainder of the characteristics were assessed similarly within the sample.

The number of questionnaires has raised the same limitations as in the UK for running the *chi-square* analysis; many of the significant results could not be reported due to multiple cells with individual expected counts less than 5. However, the few significant associations that fulfilled the requirements are presented below. Identified associations were found between:

- gender and preference for clear or cloudy apple juice;
- education level and the preference for clear or cloudy apple juice;
- presence of children and the preference for clear or cloudy apple juice.

It is noticeable that all three social variables were found to have an association with the preference for clear or cloudy apple juice. The first significant association in Germany



that can be reported concerns the *gender* of the respondents in relation to their preference for clear or cloudy apple juice (Appendix C68). The males were apparently more likely to prefer clear apple juice than females. In fact the odds that a male preferred clear apple juice were 0.57, while the odds that a woman preferred cloudy juice were 1.70. The calculated odds ratio was 2.99, hence women were almost 3 times more likely to prefer cloudy apple juice than the male counterparts.

No significant associations which could be reported were found between variable *age group* and the other studied variables in Germany.

A second observation was made with respect to the *education level* and the preference for clear or cloudy apple juice (Appendix C69). The additional calculated adjusted residuals have shown that the secondary educated consumers preferred clear apple juice more than further educated consumers which generally preferred cloudy apple juice.

A third observation concerned again the preference for clear or cloudy apple juice, but this time in relation to *respondents with children* (Appendix C70). Respondents with children tended apparently to appreciate more the value of cloudy apple juice, and preferred this product in comparison to respondents without children. The odds of a respondent with children buying cloudy apple juice could be calculated as 2.5 (25/10). The odds for a respondent without children buying cloudy apple juice were also calculated as 0.57 (16/28). After calculating the odds ratio (4.38) it can be hence stated that within the selected German sample respondents with children were four times more likely to buy cloudy apple juice compared to respondents without children.

Finally, with respect to the apple juice sample German respondents would prefer to buy for themselves 37.7% voted for sample Generos, 36.5% voted for Patul, and 25.7% for Frumos de Voinesti (Appendix C71). Samples Generos and Patul were rated very close to each other; it was also observed voted for one of the samples avoiding category “none”. Supplementary ANOVA analyses have shown that Generos was chosen mainly



Table 5.44: Observed correlations between the ratings of the German respondents for the apple juice characteristics studied

Characteristic	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
A. colour <i>Patul</i>																		
B. colour <i>Frumos de Voinessi</i>			✓															
C. colour <i>Generos</i>		✓																
D. scent <i>Patul</i>				✓														
E. scent <i>Frumos de Voinessi</i>				✓		✓												
F. scent <i>Generos</i>				✓														
G. flavour <i>Patul</i>							✓	✓										
H. flavour <i>Frumos de Voinessi</i>						✓												
I. flavour <i>Generos</i>						✓												
J. sweetness <i>Patul</i>											✓							
K. sweetness <i>Frumos de Voinessi</i>										✓								
L. sweetness <i>Generos</i>																		
M. sharpness <i>Patul</i>														✓				
N. sharpness <i>Frumos de Voinessi</i>													✓					
O. sharpness <i>Generos</i>																		
P. overall preference <i>Patul</i>																	✓	
Q. overall preference <i>Frumos de Voinessi</i>																✓		
R. overall preference <i>Generos</i>																		



on the basis of its overall like, while Patul on the basis of its overall like, flavour and sharpness.

#### ***5.2.5 Brief comparison of the apple juice consumers surveyed***

Similarities were also encountered between apple juice consumers in the three locations. The preferred apple product has proven to be the fresh apple in all three locations. In Romania this was followed by apple deserts and apple juice, in the UK by apple juice and apple desserts while in Germany by apple juice and apple sauces.

The daily apple juice consumption frequency was similar in Romania (almost 7% consume apple juice on a daily basis) and the UK (8.2% consume apple juice on a daily basis), while in Germany it was noticed to be far higher (20% consumed apple juice on a daily basis). However, compared to British and German respondents who mentioned as the main alternative the orange juice, Romanians mentioned a far larger choice of alternative drinks. Small percentages of consumers were shown to associate apple juice consumption only with meals in all three countries. No similarities were encountered in the preference for apple juice packaging, Romanians preferring plastic bottles, English respondents preferring tetra packs while Germans were oriented towards glass bottles. With respect to the preference for the two alternatives available on the market, namely clear and cloudy apple juice, it was almost equally distributed in Romania and the UK, while almost 81% of the Germans preferred cloudy apple juice. The most satisfied with the available apple juice range were German respondents (75.3% finding the range very good and good) followed by the British respondents (60.7% found the range very good and good) and finally the Romanian respondents (only 44.4% found the range good and very good). In all three countries the most appreciated characteristic of an apple juice was its apple flavour. Amongst the common important characteristics encountered when purchasing an apple juice was price, while both Romanian and UK respondents stated they would be more likely to be determined to buy a new apple juice based mostly on curiosity and price. Similarly to the fresh apples, the results of the apple juice assessment were plotted as seen in Figures 5.4, 5.5 and 5.6. As observed, the characteristics of all apple juices were rated very closely in Romania.



Figure 5.4: The assessment of the studied apple juice characteristics in Romania

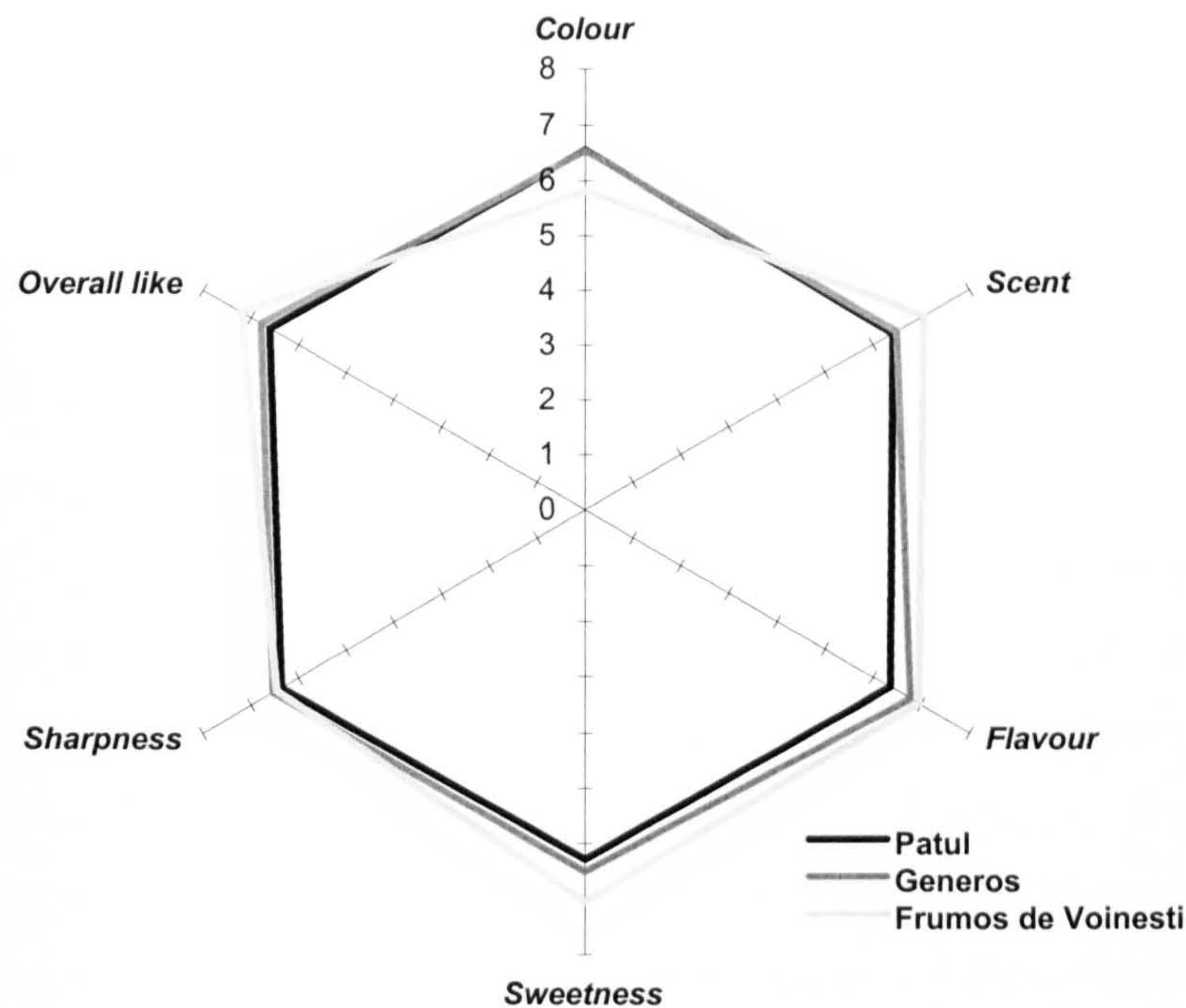


Figure 5.5: The assessment of the studied apple juice characteristics in the UK

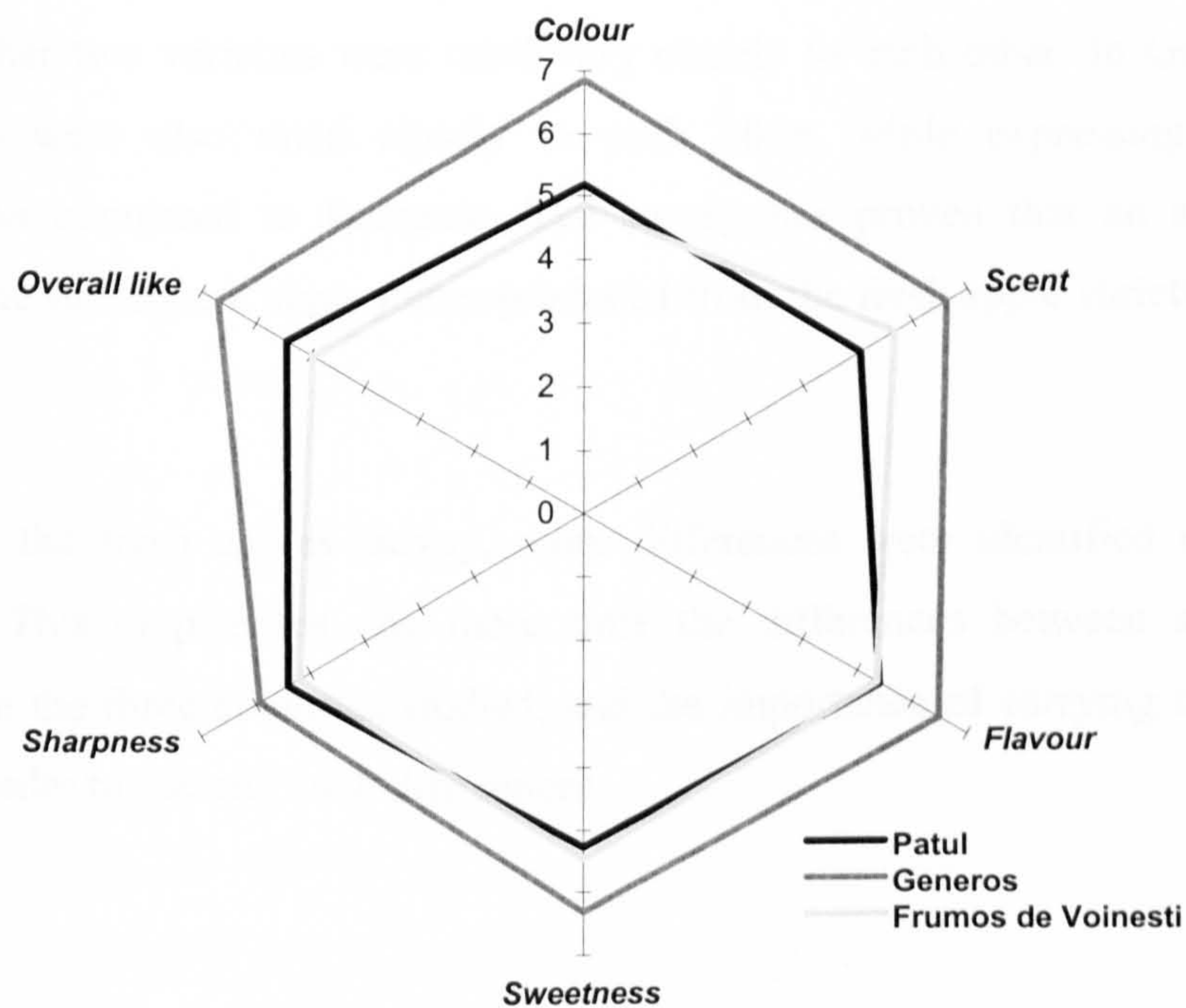
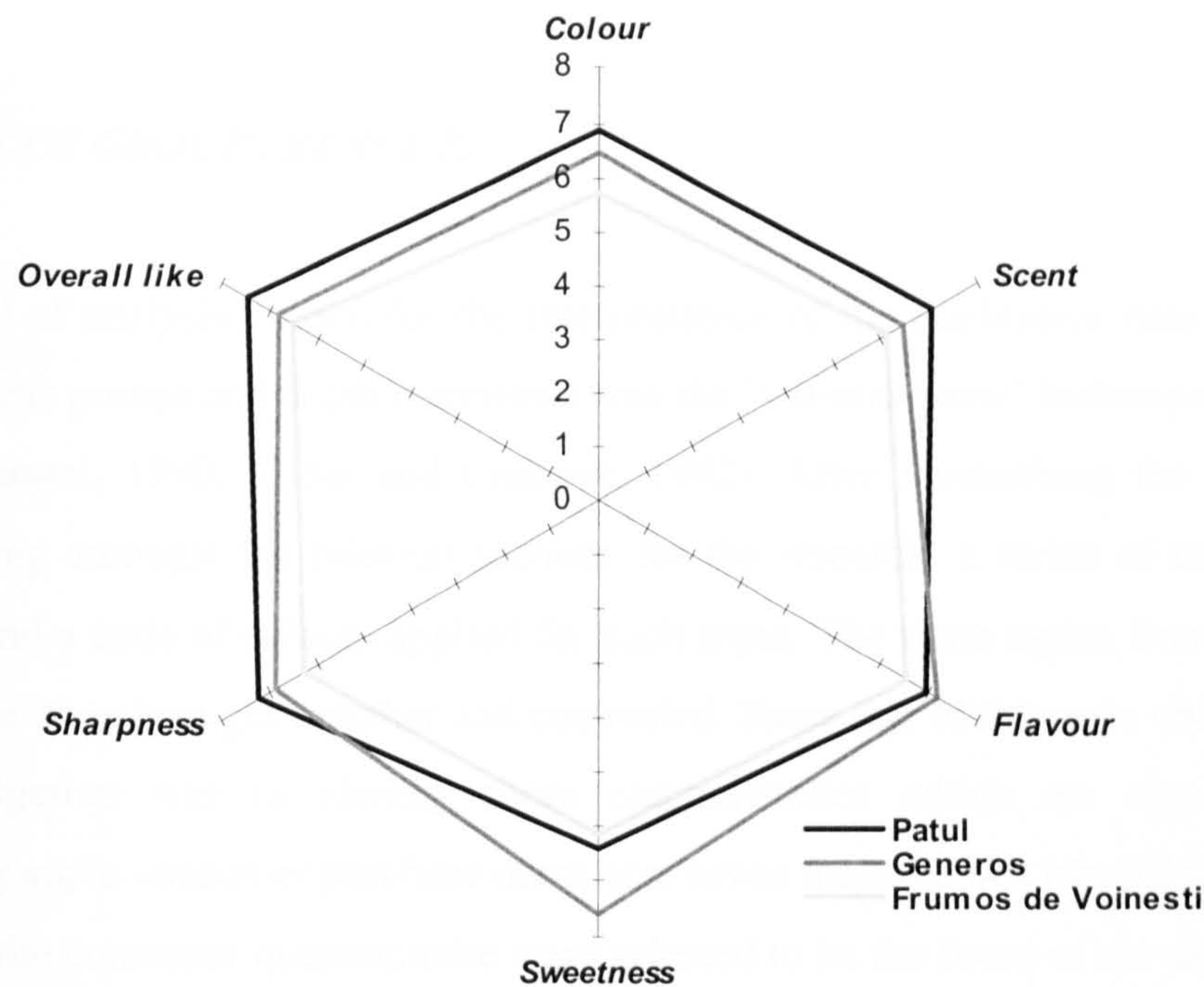




Figure 5.6: The assessment of the studied apple juice characteristics in Germany



In the UK there appeared to be a specific preference for the juice of variety Generos, while the other two varieties were rated very closely to each other. In Germany the apple juices were also rated closely to each other, while expressing a clearer differentiation compared to Romania. The survey has proven that an appeal also existed for the subsequent apple juices produced from the fresh apple varieties initially researched.

Similarly to the fresh apples survey, more differences were identified rather than similarities. This emphasises one more time the differences between apple juice consumers in the three countries studied, and the importance of carrying out sensory research in order to identify such differences.



## **6.0 RESULTS OF QUALITATIVE SURVEYS**

### **6.1 FOCUS GROUPS RESULTS**

The method of analysis chosen for the interpretation of the qualitative data emerging from the focus groups and depth interviews was the “cut-and-paste” technique (Stewart and Shamdasani, 1990; Miller and Crabtree, 1992). After transcribing the tapes and distinguishing amongst the relevant sections for the research, a series of topics were identified and a code of colours applied for each topic. The same topics from different focus groups were brought together and contrasted. Since one of the main objectives of this investigation was to identify those characteristics which are significant in determining apple consumer purchase decisions, seven major topics identified from the analysis of the consumer questionnaire were selected to be the focus of the discussions. These selected topics were:

- I. reasons for consuming apples
- II. the frequency of consumption and apple usage
- III. apple price
- IV. attitudes towards imports
- V. perception of state versus private sector producers and retailers
- VI. expectations with respect to apple quality
- VII. expectations with respect to apple retailing

Although the interview was semi-structured with the interviewer trying to integrate and become part of the group in order to facilitate the discussion, topics not included in the moderator guide emerged and are included in the analysis. Furthermore, many of the consumers were either new land owners, or had members of their families who recently inherited land. This reality which was not taken into consideration prior to running the groups added further depth not only to the expectations of the consumers with respect to the apple industry, but also to the problems the respondents personally thought the industry is facing. The seven topics mentioned above were supplemented by other two major topics which emerged from the focus groups discussions, namely



the need for establishing specific outlets (VIII) and the reasons for the disappearance of apple orchards (IX).

The focus groups yielded a wealth of qualitative data which are summarised in this section. With the impressive amount of qualitative information at hand, a detailed descriptive approach involving so many issues could have proven to be both lengthy and confusing. A more concise approach was taken, although the risk of diminishing the richness of the available information was recognised. Quotations from the interviews serve to supplement the summarised data.

At this point it is appropriate to recall the composition of the focus given in section 4.11. An exact differentiation between the characteristics of the groups such as their social profile was almost impossible. It was therefore decided to follow the main topics emerging from the interviews and present the various issues relating to each of the main topics identified. The results are summarised under Table 6.1. The columns of the Table represent the nine major topics emerging from the focus groups (labelled from I to IX), while the rows express the issues discussed under each topic.

As can be observed from the summary table, a multitude of reasons were given for consuming apples, ranging from their importance to children's nutrition to dietary reasons and tradition. The interviewees often quoted the support they received from their relatives living in the countryside who provided them with fresh fruit:

*I: Hence having children is a big influence in/*

*R.A\*.: /yes, me, for example,... I buy only for the children.*

*I: Only for the children?*

*R.A. : ...especially during winter.../*

*R.B.: /I buy for the family as well, but the little one likes apples the most.*

*R.A.: ...but not only during winter...my young ones got used to apples...to the apples that I have from home, I live in the countryside, we have Jonathan apples...I have got a garden too...and the apples that you can buy nowadays during winter...are expensive...and not so good/*

*R.B.: /I had to buy two big bags from Barnova\*, myself.*

*R.A.: But even if I had no garden, I would still go to the market and pay the money because I have two children, thank God...what shall I give them in the lunch box? If your kid is at school these days, what else can you give him? An apple...a small sandwich and sometimes a little bit of money....*

*\* R.A.= respondent "A"; R.B. = respondent "B", etc.*

*\*\* Barnova is a small village in the surroundings of Iasi*



Table 6.1: Summary of Focus groups results

Issues emerging under each topic	Major topics discussed*								
	I	II	III	IV	V	VI	VII	VIII	IX
presence of children	✓								
supplement poor nutrition	✓								
health reasons	✓								
pure like	✓								
“need” for apple consumption	✓								
price	✓		✓	✓					
tradition	✓								
availability	✓			✓					
necessity	✓								
apple storage	✓								
presents	✓								
symbolic offerings	✓								
dietary basis	✓								
habit	✓								
high apple consumption		✓							
apple juice		✓							
desserts		✓							
apple preserves		✓							
high price			✓				✓		✓
acceptable price			✓						
chaotic market			✓	✓					
economic situation			✓			✓	✓		✓
financial power			✓	✓		✓	✓		✓
retailers			✓				✓		
auctions			✓				✓		
legislation			✓	✓	✓	✓	✓		✓
corruption			✓						
apple sales			✓						
not agree with imports				✓					
unfair competition				✓					
imports - beneficial out of season				✓					
diversification				✓			✓		
stimulus for local industry				✓					
imports from NIS Moldova				✓					
transition				✓		✓	✓		✓
diversity				✓	✓		✓	✓	
bargaining					✓				
brand loyalty					✓				
“bazaar” aspect					✓				
not understanding the consumers					✓		✓		

\* I.= reasons for consuming apples; II.= the frequency of consumption and apple usage; III.= apple price; IV.= attitudes towards imports; V.= perception of state versus private sector producers and retailers; VI.= expectations with respect to apple quality; VII.= expectations with respect to apple retailing; VIII.= need for establishing specific outlets; IX.= reasons for the disappearance of apple orchards



Table 6.1: Summary of Focus groups results (continued)

Issues emerging under each topic	Major topics discussed*								
	I	II	III	IV	V	VI	VII	VIII	IX
bureaucracy					✓				
motivation					✓		✓		✓
apple quality					✓	✓	✓		
damaged apples						✓			
dirty apples						✓			
size						✓			
uniform quality						✓	✓		
pesticides						✓			
high depreciation up to retail						✓			
organic fruits						✓	✓		
packaging and labelling							✓		
consumer education	✓						✓	✓	
colour preferences							✓		
varietal preferences							✓		
complaisance							✓		
choose own apples							✓		
grading and pre-packing							✓		
distrust							✓		
Western standards			✓				✓	✓	
salespersons behaviour							✓		
old mentality							✓		
commercial education							✓		
cleanliness of retail spaces							✓		
shopping atmosphere							✓	✓	
advertising				✓			✓	✓	
disappearance of 'Aprozars'								✓	✓
location								✓	
preference for vineyards									✓
technological knowledge									✓
lack for sufficient land									✓
state support									✓
association									✓
competition									✓
land restitution									✓

\* I.= reasons for consuming apples; II.= the frequency of consumption and apple usage; III.= apple price; IV.= attitudes towards imports; V.= perception of state versus private sector producers and retailers; VI.= expectations with respect to apple quality; VII.= expectations with respect to apple retailing; VIII.= need for establishing specific outlets; IX.= reasons for the disappearance of apple orchards

It should be underlined that even if "A", "B" or "C" were the general fictional names of the respondents along this section, they are not the same in all quotations. Letters were allocated for ease of understanding the order of intervening/taking part in a conversation, rather than to represent certain respondents.



Besides being rich in vitamins, other respondents stated the importance of apples for elderly people:

*I: Perhaps there is somebody which would like to add something?*

*R: Me, for example. Both my parents are relatively ill...I buy them apples now and then from the peasant market and take the apples to the countryside...to other things my parents say "no"...so I buy them an apple, a pear, a quince...*

Apples were considered traditional in other ways too. It was mentioned that apple fruits in a bowl brought a general feel of well-being and were considered an integral part of the Romanian culture:

*R: An apple fruit bowl on the table of a consumer has the quality to make him healthier, happier and more confident. The apple, as you all know, is present in our culture from the moment of birth to the moment of death.*

It was also interesting to notice that some consumers' interest in apples could be influenced by reducing the price of other fruits. However, most of the respondents preferred apples for various other reasons:

*I: /so, you say you would not give up apples completely...*

*R: Let's take an example when apples are the same price as bananas. I can not buy two "P's"\* of bananas and store them all over winter. I cannot buy only bananas because I cannot store them...I cannot buy one hundred kilos of bananas...I buy two-three bananas when I crave them, or for a kid....but if they were at the same price I would not buy them because I cannot store them. Otherwise, where from would I buy such fruit in my village? I have to travel to the city....*

*\* a "P" is a big crate of 12-15 kilograms, mostly used to store or transport apples*

One of the main aspects discussed with respect to apple consumption was apple storage. Considered traditional in Romania, apples were for many years in rural communities stored in the so-called "Patuls" (wooden structures under the extended roofs, also used for storing and drying hay). The apples are stored beginning in mid autumn and are said to give a certain feeling of security over winter. Such traditions have been perpetuated to urban families as well:

*R: I am from the city and there was no such tradition in my house. But through marriage...my wife comes from an area where they are very keen on storing apples. I store apples now; you do not often have the chance of buying the same apples later in the year and to preserve them in a certain way.*



~~ *I know now what sort of apples to preserve; apples of medium size with increased chance of getting well through the winter. I have now apples in February that nobody could find on the market...*

The traditional place of apples in Romanian culture was also discussed, beginning with their importance as a present for loved ones and ending with their role as a symbolic offering at the traditional orthodox funeral ceremony. Nonetheless, it was noticed that in the majority of cases there was an actual need for apple consumption at a subconscious level and apples were consumed as a “necessity”. Worries were expressed in the end that the importance of consuming apples might be lost in the young generations which regard expensive exotic fruits as “more fashionable”.

As discussed in chapter 3, official statistics indicate that the level of apple consumption in Romania is relatively low. The focus groups (and the questionnaires) suggested exactly the reverse. With few exceptions, all interviewees mention consuming apples personally at least once every couple of days. However, in these families the average consumption for the rest of the family was generally declared to be higher. Some cases mentioned very high frequencies of consumption, going to up to seven apples a day on a regular basis. Apple consumption was stated to be mainly limited by the relatively high apple price. The nostalgic financially secure communist times were often evoked :

*I: Are there perhaps people consuming apples more often amongst you than mentioned?*

*R.A.: Yes. But it very much depends on our wallet/*

~~

*R.B.: There's hunger in this market economy/*

*R.A.: /it was better under the communists.*

A number of forms of apple consumption were referred to, from grated in children's meals to cooked apple pies and preserves. Apple juice resulting from the processing of apples for the pies was often mentioned to be a supplement in young children's nutrition:

*R.A.: Yes, I buy apples almost daily, especially to have enough for my little boy. He loves grated apples with biscuits, or grated apples just like that...and I know that it is good for him.*

~~

*I: Does anybody juice apples?*



*R.B.: Yes, we do. Both for the child, but for us too. I like it, we like it, especially if you mix it with other fruits as well...it's excellent. It is a shame that on its own it oxidises so quickly.*

Apple price was one of the main issues debated, sparking strong feelings. Opinions were often divided regarding price. Most of the participants considered that the price of apples was too high, especially during autumn when fresh apples are abundant, but during certain other times of the year too (Christmas, Easter). The chaotic market economy was seen as the main source of such high prices:

*R.A.: I think that it is the way it should be ... where there is competition, there also is quality/*

*R.B.: I struggle with my problems day by day, the money is never enough and that is why I think ... yes there is competition, I like competition, it does not bother me, but it should be fair. If we take the apples for example, during this winter there are only two people selling in the market and they can charge sky high prices. Do you think it is fair/*

*R.C.: /yes, some of these people go to the market and charge whatever they want these days...*

Such adverse feelings were supplemented by the poor economic situation and the low financial power of the consumers:

*R.A.: I would like to buy graded apples, separated on qualities and varieties...I would like to buy even organic apples ...and observe the cute lady who serves me and smiles. But perhaps I am more stingy...I like eating a beautiful apple...I like my kids to eat apples...I would like to support the person producing the apples and the person selling them...but I would also like to have the finances to care about all these.*

*R.B.: I would like to have the money to buy everyday...perhaps I would not store apples anymore...so many rot in the process.*

*R.A.: There are many people who can actually not afford to buy apples because they have other priorities. You should know that there are people who do not buy a single apple over the whole period/*

*R.B.: /There are families of 4-5, with both earners unemployed and three kids in school...you have to give them an apple...but believe me, in my block of flats there are people who cannot afford...and the kids dream about eating apples.*

The newly emerged retailers were said to also have an important influence over the apple prices, leading to significant increases. Wholesalers and retailers were also perceived to add a considerable percentage to apple prices. It was suggested that a closer relationship should be built between the producer and the retailer to cut out the middle men and hence reduce the prices. It was also suggested that apple auctions would be beneficial in maintaining a lower price. The lack of clear legislation with



respect to the organisation of the entire chain from production to retailing was mentioned by the participants, as well as corruption at high levels which may cause slow legislative improvements. Nonetheless, other participants consider apples as being priced acceptably, hence they were buying apples all over the duration of the year.

The psychological effect of price was mentioned with respect to other newly established businesses. Taking the Western model, some newly established retailers periodically advertise sales in their shops. It was suggested that such sales could be extended to the fruit retailing sector, especially given that fruits are highly perishable products. Many consumers stated that some retailers actually prefer wasting the fruit rather than selling it at a lower price when the quality depreciates.

Strong debates centred around the issue of apple imports. In general terms, there was a negative attitude towards most of the imported food products, such produce being perceived as unfair competition for the domestic market.

Some of the participants acknowledged however that apple imports would be beneficial out of the Romanian season, given they were of a reasonable price. It is recognised that imports may support in this way the diversification of products on the market, improving the varietal and fruit range. However, even 'out of season' imports are perceived as very expensive and targeted only towards a small section of the consumers, namely the ones with a better financial situation or foreign students who could afford such produce.

Arguments arose around the imports acting as a stimulus for the local apple industry, positively stimulating the quality and appearance of the retailed apples. Other criticisms towards foreign produce were addressed to the inflow of products from the Republic of Moldova. This may well be a particular case for cities like Iasi, or others situated in the immediate vicinity of the ex-Soviet border. Similar cases are registered near the northern border with Ukraine and even the southern border with Bulgaria. Small private businesses, but mainly individuals travel over the border daily carrying small but constant amounts of such products, forcing down the price on the Romanian



market to the dissatisfaction of the local private retailers. Further aversion was encountered towards products coming from Turkey, based on the perceived poor quality of such products. Amongst the main factors cited as responsible for such trading is the chaos generated by transition and the lack of clear legislation.

During the interviews, comparisons were made between the state and the new private sector. Most of the consumers interviewed preferred buying their produce from peasant (or free) markets. These markets were regarded as providing a higher diversity, and not the least, giving the possibility of bargaining. It was noticed during the interviews the development of frail “brand loyalty” on a small scale with respect to fresh produce; some of the respondents generally have a favourite person from whom they purchase fresh produce.

However, there were also criticisms of the peasant markets. Once exclusively designated for fresh produce, the free market is, according to one of the respondents, worse than a “bazaar”. The opening of the markets to private initiative has spurred an entire group of small retailers which have infiltrated the free markets selling everything else, but fresh produce. These so-called “bargain hunters” were said to sell everything from cooking oil to plastic cups or pens. A similar phenomena was noticed in the few remaining state outlets for fresh produce:

*I: Am I right in saying that you would like to see there only fresh produce?*

*R.A.: Yes, of course. You go nowadays to the “Aprozar”\* and you can see there everything, from hygienic rolls to notebooks, plates ... everything ... what you find is ... it looks like some sort of bazaar/*

*R.B.: /yes it looks like a small village shop these days.*

*I: Is it happening in the peasant markets as well?*

*R.C.: If I am to join the discussion ... I saw that happening at Hala and Independentei markets... they are not what they used to be. They sell whatever you want ... and especially whatever you don't want these days.*

*\* 'Aprozars' were the ex-specialised shops in fruit and vegetable retail*

The bad organisation of state retail chain was also debated. It was suggested that there was a clear lack of understanding consumer needs especially by the state sector which could be explained by lack of motivation for the employees and the high levels of bureaucracy of the system:

*R.A.: We have products far better than the imported ones...I think of far better quality...but because the whole system is badly organised, there is a*



*tendency to store them (N.A.\* apples), resulting in a lower quality, and try to sell them for the price they were worth initially. Hence we have good apples, but they end in a bad state on the market.*

*R.B.: Around the same subject, a financial advisor from one of the state farms was completely against separating the apples on qualities. He said that the good ones sell the bad apples as well. I think this is bad judgement.*

*R.A.: There is a lack of communication between the producer, retailer and consumer. The producer thinks he has to produce as much as possible regardless what happens after the apples leave the farm.*

*R.B.: Why this lack of communication? I think the producer is not motivated...they know whatever they do, the retailer gets more money anyway...*

*\* author's note*

However, the quality of the apples from the two sectors is also seen as very diverse. Some respondents mentioned that the situation can also be reversed, finding higher quality apples at state retail points. Nonetheless, many consumers mention that it takes a lot of effort to find good quality apples at an acceptable price in both state and private sector retail points.

Small private businesses were also criticised for carrying out disorganised retail. The chaos provoked by the transitional period from a centralised to a market economy was also transmitted to such businesses. Lack of legislation or inappropriate legislation failed to control the chaotic sale of fresh produce outside of designated places. Some small retailers, in order to avoid taxes and other costs associated with organised retail, sell their produce on the street, in sheltered locations but with a constant flow of pedestrians. Other types of street retail require approval from the local council. For a regular fee, some small businesses could retail their produce in public places away from organised markets or malls:

*R: ...anyway, I live by the Red Bridge. Would you believe... one day this person appears straight in front of the Telephone Building with a small booth. Usually the "boss" comes at the beginning of the day to bring the apples, three-four big crates. I saw this thing at the International train Station as well. These guys bring the apples and leave somebody behind ... sometimes nice girls ... to sell them. But these persons know where to buy them (N.A\*. apples) from ... in January you have to have connections ... they(N.A. apples) were obviously brought from a big storage facility.*

*\* author's note*

With respect to consumer expectation to apple quality it was suggested that often the price-quality relationship is missing. Often products are retailed over their quality value while consumers expect fair prices:



*R.A.: If we look at these small apples, if they look like 200 lei, I pay 200 lei.*

*R.B.: I disagree, looking at these beautiful fruits makes me think that if it's to eat an apple, it's better to eat less but of better quality. If you buy apples of lower quality some of them are bruised, some half rotten ... hence price wise you end up in similar spending.*

*R.A.: I want to say that when I've got money, I would buy some of the nice ones...however, when I reach the bottom of my pocket, I'm not fussy anymore.*

*R.B.: I would still make an effort for the kids.*

*R.C.: If I buy them for fresh consumption, I would like to buy nice ones, if I buy apples for jam or preserves, I normally buy cheap ones.*

*R.A.: Who wouldn't like to buy nice apples, but the price ... not for a much higher price.*

Other expectations of the consumers would be regarded as normal in other countries. Most of them would like to see the exclusion of bruised fruit, fruit affected by various pests and diseases or which were soiled in the process of harvesting or transport.

Size was one of the qualities often debated. Most of the participants preferred bigger apples if possible, especially for fresh consumption:

*R.A.: yes, size matters...*

*R: >>*

*R.A.: If you have a big apple ... I don't know ... it's like it tastes better.*

*R.B.: I also agree, according to me, the bigger the apple, the better the taste.*

*I: Does anybody prefer smaller apples?*

*R: [*

*R.C.: Not small, put perhaps more for the same amount /*

*R: >>*

However, a uniform, acceptable quality was seen as a vital step in a developing the market. Interesting observations were made with respect to the use of pesticides: it was suggested that the abusive use of pesticides leads to the depreciation of apples during storage. It was also suggested that there was already a high level of depreciation from the production to the retail level.

A brief discussion regarding organic produce followed the discussions related to pesticides. Most of the respondents had never heard about such fruits, or even of the concept itself. It appeared that environmental issues and sustainable agriculture were not on the priority lists of consumers:

*I: Do you think there could be a market for such products (N.A. \* organic)/*

*R.A.: I think we are not familiar with the concept.*



*R.B.: We don't give to much importance to these ecological aspects...this concept comes last nowadays.*

*R.A.: Plus you would need big farms for something like that/*

*R.B.: /and I think in Romania the quantity of residual pesticides is far lower than abroad...they use a very large number of pesticides there...here the costs led to the limitation of many pesticides.*

*\* author's note*

The children played an important role here, since the few consumers familiar with the topic affirmed that they would buy organic apples mainly for their young. However, a general opinion that such products would at the moment be unsuccessful in Romania was expressed.

Most of the discussions relating to the expectations with respect to apple retailing revolved around packaging and labelling and the state of the retail outlets including the behaviour of the sales personnel. The participants also acknowledged the lack of consumer education with respect to retail expectations, as well as the phenomena of consumer complaisance:

*R.A.: /in our shops or markets, when you go to buy apples, all you can see is a pile/*

*R.B.: /you can't even see what they put in your bag, they're so fast/*

*R.C.: /I think packaging would make apples look better.*

*R.A.: Me personally, I think this is the way we are used to. It doesn't matter, you go, see the pile ... open the bag ... you buy only to have what to eat.*

*I: Do you think it is a matter of consumer education?*

*R.C.: I would think that if you do not have such education, you should try and form it yourself, you should think about how you would actually like to buy the product/*

*R.A.: I think we're complacent in these sort of situations.*

Even if the average consumer was observed to buy apples only as apple fruits, there were nonetheless colour preferences and sometimes even varietal preferences:

*I: When you go to the market, do you prefer a certain variety, or you just think about buying apple fruits?*

*R.A.: I do not know a lot about apples/*

*R.B.: /yes, it is indifferent to me too/*

*R.C.: /I prefer buying the ones called "rabbit's nose". With crispy skin and soft pulp.*

*R.D. [Jonathan...*

*R.C.: I do not think so...*

*R.A.: What's the use of looking for something specific? You look for something and you can not find it anyway. I look for the colour. My little*



*daughters tell me “father, bring home some of those yellow ones” ... and even if they are smaller and wrinkly during winter ... that is what I buy.*

*R.D.: I buy only Jonathan or Golden.*

Other expectations were related to the possibility of being able to choose their own apples and, for some participants, the grading and pre-packing of the fruits. However a distrust in the entire system was noted. Participants stated they would not be surprised if a quarter of the pre-packed apples would not correspond to their quality expectations, as it often occurred:

*R: I think these days that the little bit of common sense has totally disappeared...nobody thinks about the consumer anymore, but always how to make money. He (N.A.\* producer, retailer) is only interested to sell his merchandise...so together with 5 good apples he'll sneak in one or two bad ones...just to weigh more, which is not correct...that's why I would not like to buy them pre-packed.*

*\* author's note*

There appeared to be a certain knowledge about the apple retailing in Western countries amongst the consumers. The opening to the West and travel opportunities have apparently contributed to this:

*R.: In the West there are separate stands with fruits and apples where you choose them yourself...you have bags and everything. This one looks good...I take it...this one I do not really like...I leave it there. And they (N.A.\* apples) are separated on taste, colour, shape...*

*\* author's note*

Another major point debated with respect to apple retailing was the actual attitude of the vendors or salespersons often depicted as non-interested, cunning and rude. This was valid especially for the state sector. The private sector (free markets) was regarded as more “user friendly” since the peasants were interested in selling their own produce. It was considered that in the state sector there is no incentive for the salespeople, hence their attitude towards the consumers. The state outlets were also associated with an old retail mentality. Many of the interviewees mention that there was a need for commercial education prior to the position of salesperson, in order to improve communication skills, attitudes and politeness:

*I: Hence, what do you think about the salespeople behaviour?*

*R.A.: It's terrible...terrible/*

*R.B.: /both in the state and private sectors.*



*R.A.: The lack of politeness, lack of respect for the consumer, common sense, their whole behaviour is terrible...what can I say, I have a very bad opinion.*

*R.B.: I think this is an atavism of the past times/*

*R.A.: /I do not think so/*

*R.B.: / yes...it is, if you wanted to buy, well, OK, if not...but you did not have any alternatives those days.*

*I: Do you think that vendors in both sectors do not know how to sell their merchandise?*

*R.A.: Yes/*

*R.B.: /yes, of course they don't...*

*~*

*R.A.: There should be a prior education with all these sales people. They think it's just a job and at the end of the day whatever they do, they still get their salary. It's something inherited from the previous system, they have a job, nobody can sack them until they retire...that's why they behave like that. And this happens especially in the state sector.*

The cleanliness of some retail outlets was criticised, especially the free markets. A general lack of shopping atmosphere was perceived in both sectors:

*R.A.: I would like to know that in the shop nearby there are always good products...If I knew, I would buy only from there. However the prices should be acceptable...and the outlet clean/*

*R.B.: / it really counts how you sell your merchandise...you're attracted by the way in which a product is retailed...by the nice smiling vendor and his behaviour/*

*R.A.: The entire atmosphere counts...*

*R.C.: Yes, the atmosphere, it's true...*

Advertising of apples was also mentioned. Consumers appeared to be aware of its importance, both for selling and promoting the product. Furthermore, increasing the general popularity of the apple was suggested. Recipe books for cooking with apples, as well as the availability of more apple products, including apple deserts on the market were amongst the interesting ideas debated.

A general idea emerging from the discussions was the generally lack of commercial spirit and commercial thought on the fruit market, especially at the retail points.

The attraction of more consumers towards the peasant markets was influenced to a certain degree by the disappearance of the former specialised state outlets called "Aprozar". Most of the interviewees would like to see such retail shops being re-established, but many doubt their success in competing with the free markets, mainly on the basis of price and location:



*R.A.: Nearby where I live there was someone who tried to establish such a shop from "A to Z". I think he did not succeed because at his turn he also buys from somebody else, and in order to get a small profit he is forced to sell 200 lei more ... now there is nothing left of the shop ... an empty space.*

*R.B.: I would like to go to the "Aprozar", at least how it was once ... yes ... but I think it is not convenient for me to buy a kilo of onions 500 lei more. Before (N.A.\*. 1989) all prices were controlled more or less.*

~~

*R.C.: Before (N.A.\* 1989) I was also buying produce from the "Aprozar", during winter some of the products were better there ... but now the one that I used to buy from went into bankruptcy ... they sell now Stalinskaya vodka.*

*\* author's note*

Western societies were given as an example for establishing such specific outlets. However, the improvement of the free markets (including further facility development) was perceived as a vital first step.

The last topic, namely the disappearance of apple orchards was brought into discussion by new land owners or their relatives taking part in the focus groups. The preference for establishing vineyards was noted, as it became that wine is more important than fruit in the perception of the consumer. Vineyards are also considered more profitable and easier look after:

*I: So, would you prefer vineyards ...or orchards?*

~~

*R.A.: /there is something else ... I live in Bohotin, and I have five apple trees at home. But I have noticed that with a vineyard you don't need so much labour...well it needs quite a lot of labour, but not as much as the apples...ploughing, fertilising all around the tree ... careful pruning ... you need money, especially to spray properly. You could plant an orchard indeed, but you have a strict technological process there to follow...with fertilisers...with all kind of things. People in the countryside do not have money ... but with a vineyard, you can do all the work yourself.*

*I: Especially if it consists of American hybrids...*

*R.B.: If so, it is even better ... that sort of wine is healthier. But with apples...I have some apple trees too, they are around ten years old. I do not know why, but at the beginning when they were young the apples were bigger and lasted longer ... but now they do not keep... most of them see the bin. The wine on the other hand brings money and keeps better.*

Lack of technological knowledge or sufficient land were other reasons mentioned to have affected the establishment of new apple orchards, together with the high prices of materials:



*R: You can't say that they choose vineyards only because wine brings higher incomes. This is a time when people are disoriented and do not know the agricultural practices, regardless of the cultivated species... which one is more appropriate and which one brings more profit...but generally the establishment of new orchards is avoided because of the high costs*

The maintenance of apple orchards was also perceived as difficult, as earlier mentioned:

*R: The truth as seen by me is like that: in the countryside, like where I live now, some peasants were given the land back in the form of orchards. Those people, one or two years could deal with one or a half hectare ... but after a while, without money for proper maintenance the production decreases and you end up with apples like cherries ... if you're lucky. Suppose it was me, I would do the same ... grub it out.*

The poor economical situation of the country was also seen not to encourage horticulture and agriculture generally:

*R: /we are practising a subsistence agriculture...people grow everything around their houses in order to have cheap food...nobody thinks about making a profit...the economical situation is as such.*

With so many new land owners in possession of small plots of land, different forms of association were perceived as beneficial for the future of agricultural business. The storage of apples was also perceived as a barrier for further apple orchard development. Most of the land owners and potential apple producers were aware of the multitude of other small apple producers they would have to compete against during the autumn season.

Under those conditions, state subventions (financial or material), or any other kind of state assistance were seen as the main potential factors in the re-establishment of orchards.

In studying Table 6.1 it is easy to observe that some issues occur more frequently. One of the most discussed issues was the legislative aspect. In the opinion of the participants, there appeared to be a need for better legislation beginning with price policies and ending with the land restitution.



Other issues which appeared under several topics were related to the poor economic state of the entire country and the low financial power of the average consumer. The period of transition was also often mentioned in relation to the confused consumers and the regression of the apple industry.

Motivation was one of the main factors identified as missing especially in the state sector for further improvement of the apple quality and retail facilities. Diversity and need for product diversification were prime words with respect to consumer expectations. Consumer education and advertising also stood out as an important issue mentioned by the participants, while Western standards are mentioned more and more as an aim the Romanian apple industry should look into.

## **6.2 *IN-DEPTH INTERVIEWS RESULTS***

A document translated into Romanian containing the main ideas emerging from the questionnaire analysis and the focus groups was sent in advance to all the selected respondents for the in-depth interviews. The interviews were semi-structured, with the moderator having developed a moderator guide (better described as a check list) with the main issues of interest prior to the interviews.

However, the discussions were also allowed to develop in directions which seemed to be of interest for the interviewee and which did not feature in the moderator guide (hence also a follow-up question approach).

The interviews were audio recorded and transcribed as was the case with the focus groups and the “cut-and-paste” technique applied. Commonalties were identified between the interviewees responses and “pasted” together in a synthetic descriptive approach, with quotations from the transcripts included in the text.

The results have been structured into four main sections determined by the attributes of the respondents. The first section (I) contains the opinions of the State sector including



producers, researchers, nursery managers and storage facility managers. The second section (II) contains the opinions of private growers, who also retail their produce. The third section (III) is concerned with the response of the processing and storage plants from “Vitalef”, once the biggest in the county of Iasi who were in charge of processing and distributing all the horticultural products originating from the State and Co-operative farms before 1989. Finally, the fourth section (IV) is concerned with the response of two supermarket managers and their opinion with respect to retailing fresh produce.

The results were summarised in Table 6.2. The columns of the table, marked with I to IV, represent the above sections in which the interviews could be grouped. The rows of the table represent the issues discussed under each of these groups.

All the interviews with the respondents began with a review of the difficulties after 1989, the year when Romania first stepped towards a market economy. It soon became apparent that they perceived more negative rather than positive circumstances. Such aspects were followed by discussing the issues raised by the consumers.

As with the focus groups, only a small resume of the results is given, considering the richness of data at hand. The issues presented in this section will be further debated in under chapter 7, “Discussions”.

The first section, namely the state sector response, could be further sub-divided into the responses of *growers, researchers, nursery managers and storage facility managers*. The results of the first section are actually presented in the same order. It is important at this point to mention that most of the state institutions interviewed belonged to the Fruit Tree Research Station Iasi. Without the strong support of this institution, many of the sensitive topics involved would have been difficult to embark on.



Table 6.2: In-depth interviews results

Issues emerging during interviews	Players interviewed			
	State	Private	Various Plants	Supermarkets
distribution difficulties	✓	✓	✓	
disappearance of classic wholesalers	✓	✓	✓	✓
confusion and uncertainty	✓			
lack of firm contracts	✓	✓	✓	
lack of legislation	✓	✓	✓	✓
need for subventions	✓	✓	✓	
production should be main aim	✓	✓		
diversification	✓	✓	✓	✓
small fruit processing units	✓	✓	✓	
chaotic distribution	✓			
high taxes	✓	✓		✓
tax evasion	✓	✓		✓
newly emerged retailers	✓	✓		✓
quick profit	✓			
establishing own stores	✓			✓
advertising	✓	✓	✓	✓
fruit exports	✓			
personal interests and corruption	✓			
lack of apple demand	✓	✓	✓	✓
apple distilling	✓			
poor financial situation	✓	✓	✓	✓
no education regarding fruit values	✓			✓
re-possession of land	✓	✓	✓	
new land owners	✓		✓	
lack of technical knowledge	✓	✓		
grubbing up orchards	✓	✓		
replacing orchards with other crops	✓	✓		
politics	✓	✓		✓
credits with high interest	✓	✓		
inflation	✓	✓	✓	✓
low production levels	✓			
ageing of existing orchards	✓	✓		
replacing of old orchards	✓	✓		
uncertainty of land ownership	✓			
lack of Government interest	✓			
Government distrust	✓			
nostalgia	✓		✓	✓
motivation	✓	✓	✓	
work discipline	✓			✓
disappearance of labour hand	✓			
Republic of Moldova	✓	✓	✓	✓



Table 6.2: In-depth interviews results (continued)

Issues emerging during interviews	Players interviewed			
	State	Private	Various Plants	Supermarkets
quality harvesting	✓	✓		
poverty	✓	✓		
thefts	✓			
bad experiences with pesticides	✓			
old equipment	✓	✓	✓	
high fuel prices	✓	✓		
high machinery prices	✓	✓		
role of the consumer	✓	✓	✓	✓
communication and feed back	✓	✓	✓	✓
increase in quality demand	✓	✓	✓	✓
apple size	✓	✓		✓
need for a marketing department	✓			✓
increasing consumer awareness	✓			✓
more could be done	✓		✓	✓
inertia	✓			
rapid depreciation in quality	✓	✓	✓	✓
size of the farms	✓	✓		
lack of culture and respect for apples	✓	✓		
storage problems	✓	✓		✓
adverse weather	✓			
apple containers	✓	✓	✓	✓
need for more research	✓			
bad state of the roads	✓	✓		
numerous apple handlings	✓	✓	✓	
sorting and grading	✓	✓		
pre-harvest technologies	✓			
disappearance of animal husbandry	✓			
chain reaction	✓			
uneven apple quality	✓			
commercial education	✓	✓	✓	✓
mentality	✓			✓
labelling	✓	✓	✓	✓
varietal range	✓	✓		
exhibitions with public attendance	✓		✓	
ethics	✓	✓	✓	
re-vitalisation of the apple industry	✓	✓	✓	✓
promotion of fruits	✓			
lack of information	✓	✓		
organic products	✓	✓		
consumer education	✓	✓	✓	✓
future of the apple industry	✓	✓	✓	
standards of living	✓			✓
International exhibitions	✓			
transfer of decision power	✓			✓
establishing own outlets	✓			



Table 6.2: In-depth interviews results (continued)

Issues emerging during interviews	Players interviewed			
	State	Private	Various Plants	Supermarkets
consumer research	✓		✓	
promoting new varieties	✓	✓		
stronger involvement of mass-media	✓	✓	✓	✓
lack of interest	✓			
attitude towards work	✓			
motivation	✓	✓		✓
attitude towards exports	✓			
optimism		✓		
old Romanian varieties		✓		
dissatisfaction with retail spaces		✓		
orchard adjustment		✓		
adaptability		✓		
dynamics		✓	✓	
quality preservation	✓	✓		✓
retailing experience		✓	✓	✓
market economy	✓	✓	✓	✓
superior retailing	✓	✓		✓
laminated apples	✓	✓		
pre-packed apples	✓	✓		
competition	✓	✓	✓	✓
disloyal competition		✓		✓
gypsy mafioso-type small organisations		✓		✓
increased state involvement needed	✓	✓	✓	✓
associations	✓	✓		
centralisation			✓	
processing	✓		✓	✓
importance of marketing department	✓		✓	✓
no interest in maintaining apple quality			✓	
sales personnel			✓	✓
perishability	✓	✓	✓	✓
improper transport conditions			✓	
small processing lines	✓		✓	
privatisation			✓	✓
commodities diversification			✓	✓
avoidance of apple retailing			✓	✓
lack of appropriate storage spaces		✓		✓
financial losses	✓			✓
lack of relationships with producers				✓
reducing apple prices	✓			✓
apple juices				✓
known consumer preference		✓		✓
re-organising retail spaces				
bureaucracy				✓



## I. The State Sector

Many state *growers* perceive the main difficulty after 1989 as the distribution of the products. Soon after 1989, beginning with 1992-1993 the situation changed radically. Wholesalers such as the ILF's (The Fruit and Vegetable Enterprises) which were specialised in storing, partially processing and distributing the fruits within the main cities have almost completely disappeared. As a result, all remaining State producers have to act as wholesalers themselves and find outlets for their production. It seems that one main difficulty is the confusion about how much to produce, given the uncertainty of further distributing the production. Firm contracts are not undertaken anymore generally speaking and this state of uncertainty is the main concern of all the producers interviewed. The distribution problem was well depicted in quotations as:

*I: What has changed and what is more difficult for you after 1989?*

*R: The main problem appeared in 1990...well, not really in 1990 because we had some inertia ...less was also stolen and we were producing as before 1989. The first shock came with 1993...we could not distribute anymore...it became more difficult to distribute than to produce. The State took its hand of us...they did not take our products anymore. However, the State does not ask us anymore what and how we are doing, but it does not help us either. It was that moment when chaotic distribution appeared on our market...speculative prices...and all sorts of speculators because I cannot call them distributors or retailers or anything else...they sell the apples illegally on many occasions, they are not even small producers and they earn twice as much as us. As a result of distribution difficulties the financial difficulties appear inherently...you cannot start a new cycle...can't do all the required technology...and without investments we are in strong decline.*

The remaining State producers after 1989 felt a lack of a coherent legislation with respect to distribution. Producers also thought they should be covered by subventions in the years when the climatic conditions are not favourable or when demand is very weak.

The growers considered that production should be their main aim. The rest of the chain should be undertaken by other links:

*R: In horticulture the money don't come easily...I invest some money now to get some profit during autumn...profit which is however not certain. We are not organised. Some links are missing. ~ Me, as the producer...I do not have the time to sell, to study the market and so on...this should be someone else's responsibility. This link which should appear as a necessity does not exist. This link should tell me to produce more or less, of higher quality, to ensure*



*distribution ...I should only have the knowledge to produce fruits of high quality.*

One of the methods for solving the lack of distribution and sometimes overproduction are small processing units which can be easily adaptable to other fruits as well. This idea of diversification was also often debated:

*R: A small processing unit would be ideal for solving part of our problems...but it should be adaptable to other fruits as well. This is also part of diversifying the activities of the farm ... I also think we should have more species within the farms to ensure a constant income with some summer fruits such as cherries and sour cherries.*

The disappointment of the remaining State producers and their disapproval with the newly emerged so called “chaotic distribution” was also debated. After 1993 many people established small firms. By using their own cars, such retailers and distributors represented at the time of the interviews the bulk of fruit distribution. Such small firms took daily quantities between 100-500 kilograms and sold them at speculative prices on the free markets. Furthermore many of these retailers were also said to avoid paying taxes to the State due to a ‘loophole’ in legislation.

Being generally offended by such practices, the unfavourable opinion about such newly emerged “retailers” could often be depicted in fragments of conversation:

*R: ~ Yes, the people which come these days with their Dacia's\* are not fruit retailers but unemployed people trying to find their way in a disturbed society. They had been lucky to have a car and they carry apples with it...it is as simple as that. They don't do anything, but sell an apple produced by me after having sweat for one year, at a far higher price.*

*I: So would you call them speculators?*

*R: Yes, sometimes they were taking apples from us and going down to Galati \*\* just to sell them double. Or selling double only because you transport an apple...personally I think they are charlatans. Not to mention that such practice is not fair for the consumer itself.*

*\* Dacia is the domestic Romanian car brand for more than thirty years*

*\*\* Galati is a big port situated by the convergence of the Black sea with the Danube*

Besides improved, clearer legislation, a potential solution given by the growers was the establishing of own stores where products could be retailed directly to the consumer. Such outlets were seen as a way of keeping direct contact with the consumer and advertise own products and the consumption of fruits generally. However, even such



farmers agreed that only a fraction of the production could be distributed in such a way.

Some growers were inclined towards a strict delimitation of production from retail and required a coherent legislation which would solve the distribution problem.

Confusing legislation was often mentioned with respect to fruit exports. The uncertainty of the Statute of the Research Station did not allow direct exports at the time of the interviews. Instead, the newly emerged “international wholesalers” made important profits taking advantage of such institutions. The lack of clear legislation and required Statute was also said to be related to corrupt functionaries with personal interests at various ministries levels.

Another concern of all producers was the decrease in consumers’ incomes after 1989. As a result, fewer and fewer consumers buy fruits, including apples; the precarious incomes were mainly directed to products of strict necessity such as bread, potatoes and meat. Such a lack of demand was said to be badly affecting production year after year, producers having to resort more often to distilling their products with big losses in their incomes destined for the re-starting of a new cycle of production.

The average consumer was also accused by the producers of a lack of education with respect to the values of fruits and vegetables for personal health. It was suggested that more should be done beginning with education in kindergartens, schools and Universities to increase the consumer’s awareness with respect to the undeniable value of fruits and vegetables to human health. Nutrition courses were also given as a potential solution:

*R: I am convinced that if the consumer will expand his knowledge with respect to a healthy nutrition, more fruits will be consumed. An early education has to be started beginning with secondary school...perhaps a special curricula developed...human nutrition sounds good. Kids have to learn about the human body and its necessities related to fruits and vegetables.*

*I: hence you consider that the consumer is not educated from this point of view/*

*R: /nor educated nor formed in such a direction.*

*I: Who in your opinion should be responsible for introducing this sort of education?*

*R: The Ministry of Education, of course...they have to promote such curricula to educate these kids.*



The re-possession of land has also heavily affected the apple production in Romania. The new land owners were said to be simply not looking after their inherited plots. The reasons were multiple, including the lack of finances, lack of knowledge, grubbing up and replacement with other lower category crops.

It was considered that land re-possession legislation was implemented too quickly, without previous careful thought and planning, and more on a political basis. Politics often occurred in discussions with respect to the agricultural situation in Romania; the re-possession of the land was seen mainly as a major tool to win important votes, rather than a process which was given careful planning.

The state subventions for horticulture and agriculture generally speaking were perceived as non-existent. Some producers had to apply for credits with high interest rates from various Banks, stated to be as high as 80-100%. Such producers often ended up in debt:

*I: Hence for solving your financial problems you have to resort to loans with high interest?*

*R: Yes, of course. For example last year we had no subventions whatsoever and we had to take loans with 76-78% interest...and if somebody thinks that the productivity of one hectare can bring a double profit I would like to say to that somebody that this is a miracle. How can I return such an interest? Nobody thinks about the particularities of horticulture compared to the industry and its production cycles. The horticultural products are also perishable and have to be stored...you can only sell them after having ended an agricultural year. As a result, I have to take new loans...for storage energy costs, water, salaries...all these also raise the price of the apple.*

Another main concern of the producers was the ageing of the existing orchards. Massive plantations were not replaced with new apple trees after 1989. The existing orchards were old, becoming non-productive and yielding fruits of lower quality given the fact that their full potential age passed. A number of factors were said to have interacted to create this situation.

One reason could be considered the uncertainty of land ownership. State growers were concerned that they would make massive investments only to find out a couple of years later that those plots will be re-possessioned by new land owners.



Another reason was a financial one. The investment of replacing an orchard was very high, at 1999 prices approximately £4500 (85-90 million lei) per hectare. It should be also considered that such young orchards have to be maintained with more high financial inputs for at least three more years, until they reach the first years of commercial production.

It was suggested that such young orchards should be subsidised. Other suggestions included long term credits with low interest rates, which should be returned when the orchards reach their maximum potential. A high level of disappointment with respect to the State politics concerning production was expressed. The State, which did not assist financially the producer, asked instead for high taxes every year. These taxes, considered by some producers to equal half of the profit could also be re-invested in planting new orchards and helping in re-vitalising the Romanian apple industry.

Most of the producers saw no way out from such problems other than subsidies from the state. The Government was blamed for lack of interest or sometimes even for carrying private interests to the detriment of the Romanian producer and consumer. Allegations of corruption at the highest levels were often made where directly interested people benefited from significant sums of foreign currency for facilitating imports of products which could be easily produced in the country.

It was also considered that there was a negative attitude towards everything that was working in the previous system:

*R: ~ there should be maintained what was once good. One nation, regardless what is did, creates values over years...values that have to be maintained. Such nations will succeed. The nations which demolish all they have produced over a certain period have no future. To work 30-40 years and say that nothing was good is total denigration.*

The state care for horticulture prior to 1989 was evoked nostalgically. The state helped immensely in maintaining solid inputs into this sector. There were also given financial incentives aiming to further increase production. A certain “work discipline” was said to have been present; as quoted by one of the interviewees, such discipline had disappeared in the general chaos created after 1989.



Another major difficulty quoted by many of the growers was the disappearance of the manual labour force. As a result, big state enterprises resorted to foreign labour, mainly from the Republic of Moldova. Contracts were signed every autumn with various schools, and groups of students were constantly brought over to working in Romania during the harvest time. However, this was to the detriment of the apple quality. Being given certain harvesting “norms” the children were interested in harvesting as much as possible, completely ignoring the concept of “quality harvesting” undertaken with care for the fruit.

The accentuation of poverty after 1993, as well as the favourable opportunities for selling fresh produce on the free market have led to an increase in thefts from the State orchards. The results were even further losses in production and implicitly in the State farms profits.

Another difficulty, often mentioned by both state and private producers was the distrust in pesticides. Besides being at almost prohibitive prices, very often such pesticides did not have any effect at all or sometimes even the contrary. The lack of clear legislation in this field did not favour the growers.

The lack of technical equipment was quoted as another impediment for higher qualitative production levels. Most of the farms were in possession of old equipment, considered insufficient for the proper maintenance of the orchards. Special attention was drawn to the spraying equipment. At high acquisition costs, modern machinery was considered to be no less than an “ambitious dream”.

The high prices of fuel were also mentioned, together with overnight increases in price for locally manufactured machinery. The rapidly escalating prices took the Romanian State apple producer by surprise. It was considered that the modest profits could not cover the continuously escalating prices of machinery, pesticides, fuel, labour, energy. It was also drawn out that with the existing high inflation most companies, including the pesticide companies, only dealt in foreign currency (US dollar being preferred)



thereby accentuating the costs even more. Substances and equipment ordered in advance at certain prices reached the farm at the US dollar value of that day.

After having discussed some of the main difficulties which State producers were confronted with, the consumers requirements were also debated.

The producers were generally aware of the role of the consumer in the entire chain:

*I: What does the consumer mean for you as a producer?*

*R: Without the consumer we could not produce. The consumer is the one we work for ...and the one that makes us happy...by consuming our fruits and, of course, bringing benefits for our unit. However there won't be rich producers as long as there won't exist rich consumers. From my point of view, this is a complete interaction.*

However, from the interviews it appeared that there was a clear lack of communication between the producers and the consumers. The only feed back was given by the multitude of small distributors actually interested in making quick profits above all. Most of the producers recognised that they had perceived a certain increase in apple quality demand during the last years. However, the only feedback that they had was for bigger apples. No other feedback was given.

Asked how they keep in touch with the consumer, most growers acknowledged that there were no means for keeping contact hence the lack of feedback and communication. Nonetheless the majority of producers recognised the benefits of establishing a marketing department or bureau. Such department could be in charge of identifying more outlets for production, generally increasing the consumers' awareness towards the consumption of fruits by advertising the benefits of fruits and keeping in touch with external markets and potential customers.

With respect to consumer quality requirements there was a general feeling that more could be done. It is also acknowledged that a certain inertia together with lack of available funds and poor consumers kept things going at a slow pace. According to consumer observations, there was a paradox on the Romanian apple market. The fruits were said to be very good, but soon after harvesting, a rapid deterioration started. Faced with the problem, the producers suggested different reasons.



The main impediment was the lack of strict control of the quality beginning with the harvesting of the fruit. Employing large numbers of people at peak time in the harvest season, they were difficult to control. An apple which was not properly harvested, would also not keep. The results mainly occur in time over storage. The main cause quoted for deficiency in harvesting was the lack of respect for the fruit itself and the lack of culture of the employed workforce. Nonetheless, employees were paid according to the quantity of apples harvested, not the quality.

The second step in damaging the quality of the apples were the apple containers themselves which were seen as too big, each of them accommodating more than three hundred kilograms of apples. Such containers were also badly damaged from the usage over many years. The renewal of such containers was inherent if quality was to be preserved. With respect to replacing such containers, most producers quoted the high costs and special orders as obstacles.

A third step in quality depreciation was considered the bad state of the roads within the farms and sometimes outside the farms. On their way to the storage facilities, driven at speed on such roads on antiquated transport platforms with no means of shock absorption the apples were further damaged.

Even further depreciation occurred with the numerous handling the apples were going through from the moment of the harvesting to the moment they reach the consumers' table. The main solution to these problems, besides raising the workers awareness, acquiring new containers, investing in roads and platforms and reducing the number of handlings was seen by reducing the average size of the farms as well.

Other proposed solutions to reducing the number of handlings such as automated grading lines were considered far out of the league of Romanian producers purely on financial considerations:

*R: Automated grading lines would be ideal ... a large number of handlings would be avoided, especially if the packing is done at the same time. The apples would reach the consumer in mint condition. ~ But we as producers are*



*helpless for now...we have the vision but we do not have the means. And in a market economy nobody helps you without money.*

It was stressed that not only the post-harvest technology, but also the pre-harvest technology, was important. The lack of finances obliges the producers to skip some important treatments or other steps in the complex technological apple production chain. The chemical fertilisers are equally important, but very expensive. Natural fertilisers once easily available have disappeared. The main reason is the difficulties faced by the animal husbandry sector which is actually in a much poorer state than the horticultural sector; natural manure was difficult to procure. It appears that having affected some sectors of the economy has triggered a chain reaction, implicitly affecting the horticultural sector.

The maintenance of apple quality was also blamed on the whole series of newly emerged retailers. Their lack of care in handling the small quantities of apples they distribute daily was quoted very often. Besides being blamed for apple damage and increasing the prices, these retailers are also blamed for the uneven quality of the apples they retail. It was said that such retailers often mix class I and II before selling at a premium price. Their inappropriate handling, transport and containers were also perceived as responsible for the dirty fruits that reach the market. The commercial education of such retailers was considered to be an enormous gap to the detriment of the consumer.

The producers complained about the lack of legislation in this field as well. The few standards that existed referred to the producers and their final product, but there were no standards imposed for the products at the retail point. It was also suggested that the consumer protection organisations should become involved more with such issues.

Some of the producers took a simpler approach arguing that the poor handling and maintenance of the apple quality is a simple problem of mentality as well as a problem of finances:

*R: We do not do some of these things only because we don't have money...I think the old mentality persists as well. I know that most of the consumers are not interested for now how the apples look, but how much they cost. If the apple looks nice and is at a low price, the consumer is happy. If the*

*apple does not look as nice as it should but the price is low, the consumer is also happy. So why should we implement for now all those complicated and expensive steps to maintain the quality, if our financial returns are sensibly the same? This is the current situation and mentality in Romania, and at least I admit it. We're sometimes tempted to overlook such important aspects.*

The question of conflicting mentalities was also mentioned by other producers with respect to some of their younger colleagues. Young specialists were perceived as being more open to new ideas, more innovative and much needed to overcome the feeling of stagnation of old ideas in the apple industry, including aspects of apple quality preservation:

*R: We were formed like that, to be strictly co-ordinated. There is a need for young blood and new conceptions in the entire apple industry. It is a shame that we do not have more young people...they prefer to do something else these days, more financially rewarding. I think young personnel is more open to new and more easily adaptable to the entire new system which is the market economy...we have a couple of good examples.*

The labelling of the apples was also a major discontent expressed by the consumers. Some of the state producers considered labelling as their own responsibility, others as the responsibility of the storage facility management, while the remainder considered that the actual retailer should label the apples. The high costs involved in individual apple labelling associated with the equipment and printing of labels were mentioned as a main reason for not undertaking such operation.

Price which was considered by the consumers as fairly high, was the lowest possible in the opinion of the producer. Some solutions were however mentioned by a limited number of producers including an increase in mechanisation and the use of higher performance sprayers. Improved legislation was required in the distribution and retail sectors too; such sectors were seen as the ones bringing the highest increases in prices.

The varietal range was another issue discussed. The state farmers acknowledged that they have inherited the present varietal structure and there is little they can do for introducing new varieties. However, some mentioned that they had already introduced on small areas and with high financial commitment varieties with big fruits, as required by the consumers (such as Generos, Idared, Querina).



The consumers were often criticised for their lack of education. The producers were somehow aware that the average consumer only buys “an apple” not a “certain variety. It was suggested that various exhibitions with public attendance could have a substantial benefit for the consumer. However, the producer was also pointing in the direction of the research sectors, sectors which seemed to create such varieties only to abandon them a couple of years later. The research sector was actually the one held responsible for the dissemination of the new varieties.

With respect to advertising such new varieties, some producers say they would be prepared to undertake the task themselves if the farms would have a marketing department. The lack of such marketing departments was mentioned countless times during the interviews and was regarded as one of the main priorities for the future revitalisation and development of the apple industry.

The lack of information and the difficulties in information dissipation were also mentioned as one of the impediments in improving the varietal range:

*R: The Internet could prove vital for the producers. As far as I know, in Western countries almost everybody has access to information ... all the details needed could be found with the help of a computer. We need access to information...we live in a society and we have to keep contacts with each other. Without this kind of information is very possible that I produce what is not desired anymore for now or for the future.*

Facilities such as the Internet and more specialised libraries were considered to help substantially, as well as access to foreign publications and subscriptions to the major magazines in the fruit growing area.

As a matter of separate interest, the issue of organic products was discussed. It appeared that most farmers were not familiar with the concept. The lack of information in the field appeared clearly. After explanations, all the producers expressed their concern considering that such products would not have a market in Romania, but acknowledged the potential importance for export markets. Most of the farmers were somehow adverse to the idea and considered that the organic production of apples was almost impossible to obtain.

*I: What do you think about organic agriculture?*

*R: The idea is good, given the fact that you can also apply it...I think that more should be done to develop resistant varieties. But for now I cannot see this sort of idea being put into practice because without being healthy, a plant cannot produce. Why do people take medication? To help them pass over their illnesses. Between pesticides and medication there is no difference...*

*I: What about until medication was invented?*

*R: People were dying. It is the same with the orchards...in order to produce you have to treat them. You should see an abandoned orchard ... it has no fruits and it looks completely wild.*

Such quotations not only showed the lack of interest and sometimes the adversity towards organic methods, but also the lack of knowledge as to what organic technologies actually mean. However it was acknowledged that both the producers and consumers have to be educated:

*R: I think there is a double difficulty with respect to organic products. The awareness should be risen for both the producers and the consumers...it is difficult enough to convince one party, leave alone the two of them.*

Amongst the last issues discussed, were the future of institutions such as the Research Stations and generally speaking the state farms. It seemed that most of the producers think that the future of the Romanian apple industry belongs to the private sector, but it will take a long time to develop. The last ten years were given as an example. Even if the majority of land was in private hands, the production in the private sector was low and chaotic. Some of the producers also hinted that the state sector will not cease to exist, no matter what direction the evolution of the Romanian apple industry will take.

The producers were also aware that they played an important role in the re-vitalisation of the Romanian apple industry, but their situation was directly correlated with the entire economic situation as a whole:

*I: How do you see the revitalisation of the apple industry in Romania?*

*R: beginning with us, the producers...we have to produce quality fruits at acceptable prices...which is difficult in the present situation with all this chaos and with all the products up the production stream being so expensive. Rising the standards of life comes straight after that. If people won't have better lives, the apple industry cannot be revitalised categorically. It is directly correlated with the standards of living and the income of every individual ... And not the least, the promotion of fruits and vegetables. There will be a revitalisation, but it will take a long time to get there.*

*I: Are you pessimistic?*

*R: No sir, I am just being realistic.*



However, not all the producers saw the revitalisation of the apple industry as such a lengthy process. Some suggested that with appropriate help, the apple growing sector could be substantially improved in 5-6 years:

*R: what we badly need for now are investment funds for establishing new orchards. If we have young orchards we will also have the first qualitative fruits and probably higher incomes. A second step is the renewal of the machinery. We have such old tractors that sometimes we are afraid to work with them. The sprayers are also old and inefficient ~ we should use more mechanical operations. Hence what is needed are investments, machinery, more mechanisation, the creation of a superior attitude towards the apple, the harvesting, transport, handling and presentation ~ With credits and investments I think that in 5-6 years we could reach superior levels ... that is the time an orchard needs to produce its first quality apples.*

However, all the producers agreed that if the general economic situation did not improve, there was little that could be done to revitalise the apple industry. With the specific sense of humour which characterises the Romanians, one of the interviewees mentioned “...*dear sir, let's revitalise the consumer's pocket first, and all the good things will follow from there*”.

The *state researchers* mentioned almost the same difficulties as their colleagues involved in the production field. The most important were the lack of finances and land repossession. Special attention was given to the diminishing interest in research. The poor material base and old equipment led to a continuous struggle in this particular sector. Only the most basic of research was carried out. As the research sector was acting as a production unit too, and the fruits from the experimental plots ended up supplementing the Station's yields, the rest of the problems depicted by the researchers were accurately depicted in the previous section.

Another aspect which has diminished with respect to the research sector was the participation in International exhibitions and Symposiums. Lack of finances acted against such activities together with lack of appropriate information and international relations.

The researchers were also apparently more aware of establishing few Research Station outlets, which would promote the fruits in a constant manner, including the new varieties. The lack of a marketing department was mentioned again. The researchers seemed to be more open to the idea of consumer research and prospecting the market. With respect to promoting the new varieties the researchers acknowledged that such process should be their responsibility. It was also apparent that there was a lack of clear direction in promoting new varieties, as well as lack of funds for organising exhibitions and printing booklets for the consumers, or any other form of advertising. It was suggested that a stronger involvement of the press and mass media would help immensely in promoting the consumption of fruits.

Labelling the apple varieties was also considered very important by the researchers who think such activity should fall under the responsibility of the producers. However, from the researchers' point of view, it was more a problem of lack of interest rather than a financial one. The interviewed researchers did not hesitate to mention a diminishing in the general attitude towards work and previous existing discipline:

*R: After 1989 there is not the same discipline and attitude towards work. Before you couldn't comment anything against your superior. You were obedient...but now, if you look around after 4 o'clock everybody is leaving...they cannot be controlled anymore...they say it is democracy. Well, it is democracy, but some sort of misunderstood democracy in our case.*

With respect to the existing mentality researchers stressed that the “foreign consumer” is perceived as something totally different from the “domestic consumer”, a mentality that had to be radically changed. It was stressed that superior standards for the products designated for local consumption were urgently needed in order to improve quality. Nonetheless, the researchers also stressed that it was apparent that the consumer demands had increased with respect to quality. However, the researchers as well as their counterparts working in the production sector, acknowledged that the consumer was rather interested in the visual characteristics of the apple than other intrinsic characteristics.

The acute lack of information and the importance of publication subscriptions and the use of the Internet were mentioned too. It was suggested that more meetings between the researchers in the same field were needed for an efficient exchange of information.



With respect to funding, the researchers felt that their work and advice was in vane if the results of the research cannot be applied in the field due to lack of finances and equipment:

*R: I think the price of apples could be reduced by applying superior technologies proposed by the research sector. But these sort of technologies cannot be applied because of the lack of funds. And to resort to bank loans these days, with such high interests...it's a one way process...to be forever indebted.*

State subsidies and credits with low interests were seen by the researchers as the quickest way to solving the financial problems, at least for the time being.

Small processing lines were mentioned by the researchers as an outlet for low quality apples, lack of demand, or overproduction in other years. However advertising for apple juice was considered extremely important for these products as well.

The last but not the least idea expressed by the researchers was the establishment of small modern storage units on the sites of every farm, in order to decrease the number of handlings and improve quality. The advantages of such small units were emphasised especially with respect to smaller farms, which were seen as dominating the future:

*R: The construction of small deposits with controlled atmosphere would be extremely helpful for all producers, but especially for the small ones. Imagine the benefits for the quality of the apples. Together with the small processing units we could give a superior designation to our fruits. I think it could be one way to the future.*

According to the *tree nursery managers*, distribution was also one of the major problems faced. Most of the trees (in numbers varying from one to thirty) were bought by ordinary people, small land owners or newly emerged retailers.

Similarly to the apple production sector, the tree production sector came across new retailers which bought the products from the nursery and further sold them on the free markets with substantial profits. There was a stringent need for an organised retail at this level.

Uncertainty was encountered within the State nursery which was often forced to burning an important number of trees every year. The situation here was dramatic, and the production of trees was reduced to almost one tenth compared to prior to 1989. However, the demand for apple trees has decreased substantially during the last years:

*I: How do you appreciate the tree production for the next year?*

*R: It's very difficult, but I can see the changes from one year to another. The apple demand is in decline. Now the plum trees are in demand. We practice the tzuica\* horticulture. New land owners thought that the apple fruits grow by themselves and now they realise it is not so. Nobody wants apples anymore. Soft fruits are in demand.*

*\* tzuica is a traditional Romanian distillate, usually made out of plums*

The sporadic planting of apple trees was also said to be chaotic at the same time. In many situations the new land owners planted the trees either isolated, either in a system which did not allow proper production, due to the lack of knowledge and experience.

From a nursery manager point of view the years of communism which passed over the Romanian peasant were to blame for the lack of agricultural education:

*R: From my point of view the problem is the 30-40 years of communism which did not teach the peasants to do anything for them. The peasant was ruined intellectually and has to take now everything from 0. We are agriculturalists for 10 years only.*

*I: So we lack in agricultural education?*

*R: Yes, but not because the peasants wanted that...the lack of education is because of the system. The peasant was taking his rake and going to work...some of them were working for 10 years on a farm and didn't know at least the varieties they were harvesting. The information was not circulating from the manager to the working people, the peasants. There was a big gap here. Hence now there is no proper agricultural education.*

The uncertain land situation was mentioned by the nursery personnel as well as one of the barriers for replacing or further developing new orchards. Many of the former plots inherited by new land owners and axed down were given as an example, as well as the corruption involved in the land repossession. Furthermore, some of the new land owners were characterised no less than indolent:

*R: Let's say that we would give the trees away for free for one week. You should know that we won't have a busy week anyway...not at all. Because people know that trees involve a lot of work...I think that besides all the financial situation, there is also an overall feel of laziness and relaxing after 1989.*



Nonetheless, the financial aspects related to the management of the nursery, combined with the antiquated machinery were mentioned amongst other main problems faced. The manager also acknowledged that the sale of the trees is not done according to modern standards ( i.e. properly labelled and packed) due to lack of finances. As ever, subsidies and credits with low interest were seen as the main solution.

However, the nursery had adapted to the few changes in varietal demand occurring after 1989, mostly concerning the apple size and the length of the storage period. As a result, more trees from varieties such as Idared, Generos and Querina were produced.

According to the *storage facility managers* distribution was also the main problem faced soon after 1989. The giant enterprises which used to distribute and process the entire production had disappeared. The distrust and disapproval with the practices of the newly emerged distributors were expressed by the storage facility manager too:

*R: I think there should be put a little bit more order within these newly emerged distributors...it is them that keep the prices high and disturb normal distribution. They buy from here with three thousand and sell with five thousand. I often tell them that they do not win by doubling the price, but by the turnover. But I think they are greedy...why bother to manipulate large amounts of apples when you can win the same money by selling small amounts at high prices. They are the ones cheating on the consumer, on the State, and indirectly on us. I think what they do is not ethical.*

The general situation of the economy which affected the finances of the consumer, also affected the storage sector. Far less quantities of apples were sold, especially after 1993. However, there was noticed an increase in quality demand, mainly with respect to the size of apples. In connection to other quality demands and the preservation of the apples, it was emphasised that the apple containers were far too large to be able to avoid quality depreciation. The poor state of such containers, some in use for more than fifteen years was also mentioned. However, the storage facility manager also thinks the entire process prior to storing the apples was to be responsible for part of their depreciation.

The storage facility could be also be improved, including the modernisation of its grading and sorting area. From the perspective of grading and sorting, the manager admitted that there was also place for improvement, beginning with further training of

the personnel and ending with better equipment. The storage facility could also be the one responsible for labelling and packing the apples given that appropriate finances would be available. Smaller crates, with a capacity of maximum ten kilograms were proposed for future packing. The general sense that more could be done was noted in replies such as:

*R: Sometimes when the apples are big but slightly bruised, we still keep them as top quality.*

*I: So you say that there is room for improvement?*

*R: I say that even if I would do my job perfectly, it is not me who gets the most of the profit. It is the distributors and the retailer that take the bulk of the profit, to the detriment of the consumer.*

Lack of motivation was encountered within this sector too. The efforts to run such a massive site, able to accommodate five thousand tonnes of apples were not considered to be motivated by the current salary rewards.

However it was suggested that further profits could be brought by introducing a juice processing unit. Instead of processing the lower quality apples, such products were simply lost. There was also a strong feeling of dissatisfactions with the old “loss limits” which are situated around 6% of the entire quantity stored:

*I: Who supports the storage losses?*

*R: It is unbelievable. We are allowed only 6% losses. We are still working according to very old norms...such calculations are made for ideal conditions which are far away from what we have here. There are some reactions taking place over the storage period...people eat apples all day long too...can I stop them? Finally, I am responsible if the losses are higher. The legislation has to be changed here too.*

With respect to the future, in the opinion of the storage facility manager it was said to belong to both state and private sectors, but in possession of much smaller farms.

## **II. The Private Sector**

The response of the private sector was far more optimistic and more consumer oriented compared to the state sector. It appeared that such producers were in possession of a



far larger number of varieties than any state farm. One of them actually still grew old Romanian varieties.

The first aspects discussed were the difficulties that private producers faced after 1989. It was no surprise that the main difficulty appeared to be a financial one. With all the pesticides and afferent products being so expensive, supplemented by inflation and an unstable apple price, it was difficult to begin a new production cycle.

*R: The biggest difficulty is always a financial one. As all the pesticides are expensive and you have to buy almost everything in dollar equivalent ....this year you buy it with one hundred kilos of apples, next year with two hundred. Plus you cannot impose a price on the market, nobody will buy your apples. In Romania people do not have financial power anymore. I think people would love to eat apples but they cannot afford them, and that affects me indirectly.*

However, it seems that the private producers in case seemed to cope well with their finances and did not have to resort to loans of any kind up to the time of the interview.

Similar to the state colleagues, bad experiences involving pesticides were mentioned. Examples were given when pesticides either did not work or, even worse, brought damage to the treated areas. It was suggested that proper legislation and protection from such sort of pesticide firms is urgently needed.

Another dissatisfaction of the private growers was related to the actual retail spaces, namely the free markets. The stands were considered to be too small, there were no spaces to deposit the fruits, difficult access, and high taxes for the low provided services. It was also suggested that affordable accommodation should be available in the area and the construction of small hostels for the retailers travelling from long distances is proposed.

Another difficulty, mentioned especially by the bigger producer amongst the private group, was the disappearance of the classic distributors. It was felt, similarly to the state enterprises, that a grower just has to grow, and not distribute as well.

It seemed however that direct retail practice helped in keeping a very close contact with the consumer and the much needed feedback was instant in those situations. Such

private producers which are also forced into being retailers were far more aware of what and how much is needed on the market. The producers had adjusted their orchards by planting and replanting the exact proportions of varieties that were requested at retail point, namely the free markets. Diversification of the varieties held was also perceived as a key to success. Both growers thought that growing only one variety did not bring high profits. Nonetheless, it was noticed that due to high rates of inflation and the poor economic state of the country, the apple consumption and hence apple sales fell steadily beginning with 1993.

With respect to promoting new varieties, these producers think that the only way of introducing them into the cultivars (recommended varietal range for specific regions) is actually selling them together with the known ones at retail points:

*I: How do you think new varieties should be promoted?*

*R: The only promotion in one way is selling them amongst the known ones. If people like it, they will buy it the second time too. After a while, assessing the percentage of apple sold from the new variety, you can introduce that certain percentage in your orchard. This is the way to start, apparently in the reverse order.*

The preservation of quality in such small farms was said to be better by far as well. Most of the handling leading to apple deterioration was eliminated as much as possible. Harvesting was done in small groups with the participation of the farmer, the crates were carefully inspected prior to harvesting, the capacity of the crates was twenty five kilograms only and the apples were stored directly in big cellars or buildings near the farm. The private producers seemed to be aware that a uniform size, even if it is not big, is easier to sell than un-graded apples where the consumer felt cheated. However it was noticed that very big apples, over a certain weight, sell with difficulty as well. Together with a multitude of other small details related to apple retail given, such small producers were impressive in their knowledge about the consumers and their preference. The experience has taught such growers that everything counts: the “shine” of the fruits, the way they are arranged, the uniformity and even the position of the stand within the market. It seemed far easier for such small private growers to get accustomed to the new market economy:

*I: Do you find beneficial this sort of relation with the consumer?*



R: *Of course...this is actually the market economy, supply and demand. You have to start with the consumer. If you don't, you won't sell. It's as simple as that.*

I: *How did the consumer influence you in your activity?*

R: *The biggest change is in the varietal range, which will soon have the structure of the demand. And not the least in some aspects related to retailing: graded apples, care for quality...*

However, when it came to labelling the apples, the opinions changed. It was said that such procedure will not help in selling the apples. The explanation given was that different people knew the varieties under different names, hence the sales could be influenced negatively in this direction. The private producers also admitted cheating on occasions and selling some similar varieties for the requested ones:

I: *Don't you think we should label the apple varieties at retail point?*

R: *[ We should ... but people like me have to sell their products. If consumers want sour apples you make them believe they are sour ... the same with sweet or even certain varieties. You have to sell ... I admit that there is no fair play in that ... to sell your product you will say anything ... otherwise you just sit there and look around.*

Nonetheless, it was said that it all was part of the game. The same situation occurred with prices. Rarely, if ever, prices were displayed at retail points in the free markets:

I: *One of the consumer dissatisfactions was related to the labelling of apples. What do you do?*

R: *I never label nor display the price of apples at retail point. I think it is not representative. People know different varieties under so many names...and they like to bargain. I think what counts is the aspect of the apples, and their taste. ~ It is the same with promoting new varieties. You advertise yourself by the quality of the fruits and the way of presenting them. I had experiences when I got convinced that pursuing the customers to taste the apples doesn't work.*

Superior retailing was also seen as inappropriate by the private producers. It was argued that the consumer liked to see the apple on all sides. Such practice had as an origin the former state system of retail, when pre-packed apples were always hiding "surprises" such as rotten or bruised fruits. Offering bags for every purchase was also perceived as inefficient. However it was said that consumers were already accustomed to bringing their own bags from home. The idea was accepted as good, but kept for better financial times.

Such private producers and retailers thought that they soon will have no competition from the state sector. It was considered that huge farms and lack of diversification and consumer feed back will lead to the auto-elimination of this sector. The same opinion was encountered with respect to the remaining state outlets:

*I: What do you think about the state retail outlets?*

*R: They have to change...but I think it will take some time. As long as they will have profits, I think they won't bother...but when the sales will drop it will have to change or they will disappear. In my opinion it is related to the age and experience of the sales personnel...they are mainly the same as before '89...holding old mentalities.*

The disappointment with the newly emerged distributors which buy products from the state and sometimes retail their products on the free market was expressed too:

*R: The organised distribution and retail has disappeared ... their shops have disappeared too. Instead we have now these dirty speculators...our peasants have common sense, but these people have not. And institutions like the Consumer Protection Agency should pay more attention to the free markets. These are the people which spoil retail...they sell dirty and low quality products, they do not know what commerce means.*

Such speculators were mainly perceived as disloyal competition, especially given the fact that they had no financial inputs whatsoever except undertaking transport prices. However, one of the private growers admitted himself that if demand is high and time allows he will also resort to buying products from the state and retail them. Disloyal competition was also perceived from the people of the Republic of Moldova. Given the proximity of the border (around 20 kilometres) hundreds of people from the ex-Soviet republic embark on trains to Iasi with all kinds of products, including apples. However, this phenomena was only accentuated during the autumn season.

Another phenomenon said to occur during the last five years within the Romanian free markets was the emergence of small underworld-type organisations, mainly led by members of the gypsy minority. Such organisations often forced “newcomers” to sell them all the produce at a very low price, products which were subsequently retailed at market price:

*I: What else do you think should be changed within the free markets?*

*R: They should be organised somehow else. And they are in need of more law enforcement perhaps. The majority of free markets have their own small Gypsy mafia ... they take the products away from some people or buy them very cheap ... they cheat on poor people who want to sell their products and such small organised crime does not let them.*



*I: Can you say that they force you to sell them the products?*

*R: Not me ... I sell there for a long time and they know me. But some other new people, or people who travel long distances...*

As noticed during the focus groups, private growers have their stable clients who buy exclusively apples from them. Besides being able to adapt to the consumer quality requirements, such retailers in direct contact with the market were also good psychologists, knowing how to gain and keep a customer.

As a results of all their advantages, the private growers think that the future of the Romanian apple industry belongs to the private sector:

*I: Do you think the future belongs to the private sector?*

*R: I am convinced. Compared to us, the state sector does not stand any chance.*

*I: How do you see the communication between the private sector and the consumer?*

*R: Closer by far...because of our activity and the way we actually retail the products. The last link, which is the consumer, tells you what you should actually do. Not the reverse. We are able to adapt far easier and far quicker to the new requirements compared to the state sector.*

However it was suggested that the state should have more involvement in agriculture and supporting the new emerging private producers. State subsidies and credits were proposed. However, the private growers propose that such credits should be given only to experienced people who have proven their capabilities - a system of prioritising was actually proposed. With such credits granted over a period of 5-6 years, the private producers thought that the Romanian apple market could be revitalised.

Private farms were seen in the future as being the most successful and of an associative nature. It was considered that in time new land owners will accept that land fragmentation is not the way forward. Most of them would re-associate by free will.

### **III. The Processing and Storage Plants**

As mentioned, this section is concerned with the response of the processing and storage plants from “Vitalef”. The plants are situated in the city of Iasi and before 1989

used to undertake the bulk of vegetable and fruit production from the entire county and redistribute it to the population, either fresh or as processed end products. The interviews were carried out with both the general manager and the distribution manager.

The decline of such units was firstly discussed. The explanations given were straightforward and simple. Before 1989 all the system was centralised and the plant was obliged to contract almost all production from both co-operative and state enterprises of the county. Firm contracts were in place, including with vegetable producers and over three hundred hectares of plastic tunnels. The unit was massive, being able to store over winter more than thirty thousand tonnes of potatoes, fifteen thousand tonnes of apples, ten thousand tonnes of onions amongst many other products. Some of these amounts were processed into various products according to the standards existing at the time. Other raw products were further distributed to other big processing plants as well as sold to the population through the sixty profile shops, the so-called "Aprozar".

After 1990, with most of the co-operatives as well as state enterprises disappearing by returning the land to the original owners, such enormous plants were left without supply. The protected vegetable crops farms had also collapsed. Compared to previous times, the unit stored at the time only four hundred tonnes of potatoes, two hundred tonnes of apples and two hundred tonnes of onions, hence almost one hundred times less for some products. The plant was also left with only seventeen shops out of the previously existing sixty and only processes at a capacity of 15% of its ability. With firm contracts not in place anymore, fragmented production, high inflation and the purchasing power of the consumer in continuous decline, such enterprises had almost collapsed. However they had adapted to the change, and store and process only limited categories that they know will sell. In order to compensate for profits, the rest of the massive storage facilities were rented out to various private firms which used them for activities ranging from production to wholesaling.



Out of the two hundred tonnes of apples the plant used to store at the time of the interview, 70% are retailed through the remaining shops, while 30% are sold for processing mainly into alcohol.

The main competition was considered to come from the private sector, which was said to have the advantage of high dynamics and the possibility to adjust the prices even a couple of times per day. It is also acknowledged that the products from the private sector have a far better quality. The plant was said to have inherited the same old technology from the past. Apples were transported a long way to reach the storage cells and were stored in the same big containers as twenty years ago. Sometimes the cooling equipment did not work properly anymore, all of these factors severely affecting quality. There was a need for change in the infrastructure of such plants; nonetheless it was felt that with competition from the private sector, the consumer quality requirements were difficult to respond to.

Feeling that they were fighting a losing battle, the management of the plant had turned to processed products as an alternative. With such products being able to be preserved for a longer time compared to fresh fruits and vegetables, it was seen as one of the keys for survival. An average of seventy tonnes of processed and conserved products was produced yearly. It was noticed that consumer feed-back has functioned better at this level. Having to compete with foreign products the plant was forced into continuously improving its products, packaging (from “omnia” or non-twist, to “twist-off”), recipes, labelling, as well as diversifying its range of products.

The continuous improvement of their processed products has led to important expansion in the distribution systems of the major cities of Romania, including Bucharest. It was suggested that creating a separate small marketing department with dedicated people had helped enormously in promoting the products. The marketing department was said to be in permanent touch with the consumer and potential clients through various exhibitions and fairs. Some of the new product labels were actually designed by the marketing people themselves. The establishment of such a department was said to be actually dictated by a specific need:

*I: You mentioned a marketing department/*

R: */Well, it is not a department actually, it is rather like a small section for now ... but it is very important.*

I: *When did you establish it?*

R: *About one year ago.*

I: *Why?*

R: *We felt the necessity. To be able to penetrate the market you need skilled people which should travel all round the country...we participate in lots of fairs and exhibitions ... we are now convinced that if you do not promote your products you cannot be successful. ~ We also try to identify the gaps on the market ... what people do not cook, just to introduce new products/*

I: *Do you actually do consumer research?*

R: *No, I am afraid not...for now. We work more empirically.*

The marketing sector seemed to be aware of the consumer requirements and the communication with the consumer has improved compared to previous years. Most of the feed back was collected from the retailers' and consumers' comments and carefully analysed. Sometimes the evolution of the enterprises' products compared to other similar units was considered to be too rapid:

R: *We try to keep the prices as low as possible, we have changed packaging and labelling few times. Compared to other similar products I think ours may be a little bit to elaborate bearing in mind that our target is the average consumer from the average neighbourhood.*

It was also suggested that in the processed commodities area, like in any other area for that particular time, price comes before anything. Preserves from the Republic of Moldova, said to be inferior by far and of questionable aspect, were sold purely on the basis of price. It is interesting to notice that even in this area the Republic of Moldova is perceived as a main competitor, and sometimes as disloyal competition as well.

With respect to the Institutions' distribution of apple fruits, as well as other horticultural produce, there was a feeling that such activity came on as secondary. The distribution of such products to the remaining shops was chaotic and unorganised. There was less interest in maintaining quality, apples were bulk transported and bulk sold. There was a stringent contrast between the disinterest in these activities compared to the processing activities. The discussion was felt to be forced to turn by interviewees towards the processing activities and driven away as much as possible from the fresh fruit distribution and retail. According to the focus groups, these remaining state shops were the ones that actually brought poor image to the entire state fruit retailing sector. The products were of bad quality, supply was chaotic and the sales personnel rude. The



interviewees did not actually even try hard to hide such defects. Furthermore, it was admitted that the commerce with fresh fruits and vegetables was a very difficult one given the perishability of such products:

*I: Why did many of your shops for fresh fruits and vegetables disappear?*

*R: We did not have reliable people in place ... they found this sort of commerce is very difficult, as we do...fruits and vegetables are perishable. They were adding to much commercial benefit...the products ended up expensive...it is difficult to control, a lot of bureaucracy...so we gave up in the end. But we have our processing lines...presently we also produce tomato juice.*

The distraction from the real focus of the interview became very obvious and the real situation was difficult to assess. It was acknowledged that the number of handlings was too high, the transport and conditions inadequate and part of the staff without commercial education (employed before 1989) were still in place. The interviewees considered that for that time nothing else could be done to improve the maintaining of apple quality. Sometimes they even refused to think about alternatives:

*I: How many handlings do the apples suffer?*

*R: Many...they come from the farms or other storage facilities...we sort them, re-sort them sometimes...we introduces them in the cell...out of the cell...in the retail boxes and so on.*

*I: Could you reduce the number of handlings?*

*R: I do not see how ~*

The lack of interest towards the consumer was said to be mainly caused by the lack of commercial education and motivation. It was also said that there was a feeling of decadence of the Romanian society as a whole; there was a need for clearer legislation with respect to the consumer, as well as quick economic development which would give consumers financial power.

Nonetheless there was a vivid interest in acquiring and opening a juicing line adjacent to the existing equipment. In the opinions of the managers the market was becoming adverse to the aggressive advertising of imported drinks. It was appreciated that the consumer may soon return to healthy natural drinks, such as apple juices. Another aspect to become apparent with respect to apple juices was the certainty of the managers as to whom only clear apple juice had a future in the market. The idea of

cloudy apple juice was rejected, even if the results from the questionnaire survey showed almost the opposite.

However what such enterprises saw for certain, was their privatisation in the future. At the time of the interview there were advanced plans in place, aiming to sell part of the non-productive actives and some of the commercial spaces. With a new financial start, a smaller unit and new equipment, the future of such newly privatised enterprises was perceived as bright:

*I: How do you see the future of your enterprise?*

*R: In the private field, without any doubt.*

*I: What would be your advantages?*

*R: Well...there are many. Size, less personnel, easier control, motivation ... al concur towards superior outcomes. We have our plans for the future ... we will sell some actives and we have a very good strategy developed, including the modernisation of the technological lines ... but I cannot say more about that.*

In the whole context of the Romanian agriculture situation, it was acknowledged that without a quick revitalisation of the horticultural sector, including the apple industry, processing plants such as Vitalef would be left without raw materials and hence collapse too. The direct link between agriculture and the processing sector was seen as undeniable and very strong.

Horticulture and agriculture were perceived as the basis of the entire economy, as the sectors which actually produce food to sustain the population. It was suggested that a stronger involvement of the state is needed, including unconditional financial and technical help.

#### **IV. The Supermarkets**

The supermarket managers interviewed were selected as representing two of the biggest food retailers in the city of Iasi, "Unic" and "Hala Centrala". Such outlets were in place before 1989, however not dominated by food retail, but by other



commodities. Both supermarkets had been recently privatised as part of an entire chain of shops from the State Property Fund.

The changes occurring after the collapse of communism were firstly discussed. The first change noticed to have occurred soon after 1989 was said to be the tremendous increase in the diversity of the products. The market was suddenly flooded by imports, including food products. The consumers became quickly more aware of the quality of the products. However, it was said that even after 1989 there can be depicted two periods with respect to retailing: the periods between 1989-1993 and after 1993. The first period mentioned was characterised by an increasing diversity in commodities and high levels of consumption. Inflation was lower and hence the financial power of the consumer was higher. The legislation for importing products was less strict and the taxes applied for food imports were lower. For the food retail system it was said to be the best period after the collapse of communism. Many products sought after became available. With respect to fruit, quantities of over two tonnes of oranges were sold daily for example. In 1999, these quantities were down to only one hundred kilograms daily.

The period after 1993 was characterised by increased levels of inflation and hence decreasing financial power for the consumer. Taxes for imported products were also steadily increasing in order to compensate for other losses in the economic system, such as the collapsing industry. Products sought after, such as well known alcoholic drinks and chocolate brands were counterfeited and the market soon became flooded with products of questionable quality. From the food retailing point of view, only cheap products could be imported under the new context. Many of the new food products originated from Turkey, Poland or states belonging to the former Soviet Union. Well known brands of food products became very expensive and accessible only to a privileged section of the population. With the exception of the joint-ventures established after 1993, the same situation was said to be encountered at retail level at the time of the interview. However, given the increases in price for food generally speaking, it is said that consumers became more demanding with respect to quality. A permanent relationship was said to exist between the retail sector and the consumer. Such a relation was not always part of satisfying the consumer needs, but also for other

reasons such as the fear for new established organisations such as the Consumer Protection Agency or Food Control Police:

*I: How do you keep in touch with the consumers?*

*R: Through our sales staff, they inform us about the satisfactions and dissatisfactions of the consumers. The products being so expensive these days, the consumers are also exigent. You cannot trick them like before (n.a. 1989).*

*I: Do you think there is a real feedback from the consumers?*

*R: I think so. Plus we have to be careful these days. They presently know how to address to the control organisations in cause. We are not looking forward to seeing investigators in our shop and the consumer knows that. Hence we work together with the consumer: we look after him and he does not complain about us.*

With respect to apple sales it was stressed that only small quantities were retailed through such supermarkets. The commerce with apples was not considered to be financially rewarding for such supermarkets. There were also other reasons for avoiding apple retailing. Amongst the most important, the lack of appropriate cooling storage space. The relatively small refrigerated spaces available were rather used for more perishable products, such as meat and meat products. It was said that without proper storage facilities, the apples were deteriorating very quickly in quality; the consumers refused to buy such apples. Losses in profits occurred in the process rather than financial gains for the supermarkets. Such deterioration of the fruit in the supermarket stores were not supported by any legislation, and the apple losses had to be paid by the employees. This was said to be one of the main reasons why salespersons were sneaking rotten or bruised apples in the consumers' bag. It was also one of the main reasons why consumers could not choose the apples themselves.

The commerce with apples was however occasional in such supermarkets. Sometimes small quantities of maximum few crates were acquired from the newly emerged distributors and further sold to the consumers. Even supermarkets like Hala Centrala, which are still in possession of some storage cells were not considering commerce with apples as rewarding, given the immediate vicinity of one of the biggest free markets in Iasi. Peasants, and generally speaking all retailers on the free market, were selling the fruit far cheaper than any supermarket could afford.



Another reason for avoiding the commerce of apples was the lack of direct relationship with established growers. On the basis of such a relationship constant quantities of apples at reasonable prices could be supplied on a daily basis to the supermarkets. It was also interesting to note that one of the managers preferred imported apples to the local produce:

*I: Hence the commerce with apples is not profitable for you?*

*R: Not really ... well, it is sometimes, but only in small amounts. And I prefer imported apples who have proven to be more suited for storage. I order only 2-3 crates ... for the clients who are looking for apples as well as other commodities.*

*I: You mentioned that if you had a direct deal with a producer, you could buy cheaper apples.*

*R: True, but as I have to pay for the transport, it would be approximately the same thing.*

The store managers acknowledged that shops like the ones they run were directed to a certain sector of the population, with more disposable income and higher quality expectations. It was also suggested that the precision of electronic scales and the fact that clients are able to choose their own fruit might attract even more clients in the future. With respect to the apple price, it was said that the shops were not responsible themselves for the high increases in price. It was suggested that producers and distributors were the ones that should cut prices down:

*I: Hence your main problem is/*

*R: /the price ... the price and low sales because of high prices. It is the producers and distributors fault for such high prices, at least in my opinion.*

As to the imported apples, it was quoted that import taxes for fresh produce can be as high as 70%, leading to high prices of such products.

It was also acknowledged that the price of apples may be one of the main deterrents for the customers. Supermarkets like formed their prices by researching the free market prices and topping them with 10% to 15%. The expenditure of the supermarkets with staff wages, space, energy and machinery rentals were said to be the reasons for such high commercial prices. Some supermarkets like the Hala Centrala admitted that they were probably keeping too many staff compared to the profits of the store. It was suggested that re-organising the space, selling more produce on a smaller surface and reducing the number of staff could also help in reducing a small percentage of the

prices in the supermarkets. It was also stated that reduction in personnel numbers is very unlikely due to the very high theft rate from the shop. Video cameras were not seen as the alternative to staff for the time being.

With respect to apple juices, one of the supermarkets had attempted to sell a few. However imported products such as “Parmalat” were perceived as too expensive, while domestic produce was totally unavailable. Other initiatives involved apple juice from the Republic of Moldova. Such products were said to fail mainly because of their poor appearance and labelling. Labelling and packaging were given special relevance during the interviews. It was suggested that certain products of not exceptional quality, but with appropriate packaging and labelling stood far better chances for sale:

*I: Returning to quality ... do you think we have goos products but do not know how to present the commodities?*

*R: Absolutely. Especially products such as biscuits, jams, chocolate.*

*I: What is there to do to improve the situation?*

*R: The producers have to look more into packaging ... labelling ... aesthetics...they should conduct some market research first and subsequently contact the appropriate design institutions.*

It was also suggested that more had to be done in relation to apple packaging and labelling; the producers had to invest in superior crates and perhaps in grading and labelling equipment in order to be more successful. The demands of the consumers with respect to labelling and grading could not be met otherwise. Such responsibilities were said never to be depending upon the retailer. It was also suggested that the rate of deterioration would be far lower if apples could be handled and transported in more appropriate crates:

*R: The quality very much depends upon how the apples are handled by the producer and all the others until they reach the supermarket. I think they could do more with respect to this issues, including investing in better individual apple trays, for example. We cannot do much, we sell the apples as we buy them ... with or without the crates they come in.*

However, such retailers seemed to be aware and tried to comply to other consumer requirements. The preference for bigger sized apples was known, as well as the exclusion of bruised apples and the ones which had deteriorated over the transport or storage process. As to the separate sale of varieties, the retailers were not aware of



such requests. Nonetheless, such sales would be impossible without the apples arriving already labelled, or at least stating a certain variety in the transport papers.

Advertising for apples and fruit generally speaking was seen as non existent. It was suggested by retailers as well that mass media should become more involved in raising the population awareness. Other solutions could involve agreements between retailers and producers in order to promote new varieties. The lack of marketing departments at production levels was seen as one of the main causes of non advertising.

It was also suggested that as long as fruit will be retailed on the free markets, the standards of apple sales will be lower. The production and retail by the same person was seen as inappropriate, resulting in low quality products and low quality services for the consumer. Such practice was perceived as disloyal competition against well organised retail supermarkets, due to the lower prices practised. However, under those circumstances, the future of apple sales was seen as belonging to the free market until the moment clearer legislation and standards are to be established.

With respect to staff education it was said that most of the newly employed staff had commercial education or training, all to the benefit of the consumer. The services provided by such staff were said to be by far superior. There were also motivation incentives, materialised by salary premiums when sales went over certain fixed barriers. However, the same was valid for not reaching the set sale levels: staff were penalised. Such procedures were not perceived as fair, but effective for the time being.

The direct relation with the consumers had also led to a continuous modernisation of the supermarkets. Constant re-investments were made, new facilities acquired, and the old ones improved. The presentation of the commodities and other related aspects, such as lighting, were also improved considerably. However, in stores like Hala Centrala which belonged to a chain of recently privatised stores, there is still perceived a lack of communication between the high management levels and the consumer.

The lack of communication was made even more difficult by the bureaucracy and the concentration of managing power in only few hands. The managers of the shops felt

they did not have enough decision power and they had to receive permission for most of their decisions from the superior levels.

Nonetheless, the commerce of fruits and vegetables was perceived as rewarding if it could be made in an organised manner. A separate section of fruits and vegetables within the supermarkets was seen as imminent. Establishing new direct links with producers and improving the existing storage facilities were other important problems to be solved before establishing such specialised sections.



## **7.0 DISCUSSION**

The present chapter seeks to discuss the principal aspects of the research and will follow the themes set out in the overall aims and objectives proposed in section 1.2 of the thesis. As such, the discussion will re-emphasise some of the aspects which emerged from the literature review with respect to: the role of the consumers in Eastern and Western countries, the potential importance of consumer purchasing decisions and attitudinal studies for the Romanian apple industry and the various factors that have influenced the Romanian apple industry and the selected EU apple industries. Special attention will be given to the characteristics which were identified as being significant in determining consumer purchase decisions, the expectations of Romanian consumers with respect to products of the Romanian apple industry, and the barriers encountered by the Romanian apple industry in order to accommodate these expectations. The potential of the Romanian apple industry to respond and to adapt to such identified expectations and new market requirements will subsequently be discussed. Finally, a series of reflections on the research process undertaken will be presented.

Some objectives were achieved during the literature review, such as the importance of the consumer in Eastern and Western economies and the selected apple industries, hence will be discussed only briefly. Other objectives will however be discussed in more detail, such as the barriers encountered by the Romanian apple industry and its accommodation of the consumer preferences.

### *The role of the consumer in Eastern and Western economies*

As observed in chapter two, there is an evident difference in the role that Eastern and Western consumers have within their economic systems as a whole. As a result of years of education in the spirit of democracy and freedom, Western consumers have evolved into understanding and participating in the entire process by developing specific organisations which represent their interests. Conversely, Eastern consumers were indoctrinated by years of communist dictatorship and besides having lost their confidence and identity, they appear to have implicitly lost their spirit of initiative.

This process is however changing as demonstrated in the relevant section of chapter two (section 2.1). It was noticed that Romanian consumers are slowly learning about the important role they play in an emerging market economy, and they are now being supported by the recent establishment of consumer agencies. Nonetheless, there is a need to re-inforce their shattered confidence and they need proof that their strength as consumers will result in positive action. The confusion and corruption generated by the transition years have often placed the consumer in a position of inferiority. Consumer complaints and dissatisfaction are frequently not taken seriously or are being “lost” within the whole network of relations that exist between the organisations supposed to protect their interests and the industry. Legislation needs to be developed and stricter measures need to be taken when there is evidence that consumers interests are at stake. There is, hence, a need for consumer respect in all sectors of the economy, including the horticultural sector.

*The importance of understanding the consumer decision processes and attitudinal research for the apple industry*

In sections 2.3 and 2.4 consumer behaviour and choice were shown to be a complex process influenced by a multitude of factors ranging from personal constructs to social constructs and geographical position. Models of consumer behaviour can contribute to explaining and predicting consumer behaviour, but all have their limitations. In fact, such models seek mainly to approximate, as realistically as possible, the complications of consumer preference, choice and purchase behaviour (Teare, 1998).

Individual differences have always affected consumer behaviour, increasing its levels of unpredictability. All the models presented under chapter 2, in section 2.4, are purely theoretical approaches, but they offer an array of good techniques for observing or discovering and further exploring new relationships. Emerging from such observations, it could be correctly stated that applying the right marketing techniques and keeping a permanent contact with the consumer is one of the key determinants in business success.

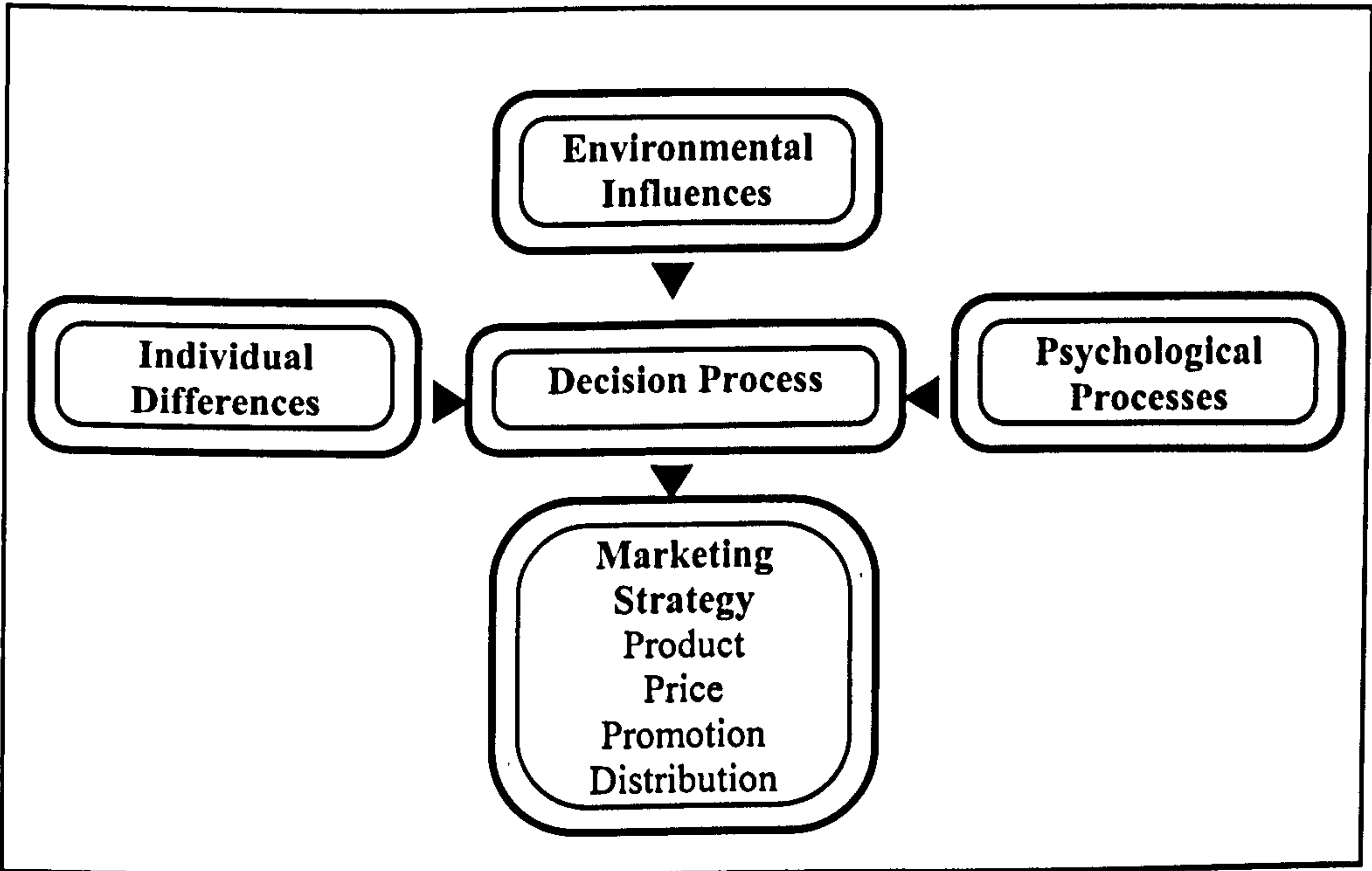


If managers are to undertake the challenge of meeting consumers' expectations they have to ensure that their expectations are fully met, not only partially. Companies have to design products and services based on what is known and what can be learned about current and prospective customers or customer groups. The expectations that companies build also have to be realistic and consistent. The voice of the consumer has to be deployed through the entire production-retail chain, and the information gathered from consumers consistently fed back into the system. This is presently one of the most important roles of consumer research. As such, consumer research should be of special relevance for the Romanian apple industry as much in the areas of distribution and retailing as in the areas of production and diffusion of innovations (e.g. new varieties, growing technologies).

The issue of understanding why consumers act in a particular way and buy a particular product is a challenging one. There is a perceptible need for an on-going programme of research in this particular field, applying both qualitative and quantitative methods. With respect to Engel's model (presented in chapter 2), the role of marketing strategy (defined in terms of product, price, promotion and distribution) could easily be introduced into it as represented in Figure 7.1.

**Figure 7.1: Marketing strategy integration into Engel's model of consumer decision-making behaviour**

(source: Engel, 1990)



There is a whole array of consumer behaviour research implications according to which marketers and managers can respond to consumer needs. One of the most important implications, as Zeithaml (1991) noticed, is closing the gap between objective and perceived quality. Companies are required to view quality from the consumers' perspective, and investigations of how consumers form impressions of quality are vital. A thorough understanding of what quality and value (amongst other characteristics) mean to consumers will lead to improving a product through more precise market analysis and segmentation, product planning, promotion and pricing strategy.

One should also be aware that perceptions of quality change over time as a result of various factors (added information, increased competition, changing expectations). The dynamic character of quality should prompt marketers to track consumer perceptions over time and align products with such changing views (Zeithaml, 1991). This should be one of main concerns of the players of the Romanian apple industry. Since such procedures are often applied in western countries, for Romanian managers there is an urgent need for a better understanding of the consumer and his/her perception of a product's quality.

There is anecdotal evidence that Romanian consumers' rejection of certain products based on their quality came as a shock to unprepared managers. The constant and increasing influx of foreign products to Romania accentuates the need for appropriate managerial skills at all economic levels and sectors, including the fruit industry.

Nevertheless, there is also a need for managers to adopt not only a local, but an international and global thinking, in order to understand the broad forces that characterise contemporary markets. Many companies, big or small, derive more than 50% of their sales outside the countries in which they are based (Engel, 1990). Engel (1990) also affirmed that:

*"...Today's consumers choose not only from products made in many countries. Consumers must also choose from ideas, advertisements, and friends representing a diversity of nations and cultures. Consumer analysts must therefore be global thinkers to design strategies to reach today's consumers."*



Drawing on this conclusions, the development of the Romanian fruit industry in the new European and Global context must inevitably involve the development of modern marketing and consumer research skills. Systematic research and communication with the consumers can no longer be avoided and has to grow from a non-existent concept to one of the company's priorities.

Equally, with respect to attitudinal studies, the complexity and importance of such a topic was presented in section 2.5 of chapter 2. Attitudinal studies are an important part of consumer research. Through attitude change and attitude reinforcement new consumers can be attracted or maintained loyal towards a product. Although it is a generally valid strategy for all economic areas, attitudinal studies could be particularly useful for the apple industry. Some of the prospective applications of attitudinal research to the apple industry (and other areas) which potentially could bring great benefits are:

- studies in determining the attitudes of consumers towards new and old varieties of apples, to retail outlets and to sales personnel;
- the use of advertising to change attitudes towards fresh and processed apples, by associating these products with positively evaluated attributes, persons and images;
- training retail personnel to generate positive feelings from consumers;
- minimising various factors (undesirable fruit attributes, dirty outlets, etc.) which could create negative feelings;
- developing products which hold attributes providing the desired benefits popular with the consumers;
- differentiating the products using the valuable attributes that they hold.

The list could also be adapted to other particular (more specific) areas of the apple industry. However, the most important issue is actually raising the awareness of the apple industry to the application of such methods, especially at the present time, when consumer populations are becoming increasingly segmented on the basis of their food orientations and attitudes in particular (Roninen *et al.*, 1999).

*Factors which have influenced the Romanian apple industry*

The various factors that have influenced the Romanian apple industry were reviewed in chapter 3 from which it became clear that although working under a command economy before 1989, there were positive aspects of the Romanian apple industry, amongst the most important being:

- subsidies and other funds were constantly given to uphold steady production;
- the use of mechanisation increased and “intensive production” approaches were practised at levels never known before;
- apple breeding programmes were implemented and Research Stations were constantly encouraged to produce progressive valuable outcomes beginning with new technologies and ending with new apple varieties;
- the apple fruit cultivated area increased substantially in size, new orchards were constantly planted and old ones constantly replaced;
- production was steady and distribution problems were not encountered.

However, before 1989, the consumer did not have any role at all due to an ideology according to which all people (and hence all consumers) were supposed to be equal. The supply of goods, including food products, were determined centrally by the government according to certain established norms claimed to be calculated scientifically (Lascu, 1993), especially during the mid and late 1980's.

After the revolution of 1989 and the associated major events which occurred, culminating with the collapse of communism in Europe, it was inevitable that there would be radical changes in Eastern European economies, including the agricultural and horticultural sectors.

The transition towards a market oriented economy was and still is proving to be difficult. The complex new situation required that an entire society (including managers, employees and consumers together) had to learn from the most basic level how the new system works. Furthermore, the changes which are needed for transitional economies are not simple reforms, but fundamental ones to ensure a shift from one system to another. Such reforms included amongst a multitude of others, price and



trade liberalisation, acceptance and encouragement of the private sector, land restitution, relaxation of state control and the adoption of liberal agricultural policies.

Such changes dramatically affected the entire state of the Romanian economy, including the horticultural sector and hence the apple industry. The literature review permitted a series of conclusions to be drawn from the assessment of the Romanian apple industry after 1990. Such outcomes were further emphasised during the focus groups and especially the in depth interviews with a range of individuals and organisations involved with the Romanian apple industry and were largely presented under the results chapter. The main conclusions are that there has been:

- a massive land fragmentation due to land reform;
- a lack of interest amongst the new land owners in maintaining apple orchards;
- a reduction in cultivated area and average production levels;
- a reduction in internal fresh and processed apple products consumption;
- a significant decrease in apple exports as a result of losing stable markets;
- a dramatic decrease in the area of young orchards;
- a reduction in nursery activities and production of young trees as a result of decreasing demand;
- a lack of funds and hence even lower inputs;
- a lack of appropriate technological knowledge amongst the new private land owners;
- a large increase in the prices of pesticides and chemical fertilisers;
- difficulties in internal retailing due to disorganised retailers;
- a lack of demand for new varieties;
- an urgent need of revitalisation of the sector.

It also became clear that the Romanian apple industry had registered a severe decline compared to the period before 1990, and was in urgent need of revitalisation. As observed, a series of barriers in the re-vitalisation and the further development of the Romanian apple industry were already encountered within the literature review. The multitude of adverse factors are mainly associated with the transition period and the accommodation of a new economic system. Other causes are also associated with a

decreasing interest in horticulture, adverse mentalities or lack of motivation, as well as the poor financial state of the consumer after 1989.

*Factors which have influenced the UK and German apple industries*

A series of conclusions were also drawn with respect to the UK and German apple industries. The UK apple industry is facing a series of problems itself; the circumstances, described in chapter three, may be summarised in relation with the state of the UK apple market at the time of the research. Leaving aside its strengths, the main threats the UK apple industry presently faces were determined to be:

- a need for a wider varietal range in order to be able to compete internationally;
- UK apple orchards have decreased as a result of different grant and intervention regimes;
- growers have to comply with strict supermarket guidelines, often to their disadvantage;
- imports of cheap apples decrease the UK growers market share;
- adverse climate often affects UK apple growers;
- there is a low consumption of apples and low promotion of the product;
- strong demand only for first class fruits as a result of EU over-production.

The future of the UK apple industry is strongly correlated with the consumer. More efforts should be directed towards raising the awareness of the consumers with respect to consumption of fruits. Greater importance should also be given to local varieties, in a context where the market is dominated mainly by foreign ones. As seen in chapter three, the apple imports from France for example, accounted sometimes for almost the same share as the local produce. Local varieties, especially Cox, represent one of the main strengths of the UK apple industry; however, adopting new varieties for which there is a clear demand should also be on the priority list of English growers.

Similarly, a series of threats were identified with respect to the German apple industry, even if, at the time of the research, it looked to be the most promising of any of the countries reviewed. Under current circumstances the German industry also has to invest in and support the former Deutsche Demokratische Republik (DDR). While



competing internationally, the future of the German apple industry and its success will mainly depend on its ability to find new markets and respond quickly to recent varietal changes, as well as finding ways to further boost internal consumption. Summarising the condition of the German apple industry the following threats were identified:

- a decrease in cultivated areas;
- strong competition from EU and extra-EU apple producers;
- high fragmentation of farms;
- constant decrease in apple price, and hence non rewarding results for growers;
- difficulties in controlling quality standards;
- need for a wider varietal range in order to be able to compete internationally;
- need for further investments in the former DDR after re-unification.

The research has also shown that the Western apple markets reviewed are highly competitive in terms of quality. However, both the UK and Germany have to resort to imports to satisfy their internal demand. Such strong internal demand could potentially act in favour of traditional fruit producers such as Romania. With respect to such export opportunities for Romania, a series of barriers were encountered at the time of the research amongst which EU protection legislation, loss of established trading partners, obsolete varieties and EU over-production (in countries such as France) were only a few. The lack of clear plant-health legislation (non-compliant with EU quality standards), land fragmentation and lack of well established distribution systems further added to export impediments, even if trade policies were substantially liberalised in 1997 (OECD, 1998).

However, the advanced discussions concerning the enlargement of the EU and the inclusion of Romania within its member states could also have positive impacts upon the trade of fruit for the latter. The favourable climatic and pedological (soil quality) conditions, and the strong tradition of apple growing in Romania could act as another enhancer of its export opportunities. Nonetheless, before moving towards becoming an important apple exporter and supplier, Romania has firstly to overcome most of the aforementioned barriers and invigorate its apple industry by raising it to European standards. The main barriers, as emerging from the research (focus groups and in-depth interviews) are presented as a separate section below.

With respect to the fresh apples and apple juices assessed it was demonstrated that the varieties selected for this research have an appeal to both domestic and foreign consumers. As such, the industry should be encouraged to increase the production of these varieties and carry out further consumer research with other new varieties. It was particularly encouraging that varieties considered to be relatively recent creations of research scored so well in the preference of the consumers. In opposition, one of the oldest Romanian varieties (Patul) still considered by many in Romania to be popular, has demonstrated its obsolescence compared to the new varieties tested.

The preference pattern of the apple juices did not generally follow the pattern of fresh apple preference; this cannot be confirmed however given the elimination of one apple juice (De Falticeni) from the survey after proof of high Patulin content. Amongst the most interesting observations with respect to the apple juices was the high rating of variety Patul (especially in Germany). This is particularly important given the high ratio of juice produced by this variety (see Table 4.1). Together with the possibility of growing this variety organically, given its native resistance to diseases, the appeal of the apple juice produced from Patul could open new horizons for a variety which was demonstrated not to have an appeal as a fresh fruit.

Furthermore, an important percentage of the apple production is regularly processed into alcohol in Romania. As such, the revitalisation and modernisation of the Romanian apple juice industry could add considerable value to the fresh apples initially destined for alcohol processing. Apple juice could also penetrate niche markets more easily compared to fresh apples, given the continuous development of such a market, both internal and international.

#### *Characteristics which are important in apple purchase*

The research has identified a series of characteristics which appear to be important in determining consumer purchase decisions in the three countries studied, both for fresh apples and apple juices. Such characteristics range from the perception of apples as being healthy fruits to advertising, packaging and labelling and the actual sensory characteristics of the apples and apple juices. However, the differences in taste within



and between the consumers in the three countries studied were also demonstrated. The preferred apple variety was a different one in each location researched. This has confirmed once again the different preferences of consumers in different locations and cultures.

The research has also demonstrated the multitude of socio-economic factors which are likely to influence consumer purchasing decisions. These range from the presence and number of children within a family to gender and age group; from income to education level. Many examples of these factors affecting the perception and purchase of fresh apples were encountered within all three countries studied. Particularly interesting were the perceptions of lower educated respondents as to Eastern European apples being richer in pesticides, or the higher awareness of the importance of consuming apples amongst older consumers. Quality perception, for example, was also perceived differently within lower and higher income groups; many other differences were presented under chapter 5. The research has demonstrated that socio-economic variables influence the purchase of apples in all locations studied. By contrasting the consumers in the three countries, differences were encountered rather than similarities. It has therefore been demonstrated to the Romanian apple industry that a universal merchandisable apple variety does not exist, and rather than insisting on growing a narrow range of varieties, some of which may be obsolete, attention should be focused on developing and supplying niche markets. The Romanian apple industry has also to admit that there is no unique, universal consumer, and that all consumers are different, including the samples encompassed in the present research. These differences have to be acknowledged and identified in the future in order to develop successful businesses and international competitiveness.

#### *The expectations of consumers to purchasing fresh apples and apple juices*

The expectations with respect to the Romanian apple industry were largely presented in the results of the questionnaires and focus groups and can be summarised as:

- expectations for higher quality, including improved legislation and standards;
- expectations for greater diversity;
- expectations for improved packaging and labelling;

- expectations for higher standards of retailing, including attitudes of sales personnel, the aspect of sales outlets and availability of self-service;
- expectations for lower prices, including a better price-quality ratio;
- expectations for higher involvement of state and mass media in advertising and promoting fruits;
- expectations for increasing the number of fresh produce outlets.

Such recorded expectations of Romanian consumers, would be perceived as normal in the countries of Western Europe, with none being regarded as out of the ordinary. In Romania however, such expectations are often not met.

*The potential of the Romanian apple industry to respond to consumer preferences and expectations*

With respect to accommodating consumer preferences generally, a series of changes were seen to occur after 1989 in Romania. Within the overall picture, the successful joint-ventures in food industries which were undertaken, have increased the quality stakes considerably. The overall expectations of the consumer with respect to food products have also increased considerably after 1990, and this has been complemented by both the modernisation of retail outlets and the improvement of the available food range.

The fruit industry however has only been subjected to relatively small changes. In comparison, other areas of the food industries (e.g. meat and dairy products, soft drinks, etc.) have performed better and adapted more rapidly to the system of the new market economy.

In respect to the Romanian apple industry, both the literature review and the surveys demonstrated that there is still no evidence of real feed back from consumers within the Romanian apple industry, especially in the state sector. The small amount of information fed back is often insufficient and sometimes distorted. There was evidence of this particular aspect both from the analysis of quantitative and qualitative data. Romanian consumers are generally dissatisfied with the available range, price,



packaging, labelling and the quality of the outlets selling these products. Little is done to collect information from the consumers and transmit it to the industry. The entire chain from production to retail works as separate units without any communication with each other, even if, individually, every single one of these sectors seems to be aware of the important role of the consumer in a market oriented society as observed during the in-depth interviews. The players in the Romanian apple industry appear to be so overcome by the problems created by the transition together with the general state of the economy that they are unable to elaborate coherent strategies and to work closely with each other.

The production sector has been severely affected by land reform, lack of finances and labour, and is struggling to maintain orchards inherited from the era before 1989. The storage facilities lack modernisation, while the distribution system has been seriously disrupted and is now in very many (and mainly unprofessional) hands and is as a result, chaotic. Retail outlets need to be upgraded to the desired consumer standards and the personnel, including the whole hierarchical management scale, need improved commercial awareness together with an understanding of, and respect for the consumer. The consumer should not be perceived only as an income and wealth generator for various businesses, but also the one that makes this income possible. Amongst the main aspects to emerge from the focus groups was the need of the consumers to be listened to and treated with respect; all societies as an entity are ultimately consumers of goods and services, and consumers should be given the deserved attention everywhere.

The agricultural and horticultural related industries are amongst the last ones to face change. For example while the fashion and clothing outlets retail an almost similar range as Western states, bakeries only offer three to four types of bread. Expensive perfumes and jewellery wrapped in elaborate paper contrast starkly with the purchase of fruits and vegetables which are mostly presented in loose piles and with consumers having to bring their own carriers from home. The wide range of electronic products can also not be compared to the range of available fruits, and, moreover, fruit varieties. Some sectors are inevitably evolving at a quicker pace than others; it seems illogical

though for an agricultural-based country such as Romania that this sector is amongst the last to be developed and has not been granted the necessary attention.

As such, at the time of the research it was concluded that the opportunities for the consumer to influence the characteristics of fresh apples and apple juices in Romania were restricted. This was particularly evident in the residual 'state sector'.

A slightly different situation was encountered within the private sector. Being forced into selling the products themselves, the producers direct contact with the consumer was of a real help in shaping more clearly the image of the desired product and service. Unfortunately even in this sector the lack of finances restricted the implementation of consumer requirements, such as improved labelling, packaging and improved outlets. It is also important to mention that in selling their products through the free markets, such small producers are forced to obey and restrict themselves to the available retail spaces, rules and regulations of such markets. In most of the cases such retail outlets have not modernised at all after 1989.

Even less evidence of consumer feed back was available with respect to apple juices. This industry has almost totally collapsed in Romania and historically there were only limited initiatives with respect to producing natural apple juices for the domestic market. The potential for such a market, according to empirical evidence and the results of the survey, exists. After a number of years dominated by imported drinks, many of which of questionable quality, the Romanian consumer seems to be returning to natural products. Such evidence is accentuated by the strong tradition of producing a variety of home made fruit syrups and cordials. Such tradition has apparently increased in importance since 1989, after the disappearance of the limited domestic range of fruit syrups available and the emergence of new, expensive, imported ones.

The combined results of the surveys, including questionnaires, focus groups and in depth interviews have revealed that there is a necessity for the Romanian apple industry to adapt to such consumer (both domestic and international) requirements and expectations if it is to ensure a successful future. This may require both the re-vitalisation and the re-structuring of the industry. While some retail and food



production systems in Romania are well advanced and compare favourably in some cases to Western standards, other industries, like the apple industry lag well behind and are encountering problems in inducing the expected changes. A number of barriers to change were clearly demonstrated from the analysis of the wealth of data at hand.

*Barriers for the development of the Romanian apple industry*

The barriers identified could be grouped into three key elements: legislative, economic and social. Some of these aspects are briefly highlighted below, while stressing that many of them acted as a complex towards the regression of the Romanian apple industry.

The *legislative barriers* encompassed aspects such as land reform and privatisation, product distribution, product quality, quality standards, consumer protection, export regulations, tax regulation.

The *economic barriers* were mostly related to inflation, lack of state subventions and subsidies, lack of funds, high prices of inputs, low financial inputs in research.

The *social barriers* included issues such as confusion, decrease in fruit consumption, motivation, a decline in work discipline, corruption, theft, lack of information, lack of agricultural knowledge, consumer education, ethics, commercial education.

The legislative aspects were amongst the main reasons for the stagnation and even regression of the Romanian apple industry. They can be related to the particularities and complexity of this industry, and the major changes occurring within the agricultural sector as a whole. It is undeniable that land reform has been one of the main factors that have contributed to the regression of the Romanian apple industry. Even if it has been claimed that the land reform and privatisation process in Romania was at an end (OECD, 1998), this process did not create a favourable climate for investment. Uncertainty regarding land ownership has restrained financial inputs, including further development and the replacement of old orchards. Furthermore, in

the majority of cases new land owners have either grubbed up inherited apple orchards (transforming them into pastures) or replaced them with other crops.

Lack of clear legislation with respect to distribution has further affected the system. The multitude of newly emerged retailers were said by both industry and consumers to be amongst the main causes for poor apple quality and increases in commodity prices. It was considered that the quality standards for apples should be improved given the enactment of appropriate legislation, especially with respect to apple retailing. It was also apparent that consumer protection does not function properly and there is only weak enforcement, even if some organisations such as the Consumer Protection Agency are now in place. Export regulations were said to have to be improved, including the further lowering of export taxes which are still too high. Equally the taxes on apple production as well as for seedlings production were said to be too high for the current state of the Romanian apple industry.

Inflation was seen as the major economic impediment. Delays in implementing stabilisation programmes have led to a surge in inflation, affecting all areas of the economy, including the apple industry. The financial power of the consumers has also diminished considerably. Lack of disposable income has led to a reduction in allocated budgets for fruits, and re-distribution to other elements essential for subsistence. State subventions were reduced to the extent as to which they were perceived to be almost unnoticeable. The few attempts to sustain agriculture such as the “diesel coupons” have failed, such funds have taken other ways (mainly the black market for fuel). The lack of funds and high prices of inputs have led to incomplete technologies being applied and hence low levels of production. Further losses have occurred related to the maintenance of obsolescent machinery and old orchards. Lack of investments was affecting the entire apple industry, from production to retail level. The reduced funds allocated to research have resulted in limited improvements and innovations in the field, including market and consumer research.

Multiple social factors were also contributing to the decline of horticulture. The entire process of transition towards a new, previously not experienced system has generated high levels of confusion both economic and social. Correlated with the general state of



the economy and population income, there has been a general decrease in fruit and hence apple consumption. The high food expenditure, reported in 1998 at 58.6% of the household expenditures (OECD, 1998) was directed during this period away from fruit and re-directed to other priorities such as meat, bread, dairy and other basic food products.

There was also evidence of a diminishing attitude towards work discipline, probably as a result of low financial motivation, social tensions related to decreasing living standards and redistribution in incomes. Lack of information and information dissemination was perceived as another barrier. Such lack of information was obvious both at industry and consumer levels, dictated not only by the poor finances available and poor inputs in research, but also by the general state of confusion generated after 1989. With respect to the industry, the lack of information was accentuated by a general lack of agricultural knowledge amongst the new land owners, resulting from the years of state monopoly upon the land.

The consumers themselves were deprived of “consumer education” during the years of dictatorship. Even if expectation standards were said to be increasing after 1989, the consumers themselves admitted to a certain state of complaisance. Such a state of complaisance was said to be easily used by unethical tradesmen and retailers. The lack of commercial education of such retailers further added to the slow adaptation to new consumer requirements.

Nonetheless, the present research has also demonstrated the existence of a series of opportunities for the Romanian apple industry. Such opportunities are related to the strong traditions surrounding apple fruits, the increasing awareness of the importance of such fruits for human health and adverse opinion towards expensive and often disappointing imports. The strong traditions were discussed in the results chapter and include aspects such as the storage of apples over winter, traditional apple desserts and as presents for loved ones. The surveys and interviews have brought evidence that there is an increasing awareness concerning the importance of apple fruits for the health of the Romanian consumer. Such awareness was reinforced by the strong role apples play in children and old peoples’ nutrition. It became apparent that the main

reason of reducing apple consumption was an economic one, related to a smaller extent to the consumers' lack of education. Adverse opinions towards imports, especially during the domestic apple season were also encountered. Such adverse attitudes towards imported produce have often been mentioned after 1989 (Lascu et al., 1993; Petrovici and Ritson, 2000), especially with respect to Turkish produce.

All the above aspects could be well taken advantage of by the Romanian apple industry. With such strong tradition of apple consumption it is very possible that Romanian consumers will soon have no other choice but to change their attitudes towards imports and turn their back to the continuously unsatisfactory internal market. This has already happened with other food products such as chocolate, some dairy products and conserved foods. Further focus on providing information to the consumers with respect to nutritional values of fruits are expected to be very successful, given the lack of such information and the high literacy rate (96.9%) of the country (Petrovici and Ritson, 2000).

## **Recommendations**

When analysing the results of the research, it is difficult to assess when, or even if the Romanian apple industry will be able to adapt to consumer requirements in the short term. It is rather likely that the Romanian apple industry could take a considerable time to adapt to the new emerging consumer requirements as a wide range of consumers dissatisfactions were uncovered.

If the Romanian apple industry is to adapt to such consumer expectations it has to undergo a series of changes and a series of measures are urgently required to be undertaken. The tasks to be solved are multiple and range in their importance and the length of time that is required. Reviewing the results it can be observed that a series of issues are common for all the players involved in the apple industry. Key words such as legislation, financial situation, inflation, role of the consumer, consumer education, communication, motivation and others seemed to be stereotypic in the responses of



participants both in focus and depth interviews. Such topics should obviously become primary targets in solving the initial problems the industry faces.

A series of barriers were found to be similar for all the players in the Romanian apple industry, and represent challenges that have to be commonly solved. Such barriers refer to the distribution system, legislation, diversification, motivation, infrastructure, etc., issues presented in Table 6.2 and discussed in chapter 6. Some barriers were common for only three or two sub-sectors, which supplement the common barriers encountered. Finally, some barriers were specific only for certain sub-sectors.

It appears as obvious that in aiming to revitalise and further evolve, a series of priority actions have to be taken by the apple industry. Such actions are suggested to be prioritised according to the common obstacles encountered within the sub-sectors of the Romanian apple industry. The main actions should hence try to rectify firstly the common obstacles and once these are solved, to finally address the problems specific for each sub-sector. The priority actions are nonetheless the actions that should be taken commonly, and, as previously mentioned, are mainly related to legislation, distribution systems, the infrastructure, the state involvement and support, lack of funds, lack of motivation for employees, involvement of the mass media and consumer agencies, commercial education for, and improved communication within the entire apple industry.

Certain barriers which are of higher significance only for two or three of the apple industry's players are briefly outlined below. Some of these common barriers were related to the limited varietal range, quality preservation, confusion related to certain responsibilities (eg. packaging, labelling, etc.), lack of interest, poor equipment and lack of apple demand. Other barriers emphasised personal interests, unsatisfactory storage spaces and lack of respect for the fruits.

Finally, some of the "player" specific challenges were, for example, old orchards and lack of labour for growers, theft and lack of firm contracts for wholesalers, lack of business knowledge and lack of professionalism for distributors, and lack of interest among retailers in selling fruit. These are only examples; all the barriers encountered

within the industry are mainly intertwined and it is therefore difficult to draw a clear distinction between them. It is suggested that further research should be carried out in identifying more specific barriers for specific players of the industry. However, it should be emphasised that the most important barriers identified and acting against the re-vitalisation of the Romanian apple industry, were common ones. These should be addressed in the near future.

Lack of appropriate legislation and legislative confusion is evidently one of the most important obstacles to overcome. A series of clear new legislative acts should be enabled as soon as possible including quality standards, retail standards and export regulations. Other legislative aspects should also regulate fruit losses over storage and retail processes and encourage the protection of the Romanian consumer. Further legislative aspects should be elucidated with respect to the free markets (i.e. retail standards) and the control upon pesticide quality. Finally, the land repossession process has to be clarified in order to give the certainty upon land plots ownership, security of investments and establishment of a 'land market'.

The establishment of a real and efficient distribution system is also urgently required, as this was apparently another weak link within the apple industry as a whole. Under current conditions the distribution sector is both underdeveloped, unprofessional and very inefficient in the small quantities every private distributor handles. Private initiative should be encouraged in this field leading to the establishment of modern distribution networks all over the country. Direct relationships between supermarkets and producers should also be encouraged.

Equally important is the development of the infrastructure. New and improved roads are essential for the establishment of good distribution networks, not to mention the preservation of fruit quality. Such infrastructure development should extend onto the farms and orchards themselves.

State involvement should be increased and should include subventions and subsidies for the horticultural sector and agricultural sector as a whole. Clearer agricultural support policies should be developed. There is an evident necessity to shift from



supporting a collapsing industry towards supporting a healthy agriculture, given the agricultural history of the country and the favourable natural and pedological conditions the country benefits from. Such a helping hand from the state was seen by the majority of the players as the only way out from the almost disastrous condition of Romanian agriculture.

It has to be however clarified that the industry should not only rely upon the state, a reminiscent inclination since before 1989. The extent of the state's assistance should involve in a first stage the renewal of orchards and support for modern equipment and technologies. Special loans for agriculture with low interest rates would also be particularly beneficial. The state should also become more involved in protecting the interests of the growers versus other industries (i.e. pesticide and fertilisers) and facilitate other appropriate legislation. Once the basic needs of the industry have been solved, it is argued that the industry will be able to continue the process of revitalisation out of own resources.

The lack of funds affected all the sectors of the apple industry, from production to retail. Without the appropriate financial support competitive machinery cannot be acquired, proper production cycles run, old orchards replaced, research supported, storage and transport improved, to mention only some of the major impediments in the re-vitalisation of the Romanian apple industry.

While outside the remit of this investigation, the introduction of the Special Accession Programme for Agriculture and Rural Development (SAPARD) and the Instrument for Structural Policies for Pre-accession (ISPA) measures may begin to address these challenges. Even at the early stage of year 2001, an estimated 250 million Euro are supposed to be allocated to Romania, and the SAPARD National Agency is already in place in Bucharest. This is considered the most substantial assistance for the Romanian agriculture since before 1989. A high number of applications is expected, even if worries were already expressed as to the difficulties of information diffusion, the application process and the establishment of regional agencies.

With respect to other major issues, the current economic state and hence the low salaries have led to a low interest in the actual work process. Extremely low motivation was encountered at all levels of the industry, except the private sector. Rewarding retribution systems should be implemented from the highest to the lowest levels, including incentives for quality production and quality preservation, in order to increase motivation and develop trusting relations. This is also one of the main means to reduce theft and corruption.

Regarding the technologies applied, more weight should be placed on quality, and modern available HACCP (Hazard Analysis - Critical Control Points) technologies applied with emphasis on a reduced number of handlings and superior packing. Training of temporary staff (mainly employed over the harvesting period) is also crucial.

A higher level of involvement is also needed on behalf of the mass media, since its importance in further increasing the awareness of the consumers with respect to the consumption of fruit is acute. Boosting internal fruit consumption is one of the alternative future solutions for the Romanian apple industry.

Institutions involved with consumer protection should be more active and also raise the awareness of the consumer with respect to their overall importance within a market economy. It became clear that the Romanian consumer often felt helpless and isolated and lacked the so-called “consumer education” encountered within Western societies.

More emphasis should also be put by major state retailers into commercial education, especially with respect to the employed staff. Most of the average sized private food retail businesses have emerged without such prior education, the result being dissatisfied consumers and low turnovers for the businesses. Such retailers are still working according to an old retail mentality and courtesy, interest in the consumer and product knowledge is still lacking. However, it was argued that sales personnel were generally more helpful in the private sector compared to the state outlets.



There is also a need to encourage specialist businesses dealing with fruits, bearing in mind the difficulty of such commerce, ranging from their seasonal nature to the high perishability.

Not the least, the communication between the actors in the Romanian apple industry has to be improved, with the consumer as the main focus. Such communication could be substantially improved by facilitating the transfer of information and building of information networks between the industry players, IT (Information technology) could play an important role here. However, in an era when a computer is still considered a luxury for a 200 ha farm manager, without appropriate support the development of such information networks is questionable.

The future of the Romanian apple production appears to belong to the private sector. The research has demonstrated the ease of adaptability of this sector. Combining small farms of 5-15 hectares (compared to the hundreds of hectares of orchards some state farms are still running) with diversification and motivation, seems to be the recipe for future success.

Finally, the general state of the economy has to improve. With limited purchasing power the Romanian consumer is unlikely to sustain the fruit industry. Economic growth will be one of the vital keys for the future well-being of the consumers. Both social and economic policies have to be included in coherent development programs in order to overcome the persistence of poverty and the erosion of services.

Amongst the priority actions proposed there are a number of other goals that should be set both for the Romanian apple industry and Romanian consumers. Some examples are presented in the tables below (Tables 7.1, 7.2, 7.3, 7.4, 7.5). More specific goals could also be developed for the sub-sectors of the apple industry.

**Table 7.1: Requirements and proposed actions for the growing sector**

General requirements	Specific requirements	Proposed actions
improve quality	<ul style="list-style-type: none"> <li>• bigger fruits</li> <li>• no bruises</li> <li>• clean fruits</li> <li>• better storage</li> </ul>	<ul style="list-style-type: none"> <li>• improve technologies</li> <li>• financial aid</li> <li>• improve state of roads</li> <li>• improve technical base</li> <li>• reduce handlings</li> <li>• introduce packaging</li> <li>• improving storage</li> <li>• increase motivation</li> <li>• improve legislation</li> </ul>
quality preservation	<ul style="list-style-type: none"> <li>• improved packaging</li> <li>• better storage</li> </ul>	<ul style="list-style-type: none"> <li>• introduce packaging</li> <li>• reduce handlings</li> <li>• improve storage</li> </ul>
improve varietal range	<ul style="list-style-type: none"> <li>• better choice</li> </ul>	<ul style="list-style-type: none"> <li>• finance research</li> <li>• accommodate new varieties</li> <li>• improve information circulation</li> <li>• finance research</li> </ul>
reduce price	<ul style="list-style-type: none"> <li>• cheaper apples</li> </ul>	<ul style="list-style-type: none"> <li>• improve technologies</li> <li>• higher mecanisation</li> <li>• reduce handlings</li> </ul>

**Table 7.2: Requirements and proposed actions for the wholesaling sector**

General requirements	Specific requirements	Proposed actions
quality preservation	<ul style="list-style-type: none"> <li>• no bruises</li> <li>• clean fruits</li> <li>• better storage</li> </ul>	<ul style="list-style-type: none"> <li>• financial aid</li> <li>• improve state of roads</li> <li>• improve technical base</li> <li>• introduce packaging</li> <li>• improving storage</li> <li>• increase motivation</li> <li>• improve legislation</li> </ul>
introduce better packaging	<ul style="list-style-type: none"> <li>• improve packaging</li> <li>• quality maintenance</li> </ul>	<ul style="list-style-type: none"> <li>• financial aid</li> <li>• research</li> <li>• legislation &amp; standards</li> </ul>
Introduce labelling	<ul style="list-style-type: none"> <li>• improve labelling</li> </ul>	<ul style="list-style-type: none"> <li>• research</li> <li>• financial aid</li> <li>• legislation &amp; standards</li> </ul>



**Table 7.3: Requirements and proposed actions for the distributing sector**

General requirements	Specific requirements	Proposed actions
professionalism	<ul style="list-style-type: none"> <li>• maintain quality</li> </ul>	<ul style="list-style-type: none"> <li>• improve legislation</li> <li>• merge small businesses</li> </ul>
quality preservation	<ul style="list-style-type: none"> <li>• no bruises</li> <li>• clean fruits</li> <li>• uniform quality</li> </ul>	<ul style="list-style-type: none"> <li>• improve transport</li> <li>• improve packaging</li> <li>• improve roads</li> <li>• legislation</li> </ul>
reduce costs	<ul style="list-style-type: none"> <li>• cheaper apples</li> </ul>	<ul style="list-style-type: none"> <li>• increase the quantities handled</li> <li>• reduce profit margins</li> <li>• merge into bigger enterprises</li> </ul>
establish national/international networks	<ul style="list-style-type: none"> <li>• develop communication</li> </ul>	<ul style="list-style-type: none"> <li>• improve communication</li> <li>• develop legislation</li> </ul>

**Table 7.4: Requirements and proposed actions for the retailing sector**

General requirements	Specific requirements	Proposed actions
improve retail	<ul style="list-style-type: none"> <li>• better retail outlets</li> <li>• better presentation</li> <li>• improved cleanliness</li> <li>• friendly and motivated personnel</li> <li>• improved services</li> <li>• self service</li> </ul>	<ul style="list-style-type: none"> <li>• encourage private initiative</li> <li>• financial support</li> <li>• superior commercial education</li> <li>• reduce theft</li> <li>• encourage competitiveness</li> </ul>
encourage apple retail	<ul style="list-style-type: none"> <li>• better storage facilities</li> <li>• improve communication with growers</li> <li>• specific cooling equipment</li> <li>• facilitate apple retail businesses</li> </ul>	<ul style="list-style-type: none"> <li>• investments in storage facilities and equipment</li> <li>• improve communication networks</li> <li>• reduce taxes on profits</li> </ul>
better communication with customers	<ul style="list-style-type: none"> <li>• improved feed back</li> </ul>	<ul style="list-style-type: none"> <li>• encourage circulation of information</li> </ul>
introduce fruit promotion	<ul style="list-style-type: none"> <li>• increase consumption</li> <li>• increase range</li> </ul>	<ul style="list-style-type: none"> <li>• information</li> <li>• raise awareness</li> </ul>

Table 7.5: Requirements and proposed actions for the consumers

General requirements	Specific requirements	Proposed actions
increase fruit consumption awareness	<ul style="list-style-type: none"><li>• be aware of the beneficial effects of fruit consumption</li><li>• be aware of the importance of fruit consumption for children</li></ul>	<ul style="list-style-type: none"><li>• encourage advertising</li><li>• financial support</li><li>• develop information networks</li><li>• develop specific publications</li><li>• encourage school campaigns</li></ul>
increase apple consumption	<ul style="list-style-type: none"><li>• facilitate apple retail businesses</li><li>• better presentation</li><li>• improved cleanliness, labelling and packing</li><li>• friendly and motivated personnel</li><li>• improved services</li><li>• self service</li><li>• more outlets</li></ul>	<ul style="list-style-type: none"><li>• increase commerce with fruits</li><li>• investments in storage facilities and equipment</li><li>• improve retail</li><li>• develop specific strategies meant to overcome poverty</li><li>• incentives for the consumption of fruits</li></ul>
develop confidence	<ul style="list-style-type: none"><li>• raise awareness with respect to the overall role of the consumer in the society</li></ul>	<ul style="list-style-type: none"><li>• encourage circulation of information</li><li>• improve relations with the Office for Consumer Protection</li><li>• resolving consumer complaints</li><li>• encourage the foundation of consumer groups and associations</li><li>• develop appropriate legislation</li></ul>

However, the achievement of all goals depends ultimately upon solving the complex barriers for the re-structuring and re-vitalisation encountered not only within the apple industry but also within the entire Romanian society as a whole; the consumer also has to develop confidence and be aware of the role of fruit consumption for both the personal and the family’s health.

Amongst other main conclusions discussed earlier in the chapter, and besides recommendations for the apple industry, a series of recommendations with respect to a



range of issues identified by the research can be given to other key areas, namely the government, activists and consumer organisations and the consumers.

The government has to adopt further pieces of legislation in line with EU existing consumer legislation and fruit retailing, aiming for a harmonisation in this field. The frequent changes of governments and other priorities in the Romanian political life have nonetheless slowed up such processes. As Romania is presently closer than ever to becoming an accession member, such priorities can no longer be overlooked; consumer policy was far too often on the margin of governments' priorities. Eleven years down the road of transition should now have contributed to the maturity of the new political system. Presently further clarification is required in outlining and better defining consumer rights, as well as facilitating the establishment of new consumer associations. Former confusions about the objectives and aims of consumer policies, the organisational structures needed to achieve this and the role of the government should come to an end. More should be done to with respect to committing financial and human resources to ensure the proper enforcement of consumer legislation and protection laws. Government must also commit itself to eradicate corruption, since corrupt practices reduce importantly the well-being of all consumers. Another area worthy of attention is the access to justice in which little progress has been made. With respect to raising consumers' awareness, one of the most effective ways may be incorporating consumer education as mandatory part in the school curriculum.

In regard to the re-vitalisation of the Romanian apple industry, one of the key areas for government implication is land restitution, building overall strategies for the restructuring of the horticultural sector and enable appropriate legislation (food and retail standards, etc.). Special policies should be developed to meet the need of small-scale farmers (upon whom agriculture will depend in the near future) and address the issue of low-income consumers. Encouragement and seriousness regarding a series of EU initiatives such as SAPARD and ISPA will most surely be of enormous benefit for the horticultural sector.

Activists should be permanently involved in organising information campaigns for the consumers, supplementing and complementing similar activities of consumer

organisations. Distribution of information with respect to consumer rights will be particularly useful as well as campaigning for the rights of disadvantaged consumers.

Consumer organisations, including the Office for Consumer Protection should expand their legislative framework in aiming for an EU harmonisation, improve the effectiveness of market inspections, extend the information systems, inform, educate and advise consumers, find an effective way to handle consumer complaints. As a main area, consumer education could be essential in providing the skills and knowledge to empower consumers and increase their awareness of their wider role in the Romanian society. In order to achieve change, according to Consumers' International (2001), consumers' organisations have only two means: the economic power of the consumers and own campaigning. While achieving economic power may take more time, more campaigning involvement and activity is needed.

The consumers have to realise their overall role in a market economy and develop consumer movements which should insist that the marketplace serves consumer needs which are placed at the very core of both business and governmental activity. Closer relationships should be developed with consumer organisations while health issues (amongst which increased fruit consumption) should become amongst the national consumer priorities.

## **Reflections**

The present study incorporated a survey encompassing both quantitative and qualitative methods and has attempted to provide an early but vital step in the direction of understanding the importance of the consumer and consumer research for the Romanian apple industry. As the country is moving towards a market oriented economy it is important to understand the role of the consumer within the general frame of the economy, but it is equally important in specific areas - such as in the present research relating to the Romanian apple industry.

The main difficulties faced by the Romanian apple industry were described together with the expectations of the Romanian consumers. The transition towards a market



economy has proven to be difficult, frustrating and confusing for such consumers. Comparisons with Western consumers were made where appropriate, as well as a brief comparison between the apple products studied in selected countries.

In the given economic context the conclusion has been reached that it is difficult to assess when the Romanian apple industry will adapt to consumer requirements, both domestic and international. It will evidently take time and appropriate legislative and economic measures to achieve all the changes required.

What became evident however is the value of multi-method research in understanding the underlying hidden reasons leading to the current decline of the Romanian apple industry. It also became apparent that the phenomena is very complex and includes a multitude of aspects ranging from economic to social ones. In this complex situation, consumer research could play only a partial role in the revitalisation of the Romanian apple industry, but nonetheless an important one which is worthy of further exploration.

The potential importance of consumer research has emerged clearly both from the literature review, and the research carried out. The present work is only a small example of how consumer research can identify consumer needs and expectations which can then be communicated to the industry.

The reflections upon the process of research have shown that it is possible to apply well established research techniques in the Western states to the new emerging market economies. The surveys were facilitated by the consumers' interest and need to communicate in Romania.

The question as to which an appropriate methodology was employed may also arise. It has to be acknowledged that every research process is a process of continuous learning and improvement, including the present one. The international dimension and semantic differences between the locations made the present research even more challenging, together with the financial and time limitations.

It also has to be acknowledged that the process of research has moved from an initial approach meant to identify consumer preferences to a more holistic approach, integrating the consumer with the Romanian apple industry in its totality. It is admitted that the datum was often not exploited at its full potential, nor have comparisons been made with available data in the UK and Germany, enriching the thesis with a much broader image upon apple consumers in these countries. Finally, the attitudes of the consumers in the three countries could have been further researched. It is planned that in the near future a series of publications will cover the gaps in the information presented. Nonetheless, the time frame of the work has led to many of these limitations.

As such, flaws in the methodology arose together with the insufficiency of data from the initial quantitative surveys. The limitations of the samples have also to be acknowledged. These were therefore supplemented by qualitative research. Upon reflection, the qualitative survey (focus groups) yielded more pertinent, profound results and a more realistic assessment of the consumers' needs and expectations. Its use has been particularly useful in identifying consumers' expectations and specific discontents of the consumer with respect to the apple industry and their overall role in the current transitional economy of Romania. It is suggested that further research in a similar field should accentuate this type of research.

Quantitative research is however more appropriate in the identification of consumer preferences and sensory evaluation, and should not be overlooked especially when operating with new varieties and trying to identify new markets. Within the present research, it was particularly useful in demonstrating the differences in consumers' preferences and identifying their opinions with respect to products of the Romanian apple industry.

Finally, the last remark goes to emphasising that the present work should be regarded as an aggregate, as a whole, and its potential value for the Romanian apple industry lies in the holistic approach taken by the thesis, and not in any of its elements taken separately.



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This questionnaire is **CONFIDENTIAL**.

Part 1

1. *Generally speaking, do you like apples? (please tick)*

Yes ☐

No ☐

2. *If yes, how much do you like apples? (Please mark with an x on the scale. The more you mark to the left, the more you dislike apples, the more you mark to the right, the more you like apple fruits)*

☹ Dislike extremely

Like extremely ☺

3. *How frequently do you eat apples? (please tick)*

once or more a day ☐

4-5/week ☐

2-3/week ☐

once /week ☐

less ☐

4. *What is your gender? (please tick)*

male ☐

female ☐

5. *What is your age group? (please tick)*

up to 18 years ☐

18-25 ☐

26-40 ☐

41-65 ☐

over 65 ☐

6. *Are you (please tick):*

single ☐

married/living with a partner ☐

divorced ☐

separated ☐

other situations ☐ (please state if you wish.....)

7. *How many persons live in your household, including yourself (back home if you are student, or temporary living away from home)?*

One person ☐

2 ☐

3 ☐

4 ☐

5 ☐

more than 5 ☐ (please state).....

8. *Do you have children? (please tick)*

Yes ☐

No ☐

not applicable ☐

9. *If Yes, how many children do you have? (please tick)*

none ☐

1 ☐

2 ☐

3 ☐

more than 3 ☐ (please state).....

10. *How many of them still live at home, and financially depend on you? (please tick)*

none ☐

1 ☐

2 ☐

3 ☐

more than 3 ☐ (please state).....

11. *Do you have any other dependants in your family? (please tick)*

Yes ☐

No ☐

not applicable ☐



12. How many other dependants do you have? (please tick)  
not applicable ☐      1 ☐      2 ☐      more than 2 ☐ (Please state \_\_\_\_\_ )

13. Are you the main bread winner? (please tick)  
Yes ☐      No ☐      not applicable ☐

14. What is the total monthly net income of your household? (please tick)  
not applicable ☐  
no income ☐  
under £1000 ☐  
£1001-2000 ☐  
£2001-2500 ☐  
£2501-3000 ☐  
over £3000 ☐

15. Are you: (please tick)  
full time employed..... ☐  
part time employed..... ☐  
self-employed..... ☐  
housewife/ househusband..... ☐  
employer..... ☐  
unemployed..... ☐  
pupil/student..... ☐  
retired..... ☐  
other..... ☐ (Please state \_\_\_\_\_ )

16. What is your highest education level? (please tick)  
secondary education ☐  
further education ☐  
higher education ☐



## Part 2

Please tick only one box for each of the following statements to show how much you agree or disagree (please continue on following sheet).

Statement	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
1. Apples are amongst the easiest fruits to purchase.					
2. Apples are rich in vitamins.					
3. I buy apples because my family likes them.					
4. I consider apples are important for my family's health.					
5. I am satisfied with the apple range on the market.					
6. Importing apples is unnecessary in the UK.					
7. When I buy apples I am not interested in which variety I buy.					
8. English apples are the best.					
9. I am worried about the pesticide levels in apples.					
10. We should give more consideration to English apple varieties.					
11. The apple range on the market is too limited.					
12. Increasing the number of varieties available on the market is good.					
13. If I could afford to buy other exotic fruits, I would not buy apples.					
14. I believe apples from Eastern Europe have a higher pesticide level.					
15. I can recognise most apple varieties in the shops or on the market.					
16. For me all apple varieties are alike.					



Statement	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
17. Apples are an expensive fruit.					
18. I prefer buying organically grown apples.					
19. I do not buy often more than one pound of apples at one time					
20. I buy only certain apple varieties.					
21. I will never buy genetically engineered fruits.					
22. Farmers should be aware of any changes in consumers' preferences.					
23. Apple growing is a tradition in England.					
24. I would avoid apples from Eastern Europe.					
25. Organically grown apples are too expensive.					
26. I would buy new apple varieties proven they satisfy my taste.					
27. Advertising is very important for apple sales.					

Part 3

**Overall appearance.** *Please look at the samples in front of you without touching, tasting or smelling any. Related only on what you see, please rate how much did you like each sample for overall appearance, by marking your opinion with an x along the scales.*

Sample No. 528

☹ dislike extremely like extremely ☺

Sample No. 306

☹ dislike extremely like extremely ☺

Sample No. 194

☹ dislike extremely like extremely ☺

Sample No. 735

☹ dislike extremely like extremely ☺

**Size.** *Please rate now each sample only for size, by marking again with an x along the scales*

Sample No. 528

☹ dislike extremely like extremely ☺

Sample No. 306

☹ dislike extremely like extremely ☺

Sample No. 194

☹ dislike extremely like extremely ☺

Sample No. 735

☹ dislike extremely like extremely ☺



**Colour.** *Please rate this time how much did you like the colour of each sample.*

**Sample No. 528**

 dislike extremely	like extremely 
<hr/>	

**Sample No. 306**

 dislike extremely	like extremely 
<hr/>	

**Sample No. 194**

 dislike extremely	like extremely 
<hr/>	

**Sample No. 735**

 dislike extremely	like extremely 
<hr/>	

**Scent.** *Please smell each product in front of you, and, unfortunately, do not taste them yet. Can you please rate how much did you like the scent of each sample?*

**Sample No. 528**

 dislike extremely	like extremely 
<hr/>	

**Sample No. 306**

 dislike extremely	like extremely 
<hr/>	

**Sample No. 194**

 dislike extremely	like extremely 
<hr/>	

**Sample No. 735**

 dislike extremely	like extremely 
<hr/>	

**Taste.** *Thank you for resisting until now! You can at last taste the products. Please do, and rate how much did you like the taste of each sample.*

**Sample No. 528**

☹ dislike extremely

like extremely ☺

**Sample No. 306**

☹ dislike extremely

like extremely ☺

**Sample No. 194**

☹ dislike extremely

like extremely ☺

**Sample No. 735**

☹ dislike extremely

like extremely ☺

**Texture.** *Please taste the samples again and rate each sample for its texture.*

**Sample No. 528**

☹ dislike extremely

like extremely ☺

**Sample No. 306**

☹ dislike extremely

like extremely ☺

**Sample No. 194**

☹ dislike extremely

like extremely ☺

**Sample No. 735**

☹ dislike extremely

like extremely ☺



***Considering now all the samples you have appreciated, can you please rate how much did you like each of them overall?***

**Sample No. 528**

 dislike extremely	like extremely 
<div></div>	

**Sample No. 306**

 dislike extremely	like extremely 
<div></div>	

**Sample No. 194**

 dislike extremely	like extremely 
<div></div>	

**Sample No. 735**

 dislike extremely	like extremely 
<div></div>	

***If you were going to buy just one of these samples, which one would you prefer to eat yourself?***

Sample No. .... (please write sample number)  
None ☐

**Thank you for your time and patience.**

Bournemouth University - School of Service Industries



Part 1

1. Which of the following apple products do you mainly consume? (please rank the two main products you consume, by numbering 1 and 2 the appropriate boxes)

- |  |  |  |                                       |
|--|--|--|---------------------------------------|
| Fresh apples <input type="checkbox"/>  | apple sauce <input type="checkbox"/>       | apple puree <input type="checkbox"/>               | dried apples <input type="checkbox"/> |
| canned apples <input type="checkbox"/> | apple deserts <input type="checkbox"/>     | toffee apples <input type="checkbox"/>             | apple juice <input type="checkbox"/>  |
| cider <input type="checkbox"/>         | apple concentrate <input type="checkbox"/> | other <input type="checkbox"/> (please state)..... |                                       |

2. How much do you like apple juice? (Please mark with an x on the scale. The more you mark to the left, the more you dislike apple juice, the more you mark to the right, the more you like it)

☹Dislike extremely	Like extremely☺
<div></div>	

3. Generally speaking, do you drink apple juice? (please tick). If not, can you please name what fruit juice do you mainly drink?

- Yes☐ No☐  
alternative product☐,please specify.....

4. How frequently do you drink apple juice in your household? (please tick) If never go to question15.

- Daily☐ 4-5/week☐ 2-3/week☐ once/week☐ less☐  
never☐

5. When you drink apple juice, you: (please tick)

- drink only with a meal ☐  
drink at various times ☐

6. What packaging do you prefer? (please tick one box only)

- glass bottles☐ plastic bottles☐ tetra pack☐ cans☐  
other☐(please specify).....

7. Which type of apple juice do you prefer? (please tick the appropriate boxes)

- A. clear☐ cloudy☐ B. pure☐ blended☐

8. Do you think the range of available apple juice on the is: (please tick only one box)

- Very good☐ good☐ fair☐ poor☐ very poor☐



9. When buying apple juice, which characteristics are more important to you? (please rank the first two characteristics you consider important, by writing 1 and 2 in the appropriate boxes)

brand ☐    packaging ☐    labelling ☐    origin ☐    colour ☐    price ☐  
nutritional information ☐    concentration in pure juice ☐  
contents added (e.g. preservatives, etc.) ☐ other characteristics ☐ (state).....

10. Which of the following qualities do you appreciate the most in an apple juice? (please rank first three)

flavour ☐    taste ☐    aroma ☐    acidity ☐    sweetness ☐    colour ☐  
concentration ☐    other ☐, please specify.....

11. Which of the following factors are likely to determine your purchase of a different apple juice: (please rank fist two factors, by writing 1,2 in the appropriate boxes)

curiosity ☐    TV advertising ☐    advertising in publications ☐  
price ☐    shop advertising ☐    friend advice ☐  
family advice ☐    I do not try new products ☐

12. How often (approximately) do you buy apple juice?

2-3 times/week ☐    once/week ☐    2-3 times/month ☐  
less ☐

13. Can you please give two main reasons you drink apple juice?(please write clearly)

1.....  
2.....

14. When buying apple juice, what quantity do you usually purchase?

Less than 1liter ☐    1liter ☐    2liters ☐    4 litres ☐    more than 4 litres ☐

15. Would you buy organic apple juice?

Yes ☐    no ☐    don't know ☐

16. Are you male or female? (please tick)

Male ☐    Female ☐

17. What is your age group? (please tick)

up to 18 years ☐    18-25 ☐    26-35 ☐    36-45 ☐    46-65 ☐    over65 ☐

18. Are you (please tick):

single ☐    married/living with a partner ☐    divorced ☐    separated ☐  
other situations ☐ (please state if you wish.....)

19. How many persons live in your household, including yourself (back home if you are student, or temporary living away from home)?

One person ☐    2 ☐    3 ☐    4 ☐    5 ☐    more than 5 ☐ (please state).....

20. Do you have children? (please tick)

Yes ☐    No ☐    not applicable ☐

21. If Yes, how many children do you have? (please tick)

none ☐    1 ☐    2 ☐    3 ☐    more than 3 ☐ (please state).....

**22. How many of them still live at home, and financially depend on you? (please tick)**  
none ☐ 1 ☐ 2 ☐ 3 ☐ more than 3 ☐ (please state).....

**23. Do you have any other dependants in your family? (please tick)**  
Yes ☐ No ☐ not applicable ☐

**24. How many other dependants do you have? (please tick)**  
not applicable ☐ 1 ☐ 2 ☐ more than 2 ☐ (please state).....

**25. Are you the main bread winner? (please tick)**  
Yes ☐ No ☐ not applicable ☐

**26. What is the total monthly net income of your household? (please tick)**  
not applicable ☐  
no income ☐  
under £800 ☐  
£801-1500 ☐  
£1501-2500 ☐  
£2501-3000 ☐  
over £3000 ☐

**27. Are you: (please tick)**  
full time employed..... ☐  
part time employed..... ☐  
self-employed..... ☐  
housewife/ househusband..... ☐  
employer..... ☐  
unemployed..... ☐  
pupil/student..... ☐  
retired..... ☐  
other..... ☐ (Please state \_\_\_\_\_ )

**28. What is your highest education level? (please tick)**  
secondary education ☐  
further education ☐  
higher education ☐

**29. Are you the person purchasing food in the household?**  
Yes ☐ No ☐ Sometimes ☐ Not applicable ☐



Part 2

**30. COLOUR.** Now look the samples in front of you, without smelling or tasting. Can you please rate only your opinion about their colour, by marking with an x on the scale. The more you mark to the left, the more you dislike it, the more you mark to the right, the more you like it.

Sample No..341

☹ dislike extremely

like extremely ☺

Sample No..278

☹ dislike extremely

like extremely ☺

Sample No..695

☹ dislike extremely

like extremely ☺

**31. SCENT.** What about the sample scent? Please rate in the same way as before, after smelling the samples.

Sample No..341

☹ dislike extremely

like extremely ☺

Sample No..278

☹ dislike extremely

like extremely ☺

Sample No..695

☹ dislike extremely

like extremely ☺

32.FLAVOUR. You can now finally taste the samples; please do so and rate them again for “apple” flavour.

Sample No..341

☹ dislike extremely

like extremely ☺

Sample No..278

☹ dislike extremely

like extremely ☺

Sample No..695

☹ dislike extremely

like extremely ☺

33. SWEETNESS. Please rate the samples again for sweetness.

Sample No..341

☹ dislike extremely

like extremely ☺

Sample No..278

☹ dislike extremely

like extremely ☺

Sample No..695

☹ dislike extremely

like extremely ☺



**34. SHARPNESS.** *And now, for the last time, can you please taste the samples and rate them for acidity (sharpness)?*

Sample No..341

☹ dislike extremely

like extremely ☺

Sample No..278

☹ dislike extremely

like extremely ☺

Sample No..695

☹ dislike extremely

like extremely ☺

**35. Thinking now of all the samples that you have tested, can you please rate them for “overall like”?**

Sample No..341

☹ dislike extremely

like extremely ☺

Sample No..278

☹ dislike extremely

like extremely ☺

Sample No..695

☹ dislike extremely

like extremely ☺

**36. Which sample would you prefer to buy for yourself, if any?**

Sample No. \_\_\_\_\_ (Please write sample number)

None ☐

**Thank you for your patience and time.**

***Appendix C1: The influence of gender on attitudinal statements in Romania***

Statement	F	Sig.
1. Romanian apples are the best	6.024	.015
2. Increasing the number of varieties available on the market is good	4.236	.040
3. I can recognise most apple varieties in the shops or on the market	7.219	.008
4. I do buy often more than one kilo of apples at one time	8.641	.004
5. Farmers should be aware of any changes in consumers' preferences	4.569	.033
6. I prefer buying from a certain person, market, store	5.847	.016

***Appendix C2: The influence of age group on attitudinal statements in Romania***

Statement	F	Sig.
1. Apples are amongst the easiest fruits to purchase	5.176	.000
2. Apples are rich in vitamins	2.543	.040
3. I buy apples because my family likes them	7.716	.000
4. I consider apples are important for my family's health	4.700	.001
5. Romanian apples are the best	6.620	.000
6. I am worried about the pesticide levels in apples	3.629	.007
7. We should give more consideration to Romanian apple varieties	2.852	.024
8. The apple range on the market is too limited	5.791	.000
9. Increasing the number of varieties available on the market is good	5.030	.001

***Appendix C3: The influence of marital status on attitudinal statements in Romania***

Statement	F	Sig.
1. I buy apples because my family likes them	3.756	.011
2. When I buy apples I am not interested in which variety I buy	6.044	.001
3. Romanian apples are the best	5.659	.001
4. I can recognise most apple varieties in the shops or on the market	3.973	.008
5. Apples are an expensive fruit	2.629	.050

***Appendix C4: The influence of number of persons in household on attitudinal statements in Romania***

Statement	F	Sig.
1. Increasing the number of varieties available on the market is good	2.423	.035
2. Compared to other products, fruits in general and apples in particular are not advertised and promoted	3.349	.006



***Appendix C5: The influence of children's presence on attitudinal statements in Romania***

Statement	F	Sig.
1. Apples are amongst the easiest fruits to purchase	7.823	.005
2. I buy apples because my family likes them	10.099	.002
3. I am satisfied with the apple range on the market	6.560	.011
4. When I buy apples I am not interested in which variety I buy	15.223	.000
5. Romanian apples are the best	15.744	.000
6. The apple range on the market is too limited	8.478	.004
7. If I could afford to buy other exotic fruits, I would not buy apples	8.047	.005
8. I believe EU hardly accepts Eastern European products	4.135	.043
9. I can recognise most apple varieties in the shops or on the market	10.656	.001
10. For me all apple varieties are alike	11.935	.001
11. Apples are an expensive fruit	14.108	.000
12. I do buy often more than one kilo of apples at one time	6.218	.013
13. There are no specialised stores for fresh produce	5.063	.025
14. I buy apples only from the state sector	15.974	.000

***Appendix C6: The influence of the number of children on attitudinal statements in Romania***

Statement	F	Sig.
1. Apples are amongst the easiest fruits to purchase	3.705	.006
2. I buy apples because my family likes them	2.626	.034
3. Romanian apples are the best	3.323	.011
4. The apple range on the market is too limited	3.371	.010
5. Increasing the number of varieties available on the market is good	4.017	.003
6. For me all apple varieties are alike	3.478	.009
7. Apples are an expensive fruit	3.872	.004
8. I buy apples only from the state sector	3.733	.006
9. Compared to other products, fruits in general and apples in particular are not advertised and promoted	4.131	.003

***Appendix C7: The influence of the number of dependent children on attitudinal statements in Romania***

Statement	F	Sig.
1. Romanian apples are the best	3.977	.004
2. For me all apple varieties are alike	4.421	.002
3. Apples are an expensive fruit	2.791	.027

***Appendix C8: The influence of being the main earner on attitudinal statements in Romania***

Statement	F	Sig.
1. I buy apples because my family likes them	11.162	.001
2. I am satisfied with the apple range on the market	5.130	.024
3. When I buy apples I am not interested in which variety I buy	8.574	.004
4. The apple range on the market is too limited	6.637	.010
5. If I could afford to buy other exotic fruits, I would not buy apples	11.651	.001
6. I believe EU hardly accepts Eastern European products	11.242	.001
7. Apples are an expensive fruit	8.451	.004
8. I will never buy genetically engineered fruits	4.476	.035
9. I buy apples only from the state sector	16.587	.000
10. I think Romanian apples would hardly penetrate the EU market	5.820	.016

***Appendix C9: The influence of the income group on attitudinal statements in Romania***

Statement	F	Sig.
1. I am worried about the pesticide levels in apples	3.177	.008
2. The apple price is highly related to their quality	3.594	.004
3. I buy only certain apple varieties	3.573	.004
4. Farmers should be aware of any changes in consumers' preferences	2.971	.012
5. There are no specialised stores for fresh produce	3.866	.002
6. Apple varieties are not labelled at sale points	3.004	.012
7. I would like to know what apple variety I buy	2.692	.024

***Appendix C10: The influence of the occupational group on attitudinal statements in Romania***

Statement	F	Sig.
1. I buy apples because my family likes them	2.581	.019
2. When I buy apples I am not interested in which variety I buy	6.721	.000
3. Romanian apples are the best	3.009	.007
4. We should give more consideration to Romanian apple varieties	3.843	.001
5. The apple range on the market is too limited	3.358	.002
6. Increasing the number of varieties available on the market is good	2.664	.016
7. Apples are an expensive fruit	3.095	.006
8. The apple price is highly related to their quality	2.189	.044
9. I do buy often more than one kilo of apples at one time	2.572	.019
10. I buy only certain apple varieties	3.277	.004
11. I will never buy genetically engineered fruits	4.106	.001
12. Farmers should be aware of any changes in consumers' preferences	3.793	.001
13. I would like to know what apple variety I buy	5.045	.000
14. I buy apples only from the state sector	4.079	.001
15. I buy apples from the free market because they are cheaper	2.474	.024



*Appendix C11: The influence of education level on attitudinal statements in Romania*

Statement	F	Sig.
1. Apples are rich in vitamins	3.920	.021
2. I consider apples are important for my family's health	6.043	.003
3. When I buy apples I am not interested in which variety I buy	19.129	.000
4. I am worried about the pesticide levels in apples	5.903	.003
5. We should give more consideration to Romanian apple varieties	4.791	.009
6. If I could afford to buy other exotic fruits, I would not buy apples	17.681	.000
7. For me all apple varieties are alike	22.529	.000
8. Farmers should be aware of any changes in consumers' preferences	8.727	.000
9. I would like to know what apple variety I buy	12.489	.000
10. I buy apples only from the state sector	7.357	.001
11. I buy apples from the free market because they are cheaper	16.563	.000
12. Compared to other products, fruits in general and apples in particular are not advertised and promoted	5.038	.007

*Appendix C12: Descriptive statistics of the fresh apple studied characteristics in Romania*

	Mean	Std. Deviation
Overall appearance Patul	4.213	2.984
Overall appearance Frumos de Voinesti	7.160	2.486
Overall appearance Generos	7.960	2.045
Overall appearance De Falticeni	6.290	2.890
Size Patul	3.633	2.773
Size Frumos de Voinesti	6.873	2.642
Size Generos	7.746	2.164
Size De Falticeni	6.973	2.760
Colour Patul	4.280	3.061
Colour Frumos de Voinesti	7.293	2.464
Colour Generos	7.953	2.081
Colour De Falticeni	6.380	2.966
Scent Patul	4.693	3.078
Scent Frumos de Voinesti	7.000	2.613
Scent Geneos	7.946	2.234
Scent De Falticeni	6.243	3.036
Taste Patul	5.070	3.149
Taste Frumos de Voinesti	7.446	2.429
Taste Generos	7.700	2.410
Taste De Falticeni	6.933	2.822
Texture Patul	5.213	3.118
Texture Frumos	7.363	2.427
Texture Generos	7.710	2.291
Texture De Falticeni	6.786	2.816
Overall like Patul	4.430	3.009
Overall like Frumos de Voinesti	7.783	2.239
Overall like Generos	7.663	2.385
Overall like De Falticeni	6.703	2.872

*Appendix C13: The influence of the studied characteristics over the choice of variety Generos in Romania*

Characteristic	F ratio	Significance
overall appearance	2.847	.038
size	1.395	.245
colour	3.160	.025
scent	.840	.473
taste	9.282	.001
texture	9.963	.000
overall like	13.231	.000

*Appendix C14: The influence of gender on attitudinal statements in the UK*

Statement	F	Sig.
English apples are the best	5.894	.016
I will never buy genetically engineered fruits	10.650	.001

*Appendix C15: The influence of age group on attitudinal statements in the UK*

Statement	F	Sig.
1. I buy apples because my family likes them	2.941	.022
2. I am satisfied with the apple range on the market	2.883	.025
3. When I buy apples I am not interested in which variety I buy	2.823	.027
4. English apples are the best	3.831	.005
5. I am worried about the pesticide levels in apples	2.849	.026
6. The apple range on the market is too limited	2.506	.045
7. For me all apple varieties are alike	2.556	.041
8. I do not buy often more than one pound of apples at one time	2.548	.042
9. I buy only certain apple varieties	2.557	.041
10. Apple growing is a tradition in England	2.638	.036
11. I would avoid apples from Eastern Europe	3.528	.009

*Appendix C16: The influence of number of persons in household on attitudinal statements in the UK*

Statement	F	Sig.
1. I am satisfied with the available apple range	4.483	.013
2. English apples are the best	6.534	.002
3. The apple range is too limited	4.386	.014
4. All apple varieties are alike	4.483	.009



*Appendix C17: The influence of children’s presence on attitudinal statements in the UK*

Statement	F	Sig.
1. I buy apples because my family likes them	4.836	.038
2. English apples are the best	6.481	.012
3. I will never buy genetically engineered fruits	6.991	.009
4. Apple growing is a tradition in England	11.111	.001
5. Farmers should be aware of changes in consumers’ preferences	6.965	.009
6. Organically grown apples are too expensive	5.078	.026

*Appendix C18: The influence of the number of children on attitudinal statements in the UK*

Statement	F	Sig.
1. I am worried about the pesticide levels in apples	3.436	.019
2. The apple range on the market is too limited	2.731	.046
3. I do not buy often more than one pound of apples at a time	3.886	.010
4. Apple growing is a tradition in England	2.882	.038
5. I would avoid apples from Eastern Europe	4.061	.008

*Appendix C19: The influence of the number of dependent children on attitudinal statements in the UK*

Statement	F	Sig.
1. We should give more consideration to English apple varieties	3.127	.047
2. I will never buy genetically engineered fruits	4.845	.009

*Appendix C20: The influence of being the main earner on attitudinal statements in the UK*

Statement	F	Sig.
1. I consider apples are important for my family’s health	5.836	.017
2. I believe apples from Eastern Europe have a higher pesticide level	4.845	.009

*Appendix C21: The influence of education level over some attitudinal statements in the UK*

Statement	F	Sig.
1. I would avoid apples from Eastern Europe	8.001	.001
2. Organically grown apples are too expensive	4.244	.016

**Appendix C22: Descriptive statistics of the fresh apple studied characteristics in the UK**

Characteristic	Mean	Std. Deviation
Overall appearance Patul	5.394	2.235
Overall appearance Frumos.	7.026	2.104
Overall appearance Generos	5.890	2.329
Overall appearance De Falticeni	6.227	2.213
Size Patul	5.053	2.593
Size Frumos	7.000	1.918
Size Generos	6.573	2.096
Size De Falticeni	6.413	2.329
Colour Patul	5.104	2.454
Colour Frumos	6.958	1.996
colour Generos	5.828	2.376
Colour De Falticeni	6.550	2.226
Scent Patul	4.931	2.427
Scent Frumos	5.626	2.109
Scent Generos	6.263	2.373
Scent De Falticeni	5.211	2.396
Taste Patul	5.187	2.406
Taste Frumos	6.669	2.382
taste Generos	6.066	2.504
Taste De Falticeni	6.068	2.562
Texture Patul	5.776	2.559
Texture Frumos	6.214	2.440
Texture Generos	6.754	2.258
Texture De Falticeni	5.088	2.627
overall like Patul	5.171	2.438
overall like Frumos	6.695	2.357
overall like Generos	6.350	2.589
overall like De Falticeni	5.698	2.712

**Appendix C23: The influence of the studied characteristics over the choice of variety Frumos de Voinesti in the UK**

Characteristic	F ratio	Significance
overall appearance	5.018	.001
size	3.246	.014
colour	2.370	.056
scent	1.468	.217
taste	9.162	.000
texture	10.265	.000
overall like	19.789	.000

**Appendix C24: The influence of gender on attitudinal statements in Germany**

Statement	F	Sig.
1. For me all apple varieties are alike	6.024	.015
6. I will never buy genetically engineered fruits	5.847	.016



***Appendix C25: The influence of age group on attitudinal statements in Germany***

Statement	F	Sig.
1. Apples are amongst the easiest fruits to purchase	4.423	.002
2. Apples are rich in vitamins	5.777	.000
3. I buy apples because my family likes them	10.168	.000
4. I consider apples are important for my family's health	8.557	.000
5. I am satisfied with the apple range on the market	2.589	.042
6. German apples are the best	6.601	.000
7. I am worried about pesticide levels in apples	4.998	.001
8. I can recognise most apple varieties in the shops or on the market	4.817	.001

***Appendix C26: The influence of marital status on attitudinal statements in Germany***

Statement	F	Sig.
1. I buy apples because my family likes them	15.020	.000
2. I consider apples are important for my family's health	8.176	.000
3. When I buy apples I am not interested in which variety I buy	5.230	.002
4. German apples are the best	7.826	.002
5. We should give more consideration to German apple varieties	3.081	.031
6. I can recognise most apple varieties in the shops or on the market	4.184	.007
7. I will never buy genetically engineered fruits	5.074	.003

***Appendix C27: The influence of the presence of children on attitudinal statements in Germany***

Statement	F	Sig.
1. I buy apples because my family likes them	19.880	.000
2. I consider apples are important for my family's health	8.839	.004
3. Importing apples to Germany is unnecessary	5.064	.027
4. German apples are the best	11.819	.001
5. I am worried about the pesticide level in apples	6.592	.012
6. If I could afford to buy other exotic fruits, I would not buy apples	6.241	.014
7. I can recognise most apple varieties in the shops or on the market	9.503	.003
8. I do buy often more than one kilo of apples at one time	7.228	.008
9. I would avoid apples from Eastern Europe	4.550	.036

***Appendix C28: The influence of the number of children on attitudinal statements in Germany***

Statement	F	Sig.
1. I buy apples because my family likes them	5.343	.002
2. German apples are the best	4.221	.008
3. I would avoid apples from Eastern Europe	3.521	.018

***Appendix C29: The influence of the number of dependent children on attitudinal statements in Germany***

Statement	F	Sig.
1. I would avoid apples from Eastern Europe	3.411	.021

***Appendix C30: The influence of being the main earner on attitudinal statements in Germany***

Statement	F	Sig.
1. I buy apples because my family likes them	4.903	.029
2. I am satisfied with the apple range on the market	8.311	.005
3. Advertising is very important for apple sales	6.714	.011

***Appendix C31: The influence of the income group on attitudinal statements in Germany***

Statement	F	Sig.
1. I believe EU should facilitate imports from Eastern Europe	2.801	.032

***Appendix C32: The influence of the occupational group on attitudinal statements in Germany***

Statement	F	Sig.
1. I buy apples because my family likes them	6.127	.000
2. I consider apples are important for my family's health	5.507	.000
3. I am satisfied with the apple range on the market	3.175	.005
4. German apples are the best	3.557	.002
5. I am worried about the pesticide level in apples	2.453	.024
6. I can recognise most apple varieties in the shops or on the market	3.117	.006
7. I buy only certain apple varieties	2.597	.018
8. Advertising is very important for apple sales	2.662	.015

***Appendix C33: The influence of education level on attitudinal statements in Germany***

Statement	F	Sig.
1. Apples are rich in vitamins	5.483	.006
2. I buy apples because my family likes them	13.798	.000
3. I consider apples are important for my family's health	5.596	.005
4. Importing apples to Germany is unnecessary	4.821	.010
5. When I buy apples I am not interested in which variety I buy	3.885	.024
6. German apples are the best	8.047	.001
7. I would avoid apples from Eastern Europe	8.624	.000
8. I believe apples from Eastern Europe have a higher pesticide level	4.330	.016



*Appendix C34: Descriptive statistics of the fresh apple studied characteristics in Germany*

Characteristic	Mean	Std. Deviation
Overall appearance Patul	6.076	2.612
Overall appearance Frumos de Voinesti	7.548	1.827
Overall appearance Generos	6.625	2.418
Overall appearance De Falticeni	7.200	2.415
Size Patul	5.520	2.823
Size Frumos de Voinesti	7.291	2.172
Size Generos	7.350	2.157
Size De Falticeni	7.762	1.744
Colour Patul	5.637	2.880
Colour Frumos de Voinesti	7.340	2.085
Colour Generos	6.590	2.462
Colour De Falticeni	7.276	2.323
Scent Patul	5.198	2.241
Scent Frumos de Voinesti	6.450	2.439
Scent Geneos	7.337	2.192
Scent De Falticeni	5.703	2.640
Taste Patul	5.196	2.754
Taste Frumos de Voinesti	5.920	2.351
Taste Generos	6.750	2.393
Taste De Falticeni	7.194	2.603
Texture Patul	6.257	2.283
Texture Frumos	5.768	2.736
Texture Generos	7.090	2.257
Texture De Falticeni	6.228	2.709
Overall like Patul	4.828	2.699
Overall like Frumos de Voinesti	6.040	2.238
Overall like Generos	6.745	2.246
Overall like De Falticeni	7.198	2.462

*Appendix C35: The influence of the studied characteristics over the choice of variety De Falticeni in Germany*

Characteristic	F ratio	Significance
overall appearance	1.333	.263
size	2.020	.098
colour	.730	.574
scent	1.927	.112
taste	8.617	.000
texture	3.343	.013
overall like	9.957	.000

Appendix C36: Descriptive statistics of the apple juice studied characteristics in Romania

Characteristic	Mean	Std. Deviation
Colour Patul.	6.558	2.390
Colour Generos	6.531	2.510
Colour Frumos de Voinesti	5.824	2.603
Smell Patul	6.414	2.411
Smell Generos	6.493	2.388
Smell Frumos deVoinesti	7.052	2.468
Flavour Patul	6.366	2.447
Flavour Generos	6.775	2.400
Flavour Frumos de Voinesti	6.941	2.478
Sweetness Patul	6.284	2.490
Sweetness Generos	6.510	2.409
Sweetness Frumos de Voinesti	7.043	2.410
Sharpness Patul	6.366	2.511
Sharpness Generos	6.538	2.370
Sharpness Frumos de Voinesti	6.462	2.471
Overall like Patul	6.613	2.443
Overall like Generos	6.794	2.310
Overall like Frumos de Voinesti	7.209	2.354

Appendix C37: Gender and the likelihood of buying organic apple juice in Romania

Gender		Would you buy organic apple juice?	
		yes	no
Gender: male	Count	124	47
	Adjusted Residual	2.2	-2.3
female	Count	116	78
	Adjusted Residual	-2.2	2.3
Total	Count	240	125

Appendix C38: Gender and the most appreciated apple juices characteristics in Romania

Opinion		Gender:		Total
		male	female	
Count	flavour	89	116	205
	taste	95	77	172
	sweetness	6	11	17
	concentration	13	27	40
Adjusted Residual	flavour	-1.2	1.2	-
	taste	2.9	-2.9	-
	sweetness	-.9	.9	-
	concentration	-1.9	1.9	-



Appendix C39: Age group and the available apple juice range in Romania

		Age groups						Total
		up to 18 years	18-25 years	26-35 years	36-45 years	46-65 years	over 65 years	
Count	very good	11	14	9	8	13	2	57
	good	9	60	34	23	17	4	147
	fair	7	60	23	14	25	2	131
	poor	4	38	20	12	11	5	90
	very poor	0	14	4	6	4	3	31
Adjusted Residual	very good	4.0	-2.7	-.8	.1	1.7	.0	-
	good	-.4	.0	1.3	.8	-1.5	-.6	-
	fair	-.8	1.4	-.7	-1.2	1.4	-1.5	-
	poor	-1.0	.3	.7	-.1	-.9	1.2	-
	very poor	-1.6	.5	-1.0	.9	-.4	1.9	-

Appendix C40: Age groups and important characteristics when purchasing apple juice in Romania

		Age group					
		up to 18 years	18-25 years	26-35 years	36-45 years	46-65 years	over 65 years
Count	brand	9	28	15	15	11	1
	packaging	5	11	5	1	8	2
	origin	5	25	9	8	17	4
	color	0	6	6	6	6	0
	price	2	16	4	5	8	3
	nutritional information	0	18	6	4	1	3
	concentration	8	78	41	22	14	1
	contents added	0	5	2	0	1	0
Adjusted Residual	brand	1.9	-1.3	-.2	1.5	-.3	-1.1
	packaging	2.2	-.9	-.6	-1.8	1.7	1.0
	origin	.3	-1.0	-1.5	-.5	2.6	1.4
	color	-1.3	-1.7	.7	1.7	1.4	-.9
	price	-.3	.0	-1.5	-.1	1.1	1.8
	nutritional information	-1.6	1.7	-.2	-.2	-1.9	2.1
	concentration	-1.1	1.8	2.1	-.1	-2.9	-2.3
	contents added	-.8	1.2	.4	-1.1	-.2	-.5

Appendix C41: Age groups and the reasons for apple consumption in Romania

		Age group				
		Reason	up to 18 years	18-25 years	26-35 years	36-45 years 46-65 years
Count	like		8	54	25	14 7
	healthy		17	100	37	35 57
	refreshing		1	4	3	0 0
Adjusted Residual	like		.1	1.7	2.3	-.2 -4.1
	healthy		-.3	-1.8	-2.3	.5 4.1
	refreshing		.6	.5	1.5	-1.1 -1.3

C42: Age group and the perception of home made apple juice in Romania

Perception		Age group					
		up to 18 years	18-25 years	26-35 years	36-45 years	46-65 years	over 65 years
Count	tastier	7	14	7	11	14	1
	cheaper	3	48	25	25	13	4
	"natural"	10	78	33	19	15	1
	trusted	3	21	5	6	9	3
Adjusted Residual	tastier	2.1	-2.4	-1.3	1.3	2.2	-.5
	cheaper	-1.9	-.1	.5	2.4	-1.6	.4
	"natural"	.0	2.7	.6	-1.0	-2.5	-2.0
	trusted	.0	.5	-1.6	-.3	.7	1.5

Appendix C43: Gender and the likelihood of purchasing organic apple juice in Romania

		Age group					
		up to 18 years	18-25 years	26-35 years	36-45 years	46-65 years	over 65 years
Count	yes	6	95	52	41	33	13
	no	12	40	22	17	34	0
Adjusted Residual	yes	-3.3	-.6	1.2	1.6	-1.2	3.2
	no	1.7	-2.4	-.6	-.3	4.0	-2.2

Appendix C44: The presence of children and the preferred packaging in Romania

		Preferred packaging			
		glass	plastic	tetra pack	cans
Count	yes	45	94	28	2
		.8	1.8	-1.6	-2.8
Adjusted Residual					
Count	no	67	135	66	20
		-.8	-1.8	1.6	2.8
Adjusted Residual					

Appendix C45: Presence of children and the likelihood of buying clear apple juice in Romania

			Do you prefer clear or cloudy apple juice?	
			clear	cloudy
Do you have children?	yes	Count	64	46
		Adjusted Residual	2.5	-2.5
	no	Count	89	115
		Adjusted Residual	-2.5	2.5



Appendix C 46: Presence of children and the important characteristics when purchasing an apple juice in Romania

Characteristics		Do you have children?		Total
		yes	no	
Count	brand	28	51	79
	packaging and labelling	7	25	32
	origin	34	34	68
	color	13	11	24
	price	15	23	38
	nutritional information	8	25	33
	concentration in pure juice	51	113	164
	contents added	3	5	8
Adjusted Residual	brand	.0	.0	-
	packaging and labelling	-1.7	1.7	-
	origin	2.7	-2.7	-
	color	1.9	-1.9	-
	price	.5	-.5	-
	nutritional information	-1.4	1.4	-
	concentration in pure juice	-1.5	1.5	-
	contents added	.1	-.1	-

Appendix C 47: Presence of children and the likelihood of buying organic apple juice in Romania

			Would you buy organic apple juice?		
			yes	no	do not know
Do you have children?	yes	Count	93	58	39
		Adjusted Residual	1.0	2.6	-3.5
	no	Count	147	67	116
		Adjusted Residual	-1.0	-2.6	3.5

Appendix C48: Presence of children and opinions on home made apple juice in Romania

Opinion		Do you have children?	
		yes	no
Count	tastier	26	28
	cheaper	48	71
	more "natural"	40	116
	I don't know, but I trust it more	17	30
Adjusted Residual	tastier	1.9	-1.9
	cheaper	1.0	-1.0
	more "natural"	-3.4	3.4
	I don't know, but I trust it more	-.1	.1

Appendix C49: Preferred apple juice packaging for the person purchasing the food in Romania

			Are you the person buying the food in the household?		
			yes	no	sometimes
Preferred packaging	glass	Count	63	6	43
		Adjusted Residual	1.2	-.3	-1.1
	plastic	Count	123	11	94
		Adjusted Residual	1.1	-1.0	-.7
	tetra pack	Count	43	6	45
		Adjusted Residual	-1.2	.2	1.1
	cans	Count	5	4	13
		Adjusted Residual	-2.7	2.5	1.6

Appendix C50: The likelihood of buying organic apple juice and the person purchasing the food in Romania

		Would you buy organic apple juice?		
		yes	no	do not know
yes	Count	133	72	61
	Adjusted Residual	1.8	1.7	-3.5
no	Count	16	11	7
	Adjusted Residual	.1	1.2	-1.2
sometimes	Count	91	42	87
	Adjusted Residual	-1.9	-2.3	4.2

Appendix C51: Education level and the frequency of apple juice consumption in Romania

		Education level		
Frequency		secondary	further	higher
Count	daily	7	15	14
	4/5 times per week	3	24	33
	2/3 times per week	11	39	72
	once a week	7	22	60
	less	8	53	90
	never	1	22	41
Adjusted Residual	daily	3.0	1.1	-2.6
	4/5 times per week	-.7	1.1	-.7
	2/3 times per week	.9	-.4	-.1
	once a week	.3	-1.9	1.7
	less	-1.0	.5	.1
	never	-1.8	.2	.8



Appendix C52: Education level and the apple juice range satisfaction in Romania

Opinion		Education level		
		secondary	further	higher
Count	very good	14	32	11
	good	12	55	80
	fair	6	40	86
	poor	2	19	69
	very poor	1	7	23
Adjusted Residual	very good	5.1	3.9	-6.5
	good	.3	1.2	-1.3
	fair	-1.6	-.9	1.7
	poor	-2.2	-2.8	3.8
	very poor	-1.0	-1.3	1.8

Appendix C53: Education level and the likelihood of buying organic apple juice in Romania

		Education level		
		secondary	further	higher
Count	yes	13	58	169
	no	17	56	52
	do not know	6	59	90
Adjusted Residual	yes	-1.3	-4.1	4.6
	no	3.4	3.1	-4.8
	do not know	-1.8	1.5	-.5

Appendix C54: Overall apple juice consumption and the preference for pure or blended apple juice in Romania

			Do you prefer blended or pure apple juice?	
			blended	pure
Do you generally drink apple juice?	yes	Count	60	195
		Adjusted Residual	-3.3	3.3
	no	Count	22	25
		Adjusted Residual	3.3	-3.3

Appendix C55: Frequency of apple juice consumption and the available apple juice range in Romania

Consumption		How do you find the available apple juice range?				
		very good	good	fair	poor	very poor
Count	daily	17	12	3	3	1
	4/5 times per week	12	20	16	7	5
	2/3 times per week	12	42	37	25	7
	once a week	6	26	27	22	7
	less	10	47	50	33	12
Adjusted Residual	daily	6.6	.2	-2.8	-1.8	-1.0
	4/5 times per week	1.9	.2	-.4	-1.7	.4
	2/3 times per week	-1.0	.6	.3	.2	-.7
	once a week	-1.8	-.6	.4	1.4	.4
	less	-2.7	-.4	1.3	.8	.5

Appendix C56: The available apple juice range and the preference for clear or cloudy apple juice in Romania

Opinion		Do you prefer clear or cloudy apple juice?	
		clear	cloudy
Count	very good	31	13
	good	46	45
	fair	42	48
	poor	28	44
	very poor	7	11
Adjusted Residual	very good	3.1	-3.1
	good	.4	-.4
	fair	-.5	.5
	poor	-1.9	1.9
	very poor	-.9	.9

Appendix C57: Preferred apple juice sample in Romania

Sample	Percent
Patul	29.9
Generos	26.7
Frumos de Voinesti	40.8
none	2.6
Total	100.0



Appendix C58: Descriptive statistics of the apple juice studied characteristics in the UK

	Mean	Std. Deviation
Colour Patul	5.185	2.127
Colour Generos	6.857	2.172
Colour Frumos de Voinesti	4.869	2.511
Scent Patul	5.042	2.305
Scent Generos	6.610	2.189
Scent Frumos de Voinesti	5.670	2.449
Flavour Patul	5.419	2.550
Flavour Generos	6.483	2.407
Flavour Frumos de Voinesti	5.362	2.677
Sweetness Patul	5.263	2.419
Sweetness Generos	6.315	2.265
Sweetness Frumos de Voinesti	5.457	2.333
Sharpness Patul	5.411	2.374
Sharpness Generos	5.922	2.110
Sharpness Frumos de Voinesti	5.207	2.330
Overall like Patul	5.445	2.526
Overall like Generos	6.695	2.338
Overall like Frumos de Voinesti	4.962	2.587

Appendix C59: Gender and the likelihood of buying organic apple juice in the UK

			Do you prefer clear or cloudy apple juice?	
			clear apple juice	cloudy apple juice
Gender	male	Count	16	8
		Adjusted Residual	-2.5	2.5
	female	Count	21	1
		Adjusted Residual	2.5	-2.5

Appendix C60: Gender and the person purchasing the food in the UK

		Food purchaser		Gender	
				male	female
Count	yes			14	38
	no			9	2
	sometimes			23	10
Adjusted Residual	yes			-4.6	4.6
	no			2.3	-2.3
	sometimes			2.9	-2.9

*Appendix C61: The number of persons in household and overall consumption of apple juice in the UK*

		Generally speaking, do you drink apple juice?	
		yes	no
Count	one person	9	1
	two persons	13	20
	three persons	12	5
	four persons	11	14
	five persons	6	4
Adjusted Residual	one person	2.5	-2.5
	two persons	-2.0	2.0
	three persons	1.7	-1.7
	four persons	-.9	.9
	five persons	.5	-.5

*Appendix C62: Preference for packaging and the main income earner in the UK*

		Main earner		
Packaging		yes	no	not applicable
Count	glass bottles	5	13	4
	plastic bottles	3	10	11
	tetra-pack	17	18	5
Adjusted Residual	glass bottles	-.7	1.2	-.6
	plastic bottles	-2.1	-.8	3.1
	tetra-pack	2.6	-.6	-2.1

*Appendix C63: Opinion on range and the presence of children in the UK*

		Do you have children?	
Range		yes	no
Count	very good	6	2
	good	13	32
	fair	13	17
Adjusted Residual	very good	2.4	-2.4
	good	-1.5	1.5
	fair	1.0	-1.0

*Appendix C64: Frequency and overall apple juice consumption in the UK*

		Generally speaking, do you drink apple juice?	
Consumption		yes	no
Count	weekly	34	2
	2-3 times/month	10	14
	less	8	20
Adjusted Residual	weekly	5.6	-5.6
	2-3 times/month	-2.0	2.0
	less	-4.0	4.0



***Appendix C65: Preferred apple juice sample in the UK***

	Percent
Patul	22.5
Generos	51.6
Frumos de Voinesti	18.0
none	7.9
Total	100.0

***Appendix C66: The influence of the studied characteristics over the choice of Generos apple juice in Germany***

	F	Sig.
Colour	1.548	.208
Smell	3.192	.028
Flavour	12.157	.000
Sweetness	10.710	.000
Sharpness	3.225	.027
Overall like	19.663	.000

***Appendix C67: Descriptive statistics of the apple juice studied characteristics in Germany***

	Mean	Std. Deviation
Colour Patul	6.840	2.236
Colour Generos	6.426	2.422
Colour Frumos de Voinesti	5.720	2.555
Scent Patul	7.041	2.474
Scent Generos	6.479	2.809
Scent Frumos de Voinesti	6.109	2.771
Flavour Patul	6.971	2.513
Flavour Generos	7.157	2.668
Flavour Frumos de Voinesti	6.542	2.727
Sweetness Patul	6.371	2.272
Sweetness Generos	7.571	2.429
Sweetness Frumos de Voinesti	6.100	2.638
Sharpness Patul	7.235	2.450
Sharpness Generos	6.882	2.745
Sharpness Frumos de Voinesti	6.279	2.763
Overall like Patul	7.470	2.314
Overall like Generos	6.850	3.006
Overall like Frumos de Voinesti	6.567	2.840

Appendix C68: Gender and the preference for clear or cloudy apple juice in Germany

Preferred juice		Gender	
		male	female
clear	Count	21	17
	Adjusted Residual	2.3	-2.3
cloudy	Count	12	29
	Adjusted Residual	-2.3	2.3

Appendix C69: Education and the preference for clear or cloudy apple juice in Germany

Education		Do you prefer clear or cloudy apple juice?	
		clear	cloudy
Count	secondary education	20	11
	further education	12	9
	higher education	5	19
Adjusted Residual	secondary education	2.3	-2.3
	further education	.9	-.9
	higher education	-3.3	3.3

Appendix C70: Presence of children and the preference for clear or cloudy apple juice in Germany

Presence of children		Do you prefer clear or cloudy apple juice?	
		clear	cloudy
Count	yes	10	25
	no	28	16
Adjusted Residual	yes	-3.1	3.1
	no	3.1	-3.1

Appendix C71: Preferred apple juice sample in Germany

Sample	Valid Percent
Patul	36.5
Generos	37.8
Frumos de Voinești	25.7
None	0.0
Total	100.0



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