THE MARKETING STRATEGIES OF LIVESTOCK ENTERPRISES IN OBJECTIVE ONE REGIONS: A COMPARATIVE STUDY BETWEEN GREECE AND UNITED KINGDOM.

LAMBROS TSOURGIANNIS

Ph.D. 2007

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This research aims to identify the marketing decisions made by agricultural producers in two E.U. Objective 1 regions and to provide insights into the reasons that such decisions are made, with a particular focus on meat and milk products.

Two farm business surveys; one in the involving sheep and goat farmers in the Region of East Macedonia and Thrace (EMTh) in Greece and one in the sheep and dairy cow farmers in Cornwall, U.K. were undertaken in order to identify their marketing behaviour. This study used robust predictive models incorporating bivariate and multivariate statistical techniques in order to develop marketing typologies regarding the livestock and milk marketing strategies that the sheep and goat farmers follow in EMTh and which the sheep and dairy cow farmers adopt in Cornwall.

Results show that the sheep and goat farmers in EMTh follow three different livestock marketing strategies: (a) cost-focus strategy, (b) production-orientation strategy and (c) return-focus strategy; and three different milk marketing strategies: (a) differentiation strategy, (b) production orientation strategy and (c) return focus strategy. Sheep farmers in Cornwall adopt the following two marketing strategies: (a) differentiation strategy and (b) production-orientation strategy; while the dairy cow Cornish farmers adopt the following three marketing strategies: (a) opportunistic strategy, (b) return focus strategy and (c) market orientation strategy. This study determined the factors and the characteristics that influence the farmers to adopt a particular marketing strategy. Moreover, marketing channel selection is related to distribution channel utilisation. It also identified the factors included sale price, speed of payment, volume of livestock and milk production and loyalty that affect the farmers in EMTh to choose a particular marketing channel. Farmers in Cornwall are also influenced in their marketing channel selection by welfare issues, marketing cost and convenience. Finally, implications of these findings for agencies and organisations seeking to increase the regional GDP derived from the agrifood sector in these regions, were identified.

FREQUENTLY USED ABBREVIATIONS

ANOVA	Analysis of variance
BSE	Bovine Spongiform Encephalopathy
Cmax	Maximum Chance Criterion
Coef	Coefficient
Cpro	Proportion Chance Criterion
DA	Discriminant Analysis
DEFRA	Deparment of Environment, Food and Rural Affairs
df	Degrees of freedom
E.U.	European Union
EAGGF	European Agricultrure Guidance and Guarantee Fund
EMTh	East Macedonia and Thrace
ERDF	European Regional Development Fund
ESF	European Social Fund
F	F statistic (Anova)
F.A.O.	Food and Agricultrure Organisation
FMD	Foot and Mouth Disease
G	G statistic (Logistic Regression Analysis)
GATT	General Agreement on Tariffs and Trade
GMS	Group Marketing Scheme
GNP	Gross National Product
GRP	Gross Regional Product
H.O.T.	Hellenic Organisation of Tourism
ha	Hechare
I^2	Index of the discriminant prower of independent variable
kg	Kilogram
KMO	Kaiser – Meyer - Oklin
MAFF	Ministry of Agriculture, Fisheries and Food
MLC	Meat and Livestock Commision
MSA	Measure of Adequacy
n/a	Not Available
n.s	Not Significant
N.S.S.G.	National Statistic Service of Greece
NFU	National Farmers Union
OECD	Organisation for Economic Co-operation and Development
P.D.O.	Protected Destination of Origin
P.G.I.	Protected Geographical Indication
R^2	Coefficient of Determination

S.W.O.T.	Strength, Weaknesses, Opportunities and Threats
T.S.G.	Traditional Specialty Guaranteed
U.K.	United Kingdom
W.T.O.	World Trade Organisation
x^2	Chi-square
Λ	Wilks lamda

CONTENTS

LIST OF TABLES

CHAPTER 14: DISCUSSION.

APPENDIX XII:DETAILED INFORMATION ON THE STATISTICAL ANALYSIS REGARDING THE SURVEY IN THE LIVESTOCK FARMERS IN GREECE.

APPENDIX XIII:DETAILED INFORMATION ON THE STATISTICAL ANALYSIS REGARDING THE SURVEY IN THE SHEEP AND DAIRY COW FARMERS IN UNITED KINGDOM.

LIST OF FIGURES

CHAPTER 5: DESCRIPTION OF THE LIVESTOCK AND DAIRY SECTOR IN THE REGION OF EAST MACEDONIA AND THIRACE AND THE COUNTY OF CORNWALL

CHAPTER 6:THE DEMAND FOR MEAT, MILK AND DAIRY PRODUCTS IN GREECE AND UNITED KINGDOM

CHAPTER 8:METHODOLOGICAL APPROACH: LIVESTOCK AND MILK MARKETING SURVEY IN SHEEP AND GOAT FARMERS IN THE REGION OF EAST MACEDONIA AND THRACE IN GREECE

CHAPTER 9:THE LIVESTOCK MARKETING STRATEGIES THAT SHEEP AND GOAT FARMERS ADOPT IN THE REGION OF EMTh IN GREECE

CHAPTER 10:THE MILK MARKETING STRATEGIES THAT SHEEP AND GOAT FARMERS ADOPT IN THE REGION OF EMTh IN GREECE

CHAPTER 11:METHODOLOGICAL APPROACH: MARKETING SURVEY IN SHEEP AND DAIRY COW FARMERS IN THE COUNTY OF CORNWALL IN UNITED KINGDOM

CHAPTER 12:THE MARKETING STRATEGIES THAT SHEEP FARMERS ADOPT IN THE COUNTY OF CORNWALL IN UNITED KINGDOM

CHAPTER 13:THE MARKETING STRATEGIES THAT DAIRY COW FARMERS ADOPT IN THE COUNTY OF CORNWALL IN UNITED KINGDOM

LIST OF APPENDICES

ACKNOWLEDGEMENTS

As author of this thesis I would like to acknowledge and extend my thanks to all those people who have supported my work and influenced its completion through out each individual stage.

First of them all, I would like to thank my supervisors:

Prof. Andrew Errington for believing in me and giving me the opportunity to start my PhD as a part time student who has a full time job in Greece. His continuous support and encouragement and his brilliant scientific guidance until his ultimate death in November 2003; were the principal motives to sustain and complete this project. I feel myself very lucky for having the opportunity to work with him and be the Director of my studies for the first three years.

Dr John Eddison for his scientific guidance mainly in the statistical part and most of all for believing in me after Professor Errington's death and accepting to continue supervising me as the new Director of my studies. His enthusiasm and continuous support of my work was a very important element in helping me to finish this task. Furtermore, I believe that I am very lucky person for having as supervisor such a good academic and precious friend. Thank you very much Dr Eddison.

Mr Martyn Warren for accepting me to become my supervisor in the middle of my studies, for his continuous support, scientific guidance, and encouragement. His contribution to the fulfillment of my thesis was very important and precious. He supported me and guided me though all those tasks and mainly in my scientific publications. Thank you Mr Warren for being my supervisor and also a good friend all these years.

Furthermore, I am very grateful to *Mr Konstantinos Tatsis*, the President of the Prefectural Authority of Drama – Kavala – Xanthi where I am working as a full time officer since November of 2001; for understanding the importance of this thesis and fully supporting me in completing my studies.

I would also like to thank *Mr Konstantinos Himariotis*, the Managing Director of the Development Association of East Macedonia and Thrace where I was working till November of 2001; for his support and motivation in completing my thesis.

There are also many people who have assisted me in undertaking this project and to whom I am gratefull. I would like to thank *Mr Kostas Mavromatis* for helping me in conducting the prelimerany survey in Greece as well as all the officers working in the Agricultural Departments of the Prefectures of Drama, Kavala, Xanthi, Rhopodi and Evros, in the Greek Ministry of Agricultrure, National Statistic Service of Greece, that provided me usefull information and data in order to conduct my survey in Greece. Furtmermore I would like to thank, *Mr Anthony Gibson* and *Mrs Cathy Heath* of the National Farmers' Union (South West Region) as well as *Mr Roger Metcalf* of the Corwall Enterprises; for their information, advice and support in conducting my survey in Conwall. I am also very grateful to the respondents themselves without which this study was not possible to be completed. Moreover I would like to thank *Dr John Kirk* and *Mr Allan Cooper* for their advice regarding the livestock and dairy sector in

U.K. and Cornwall. I am also very grateful to *Professor Peter Brooks* for his advice and support during the monitoring process of my studies. I really thank him for having always his door open for me. I would also like to thank Dr Daffyd Davies and Dr Karen Murray for their advice on the methodological approach adopted and Dr George Siardos of the Aristotle University of Thesaloniki in Greece for his advice on staitistics.

My thanks are extended to the Seale-Hayne Librarians, *Ms Heather Harrison, Ms Nicola Cockarill, Mrs Shirley Blair, Mrs Celia Connett, Mrs Jackie Nelmes, Mrs Patricia Foster, Miss Joan Haslett, Mrs Angela Blackman, Mrs Wendy Hear , Mr Ian Rayment* and specifically *Mrs Jan Hussein* for being so nice and friendly to me all these years that I was a student at Seale-Hayne and sending me in Greece any material vital for my literature review, nullifying in this way the distance between me and the Library and all the problems that can rise while working remotely. I would also like to thank the Librarian of the Democritus University of Thrace in Xanthi and very good friend of me, *Mrs Maria Lekidou*, for ordering me any material I needed and was not possible to have it from the University of Plymouth.

I would also like to specifically thank the following:
Mrs Chris Smart for her support and assistant regarding the administrative part of my studies.
Mr Nick Sharratt and *Mr Alex Khan* for their computing support.
All the members of Seale-Hayne postgraduate community for all those refreshing and enjoyable moments during all these years.

Special thanks to my good friends *Dr Vlasta Demeckova* and *Dr Colm Moran* for sharing their postgraduate experience and saving me valuable time and effort to acclimitise in this new environment especially in the first year of my studies. They were always there to help and support me without a second thought.

Furthermore, I would like to thank the Hellenic Community of Seale-Hayne Campus, for being so friendly and thoughtful during my studies. I would like to specifically thank *Ms Eleni Saivanidou, Mr Giorgos Samaras, Mr Dimitrios Tsigros, Mr Kleanthis Spanidis* and *Mr Ioannis Karoumbalis* for their understanding, support and friendship through out the course of these years.

I am also greatfull to *Ifigenia Traiou* for her assistant in English literacy.

Moreover, I would like to thank *Eleni*, for been so patient all these years, giving me great support and encouragement in order to complete this task.

And finally I would like to thank my parents, *Nikolaos* and *Kyriaki* and my brother *Antonis*. I owe my deep gratitude for their constant support, patience and understanding during all these years of my studies. Especially my father's and brother's assistant in conducting my surveys in Greece and U.K. respectively was very important and precious. Due to their financial and personal sacrifices their vision and my dream is becoming true. Σας ευχαριστώ πολύ!

AUTHOR'S DECLARATION

At no time during the registration for the degree of Doctor of Philosophy has the author been registered for any other University award.

This study was financed by the author himself.

Relevant scientific seminars and conference were attended at which work was presented.

Publications accepted in referreed jJournals

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Word count of main body of thesis: 79,362

Signed:	.....
Date:	..... 24.3.08 .....

CHAPTER 1

INTRODUCTION

1.2 Introduction

Since ancient times agricultural production has been the main pillar of the economic activity, especially in rural communities. Even today agriculture comprises a very important sector of the economy within the European Union and therefore it gets a large slice of the European Union's budget and accounts. However, international agreements within the W.T.O. pressure the E.U. to limit the subsidies regarding agricultural production. Hence, the European agricultural sector has had to become more competitive and market orientated. Furthermore, the globalization of the economy, the internationalization of the market and the vertical integration of the human supply through the rapid development of the supermarket chains during the last decades have forced agricultural producers to become more market orientated. Most farmers within the European Union will be capable of responding to this change to varying degree. On the other hand, producers in geographical areas that are traditionally regarded as poor (e.g. E.U. Objective 1 regions)[1] , usually have small farms, are operated in regions which in most cases are isolated for the main urban centers and therefore will find difficulties in responding appropriately.

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[1] The Objective 1 regions are corresponding to Nomenclature of Technical Statistical Units (NUTS level II) and their per capita GDP calculated on the basis of Community figures for the last three years available on 26th of March 1999 was less than the 75% of the E.U. average. This Objective also covers the most remote regions such as the French overseas departments, Azores, Madeira and Canary Islands as well as the area eligible under the former Objective 6 for the period 1995-1999 pursuant to Protocol 6 to the Act of Accession of Austria, Finland and Sweden (Council Regulation (EC) No 1260 1999).

Thus, it is important for policy makers and extension workers (advisors) to have a clear understanding of the way that farmers make business decisions (and the factors that influence such decisions) so that they can work in order to make the farming sector (especially in poor regions) competitive, effective and profitable. This investigation aims to identify the marketing decisions made by agricultural producers in two E.U. Objective 1 regions and to provide insights into the reasons that such decisions are made, with a particular focus on meat and milk products. The results of this study will facilitate improvements in agricultural production whilst recognizing the important part that agricultural producers play in the structure of rural communities. This study will also provide suggestions that can be usefull to the local authorities and the rural stakeholders and help them make their proposals more useful (through the bottom – up procedure proposed by the European Commision) to their national government for the design of the national plans regarding rural development for the next programming period (2007-2013).

1.2 Background to the study

Most producers use marketing intermediaries such as wholesalers and retailers to distribute their products to the markets. These marketing intermediaries consist of a marketing channel (Kotler 1994). Marketing channels can be defined as "... *sets of independent organisations involved in the process of making a product or service available for consumption or use*" (Stern *et al.* 1992).

Marketing channel decisions are some of the most crucial that businessmen and managers take because they affect all the other marketing decisions of their organizations (Kotler 1994). More particularly, distribution channels are very important in the farming sector since it comprises a large number of small agricultural holdings, most of the agricultural products are "undifferentiated", and the farming enterprises are isolated for the final

consumer (Ritson 1997). Distribution channel choice is one in which an organization can achieve its marketing objectives within the framework of its marketing strategy (Fifield 1992; Kotler 1994). A marketing strategy that an organization follows aims to identify a competitive and consumer advantage and therefore can be viewed as an integral part of the business strategy (Wind and Robertson 1983). In the business literature there are many studies related to business typologies and taxonomies, as Chapter 3 presents.

It is very difficult to use the typologies of business strategies (presented in Chapter 3) to describe adequately the way agricultural businesses behave, due to the nature of farm firms and the environment in which they operate. It is also very difficult for farmers to differentiate their produce, and the large number of small farm businesses impedes the creation of economies of scale that are required for cost leadership.

Generally, little is known about the decision making process of farmers regarding marketing strategy selection, and particularly about the factors and the farmers' characteristics that influence them to choose a particular strategic alternative. Some studies that are presented in Chapter 4 have sought to cluster farmers according to their strategic behaviour. Other studies have attempted to identify the factors that influence farmers to adopt a particular marketing strategy. For example, distribution risk is one factor that influences marketing decision making in the agribusiness sector. Risks that agricultural producers face are linked with decisions about the prices, quantity, quality, and the timing of delivery (Royer 1995). Transaction cost was identified as another factor, which has significant impact on marketing decision-making (Hobbs 1996a; Hobbs 1996b; Hobbs 1996c). Age, education and farm profit are also, according to Hobbs (1997), some factors that affect farmers using live auction markets. The type of cattle, quick payment and the price received were the most important reasons for selling cattle live-weight.

Furthermore, changes in meat and milk consumer preferences and demand have an impact on farmers' marketing strategy selection and distribution channel's utilization as Chapter 6 presents. The demand for meat and milk products is influenced by the products themselves; their quality characteristics such as taste, tenderness, leanness; and their price. (Brayshaw *et al.* 1967; Kotler 1994; Fousekis and Pantzios 2000; Lazaridis 2003; Mantzouneas *et al.* 2004). Promotion activities, distribution systems (including the increasing bargaining power of supermarket chains), as well as the economic environment and new technologies, comprise some other factors that affect the demand for those products. Political decisions, cultural and social factors including family, roles and statuses, also influence the demand for milk and meat products according to the same authors. Besides, consumers' personal characteristics such as age, occupation, lifestyle, income; and psychological factors like their belief and attitudes towards meat and milk consumption have an impact on the demand for those products (Brayshaw *et al.* 1967; Kotler 1994; Fousekis and Pantzios 2000; Lazaridis 2003; Mantzouneas *et al.* 2004).

Additionally, the C.A.P. reform and Regional Policy of E.U. (presented in Chapter 7) affect farmers' decision-making regarding their business and marketing strategies.

Furthermore, marketing channel selection is very important for the livestock farmers in the two examined regions as both regions are quite isolated from the rest of their countries, their agricultural sector is dominated by ruminant livestock production, they are quite poor regions as their income per capita is less than 75% of the income per capita in E.U. and therefore have their designation as Objective One Regions.

The factors that may potentially influence farmers' decision making regarding marketing strategy and distribution channel selection are proposed in (Figure 1.1)

1.3 Rationale for the study

Agricultural economists, policy makers and farm advisers need to develop strategic programs and business plans in order to maintain farm incomes in regions where the agricultural sector consists of an important part of their economy. Therefore, it is very important to have a clear understanding of the marketing behaviour of farmers regarding the livestock and milk distribution channel selection and their response to the changes that occur across the supply chain. However, there is not much objective evidence regarding to the strategic management process of farmers and, particularly, about the factors that influence their choice of a specific marketing strategy. Initially, this study describes the marketing strategies that livestock farmers (sheep and goat farmers in EMTh as well as sheep and dairy cow farmers in Cornwall) follow regarding the factors that affect their marketing attitudes. The main aim of this study is to profile each of the identified marketing strategic groups in the sheep and goat livestock sector in terms of the farm and the farmers' characterstics, as well their preferred livestock distribution channels. It also aims to explore the association between the factors that influence the farmers of each strategic group in choosing a particular distribution pattern and their selection of a particular marketing strategy.

The results of this study will be valuable for the policy makers, who aim to assist farmers to exploit changing markets, by providing them with a better understanding about farmers' choice criteria regarding their distribution channel, and the association between marketing and business orientation and the preferred marketing channels.

Furthermore, this study has implications for farmers in facing the possible impacts of governmental policy and other factors including the increased retail concentrations and quality assurance in businesses in specific groups. For example, the C.A.P. has a large

impact on livestock and dairy farmers' income, and may force some of them to access cooperative marketing groups in order to establish closer business relationships with major multiple retailers. It may also have implications on the design of the Rural Development Policy of the E.U. for the period 2007-2013 through the participation of the local stakeholders to the decision making procedure (bottom – up approach).

In addition, members of various members of the livestock and milk marketing channels such as dairy firms, milk marketing groups, and abattoir and meat processors might be interested in the results of this study as they provide useful information about the marketing behaviour of livestock and dairy farmers operating in Cornwall and EMTh, their distribution channel selection, and the factors (farm and personal characteristics) that affect those decisions.

More particularly, the this research aims to examine the factors affecting the choice of marketing channels by sheep and goat meat and milk producers in the Region of East Macedonia and Thrace in Greece and sheep and dairy cow farmers in the County of Cornwall in U.K.. In Greece the milk from the sheep and goats is used for the production of processed dairy products such as cheese and yoghurt. In U.K. the dairy industry, apart from a small amount of goat's milk, mainly uses the milk from cows. Thus this thesis will examine the distribution channels as they are related with milk production, that the sheep producers follow in Greece and dairy cow producers follow in U.K.. These two areas are characterised by the E.U. as Objective One areas and have a lot of similarities in the structure of the agricultural sector. This thesis will include a multivariate statistical analysis of strategic groups of the examined livestock producers in both areas in order to examine the business and management characteristics associated with their distinctive marketing strategies. The similarities and differences between these characteristics in these two areas will be identified.

Specifically, the objectives of this project are:

1. To identify the marketing channels that the livestock producers (sheep and goat farmers in EMTh as well as sheep and dairy cow farmers in Cornwall) use for the distribution of their products (meat, livestock and milk).
2. To determine the factors and the characteristics that affect marketing channel utilisation (such as the level of demand, the nature of the retail sector).
3. To identify the strategies that the farmers follow (based on those previously identified in the literature) and to cluster them into strategic groups.
4. To determine the factors and the characteristics that influence the farmers to adopt a particular marketing strategy.
5. To determine the factors and the characteristics that influence farmers' distribution channel decision making.
6. To compare the marketing strategies, as well as the characteristics and the factors that influence the decision making of the farmers, in relation to the marketing channel utilisation in the Region of East Macedonia and Thrace and in the County of Cornwall, and to identify the similarities and the differences in these strategies and characteristics.
7. To identify implications of these findings for agencies and organisations seeking to increase the regional GDP derived from the agrifood sector in these regions.

This study, in order to achieve its aim and objectives stated above, presents in Chapters 2-4 a literature review regarding the marketing strategies and distribution channels; decision-making process about marketing strategy and distribution channel selection in the primary sector. A more detailed examination of the factors that affect the meat and milk consumption patterns and demand in Greece and United Kingdom is presented in chapter 6. Chapter 7 encapsulates the impact of the European Union's Common Agricultural and Regional Policy on the livestock and dairy cow faming sectors in objective one European

Regions. A detailed description of the two research areas consisted of the Region of East Macedonia and Thrace (EMTh) in Greece and the County of Cornwall in U.K. is provided in Chapter 5. Furthermore, the methodology and results of the survey that was conducted to explore the marketing strategies and distribution channels that the sheep and goat farmers use in the Region of EMTh regarding their livestock and milk production are presented in Chapters 8-10. Chapters 11-13 describes the methodology and results of the two surveys conducted in the County of Cornwall in order to identify the marketing strategies and distribution channel that sheep and dairy cow farmers follow in that area regarding their livestock and milk production, respectively. Finally, a discussion of the findings of this study takes place in Chapter 14 and concluding remarks are presented in Chapter 15.

Figure 1.1 provides a schematic linking the various factors that impact on the decision – making process of farmers.

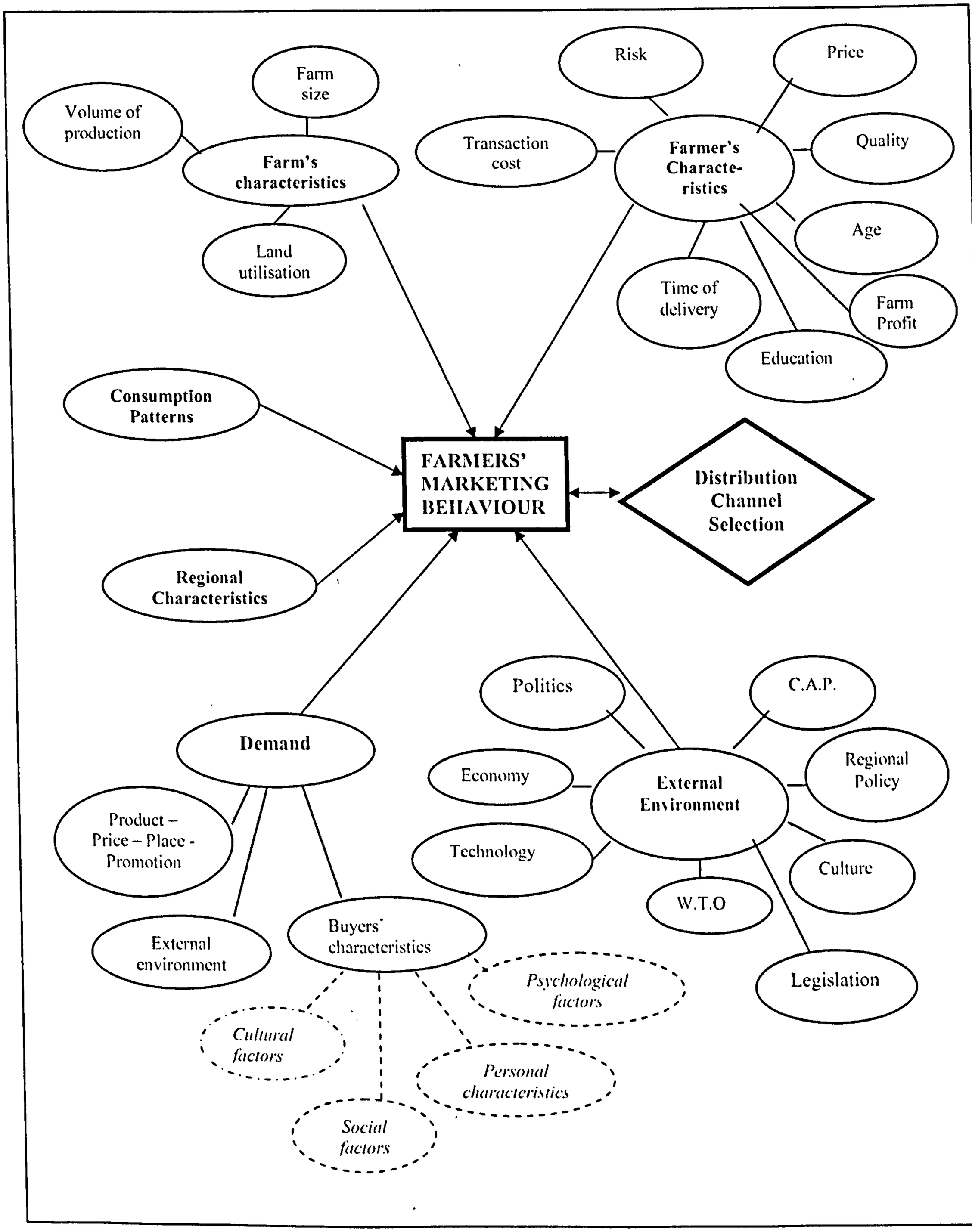

Figure 1.1. Factors affect livestock farmers' marketing beheviour and their distribution channel selection.

CHAPTER 2

MARKETING AND MARKETING CHANNELS

2.1 Introduction

The marketing system as it exists in the British and Greek agricultural sector consists of many factors such as long-standing traditional practice, compulsorily organized marketing of some products and generally by many complex procedures bringing the agricultural products from the farm gate to the household shopping basket.

Due to the fact that there are very few farmers that can afford to stay long-term without making profit, most of them try to achieve income that exceeds their expenditures in order to be able to continue their businesses. Thus, marketing management should be of importance to the individual farmer, since he wants to make a profit from his transactions, in other words he should take marketing aspects into consideration before he makes any short term decisions (e.g. sell the grain immediately after the harvest or store it and sell it in the winter when the prices will be higher) or long term decisions (e.g. what should he grow after two years).

In this chapter, the term of marketing will be defined, and the elements of the "marketing mix" will be analysed. A more detailed analysis of marketing channels and their functions and structure will also be presented in this chapter. Finally, a brief review of vertical marketing channels will also be conducted.

2.2 What is marketing

The market, according to Kotler (1994), "*...consists of all the potential customers sharing a particular need or want who might be willing and able to engage in exchange to satisfy that need or want*". Thus, at the simplest level marketing could be regarded as the activity which takes place in the market.

Bartels (1968) defined marketing as "*the process whereby society, in order to supply its needs, evolves distributive systems composed of participants, who, interacting under constraints – technical (economic) and ethnical (social) – create the transactions or flows, which resolve market separations and result in exchange and consumption*". He supported the view that participants in marketing, act as social entities, nor just economists or mechanisms.

Rogers (1962) argued that marketing is a primary management function, which organizes and directs the aggregate of business activities involved in converting consumer purchasing power into effective demand for a specific product or service and in moving the specific product or service to the final customer or user so as to achieve company profits or other objectives. The term "customer", as Rogers (1962) used it, refers not only to the final consumer but also to intermediate market agents such as wholesalers and retailers as well as, in the case of farming, to merchants and co-operatives that must be persuaded to buy the product.

Kempner (1971) defined marketing as: "*the process in a society by anticipated or enlarged and satisfied through the conception, physical distribution and exchange of such good and services*".

Marketing according to Barker (1989) covers all the business functions, including production, and in its broadest sense also covers production decisions. Hence, farmer's decisions relative to the variety of crop to grow, the breed of animal to keep, are marketing decisions.

Kohls and Uhl (1990) gave another definition of marketing that is more applicable to agriculture. They said that marketing is a performance of all business activities involved in the flow of goods and services from the farm where they are produced until they are in the hands of the final consumer. From this definition it can be argued that groups with varying interests will view marketing differently (Barker 1989). Consumers will be interested in buying what they want at the lowest price and farmers will be interested in obtaining the highest possible returns from the sale of their products. A situation such as this is possible to cause conflict of interests, while the continual occurrence and solution of such problems gives marketing its essential dynamic character (Barker 1989).

Keegan (1989) defined marketing as *"a process of focusing the resources and objectives of an organisation on environmental opportunities and threats"*.

Marketing according to Kotler (1994) is "*a social and managerial process by which individuals and groups obtain what they need and want through creating, offering, and exchanging products of value with others*".

The following figure represents the main elements of a modern marketing system as Kotler (1994) described it.

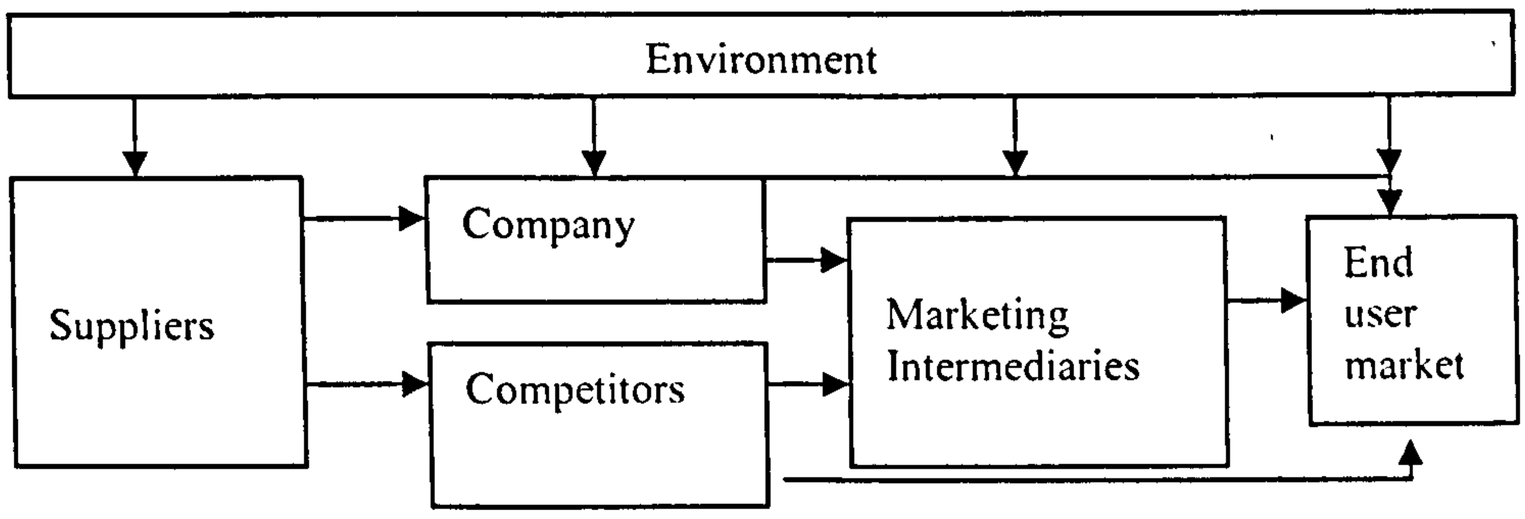

Figure 2.1: Main Actors and Factors in a Modern Marketing System

Source: Adapted from Kotler (1994)

He argued that, in a normal situation, companies try to serve their markets in the face of their competitors. The company and its competitors send their messages directly or through intermediaries (wholesalers, retailers, merchants and co-operatives) to the end users. Their respective suppliers as well as major environmental forces (demographic, economic, physical, technological, political, legal, social, cultural) influence their relative effectiveness.

In this thesis marketing is defined as a process, fully harmonized with the general business strategy of an organization, aiming to the satisfaction of needs and wants of a specific target group of customers through creating and selling products. In the above process, it is crucial that an analysis of the internal and external environment of an organisation to be conducted. In this thesis the definition of Roger (1962) regarding the description of the term "customer" is adopted. In the marketing literature, the set of the variables with which an organisation may influence its market is known as "marketing mix". The achievement of the marketing aim requires the planning of the appropriate policies relative to each element of the "marketing mix". Barker (1989) argued that there are a large number of variables in the marketing mix. McCarthy (1975) introduced the four-factor classification which is generally known as the "4 Ps" – Product, Price, Promotion and Place. Each of

these four factors includes a number of marketing considerations as shown in the Figure 2.2.

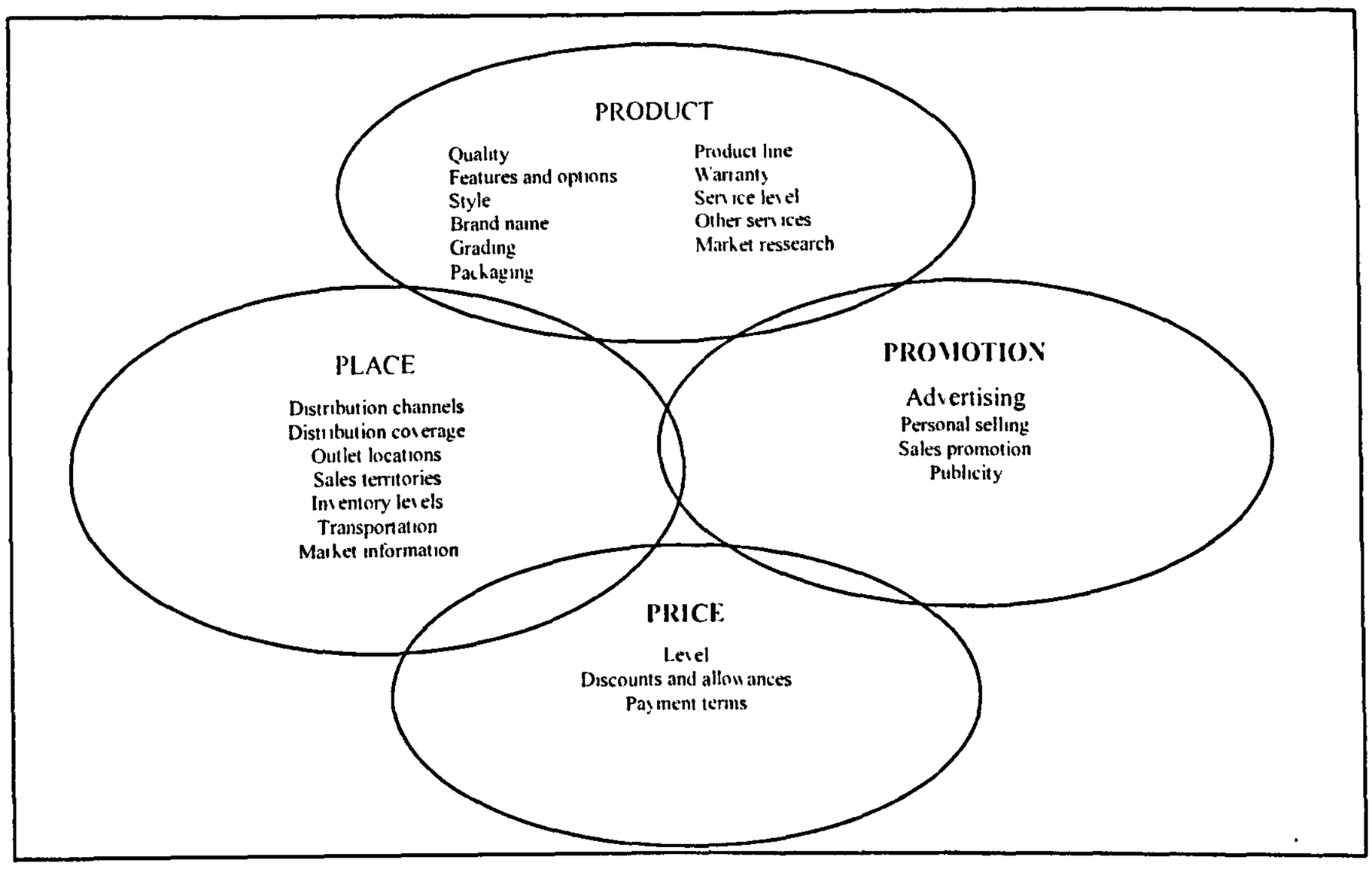

Figure 2.2: Elements of marketing mix

Source: Adapted from Barker (1989)

A marketing manager is responsible for the selection of target groups and the design of policies relative to the "marketing mix". The marketing manager in agriclulture (who is usually the farmer) is responsible for making decisions such as the range of products to be offered, the prices and the discounts, the communication media to be employed, and the distribution channels through which the product or service is to be made available (Barker 1989).

The way in which farmers view their businesses depends to a very high degree on their personal aspirations and opinions. Bartels (1968) suggests that agricultural businesses are usually either production orientated or selling orientated. The production-orientated farmer believes that the most important part of his business is concerned with the goods that he wishes to produce. On the other hand, the selling orientated farmer endeavours to produce

goods that can be sold profitably, giving due to consideration the likelihood of profit before production is undertaken.

The subject of marketing as defined above is closely related with broader social and economic factors that constrain the satisfaction of consumers' and society's wants and needs (Webster 1992; Kotler 1994). For example, Houston (1986) argues that it should include factors such as environmental pollution, reduction of natural resources, unemployment, population growth, that are of high importance to society.

Due to the fact that the marketing concept sidesteps the potential conflict between consumer wants and interests and long - term societal welfare, Kotler (1994) defined a marketing philosophy as "*the societal marketing concept according to which the organisation's task is to determine the needs, wants and interests of target markets and to deliver the desired satisfactions more effectively and efficiently than competitors in a way that preserves or enhances the consumer's and the society's well-being*". Social marketing deals with the market's core beliefs and values whereas business marketing often deals with superficial preferences and opinions (Kotler and Zaltman 1971).

In recent years, industry is mostly marketing orientated which means that companies argue that the key to achieving organisational goals consists of determining the needs and wants of target markets and delivering the desired satisfactions more effectively and efficiently than their competitors (Kotler 1994). While there is a continuous growth concern over the relationship between food consumption, health and diet (Kotler 1994), the societal concept starts to become more evident as retailers and manufacturers start selling more ecological products, organic products as well as products in recyclable packing.

2.3 The"Marketing Mix"

A marketing strategy aims to create a sense of purpose in an organization, and thereby to create a behaviour that the customer will understand and will enable them to differentiate the organization from its competitors (Fifield 1992). It is also responsible for some basic decisions on marketing expenditures and the marketing mix. The marketing mix according to Kotler (1994) is defined as "*a set of marketing tools that the firm uses to pursue its marketing objectives in the target market*".

McCarthy (1975) described the marketing mix with the 4P's – product, price, promotion and place. Many years later, when theorists gave more attention to services marketing, additional variables which can be added to the 4P's were identified (Vignali 2001a). Process, physical, and people, were recognized by Fifield and Gilligan (1996) as an integral part of the marketing mix. Hence, a 7P's marketing mix referring to service marketing can be described as follows (Vignali 2001a):

(1) Product – features, quality, quantity

(2) Place – location, number of outlets

(3) Price – strategy, determinants, levels

(4) Promotion – advertising, sales, promotion, public relations

(5) People – quantity, quality, training, promotion

(6) Process – blueprinting, automation, control procedures

(7) Physical – cleanliness, décor, ambience of the service.

It should be noted that the 4P's and 7P's marketing mix represent the marketing tools used by sellers in order to influence buyers. From the buyers' points of view, each marketing tool is referring to a customer benefit (Kotler 1994).

Therefore, Lauternborn (1990) suggested the 4C's which corresponds to each of the 4P's:

4P's	4C's
Product	Customer need and wants
Price	Cost to the customer
Place	Convenience
Promotion	Communication

The analysis of the marketing mix in this thesis will be based on the 4Ps classification, which is the most widely used classification in the marketing literature.

Product, according to Kotler (1994), is the most basic marketing - mix tool that represents the firm's tangible offer to the market, including the product quality, design features, branding and packaging. Product is *"no more than the most appropriate vehicle, at any point in time, which will carry satisfactions produced by the organization in one direction, and carry profits from market place to the organization in the opposite direction"* (Fifield 1992). Kotler (1994) distinguished product into 3 parts: the core component, the packaging component and the support services component. The core component refers to the physical product and the functional features while the packaging component refers to elements such as the trade mark, the brand name, style, colour and price which is an important packaging component that it links strongly to the quality. The support services component refers to aspects such as maintenance, installation, and delivery terms (Fifield 1992).

Price impacts upon financial performance of the organization and depends mainly on the target market, the product and the distribution strategies. It also has a significant influence on buyers' perceptions and positioning of the brand (Vignali 2001b). Zikmund and D' Amico (1993) argued that price may serve as a substitute for selling effort, advertising and product quality. The pricing process according to Vignali (2001a) consists of 6 steps:

(1) selecting the price objective, (2) determining demand, (3) estimating costs, (4) analyzing competitors' costs, price and offers, (5) selecting a pricing method and (6) selecting a final price. Pricing policy may be influenced by many factors such as competitor's price, positioning of the product in the lifecycle, company positioning policy, perceived level of differentiation and perceived value (Fifield 1992).

Place or distribution is another key tool of the marketing mix and refers to the various activities the company undertakes to make the product accessible and available to target customers (Kotler 1994). Distribution deals with the question "how to distribute and deliver product to the customers and where to locate the service points for better customer accessibility?" (Fifield 1992). The key element to the distribution policy is the structure of the marketing channels and the customer's service level (McDonald 2002). A descriptive analysis relative to the marketing channels will be presented in the next part of this chapter.

Promotion is defined by Fifield (1992) as "*whole array of methods and procedures by which an organization communicates with its target market*". Promotion activities take place until the decisions regarding to the other elements of the marketing mix have been made. This means that an organization should know what product is on offer, at what price, and through which marketing channels (Fifield 1992). The communication between an organization and its intermediaries, consumers and various publics is made through a marketing tool that is known as "promotion mix" Promotion mix according to Kotler, (1994) is made up five major tools:

- *Advertising: Any paid form of non-personal presentation and promotion of ideas, goods or services by an identified sponsor.*
- *Direct Marketing: Use of mail, telephone, and other non-personal contact tools to communicate with or solicit response from specific customers and prospects.*

- *Sales Promotion: Short-term incentives to encourage trial or purchase of a product or service.*
- *Public Relations and Publicity: A variety of programs designed to promote and or/ protect a company's image or its individual products.*
- *Personal Selling: Face – to – face interaction with one or more prospective purchasers for the purpose of making sales.*

The large number of farming businesses, their remoteness from urban centres and the undifferentiated nature of the agricultural products determine that the distribution system is a key factor in the marketing of agricultural produce (Ritson 1997). Therefore, the marketing strategies dealing with the distribution of agricultural products and, more specifically, the utilization of marketing channels rather than the other elements of the marketing mix, are the main foci of this thesis.

2.4 Marketing channels, their functions and stucture

The movement of ownership, the negotiation of title and the physical movement of products usually define marketing channels (Mallen 1976). Marketing channels are very complicated aspects of an advanced economy as they elaborate economic, political and social systems, and often extend over a wide geographic area. They not only satisfy demand by supplying goods and services (at the right place, quantity, quality and price), but they also stimulate demand through the promotional activities of the organizations constituting them, e.g. wholesalers and retailers (Stern *et al.* 1992).

A marketing channel is a system of interrelated and interdependent components engaged in producing an output. A distribution channel consists of two major sectors: commercial and end user. The commercial subsystem includes a set of vertically aligned marketing

institutions and agencies, such as producers, wholesalers and retailers (often referred to as the marketing chain). Each member of the chain depends on the other members for achieving its goals. A farm business is dependent on others (e.g. wholesaler and retailer) in getting its products to the final consumer and, thereby, attaining its objectives such as profits. A channel exists as part of an economy, which is part of the national environment, that is also subsystem of the international environment. Both the national and the international environments are influenced by physical, economic, social, cultural, technological and political factors such as National Agricultural Policy, Common Agricultural Policy of the E.U., W.T.O. Agreement (Stern *et al.* 1992). This configuration of the systems is illustrated in Figure 2.3.

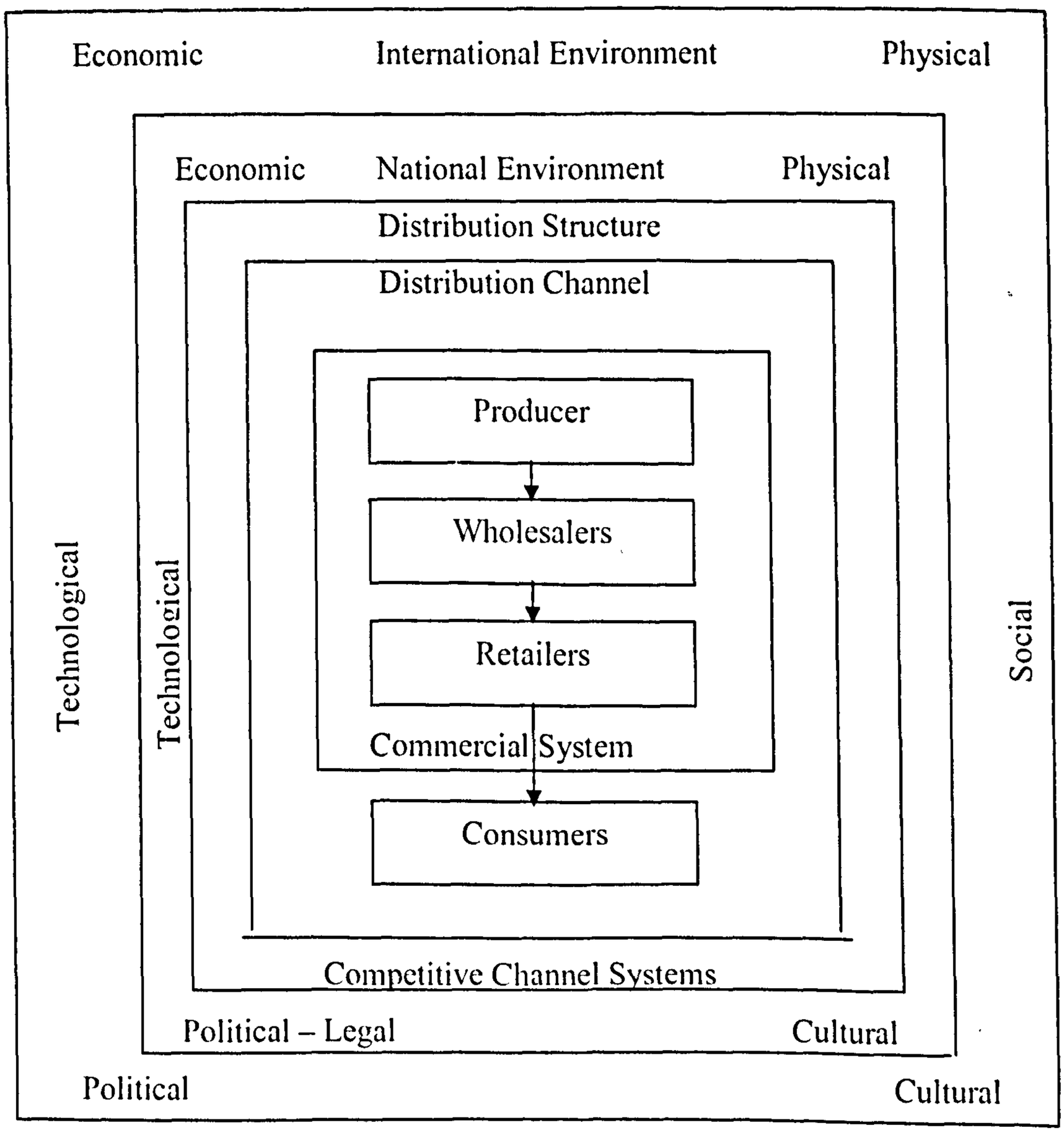

Figure 2.3: The marketing channel as a processing subsystem within the environment

Source: Adapted from Stern *et al.* (1992)

The selection of marketing channels in the agribusiness sector as well as in any other industry is associated with the "total distribution cost". The total distribution cost is defined by the following equation (Chistopher 1994):

$$TDC=TC+FC+CC+IC+HC+PC+MC,$$

Where:

TDC= Total distribution costs

TC= Transport costs

FC= Facilities costs (depots, warehouses)

CC= Communications costs (order processing invoicing)

IC= Inventory cost

HC= Materials handling costs

PC= Protective packing costs

MC= Distribution management cost

The selection of a distribution system is associated with potential "trade offs" between each element of the distribution cost. A "trade-off" occurs when an increased cost in one area is more than matched by a cost reduction in another area, leading therefore to an improving situation overall (Chistopher 1994). The use of intermediaries in a distribution system improves the efficiency of the system. Hence, a centralised network which uses intermediates is more efficient than a decentralized system with no intermediates (Stern *et al.* 1992).

Intermediaries, as Kotler (1994) said, aim to transform the heterogeneous supplies found in nature into assortments of goods that people are willing to buy. They smooth the flow of goods and services in order to bridge the discrepancy between the assortment of goods and services generated by the producer and the assortment demanded by the consumer with the goal of matching segments of supply and demand (Alderson 1954; Bucklin 1973).

A direct marketing channel consists of the producer selling directly to the consumer, the one level channel contains one intermediary such as a retailer, the two level channel includes two intermediaries such as retailer and wholesale and, so on.

The marketing process performs several functions in bridging the gap between production and consumption, such as the movement of ownership, negotiation of title and physical movement of product, (Mallen 1976). Physical possession, ownership and promotion are typically the flows operated from the producer to consumer (Figure 2.4); while the negotiation, financing and risk flows move in both directions and ordering as well as payment consisted of the flows directed from consumer to producer (Stern *et al.* 1992). Therefore, at any time that inventories are held by one member of the channel system, a financing operation is under way.

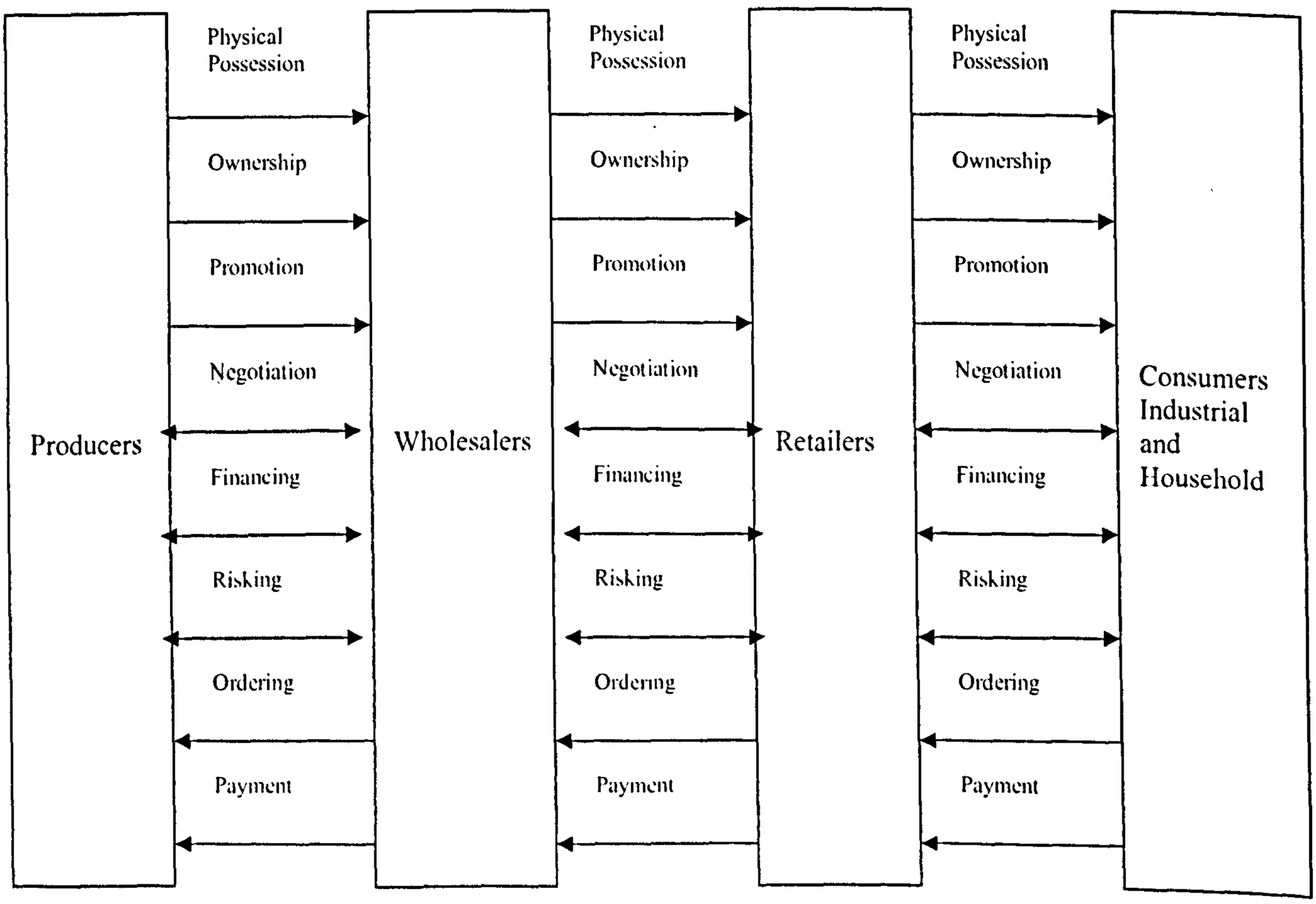

Figure 2.4 Marketing flows in Channels

Source: Adapted from (Stern *et al.* 1992)

Marketing functions can be allocated in different mixes to different channels, and these functional mixes will be patterned in a way that provides the greatest profit to the consumer in the form of low prices and more convenience, or to the channel members with the most power that depends on the market structure (Gattorna 1978).

The structure and the functions of marketing channels cannot be explained sufficiently in only economic terms. Generally, the structure of marketing channels is influenced by all economic, social, cultural, technological factors as described earlier in this chapter.

2.5 Vertical Marketing Systems

Vertical marketing systems have been developed in addition to conventional marketing channels that are consisted of independent producers, wholesalers and retailers. Vertical marketing systems can be defined as the combination of two or more stages of production-marketing chain under single ownership and are aimed strategically to achieve anti – competitive effects (Williamson 1979; Den Ouden *et al.* 1996).

Vertical integration brings a lot of management challenges and significant financial demands. It offers flexibility in control and risk sharing between the parties. In agriculture, it is especially complex when numerous, diverse entities are involved (Barry *et al.* 1992). The advantages of the development of a full vertical integration according to Den Ouden *et al.* (1996) are the reduction of the transaction cost as well as the reduction of the amount of technological inputs themselves. The increased control over two or more consecutive stages the production – distribution chain may also enhance the ability of a firm to innovate or differentiate its products. Moreover, through vertical integration, a firm may need less information and hence enjoy a reduction in the cost of collecting and processing information. Another advantage of vertical integration is the establishment of a stable

relationship between each party. Integrated firms have also a greater competitive advantage over the unintegrated due to the raising of the entry barriers and mobility barriers. A dominant firm may use the vertical integration to impair its rivals by raising their costs. Moreover, an imperfect competitive firm may practise price, or quantify discrimination, toward adjacent competitive stages resulting in price or supply squeezes through vertical integration (Den Ouden *et al.* 1996).

King (1992) identified three general classes of problems that are very important for the managers of vertically coordinated systems.

The first problem is dealing with the establishment of appropriate boundaries for the firm: determining which activities should be incorporated into the firm, which should be coordinated through formal contracts, and which should be accomplished through open market transactions. This makes decisions about firm boundaries a critical element in an organization's strategy. While these decisions have important long term implications, it should be realized that appropriate firm boundaries may be affected by technical and institutional changes. High investments may also raise exit barriers and reduce a firm's flexibility. Integrated firms in times of change in technology, product design and market technologies may also be confronted with higher switching costs than would have been the case when they had contracted with independent partners (Den Ouden *et al.* 1996).

The second problem is associated with the establishment of organizational structures with an appropriate mix of centralization and decentralization of decision making. Efforts to increase vertical coordination involve centralization of authority to exploit size economies in information acquisition and processing as well as to improve coordination of activities. On the other hand, too much centralization can make it difficult to respond quickly to unique problems or opportunities in one segment of the production / marketing system.

Den Ouden *et al.* (1996) argued that a risk which might be derived from full vertical integration *"...is embodied in managing the various stages that may require distinctly different managerial approaches"* such as manufacturing compared with marketing.

The third problem is related to designing incentive structures that motivate actors across the system to make decisions, take actions, and share information in a manner that maximizes overall performance. Dulled incentives according to Den Ouden *et al.* (1996) may be caused by the tightly linked, captive and assured relations between the stages in an integrated firm. Markets, compared with internal organization, promote high powered incentives and restrain bureaucratic distortions more effectively.

Royer (1995) examined the advantages and disadvantages that agricultural cooperatives may have in coordinating the marketing of agricultural commodities through the market channel from the farm gate to the processed product level. He found that producers exploiting contract integration through a cooperative may be subject to less risk due to the actions of the cooperative. On the other hand, factors related to cooperative ownership, capitalization and governance may limit the cooperative vertical expansion. Hence, coordination of farm – level production through contract integration may enable the cooperative to achieve optimal output levels and to capture profits from the processed market (Royer 1995). Furthermore, the long term stable relationships that might occur in the livestock supply chain might reduce the retailers' transaction costs and provide assurance of welfare standards at production level (Davies 2001).

Multi – channel marketing systems occur when a firm utilizes two or more marketing methods to reach one or more customer segments. An increase in market coverage, a lower channel costs by-passing an intermediary as well as a more customized selling are the three major advantages of the utilization of more than one marketing channel (Stern *et al.* 1992).

A firm adopting the utilization of multi-marketing system may use channels that are subject to different modes of vertical co-ordination, thereby producing coexisting transactional forms to meet the needs of heterogeneous markets. By using multi-channel marketing systems, where different forms of vertical co-ordination are employed, it is very likely that channel conflicts will occur, especially when different channels are aimed at the same customer. This form of marketing channel is based on trust, authority, price and without their existence the transaction cost will rise and possibly lead to a market failure (Den Ouden *et al.* 1996; Hobbs 1996b).

2.7 Conclusion

This chapter outlined the concept of marketing and marketing channels and defined marketing as a process, fully harmonized with the general business strategy of an organization, aiming at satisfacting the needs and wants of a specific target group of customers through creating and selling products. The achievement of this aim requires the planning of the appropriate policies relative to each element of the "marketing mix". Hence, the farm manager or the farmer is responsible for the selection of the buyer and the design of policies relative to the product, price, promotion and distribution. The way in which farmers view their businesses depends to a very high degree on their personal aspirations and opinions. Marketing channel decisions are crucial as they affect all the other marketing decisions. In addition to the conventional marketing channels, vertical marketing systems were also developed in the agricultural sector. Another form of marketing channels that are also used by farmers is the multi – marketing channels.

CHAPTER 3

MARKETING MANAGEMENT AND BUSINESS STRATEGY

3.1 Introduction

Marketing management is mostly concerned with decisions regarding the marketing mix. In contrast, a marketing strategy focuses on the search for competitive and consumer advantage. As such, it has a high degree of overlap with business strategy and can be viewed as an integral part of business strategy (Wind and Robertson 1983).

Strategic management draws a distinction between "content" research, which deals with the content of strategies, and "process" research that examines the strategic decision process and the factors that affect it (Schwenk 1995). The term business strategy will be defined in the first part of this chapter. In the second part of the chapter the typologies and taxonomies that were developed for the better understanding of the concept of business strategy will be described. Finally, the decision making process regarding the selection of a business strategy, as well as the factors that influence this process, will be presented.

3.2 What is business strategy?

Business strategy consists of a set of management guidelines which specify the firm's product market position, the directions in which the firm seeks to grow and change, the competitive tools it will employ, the means by which it will enter in to new markets, the management team that will configure its resources, the strengths it will seek to exploit, as well as the weaknesses it should avoid (Ansoff 1968). Business strategy according to Quinn (1998), is defined as " *a pattern or plan that integrates an organization's major goals, policies and action sequences into a cohesive whole".*

If an organization does not have a clear *business objective* then its activities are more likely to be directed in a number of different and possibly conflicting directions, which means that the organisation will waste money, time and management effort (Fifield 1992). *Policies,* according to Quinn (1998), are the rules or guidelines that formulate the limits within which action will take place. *Programs* specify the step – by – step sequence of actions necessary to achieve major objectives within the limits that were set by policy. *Strategic decisions* are concerned with the solution of a strategic problem which is the relationship between the firm and its environment (Ansoff 1968). These decisions determine the overall direction of a firm and its ultimate viability in light of any changes, that may occur in its most important surrounding environment (Quinn 1998).

Thus, effective business strategies should contain three essential elements: (1) the most important goals to be achieved, (2) the most significant policies guiding or limiting actions and (3) the major programs that have to accomplish the goals set within the setting limits (Ansoff 1968).

Finally, the ultimate aim of competitive strategy, according to Porter (1985), is to cope with the rules of competition and, ideally, to change them in the organization's favour. However, if a corporate strategy is to be successful, it has to be consistent with consumer

needs, performance and preferences, irrespective of whether it is driven by cost, technology, distribution, service or any other competitive advantage that the firm may have (Wind and Robertson 1983).

3.3 Strategic typologies and taxonomies

There have been many studies related to business typologies and taxonomies.

Miles and Snow (1978) categorised organisations into three basic types according to the way they behave strategically (Table 3.1). The three categories are defender, prospector and analyser. The strategic analysis that Miles and Snow formed provides a means of assessing the dominant culture of the organisation.

This typology mostly characterizes the organisational culture of a firm and the way each type influences the decision making of a business strategy. The key dimension of this typology is the differentiation of an organisation through the degree of innovation in product or market development.

Organisation type	Characteristics of strategic decision making		
	Dominant Objectives	**Preferred Strategies**	**Planning Control Systems**
Defender	Desire for a secure and stable niche in market.	Specialisation, cost-efficient production, marketing emphasises price and service to defend current business, tendency to vertical integration.	Centralised, detailed control, emphasis on cost efficiency, extensive use of formal planning.
Prospector	Location and exploitation of new product and market opportunities.	Growth through product and market development (often in spurts), constant monitoring of environmental change, multiple technologies.	Emphasis on flexibility, decentralised control, use of *ad hoc* measurements.
Analyser	Desire to match new ventures to present shape of business.	Steady growth through market penetration, exploitation of applied research, followers in the market.	Very complicated, co-ordinating roles between functions (e.g. product managers), intensive planning.

Table 3.1 : Organizational Strategies according to Miles and Snow

Source: Adapted from Johnson and Scholes (1993)

Porter (1979) tried to explain the stable differences in competitive strategies among firms within an industry and the persistent intra-industry profit differences among firms. Firms were divided in each industry in two categories that are called industry "leaders" and industry "followers". Industry leaders were the largest firms in the industry with approximately 30% of the industry sales revenue, while all other firms were the industry followers. He argued that the leader group should adopt strategies that can potentially achieve economies of scale in production technology, vertical integration, captive distribution and national advertising. The leader group should also encompass strategic groups with broad product lines and large sales forces. On the other hand, the follower group firms follow specialist or narrow – line or regional strategies.

In any industry five forces can describe the rules of competition: the entry of new competitors, the threat of substitutes, the bargaining power of buyers, the bargaining power of suppliers, and the rivalry among the existing competitors (Porter 1985; Figure 3.1)

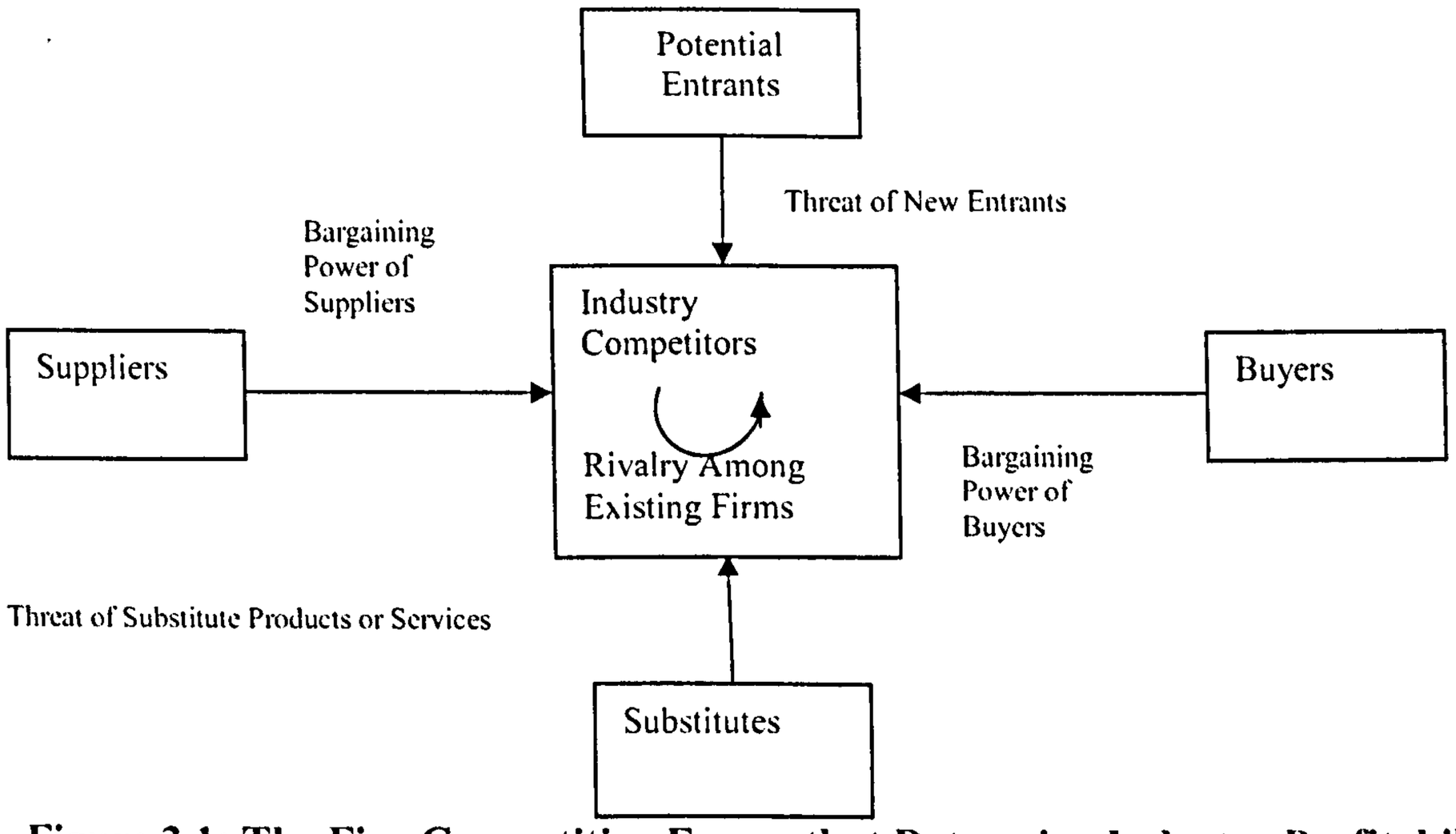

Figure 3.1: The Five Competitive Forces that Determine Industry Profitability

Source: Adapted from Porter (1985)

The collective strength of these five forces determines the ability of business organisations in an industry to gain rates of return on investment in excess of cost of capital. These forces determine industry profitability because they influence the prices, costs, and required investment of firms in an industry.

The best strategy for a specific organization is ultimately a unique construction that reflects its particular circumstances. However, Porter (1980) identified three internally consistent generic strategies (Figure 3.2) for creating a defendable position in the long term competitors in an industry. The three generic strategies that a firm may adopt are: (a) Overall cost leadership, (b) Differentiation and (c) Focus strategy.

The first strategy seeks an overall cost leadership in an industry through a set of functional policies aimed at this basic objective. This strategy requires aggressive construction of efficient – scale facilities, cost reduction due to experience and overhead control and cost minimization in areas like R&D, service, sales force and advertising. The second strategy seeks product or service differentiation, creating something that is considered industry - wide as unique. Approaches to differentiating can take many forms: design or brand image, technology, features, customer service, dealer network, or other dimensions. The third strategy is focusing on a particular buyer group, segment of the product line, or geographic market. Although the first two strategies are aimed at achieving their objectives industry wide, the focus strategy is built around serving a particular target very well, and each functional policy is based on this. A firm that adopts a focus strategy believes that it is able to serve its narrow strategic target more effectively or efficiently than competitors who are competing more broadly.

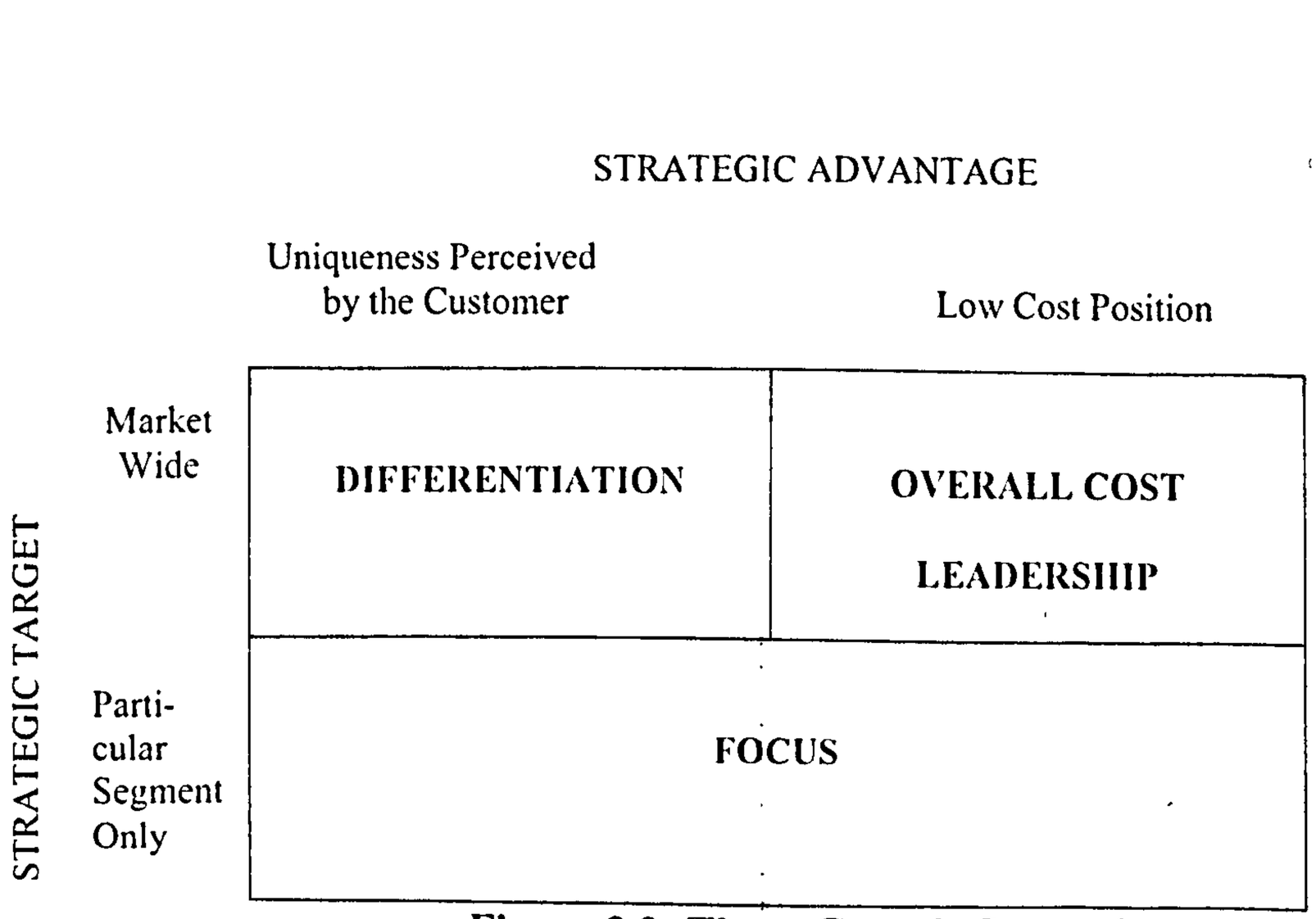

Figure 3.2: Three Generic Strategies

Source: Adapted from Porter (1980)

Four broad strategies based on the above generic strategies were suggested by Fearne and Bates (2000):

1. Cost leadership strategy: supply orientated chain tries to perceive the market share it already has. Product remains unchanged but investment in machinery equipment is required to meet the standards that chain partners have set.
2. Differentiation strategy: chain improves its products in order to meet the needs of a market segment. It is demand-oriented to existing markets.
3. Diversification strategy: chain designs completely new products. It is demand-orientated to new products.
4. Specialization strategy: chain adopts the diversification strategy but focusing in a narrow product range for a specialized customer target group. It focuses on innovation in product, and typically emphasizes quality.

Douglas and Rhee (1989) explored the nature of generic competitive strategies in an international context, based on a sample of industrial business serving markets in the U.S and Europe. They identified six strategy types that exist in both markets. "Broad liner" was the first type of competitive strategy and it was characterized in both cases (U.S. and European markets) by its broad market scope and high quality. The second type called "innovators" was composed of businesses with a very high proportion of new products. The third strategic group "nichers" was characterised by a focused niche strategy and narrow market scope. "Synergists" who were the fourth strategic cluster had narrow market scope and high levels of shared expenditure. The two remaining did not have very clear profiles. The fifth group which is called "Integrated marketer" was characterised in both markets by a high degree of vertical integration while the last group, the "low quality", appeared to have no clearly directed strategy.

Kohls and Uhl (1990) argued that, in the food industry, most firms mainly adopt the following two strategies:

(a) Product differentiation, seeking to find a product's unique features which set it apart from its competitors; increased brand loyalty with a less elastic demand is expected.

(b) Market segmentation, concerning the development of unique product variations that will be better perceived by different consumer classes and market segments.

Farmers do not differ from any other businessman in being concerned with allocating the resources available to them in such way that it will be possible to achieve their objectives (Errington 1986). Some typical objectives for a farm business might be the maximisation of profits or returns, the enlargement of the business, or the reduction of borrowing needs (Gasson and Errington 1993). Hence, the manager of a farm who, in most of the cases, is the farmer himself, has to assemble and co-ordinate the factors of production (land, labour, equipment, capital), and to decide what products to produce. He also has to be in touch with the outside business world (Bradford and Johnson 1953). In addition to Porter's five forces described above, there are other influences that affect the performance of a farm business including the acceptance of the political – legal environment (as it is forming through, for example, the Common Agricultural Policy, European Regional Policy and W.T.O. Agreements), sociocultural factors, as well as the weather, diseases and other unpredictable factors related to nature. Farming businesses are in most cases small, family businesses which mean that "*.....business problems can put a strain on marriage and family relationships and family strains in a farm household may destroy the business*" (Gasson and Errington 1993).

Therefore, the typologies of business strategies outlined above do not provide a wholly adequate description of the way agribusinesses behave strategically due to the nature of farm firms and the environment in which they operate. Furthermore, it is very difficult for the farmers to differentiate their produce: milk is milk, corn is corn; while the large number

of small farm businesses impede the creation of economy of scales that are required for cost leadership.

3.4 The decision making process in business organizations

The role of management in business organisations is to make decisions about the future activities of the organisation, to implement these decisions and to supervise the realisations of them (Hanf and Schiefer 1983).

Wind and Robertson (1983) developed a marketing guided model for strategy formulation and evaluation in order to overcome the above limitation. The model (Figure 3.3) incorporates three main sections. Section I identifies the market opportunities and business strengths. It includes (a) an analysis of market and environmental opportunities and threats and (b) an analysis of business strengths and weaknesses. Section II contains the heart of the model and its unique marketing strategy contribution. It is consisted of (a) an analysis of a segment by positioning replacing, (b) identification of opportunities and strengths of the segment, (c) a synergy analysis, (d) an evaluation of each segment in terms of the functional requirements for success and the company's strengths in particular functional areas and (e) a portfolio analysis. Section III is common to most strategic planning models and it focuses on the development and evaluation of objectives and strategies. It includes (a) a generation of objectives and strategies as well as the development of marketing program, (b) an evaluation of the objectives that were set, the strategies that have decided to be followed and the marketing program that was developed and (c) the planning of the implementation and the control programs.

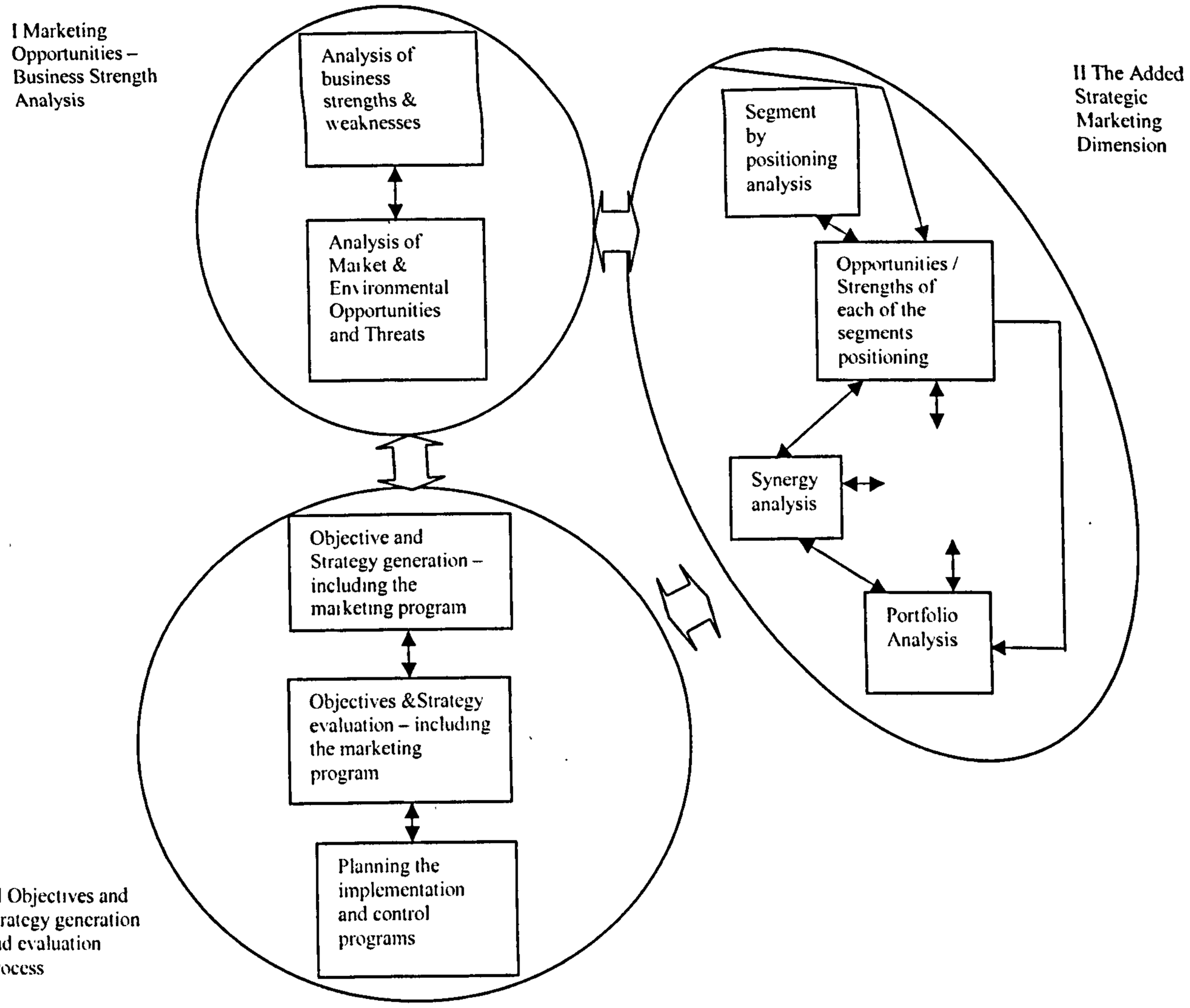

Figure 3.3: A marketing orientated approach to strategy formulation and evaluation

Source: Wind and Robertson (1983)

In essence, the model describes a marketing orientated approach to strategic planning and it provides a marketing perspective for strategic decisions as well as strategic perspective for marketing decisions.

According to the perceptions presented above, business organisations should examine how factors of the external and internal environment might affect their performance. Actually, in order to analyse the external environment, they should examine the way that the five forces according to Porter's model (buyers, suppliers, substitutes, potential entries, competitors) affect the organisation as well as the political –legal, economical, technological and sociocultural environment. Analysis of the internal factors of an

organisation such as organisational structure, human resources, financial performance, trade and marketing policy, inventory policy, information systems should take place in order the internal environment to be examined. After the above internal and external environmental analysis, an examination of an organisation's strengths and weaknesses together with opportunities and threats that the external environment outlines, should be done in order that decisions can be made (Figure 3.4).

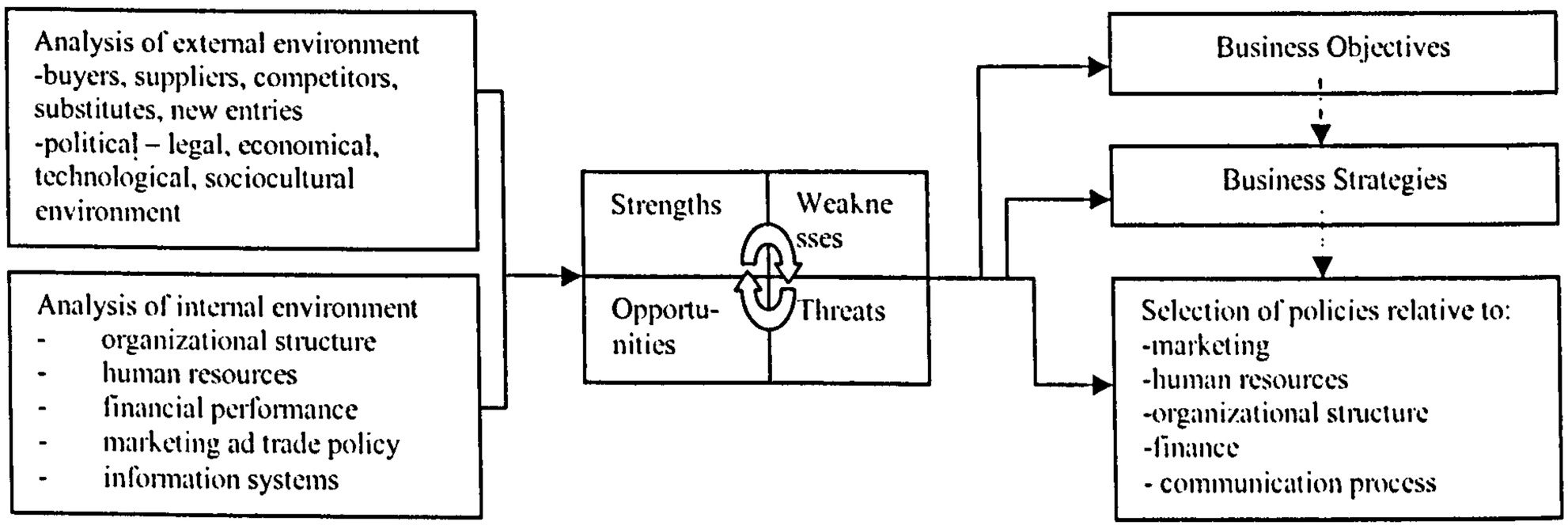

Figure 3.4: The decision making process

The management of the organization in terms of profitability, stock price and market share can measure the effectiveness of the implemented strategies and policies.

Hitt and Tyler (1991) found that objective criteria also played an important role in strategic decision models. Strategic decisions were influenced to a small degree by the industry and executive's characteristics. They also suggested that the industry had small but stable influences on a firm's performance. Thus, the effect of the external control perspective was also supported. The objective criteria used in strategic decision making might vary by industry. They also found that executives matter above and beyond rational analytical processes and industry characteristics: the characteristics of the executives had a significant influence on strategic decisions models.

Schwenk (1995) also investigated strategic decision- making and the factors that affected it. He argued that the characteristics of executives affected the way that these people viewed their business and its environment.

Papadakis *et al.* (1998) argued that generic characteristics of a strategic decision (such as its perceived magnitude of impact, frequency, familiarity, uncertainty, threat / crisis component) had an important influence over the dimensions of the decision making process, more than other environmental, organizational and managerial factors. Furthermore, internal firm characteristics such as formal planning system, lateral communication, and politicisation affected to a high degree the decision making process. Corporate performance and the size of an organisation have a significant impact on the decision process. They also found that control type also influenced several aspects of strategic decision-making process. Enterprises under state ownership were found to apply more comprehensiveness / rationality and more politicisation when making strategic decisions.

In conclusion, in business organisation an analysis of internal and external environmental factors should be performed in order to identify and examine its strengths, weaknesses, opportunities and threats. These steps will help decisions to be made about business objectives, business strategies and policies. When the decisions are made, they have to be implemented and supervised relative to their realization and effectiveness. In addition to the external and internal environmental factors, a firm's characteristics such as organizational size and control type will also affect the decision - making process.

3.5 Strategic decision making in agribusiness sector

Strategic planning focused on achievement of specific business objectives is an important activity for most firms in agribusiness sector, but it is often conducted informally.

Decision making on the farm as Fearne and Ritson (1989) described, "... *is an iterative process, with information and advice from various sources being cross – referenced and verified, to varying degrees and often sub-consciously, before, during and after the adoption of a new idea*".

Harper and Eastman (1980) evaluated two sets of goals relative to agricultural business: the goals for the family unit and the goals for the agricultural enterprise. Family and agricultural goals were analyzed in terms of their socioeconomic content in order to ensure the consistency between the ranking and therefore avoid any conflicts between the two sets of goals to be evaluated. Quality of life, income and net worth were found to be in the highest levels in both hierarchies. Although the hierarchies of the socioeconomic content of goals in both family and agricultural goals are not completely symmetric, these two sets of goals in small farm business appeared to be compatible.

External events can have a significant impact to the organizational goals. Values on the other hand "*are a more permanent property of the individual, less likely to change with time and circumstances*" (Gasson and Errington 1993).

Ohlmer *et al.* (1998), found that managers in the agribusiness sector were very conscious about their values and mostly about the values affected by, and affecting, unique decisions. They also discovered that most farmers had not formulated quantitative goals (intuitive farmers), while there were some who had quantified some of their goals (analytical

farmers). Improvement of the farm for the next generation was the highest value for most farmers. Some other high values were private consumption, leisure time and risk taking. Objectives were mostly in the form of directions, such as an increase in milk production per dairy cow.

Firms in the agribusiness sector operate in an environment which essentially defined their opportunity set. This environment is influenced by the actions of the firms and the organizations that were operating within it. That means that the consequences of the environmental changes are dependent on the behavioral responses of the participants in the agribusiness sector. As Sonka and Hudson (1990) argued, agribusiness competitiveness research addresses two perspectives: environmental forces (things external to the firm) and behavioral responses (things internal to the firm). Relative to the external environment, firms were interested in areas of competitive advantage that can be exploited for profit. Efforts directed towards the external environment should be focused both on the anticipation of changes and on changing decision – maker behaviour in order to take advantage of opportunities created by those changes.

Agribusiness organisations which are characterised by a product rather than a commodity orientation did not follow an analysis of the general business environment as described in Section 3.4 (Westgren *et al.* 1988). These researchers classified strategic issues in the following three categories: (a) general business issues, (b) competitive issues and (c) internal issues. Environmental regulation and interest rates mainly affected the general business issues, while tax and trade policies were less important for them. Competitive issues were of higher concern than general business issues. The identification of the major product rivals was the most important issue in this category, while less important were the raw material access and the goals and objectives of rivals. Relative to the internal issues, the financial position of the firm displayed the most considerable concern, while research

and development appeared to be a less important strategic issue. The relative orientation of a firm between production of commodities and production of identifiable products may influence the firm's concern for specific types of strategic issues. Product-orientated firms considered the identification of new market opportunities very important, while the commodity-orientated firms showed a low level of interest in this topic. Commodity-orientated firms were more concerned about their liquidity and leverage position.

Harling and Quail (1990) tried to explore whether the concepts and tools of strategic management can be applied to farm management. They found that farmers had a broad general management view in their business, believing that all elements of their business are equally important. Interpersonal relations and marketing were also considered important. All the managers were familiar with the concept of strategy, but the precise meaning of it was unclear. Almost all the managers had a general idea about the goals they wanted to achieve, but they appeared to lack an operational view of these goals. The set of goals that dominated in farm management included the increase of profits and net worth. Production practices were considered the most important factor that could affect the performance of their business. The environment had an important influence on business performance as well. Customers consist of the most important factor of the environment that could affect the performance of a farm business; whilst competitors were considered of lesser importance. Farm businesses were influenced by the importance of various resources to the management process. A very important factor is the amount of time that the managers had available. As the business did not have organizational charts, the legal form of ownership reflected how the authority and responsibility are allocated within the business. Only one third of the surveyed managers liked to delegate authority and responsibility for jobs to others, while a third did not. Moreover, personal computers were not well used functionally by managers in order to plan, coordinate, control and evaluate the activities performing in the farms.

Warren (1989) reported a survey in Devon and Cornwall (U.K.) of farmers, advisers and others who provided services to farmers, in order to examine the way the farmers in the South West England expect their businesses to change in the next ten years, as well as the additional management skills those farmers need to adapt successfully. Additionally, he tried to identify the steps that the farmers consider are needed for the accomplishment of these deficiencies; and finally, how the providers of management training adapt their approach in order to become more effective in meeting the needs of those farmers. Analysis showed that people with a high average age and a generally low level of formal business management education directed the surveyed agricultural enterprises. The decision making process of the farm is likely to be influenced by the entrance of the younger member of the family to the operation of the farm. Furthermore, a number of farmers (not the vast majority) intend to change the nature of the productive activity of the businesses. Of the many farms of the envisaged changes, the most important were the development of activities which are mostly concerned with non-farm businesses; a switch from conventional to specialist markets for agricultural produce; and, particularly in the dairy sector, expansion of the businesses by intensification or acquisition of more land (Warren 1989).

Finally, it can be concluded that there is a strategic decision making process in farm businesses even in an informal and empirical way. Farmers set their goals relative to their business and try to make long-term strategic and day-to-day tactical decisions in order to reach their goals. Factors relative to the external environment such as competitors, buyers, political, economic and environmental issues have a significant influence to the decision-making process of agricultural firms. This decision-making process is also affected by factors of the internal environment, such as the legal form of the ownership, the organizational structure, age and educational level of farmer.

3.6 Conclusions

Many typologies and taxonomies have been developed regarding the business strategy that a business organisation may follow, but the nature of the farm enterprise and the environment in which it operates creates difficulties in adopting the described typologies and taxonomies for the description of the business strategy in the agribusiness sector. Furthermore, the factors that affect the adoption of a particular business strategy by a firm and the decision making process itself have been presented. The decisions about the business objectives, business strategies and policies should be taken after a S.W.O.T. analysis and an analysis of internal and external environmental factors is an integral part of this process. Finally, when the decisions are made, they have to be implemented and supervised relative to their realization and effectiveness. The decision making process also takes place in the agribusiness sector even in an informal and empirical way. External factors such as suppliers, buyers and competitors as well as the economical, political, technological environment and culture, affect the decisions that the farmers should make regarding their farm's operation. Moreover, factors existing within the farm including organizational structure, existence of successors, farmer's age and education, have an impact on the strategic decision making process in the agricultural sector.

CHAPTER 4

MARKETING AND AGRICULTURAL MARKETING

4.1 Introduction

This chapter will deal with the definition of the term "agricultural marketing" as well as with the description of its issues and its relationship with the business marketing. An analysis of the decision making process about marketing strategies in the agribusiness sector and the factors that have affected farmers in making these kind of decision will be also part of this chapter. Also, in particular, marketing strategies regarding the dairy and livestock sectors, will be presented.

4.2 The relation between Marketing and Agricultural Marketing

In Britain, the study of agricultural marketing was developed in a great extent between the two wars as a consequence of low farm prices. It was believed that low prices were associated with inefficiencies in the distribution of agricultural products from the farmer to consumer, with farmers' inadequate bargaining power and with lack of grading of agricultural produce. Rather than farmers themselves, government as well as institutional means such as the Marketing Boards were considered to provide the solutions. Therefore, agricultural marketing was strongly orientated towards logistics and towards policy (Batteman 1976).

Sheperd and Futrell (1982) defined agricultural marketing as a process that "...begins when the product is loaded at the farm gate and ends when goods reaches the consumer's table. It is concerned with physical things as trucks and packing plants and also with technological developments in preservation and packaging."

Three distinctive approaches were developed relative to the concept of agricultural marketing (Breiymer 1973). The first one is that marketing is what happens to a product after it leaves the farm gate. This approach is quite simplistic and conventional. Marketing, according to the second approach, occurs wherever transformations take place and operates as a co-ordinator of economic activity mainly through the price. Finally, marketing, according to the third approach, is a form of market development through the cultivating demand and the generating of purchasing power by consumers through differentiating and promoting products. This approach, according to Davies (2001), is closest to business marketing as it focuses on consumption and consumer behaviour and suggests an interaction between members of supply chain (Davies 2001).

Barker (1989) argued that there are three basic problems that affect the marketing of agricultural products. The first problem is the role of the farmer, which is concluded at the farm gate, and the fact that the marketing of their produce is not their direct concern. So, satisfying the consumers' continually changing demands presents many problems. This ties in very closely with production- orientated management. Farmers produce those commodities which are better suited to their farm's resources; and from there it is the task of the merchant to find a market to sell these products. The second problem is related to the accuracy with which prices reflect consumers' demands. These demands act like guides to producers as they set their production and marketing plans according to the market prices (the market prices transmit consumer demands to producers). Communication problems are eliminated when producers are able to meet consumers face to face and sell their

products direct to them. Problems also arise from the fact that agricultural producers are based many miles away from the consumers and have to sell their products through the intermediaries. This situation has a direct impact on the producers as they face problems in keeping themselves in touch with constantly changing demands. The third agricultural marketing problem is related to transferring the products from the production point to the consumer at the lowest cost.

Ritson (1997) argued that there are four features of agriculture, which led to this almost detached and unique nature of the agricultural marketing. First is the structure of farming with, typically, many thousands of small businesses supplying an agricultural commodity market. The second important feature of farming is that the agricultural products are "undifferentiated". In other words, as produce leaves the farm gate, in most cases the output of one farm is much the same as that of others farms: milk is milk, lamb is lamb. That means that due to the fact that raw output is difficult to brand, industrial buyers buy agricultural products in bulk and their only interest is to reduce the cost (Haines 1999). These are the two features that make the marketing mix variables of limited relevance to individual farmers. The third important characteristic for agriculture is the remoteness of the agricultural producer from the final consumer. The value of the product typically is getting a twofold increase between the farm gate and the retail sale. This process is usually controlled by businesses under ownership independent of farming. Therefore, distribution channels consisted of a very important factor of the marketing of agricultural products. Finally, government intervention (e.g. C.A.P., Agenda 2000) could be interpreted as the manipulation of the four elements of marketing mix and, as a consequence, had a great impact on agricultural production. In many countries the farmer's major customer for most agricultural commodities has been the government, which provided a product specification and underwrote production with support prices only marginally linked to real customer requirements (Haines 1999).

According to Allen (1997) most farmers' marketing orientation simply associates with the process of selling their products. As Barker (1989) argued, there are two extreme positions that can be identified in the agricultural businesses: the production orientated and selling orientated farmers. The production-orientated farmer believes that the most important part of his business is concerned with the goods that he wishes to produce. On the other hand, the selling orientated farmer will endeavour to produce goods that can be profitably sold, giving due consideration to the likelihood of profit before production is undertaken. There is also a third option that farmers have in order to marketing their produce. This is through co-operative schemes. One of the main aims of co-operation, both voluntary and compulsory, is the reduction of the inherent weaknesses of the farmers acting in the market individually since the bargaining power of the individual is limited in comparison with the people with whom he is trading. Farmers, by acting in the market not as individuals but under co-operative schemes, will receive synergistic returns due to the increased scale of operation (Barker 1989). There are many kinds of co-operative schemes that can be identified: machinery sharing, production co-operation, marketing co-operation, cooperation in the supply of farmers' requisites and federal co-operation.

Farmers will have difficulty in maintaining their income from the market without diversifying into new products and enterprises (Haines 1999). Although diversification opportunities are not unlimited, there are always some for the entrepreneurs who have the initiative to identify them, as well as having the dedication and the resources to exploit them. Many farmers may also benefit from rural reallocation of light industry and commerce due to the improving communications technology that encourages more people to work in the countryside (Haines 1999). Farmers may also produce and market products for special niche markets such as "organic products" and "healthy products" due to the high desire of the consumers for this kind of products as a result of their interest for diet or because they believe that these products will improve their social prestige or because they

are just fun (Hughes 1995; Allen 1997). Polopolus (1982) argued that farmers may benefit from improved marketing and distribution efficiency by increasing the derived farm level profits for given consumer demand levels. Improved efficiency of marketing and distribution may also enhance the competitive position of farmers so as to maintain or expand their markets at home and abroad.

Therefore, marketing channels are of great importance to the prosperity of farming. All farmers should utilise marketing channels. Any farmer that produces goods, which are in excess of his/her domestic consumption, should choose between various marketing channels in order to dispose his/her produce. For some farmers, this is simply a matter of routine, selling through the same outlets every year. For others, the choice of marketing channel is a very important decision (Barker 1989).

4.3 Decision making in agribusiness marketing aspects

Farming businesses have to make decisions relative to the type of stock, method and timing of sales, price, payment and distribution channels in order to achieve their objectives. Hence, decision making relative to marketing is a very important part of the general decision making process and therefore crucial for the fulfilment of the business' objectives.

McLeay *et al.* (1996) analyzed farm business marketing and strategic management processes. Five clusters were determined according to the strategy that businesses appeared to follow. These clusters were the following:

- Production / Production Flexibility Strategy
- Stability Strategy
- Production / Market Outlet Focus Strategy

- Differentiation Strategy
- Arbitrage Strategy

They found that members of the first cluster followed strategies that were characterized by production flexibility, production focus, high levels of market knowledge and low costs. Stability and financial focus factors influenced farmers' strategy of the second cluster. These farmers cultivated a standardized crop mix that was thought to grow well in their farms. They considered the farm gate as the boundary of their farm and, therefore, market information was not a very important factor for them. Farmers of the third group were thought to consider production activities as an important factor of their strategy, but they were found to use an inflexible crop mix and a high degree of channel flexibility. They sold to a large number of different agents or market outlets and were continually searching for new outlets. Members of the fourth group were more interesting in the strategic dimension relating to differentiation, preferring to differentiate their produce by growing niche crops or to involve in other adding-value activities such as processing and marketing. These farmers also interested in getting involved in off-farm activities as well as in high levels of market knowledge and in the financial imperative dimension. High levels of sales flexibility characterized farmers that were members of the fifth group. They preferred to sell their produce on the free market rather than on contract, store their produce and wait for price improvement. They focused on short – term returns, sales and investment opportunities rather than production concerns. The researchers also found differences in farm sizes between farmers following differentiation strategy and farmers adopting production focus / production flexibility strategy. Many farmers following a production focus / production flexibility strategy were likely to occupy positions of responsibility in farming organizations and marketing cooperatives. Differentiators on the other hand, had limited involvement to business activities directly related to the farm but they spent a lot of time working away from the farm. Farmers adopting stability and arbitrage strategies

spend less time working away from on farm activities that were related to their farms, contrary to the farmers that follow strategies focused on production activities.

Other researchers have tried to identify the factors that affect farmers' marketing decision making. Royer (1995) argued that distribution risk is another factor influences marketing decision making in agribusiness sector. Risks that agricultural producers face are relative to the decisions about the prices, quantity, quality and the timing of delivery.

Transaction cost is another factor that has significant influence in marketing decision-making (Hobbs 1996a). Loader (1997), described the implications of transaction costs for agricultural marketing channel structure, and derived some basic ways of assessing and examining these costs. The study illustrated the possibility of using transaction cost economics in order to make a detailed diagnostic investigation of individual relationships within an agricultural system, and explored the implications of such relationships of channel structure and integration.

Hobbs (1996b) measured the relative importance of the transaction cost arising from the need of retailers to ensure quality consistency, traceability and farm animal welfare. The information and monitoring cost occurred because of the retailer's needs to ensure that beef suppliers were of a consistent quality. This emerged as an important factor affecting the choice of supplier, followed by the traceability of cattle, such as whether the beef originated from a farm assurance scheme or not, and the price paid by the retailer. Procurement preferences of individual respondents were also examined revealing some differences between retailers.

Hobbs (1996c) tried to investigate if different supply channels impose different types and levels of transaction cost on beef processors in U.K., finding that the monitoring costs

arising from the traceability of cattle of the farm of origin were the most important of the transaction cost attributes.

Interactions of legislative restrictions, economic pressures and technological advantages caused many changes to the meat production industry from the agricultural producer to the final consumer (Murray *et al.* 1996). They found that multiple retailers commanded over 60% of the retail meat sales in 1994, and paid much attention to the traceability of the meat.

Therefore, many factors (such as farm size, debt requirements, kind of farmer's occupation, sources of information, farmer's focus on production flexibility, achievement of low production cost, farmer's market knowledge) might influence decision making relative to marketing strategies in the agribusiness sector. Marketing decision-making might also be affected significantly by factors such as the distribution risk, transaction cost and other forces relative to external environment (e.g. legislative restrictions, economic pressures and technological advantages).

4.4 Marketing of livestock

Producers' decisions are influenced by the relative importance that they give to their selling and producing roles (MLC 1980).

Mitchell (1976) examined the extent to which farmers were influenced in their livestock marketing decisions by publicly available information on prices and supplies. He argued that the acquisition of information is an essential part of the decision making process. He also argued that the decision problem that producers' face in the case of livestock is whether to sell in liveweight or in deadweight and, if the decision is liveweight, whether to

sell by auction or privately. He found that deadweight selling tended to be attractive to *product-orientated* farmers who were attempting to establish a product reputation. Therefore, the directness of contact between seller and buyer gave easy opportunities for an exchange of information related to the type of product preferred by the buyer and the possibility of obtaining a premium payment for it. On the other hand, the *selling orientated* farmers believe that time was well spent in attending auctions in that it brought an additional return (Mitchell 1976; MLC 1980). This type of producer thinks that the advantage lies mainly in the price information, which was acquired as a result of the frequent attendance at auctions. Some selling – orientated farmers were also *market – orientated* in the sense that they were conscious of the need to adjust their product to the demands of the market. For these agricultural producers, attendance at auctions had an additional importance as it gave them the opportunity to gain information about market preferences. From Mitchell's (1976) study, two major conclusions emerged that are related to the marketing behaviour of farmers in general. First, farmer's actions in marketing were most commonly the results of long – term decisions. In other words, marketing decisions are part of a long-term policy. The typical farmer is aiming to produce for sale either at auction or through a deadweight centre. But he did not consider the two methods as practical alternatives. The second major finding was that when marketing decisions were of short-term nature, they were influenced by many factors. Prices or price expectations were the most frequently mentioned single factor but there are also some other factors such as the lack of trust in deadweight centres or the enjoyment of auctions for social reasons.

Local markets in U.K. are places where information is exchanged when farmers meet together. Farmers rate liveweight and deadweight selling strictly according to their practical benefits (Bullen 1984). One of the characteristics of the livestock market is the face-to-face contact between sellers and buyers that takes place and provides a confidence in the open – buying process (Jones and Steel (1995). Another characteristic is that farmers

have the option to take their animals back if they do not approve of the prices. In livestock markets, there is always a price level, in which any buyer that believes it is worthwhile to purchase an animal can make an agreement with the seller in order to buy it (Bullen 1984). Deadweight prices, according to him, tend to follow price trends existing in livestock market. A deadweight buyer responds to the market prices after the event, which means that there is always a time lag from week to week. If prices seem to be increased, farmers sell through auction markets. On the other hand, when prices are expected to fall they sell their stock deadweight before the falling of prices influence the abattoir price within a week's time. Farmers are reluctant to sell through abattoir because many slaughterhouses face financial problems due to high overheads and poor management. Auctioneers pay farmers on the same day the transaction takes place or within seven days, while most abattoirs take ten days or longer to pay.

Kohls and Uhl (1990) reported that many farmers in U.S. preferred direct sales because this kind of market usually requires fewer marketing services, which means less marketing expenses. They also felt that in direct sale there was less shrinkage (loss of product and value) and that direct sales were more convenient. In direct sales, farmers maintained the physical control over livestock until they are sold. On the other hand, many farmers used terminal markets because they did not have any other choice. There were many small producers who needed the services that were provided by the terminal markets. There were also many farmers who thought that competition was more vigorous in the terminal markets because there were more buyers and sellers physically present at the terminal market (Kohls and Uhl 1990). Therefore, direct sales seem to be more popular in U.S. than in U.K. presumably due to the longer distances exist in U.S., which lead to higher transportation and marketing cost.

Grega and Ray (1992) argued that the interest in electronic marketing was derived from two reasons. First, multiple retailers were reluctant to use live auctions, because of the variable quality and the difficulty of tracing stock back to source. Second, some farmers were seeking a cheaper and less stressful alternative to transporting livestock to live auction markets. Electronic auctions were organized with rules and clear rights to access information. The basic concept of this marketing method is the simultaneous trade negotiations among spatially separated buyers and sellers channelled into an interactive central market through electronic communications (Henderson 1984). Buyers and sellers could be observed in the process of trading and they did not have to travel in order to meet each other. In electronic markets, verbal, pictorial or electronically censored descriptions were used, which means that the product was sold without being moved. The buyer did not have to take an immediate delivery but it could negotiate with the seller who maintains the control of the product until the exchange takes place. Graham (1997) compared the two kinds of auction markets and argued that live auction markets are inefficient due to the cost of animal transportation, the time required for participation by both buyers and sellers and the distortion of price in local markets. Electronic markets, on the other hand, reduce the cost of bringing buyers and sellers together as well as the cost of completing transaction. The spatial impact of electronic trading, according to Sporleder (1984), is related to the larger geographic areas over which buyers may procure supplies and the larger least – cost volumes. To a degree, electronic marketing expands geographic procurement areas, and disparate submarkets experience enhanced buyer competition by lowering effective concentration levels for any particular seller. This suggests higher short run prices and the potential to increase long-term buyer concentration in the global or aggregate market (Sporleder 1984).

Hobbs (1997) stated that the type of cattle, quick payment and the received price are the most important reasons for selling cattle live weight. Age, education and farm profit also

influence farmers using live auction markets. On the other hand, convenience and payment being directly based on carcass value as well as the price and the long-standing relationship with the buyer comprise the most popular reasons for selling dead – weight. Furthermore, 23% of those farmers that hold an undergraduate degree and 20% of those with a postgraduate degree were using an electronic auction market. Experimenting with the system as well as the higher expected returns are the most important reasons for using an electronic auction system. Group marketing was more popular with those farmers who had some further or higher education beyond that of a college day release programme. The most popular reason for joining a group-marketing scheme was because it provided an outlet for a specific type of cattle.

Davies (1999) tried to examine the impacts of farm marketing groups in some specific areas of interest. The member of groups he surveyed had quite similar age, experience and education. Actually the average age of the surveyed farmers was around 50 years, most farmers had more than 20 years working experience and their education was either up to 16 years or college level and beyond. The majority of the farmers in the examined groups had large herds. He surveyd four groups:

(a) Group 1 – A small independent beef producers' group in the South West England with fewer than 150 members.

(b) Group 2 – A large meat producers' group in the South of England with over 600 members.

(c) Group 3 – A large retail supply group with several thousand members.

(d) Group 4 – A small lamb producers' group with 138 members in South West England.

He found that there was a variation in the use of marketing groups by farmers. Marketing schemes were only a part of mixed marketing strategy for up to a third of group members.

Many of the farmers were recruited from liveweight and deadweight marketing channels while there were a small number of farmers that used mixed strategies previously. Retail orientated producers were strongly motivated by the better prices they could gain, while the increasing knowledge on stock grades was their second priority and an assured market the third. Better prices and guaranteed payments were also very important factors for the remaining groups. Groups 1 and 4 ranked generated market power as their top priority, possibly influenced by their experiences in their locality where one supermarket buyer dominate the limited sales outlets. The remaining independent group considered a reliable scheme management more important than market power. All groups had a positive influence in improving members' knowledge around issues of quality and market awareness. An increase of the quality of stock marketed through the group, which therefore leads to an increase of bargaining power and the market presence was one of the interests of the management of the groups. The majority of farmers that sold cattle, used the marketing schemes for their entire output while there were some farmers that they used mixed patterns of sale. Davies (1999) argued that the issue of flexibility in channel choice was very important in the lamb group strategy that required all stock to be marketed through the group.

Murray *et al.* (1998) carried out a survey of complete journey structure of over 18,000 slaughter weight lambs from farms to abattoirs in order to examine the factors affecting meat and livestock distribution within the U.K. and the relationships between journey type and animal type in relation to the impacts on transaction cost. They found out that journeys in livestock distribution systems are diverse and vary in complexity; and argued that the prevailing perception of improved animal welfare may be invalid.

Davies (2001) examined the factors affecting meat and livestock distribution within U.K.. Based on the methodology of McLeay *et al.* (1996), he measured differences between

firms over a number of strategic variables and using strategic group analysis to identify strategic groups. He identified a number of different types of strategic variables. Those that were related to strategic activity were used as inputs for factor and cluster analysis while the others were used for the development of profiles of the strategic group members. Twenty marketing channels relative to the beef sector (six direct channels and fourteen multiple) and sixteen distribution outlets regarding the sheep sector (four direct and twelve multiple) were identified.

The strategic dimensions he used in a survey of the beef farmers in Devon and Cornwall were: market knowledge, production planning, consumer and buyer orientation, channel flexibility, differentiation, quality and traceability focus, and cost focus. The groups identified were: (a) the group that adopted a selling orientation strategy, (b) the group that followed a buyer orientation strategy and (c) the group that followed a differentiation strategy. The profile characteristics of each strategic group appeared to be consistent with their cluster profiles. Farmers of the selling oriented group were focused on sales rather than production. Synchronising production in relation to seasonal fluctuations, as well as the continually monitoring local prices (in order to achieve short term profits by selling to a large number of livestock market outlets) were the main factors from where farmers adopting selling orientated strategy could derive some advantages. They consider marketing as a selling function that provides additional income. Farmers of the buyer orientation group followed a cost efficient production strategy. They were focused on producing livestock that could meet market requirements in terms of carcass quality and traceability. They believed that profit maximization could be achieved through: (i) a greater understanding of what is happening in the market place, (ii) off-farm marketing involvement and (iii) the likelihood of holding positions of responsibility within farming organizations. They viewed marketing as extending beyond the farm gate. Finally, differentiators had non-farm business involvement, high levels of market knowledge, off –

farm marketing activity and a greater likelihood of holding positions of responsibility within farming organizations. They were highly educated, characterized by entrepreneurial skills and actively sought opportunities to differentiate their production by producing niche livestock or involvement in further processing. These kind of farmers were also characterized by high levels of marketing orientation and vertical integration as well as considered marketing as business function of the whole enterprise.

Furthermore, Davies (2001) identified the following key strategic dimensions regarding the marketing orientation of the sheep farmers operated in Devon and Cornwall: differentiation, product focus, production planning, consumer and buyer orientation, market knowledge, quality and traceability focus, distribution knowledge, cost focus. Additionally, sheep farmers followed one of the three derived marketing strategies which are: (a) opportunist strategy, (b) production orientation strategy and (c) differentiation strategy. The farmers who followed the opportunist strategy planned their production to a limited degree to coincide with seasonal fluctuations as well as monitoring market prices. Even though they considered that they met consumer and retail expectations, they had low levels of market knowledge regarding detailed market requirements and production costs. They had a reasonable knowledge of distribution of their produce and were involved with off-farm activities. Most of these farmers also produced carcasses meeting minimum market requirements. They also might view their sheep production as a minor enterprise associated primarily with a grass management function providing additional income. Production orientated sheep farmers perceived that most of their profit occurs by implementing a cost efficient production strategy as well as by adapting their production techniques to meet detailed market requirements. They are not eager to seek out new markets, nor involve themselves in off-marketing activities or planning production with regard to price monitoring or seasonal fluctuations. Differentiators produced niche livestock, considered that their main rivals are small specialist producers, and were

involved with other added value activities. They also met market requirements regarding carcass conformation, were concerned about the quality and traceability of their produce in order to increase their farm success as well as planning their production by monitoring market prices and seasonal fluctuations. Furthermore, they were aware of exploiting marketing opportunities. Differentiators were interested in producing livestock of a different quality than those produced by other farmers, considered that overseas farmers are not their main competitors while they adapted their enterprise mix in order to minimize their enterprise risk.

According to the above studies, the main factors that influence decision-making in livestock marketing are: price expectations, guarantee payments, speed of payment, grade of stock and market power. Some other factors that influence farmers decision making relative to marketing channels are the fact that in live auction markets a face to face contact between farmers and buyers takes place as well as the option that farmers have to take their animals back if a disagreement between seller – buyer occurred. Therefore, farmers' off-farm activities, educational level, entrepreneurial skills might affect farmers' decisions relative to their business strategies and marketing strategies.

4.5 Marketing of milk as an agricultural product.

In dairy farming, farmers have several options in the use of their milk. They may feed it to calves, consume it in the farm household, separate it into skimmed milk and cream and sell the cream only, retail the milk direct to the consumers, or sell the whole milk to dairy processors, or they may process it themselves to produce cheese, yoghurt and ice cream (Kohls and Uhl 1990). The U.K. dairy industry mainly uses the milk from the cows in order to produce liquid milk and other dairy products. In Greece, the dairy industry uses sheep and goats milk as intensively as cow's milk. Sheep and goat milk is used for the

production of processed milk products such as yoghurt, butter and cheese. Cow milk is used in Greece for the production of liquid milk, yoghurt, cream and ice cream.

Baker (1973) argued that milk in U.K. can move from the farmer to the final consumer through a number of different marketing channels. The most direct marketing channel was that from the producer to retailer, involving only one stage of transport (producer – retailer's own delivery vehicle), but it accounts for very small quantities of the total consumed milk. A crucial source of supply of liquid milk was the processing dairies. Processing dairies were supplied with milk either directly from the farm or from a country depot. Another important outlet for milk were the retailers without heat-treating or bottling facilities, whose supplies could come either from wholesale dairies or processing depots. Finally, retailers with bottling facilities were supplied with milk from country depots. The quantity of milk sold through this marketing outlet was very small. Manufacturing milk, on the other hand, was mainly processed in creameries, some of which could be supplied ex-farm or by feed-back of surplus milk from town dairies.

In 1994, the arrangement for milk marketing in the U.K. changed. Previously, farmers should sell the milk they produced through the Milk Marketing Scheme that was dominated by the operation of Milk Marketing Boards (MMBs) which, in reality, were a statutory co-operative linked by Joint Committee to the processors and manufacturers of milk products (Hobbs 1995; Fearne and Bates 2000). Williams (1993) defined the Milk Marketing Scheme as a means of regulating competition in the dairy industry, which gives rights and creates obligations for parties within the industry aiming to create a fair balance of competitive forces. The absolute priority of the Milk Marketing Board was to maintain and, if possible, to increase the consumption of liquid milk (Baker 1973). There were five Milk Marketing Boards in U.K., one in England and Wales, one in Northern Ireland and three in Scotland. Since the government disbanded the system of milk marketing boards,

farmers choose to sell their milk through voluntary milk marketing co-operatives or under contract direct to dairy processors (Hobbs 1995). The U.K. milk market, after de-regulation, was influenced, as Fearne and Bates (2000) argued, from:(a) the growth of the supermarkets who are progressively dominating the market for liquid milk, (b) the progressive rationalization of dairy processors in an attempt to reduce costs and to maintain market share and profitability, (c) the growing constraints of the C.A.P. and W.T.O., (d) the current weaknesses of the Euro compared to sterling, reducing the target price for milk and (e) the growth of global milk production at a time of falling global demand.

After 1994, there were three options for most dairy farmers: (a) to sell the milk to Milk Marque, (b) direct to a dairy, or (c) to joint a regional producer group which pools all its members milk so that the advantages of local collective strength can be realized (Walkland 1994). With Milk Marque, the costs to the farms throughout the country were effectively shared while local co-operatives maximize the advantages of location. Many medium size companies sourced their milk from Milk Marque while some smaller processors were seeking to source their milk direct from farmers. Nowdays, Milk Marque has been replaced by three large milk marketing groups that are Milk Link, Zenith and Axis (Fearne and Bates 2000). The milk producer groups can be distinguished according to the above researchers to quota-holding and non-quota holding producer groups. The quota holding groups sell processed milk on behalf of their members, arranging the collection, testing and transport of their milk. They also run their own systems for invoicing processors, making payments to their members for their milk and managing their members' quota. On the other hand, non-quota groups do not take the ownership of their members milk and they are not involved in any distribution and administrative activities, which are run by the processors who buy their members' milk. Moreover, they are dedicated suppliers to just one processor (Fearne and Bates 2000).

Sales outlets in Greece for the sheep and goat milk comprise local processors (in most cases these are local family based or co-operative based firms) and big national dairy industries if they are located in the area. Feka, *et al.* (1997) clustered the dairy processors in nine strategic groups (Figure 4.1) according to their size (number of employees and volume of sales, market share) and to the degree of diversification (number of products they supply to the market). Four of these groups (groups F to I) contain relatively small and mostly regionally orientated companies, their production scale is low and their target market narrow. The other five groups (groups A to E) contain big and dynamic companies. The competition between them is vigorous, since they operate nationally or internationally, and they try to capture as large market share as possible with the same product range, which is large.

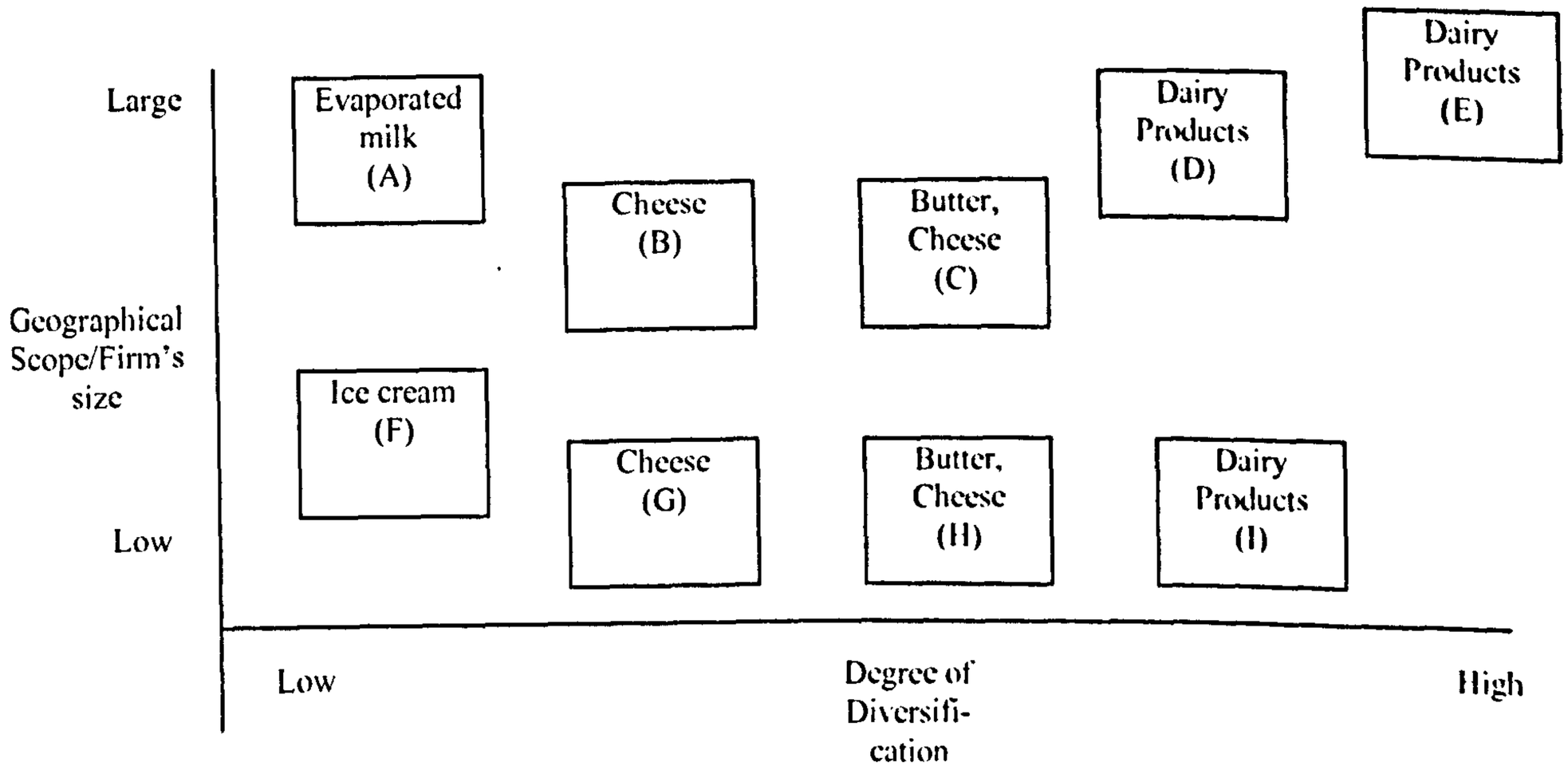

Figure 4.1: The structure of Greek milk processors

Source: Adapted from Feka, *et al.* (1997)

Fearne and Bates (2000) tried to identify the appropriate marketing strategies relative to the classification of milk and dairy products as differentiated products or as commodities. Figure 4.2 presents the current situation in U.K. dairy sector in terms of the size and growth of profits from commodities and diffentiated products.

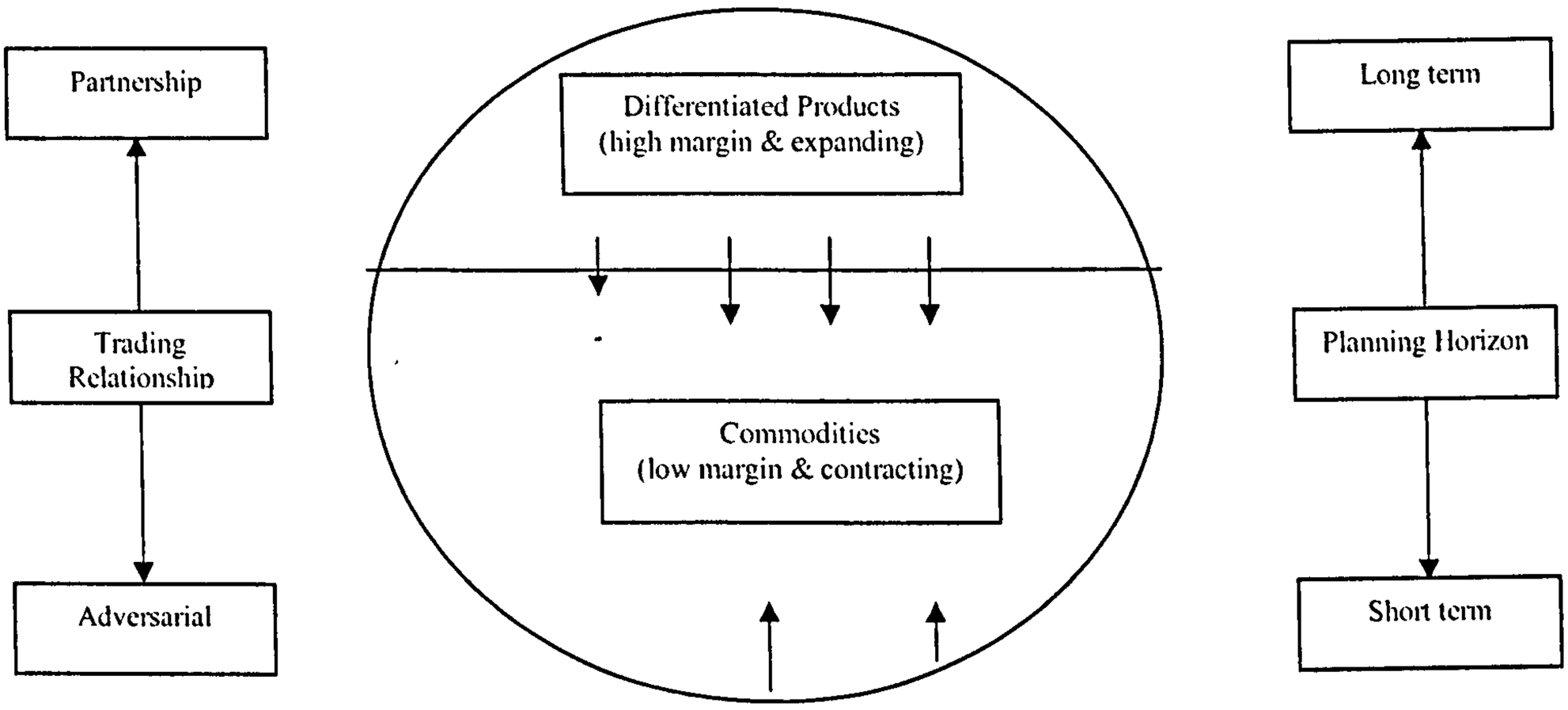

Figure 4.2 The Dairy Product Marketing Strategies

Source: Adapted from Fearne and Bates (2000).

The profit derived from commodities (which in volume terms is the majority) is declining; while that from differentiated value-added products is increasing. Commodity markets are characterized (Figure 4.2) by a short term planning horizon and adversarial trading relationships. Differentiated products, on the other hand, take more time to develop and work in a partnership trading relationship rather than in conflict. Due to the speed with which technology is transferred from one manufacturer to another and the accessibility of the market information to all parties in the supply chain, the life cycles of new products are getting shorter along with the lead times for new product development.

Fearne and Bates (2000) argued that all parties in U.K. dairy industry should realize the importance of understanding consumer wants, needs and preferences. The response of many U.K. dairy processors to this challenge was to develop standardized products with a wide appeal, maximizing processing efficiency and minimizing marketing expenditure. Such an approach had resulted in the U.K. dairy industry today finding it difficult to

survive in a "free" market. Even though the British market of the high value – added products is dominated by overseas firms, there are opportunities for adding value in sectors which are predominantly un- branded – liquid milk and cheese –which together account for over the 70% of the U.K. milk market (Fearne and Bates 2000). They also argued that a small increase in the returns for suppliers into these two sectors would have a much larger impact on the farm gate milk price than the introduction of a new branded yoghurt. Niche markets, such as organic milk and cheese as well as yoghurt, ice cream and crème fraiche marketed under a local/regional banner, also offer great opportunities for small and medium sized dairy processors including farm-owned enterprises (Fearne and Bates 2000).

Kitsobanidis *et al.* (1980) examined the sheep farming in Greece and found that it could operate successfully on one hand by the pastural type (the animals are fed during the spring – summer and early autumn in grasslands) and on the other hand by the semihome-fed type (the animals are fed during the spring – summer and early autumn both in grasslands and sheepfold). The first type could operate successfully based on large size while the second type could be based on high productivity sheep (high milk yield and high numbers of lambs born) in order the utilization of land by sheep farming to become more profitable than any other kind crop or livestock enterprises. Low wages of hired shepherds, the low cost of animal feed during the winter months, as well as the better organization of milk and meat marketing cooperatives for achieving higher milk and meat prices were the factors that influenced the profitability of the first type of sheep farming. On the other hand, the best combination of the available production factors for achieving the cheapest ration connected with the best organization of the marketing and production of sheep products affected the profitability of the second type of sheep farming.

From the above analysis it can be argued that milk-marketing channels in Greece and U.K. are almost similar. Domestic supply and consumer demand as well as the milk quota status

and the general Common Agricultural Policy are factors affecting the milk marketing in E.U.

A more detailed analysis relative to the structure of milk sector in U.K. and Greece as well the existing marketing channels will take place in the following chapter. Furthermore, the consumption patterns of milk and dairy products as well as the factors that affect them are presented in Chapter 6 of the thesis.

4.6 Conclusions

Decision making regarding marketing and more particularly about distribution patterns is a very important part of a farmers' decision making process, and therefore crucial for the fulfilment of agribusiness' objectives. Factors such as farm size, debt requirements, kind of farm enterprise, sources of information, farmer's focus on production flexibility, achievement of low production cost, and market knowledge might influence the decision making relative to the selection of marketing strategies in the agribusiness sector. The livestock distribution system in U.K. is completely different than that which exists in Greece, while the milk-marketing channels in Greece and U.K. are similar.

Little is known about the strategic management process of farmers and particularly about the factors and the farmers' characteristics that influence them to choose a particular strategic alternative. Furthermore, little research has been undertaken about the association between marketing strategy selection, the utilisation of particular distribution patterns and the factors that affect their choice in the livestock and dairy sector. Besides, no such research has taken place in Objective One Regions, either in Greece or in United Kingdom since the Foot and Mouth outbreak in 2001, which had great impact on the country's livestock sector.

CHAPTER 5

DESCRIPTION OF THE LIVESTOCK AND DAIRY SECTOR IN THE REGION OF EAST MACEDONIA AND THRACE AND THE COUNTY OF CORNWALL

5.1 Introduction

In order to examine the factors affecting the choice of marketing strategies by sheep/goat livestock and milk producers in the Region of East Macedonia and Thrace (EMTh) in Greece as well as sheep and dairy cow farmers in the County of Cornwall in U.K., the marketing channels that the examined farmers use for the distribution of their products (meat, livestock and milk) in these two areas have to be identified.

These two regions were selected as study areas for this comparative study because both have been designated as Objective One Regions by the E.U.. Furthermore, both regions have many similarities regarding their agricultural sector. Therefore, this chapter begins by providing a general description of the two study regions in terms of area, population and labour force. This is followed by a more detailed analysis of the livestock and milk sector in EMTh and Cornwall in order that their similarities and differences can be identified. These descriptions are based on historical data up to the year 2000 when this study started and the study areas were chosen.

5.2 General Description of the Region of EMTh and the County of Cornwall.

The Region of East Macedonia and Thrace (EMTh) is an administrative Region and consists of the geographical areas of East Macedonia (except the prefecture of Seres) and Thrace, including 5 prefectures in total: Drama, Kavala, Xanthi, Rhodopi and Evros. The islands of Thassos and Samothraki are also part of this Region. It is situated in the North East Part of Greece and its whole area reaches the 1,415,770 ha (10.7% of the total area of the Country). The land of the Region can be divided from the morphology point of view to: (a) the plain area (486,780 ha or 34.4%), (b) semi – mountainous area (368,780 ha or 26%) and (c) mountainous area (560,210 ha or 39.6%). The total cultivated area is about 417,056 ha, the pastures are about 462,810 ha, the forest area is almost 443,140 ha and the rest of the area is about 135,830 ha. The population of EMTh is according to National Statistic Service of Greece (N.S.S.G) 611,067 people (N.S.S.G 2005e) - 5.6% of the total population of the Country. Almost 40% of the population of EMTh is rural and 60% is urban. The following table (Table 5.1) presents the composition of the population of the Region EMTh in each of the five prefectures. The labour force in EMTh according to the (N.S.S.G 2005f) is about 243,649 people.

PREFECTURES	URBAN	RURAL	TOTAL
DRAMA	65,589 (63.1%)	38,386 (36.9%)	103,975 (100%)
KAVALA	91,050 (62.8%)	54,004 (37.2%)	145,054 (100%)
XANTHI	58,902 (57.8%)	42,954 (42.2%)	101,828 (100%)
RHODOPI	57,044 (51.5%)	53,784 (48.5%)	110,828 (100%)
EVROS	88,608 (59.3%)	60,746 (40.7%)	149,354 (100%)
REGION EMTh	**361,193 (59.1%)**	**249,874 (40.9%)**	**611,067 (100%)**
WHOLE GREECE	7,980,414 (72.8%)	2,983,606 (27.2%)	10,964,020 (100%)

Table 5.1: The composition of population of EMTh Region in the year 2001

Source: After N.S.S.G (2005e).

Chapter 5: Description of the Livestock and Dairy Sector in the Region of EMTh and Cornwall

The Gross Regional Product of the Region of EMTh in 2001 (N.S.S.G 2005d) was about 5,594 million euro comprising the 4.3% of the GNP of Greece. The primary sector represents about the 29% of the GRP; the manufacturing sector the 32%, and the service sector 39%. The income per capita in the Region of EMTh is about 9,219 euro while the national per capita income is about 11,995 euro (N.S.S.G 2005d). That means that the Region of EMTh is one of the poorest in Greece, and is also characterised by the E.U. as an Objective One Region (as is the whole of Greece).

Cornwall on the other hand, is a rural and maritime county included in the South West Standard Region of England. The county of Cornwall has an area of 354,920 ha (about one quarter the size of EMTh) while the total agricultural land is about 272,195 ha (77%), and its whole population is about 501,267 (National Statistics 2005b), only a little smaller than that of EMTh.

The Gross Domestic Product of the County is £ 3,545 millions. The primary sector represents about the 6% of the regional GDP. Manufacture represents 23%, and the service sector represents 71%. Compared with EMTh, the primary sector in Cornwall is very much smaller as a percentage of GDP; and the manufacturing sector somewhat smaller. On the other hand, the service sector in Cornwall is almost twice the percentage of GDP compared to that of EMTh. The GDP per head is £7,614 for Cornwall (four times that of EMTh) while for the whole country it is £10,711. Compared with the rest of the U.K. it is therefore poor and indeed Cornwall has been designated by the E.U. as Objective One Area. The whole labour force of Cornwall reaches the 214,260 people (Cornwall County Council 2005) almost half of that of EMTh due to higher proportion of elderly/retired people in Cornwall compared with EMTh. According to the N.S.S.G. (2005f) and the National Statistics (2005b) people who are more than 50 years old represent the 35.5% of the total

population in EMTh and the 41.4% of that in Cornwall. On the other hand, people between 20-49 years comprise 41.5% of the total population in EMTh and the 35.6% in Cornwall, while people up to 19 years old represent about the 23% of the total population in both cases. The composition of the labour force, classified according to the economic activities of the county is illustrated below (Table 5.2; Cornwall County Council 2005).

Economic Activity	**Employment (workers)**	**% of the total**
Agriculture and Forestry	9,000	4.2
Fishing	750	0.3
Mining and quarrying	2,805	1.3
Manufacturing	23,785	11.1
Electricity, gas, water	1,155	0.5
Construction	17,355	8.1
Retailing, car repair	38,915	18.2
Hotels and catering	18,710	8.7
Transport and communication	11,165	5.2
Financial Services	4,010	1.9
Estate agents, business	18,730	8.7
Public administration, defence	15,340	7.2
Education	15,940	7.4
Health and social care	25,350	11.8
Other sectors.	11,250	5.3

Table 5.2: The composition of labour force of Cornwall in 2001

Source: (Cornwall County Council 2005)

The data in the above table show that the percentage of the total population in employment that is occupied in the agricultural sector is about 4% (much lower compared to that of EMTh).

Generally, both areas are geographically isolated: Cornwall is in the South West edge of U.K. and EMTh is in the North East edge of Greece. Both areas are very poor compared to other E.U. areas, and indeed have both been designated as Objective One Regions. On the

other hand, the economy of EMTh is dependent on agriculture to a higher degree than that of Cornwall, which is mainly based on the service sector.

5.3 The Agricultural Sector in the Region of EMTh and the County of Cornwall.

The Agricultural sector provides the basis for the development of the whole Region of East Macedonia and Thrace. The total agricultural land of the Region reaches 417,056 ha. Figure 5.1 illustrates the land on which each crop is cultivated as a percentage of the total agricultural land.

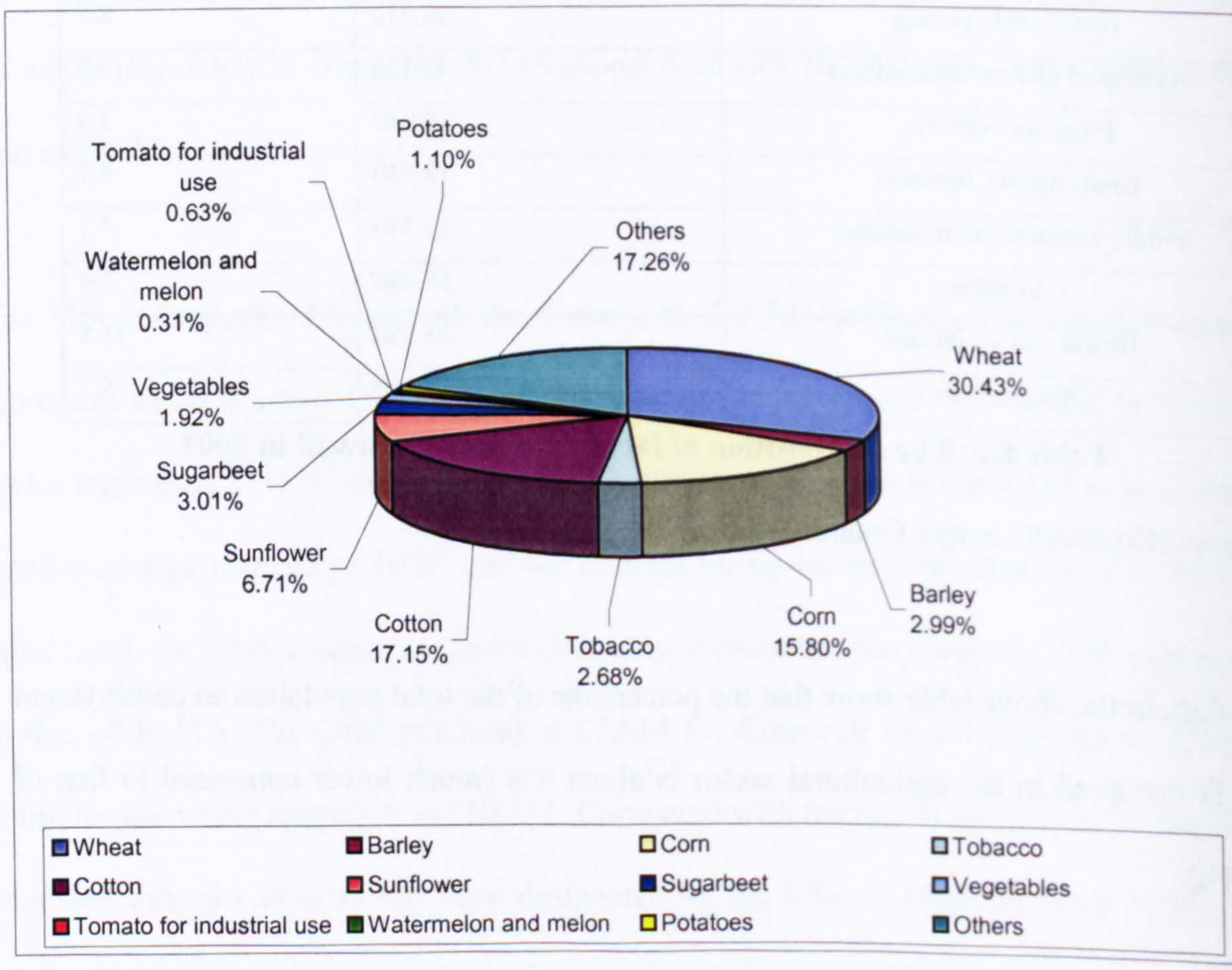

Figure 5.1 The structure of the agricultural land in the Region EMTh - Year 1999

Source: After N.S.S.G (2001a)

According to Figure 5.1, wheat, cotton and corn are the crops the mostly commonly cultivated in the Region of EMTh. Sunflower, sugar beet, barley and tobacco are also cultivated in the Region, to a lesser extent.

Figure 5.2 illustrates the composition of the gross value of the agricultural production of the Region EMTh in each of the agricultural products that are produced within the region.

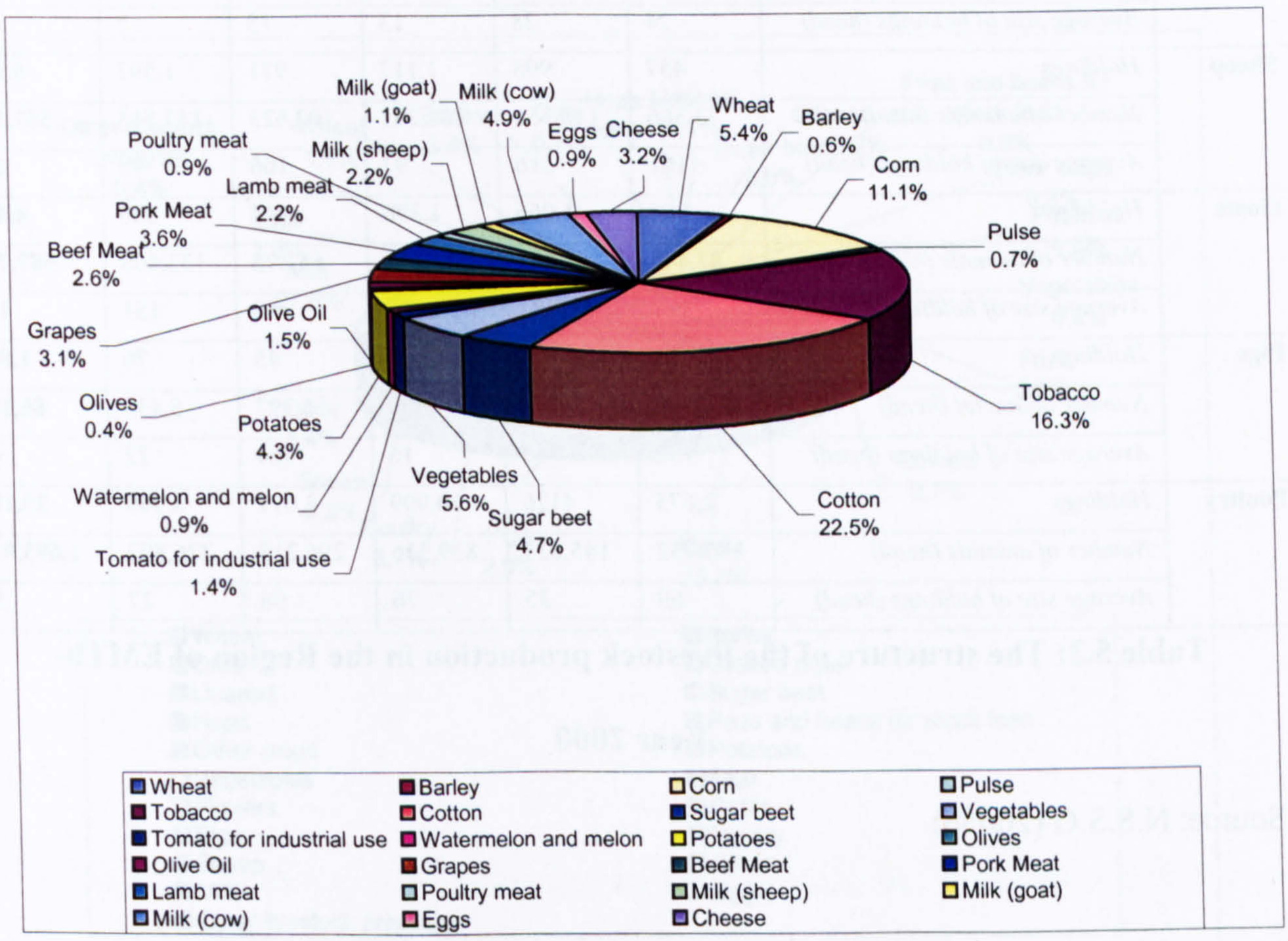

Figure 5.2: The Composition of Gross Value of the agricultural production in the Region of EMTh –Year 1999

Source: After N.S.S.G (2001a)

Figure 5.2 illustrates that crop production has greater gross value (78.3%) than the livestock production (21.7%). Among the livestock products in the Region, sheep and goat products (which are lamb meat, sheep milk, goat milk and cheese - the vast majority of which is produced from sheep and goat milk) have the greatest gross value.

Table 5.3 details the number of livestock holdings in the Region of East Macedonia and Thrace and the number of the animals as well as the average size of these holdings. It has to be mentioned that many of the production units are very small. Indeed, the number of the holdings that operate as enterprises and have more than 150 animals is not very large.

Animals		Drama	Kavala	Evros	Xanthi	Rhodopi	EMTh
Cattle	*Holdings*	1,774	928	2,259	2,626	5,198	**12,785**
	Number of animals (head)	43,121	25,565	30,430	39,020	34,995	**173,131**
	Average size of holdings (head)	24	28	13	15	7	**14**
Sheep	*Holdings*	457	993	1,117	971	1,597	**5,135**
	Number of animals (head)	73,366	115,551	108,291	102,623	157,513	**557,344**
	Average size of holdings (head)	161	116	97	106	99	**109**
Goats	*Holdings*	383	1,066	1,396	747	886	**4,478**
	Number of animals (head)	87,446	189,933	111,568	65,378	133,408	**587,733**
	Average size of holdings (head)	228	178	80	88	151	**131**
Pigs	*Holdings*	174	197	1,342	45	76	**1,834**
	Number of animal (head)	33,346	9,425	21,558	16,397	5,438	**86,164**
	Average size of holdings (head)	192	48	16	364	72	**47**
Poultry	*Holdings*	2,675	4126	10,999	3,077	8,309	**29,186**
	Number of animals (head)	185,752	145,833	839,316	296,218	226,802	**1,693,921**
	Average size of holdings (head)	69	35	76	96	27	**58**

Table 5.3: The structure of the livestock production in the Region of EMTh-Year 2000

Source: N.S.S.G (2005b)

Agriculture is an important component of the economy of Cornwall and particularly its more rural districts. Agricultural employment is declining over time in U.K., and this is major problem for areas such as Cornwall where there are no alternative sources of employment.

Figure 5.3 illustrates the gross output of each agricultural product in Cornwall as a percentage of the total agricultural output. Livestock production has higher gross output than crop production. The 71.1% of the gross output derives from livestock in contrast with

EMTh where only 21.7% of the gross value of agricultural products is derived from livestock. The most important products are cattle (23.7% of the total output), followed by poultry, sheep and pigs, which are also important, representing the 8.7%, 4.8% and the 2% of the total output, respectively. Dairy activity is very important in Cornwall (27.5% of the total output). Flowers, vegetables, potatoes and barley are the crops that are mostly produced in the area (9.7% 6.2%, 4.6% and 3.8%, of the total output respectively).

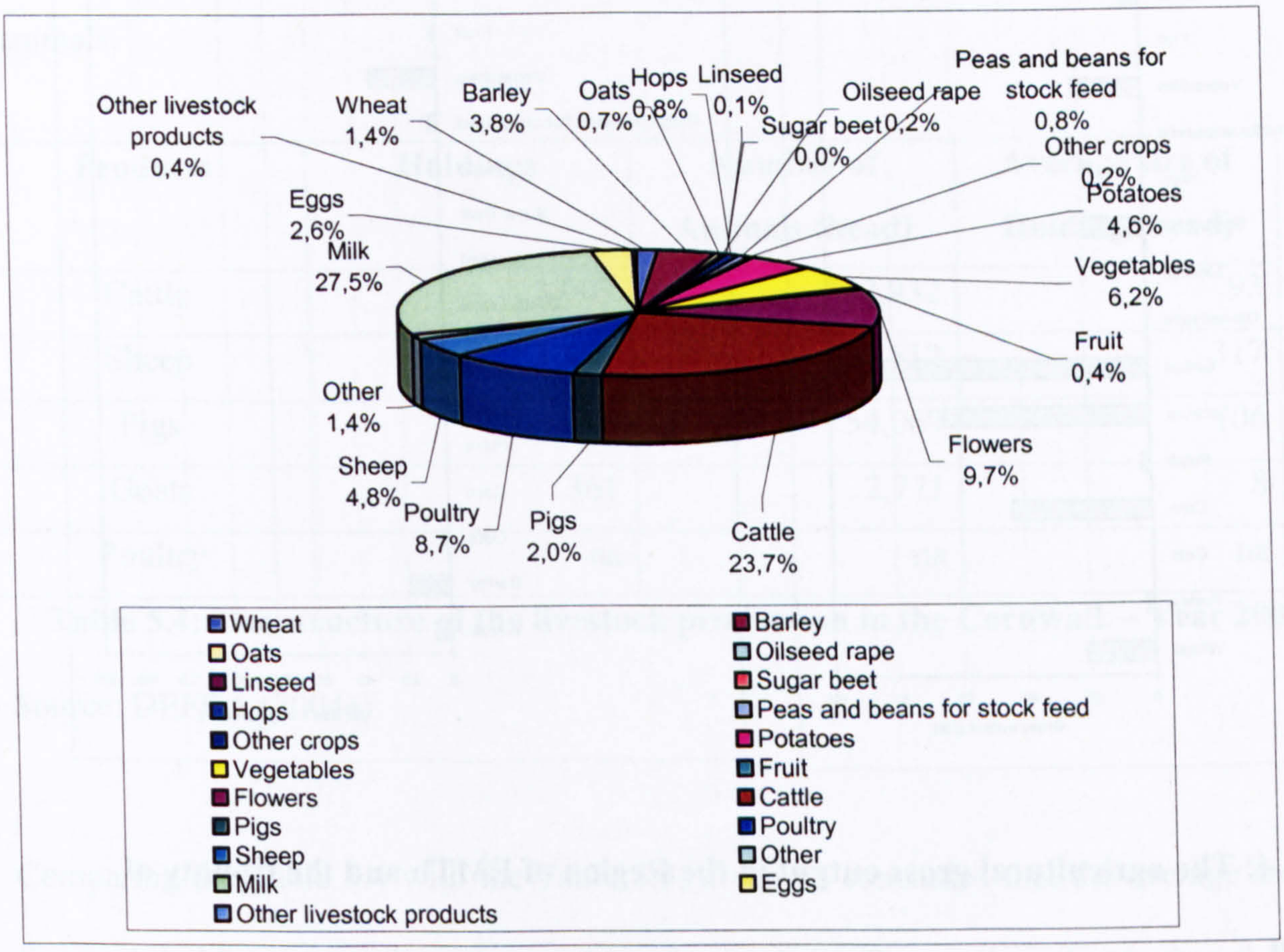

Figure 5.3: The agricultural and horticultural gross output for Cornwall – Year 1995

Source: Cornwall County Council (1998).

Figure 5.4 illustrates a comparison between the gross output of the agricultural products in the Region of EMTh and the County of Cornwall.

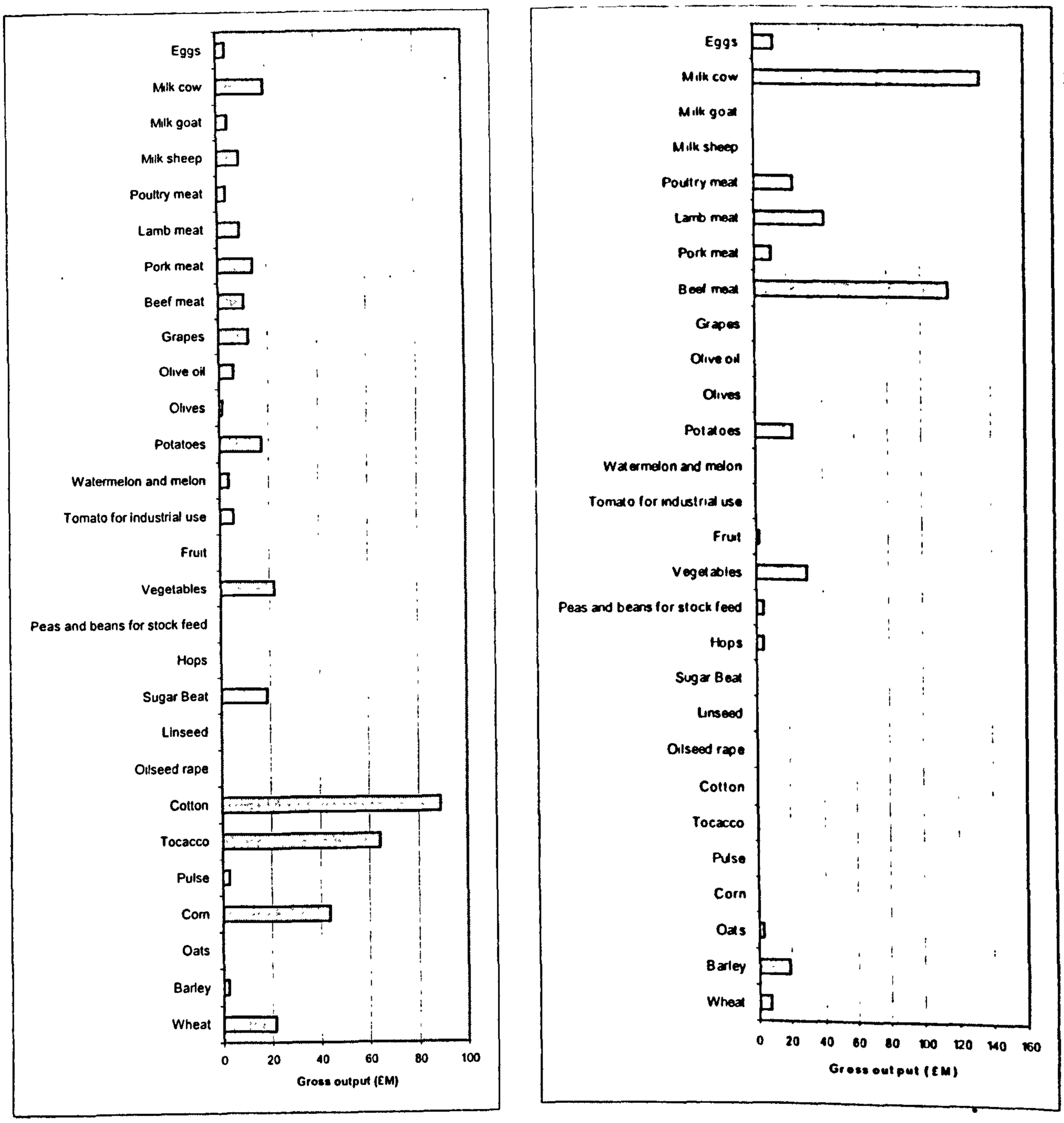

Figure 5.4: The agricultural gross output in the Region of EMTh and the County of Cornwall

In both regions, cow milk is the most important livestock product followed by beef meat and lamb meat in Cornwall, and pork meat and beef meat in EMTh. Lamb meat as well as sheep and goat milk have a significant contribution to the livestock gross output of EMTh. Regarding the crop sector, vegetable production has the greatest gross value in Cornwall followed by potatoes and barley; while, in EMTh cotton comprises the most important crop

in economic terms followed by tobacco and corn. The economic validity of most horticultural products that are produced in EMTh (e.g. cotton, tobacco, corn, wheat) is based on the E.U. subsidies that will last till 2006, through the C.A.P.. Thus, a restructuring of the horticultural sector in terms of the cultivation of other crops (such as energy crops or aromatic plants) is necessary.

Table 5.4 illustrates the number of livestock holdings in Cornwall and the number of animals.

Products	Holdings	Number of Animals (head)	Average size of Holding (head)
Cattle	3,903	362,932	93
Sheep	1,917	607,512	317
Pigs	509	54,069	106
Goats	361	2,771	8
Poultry	na	na	na

Table 5.4: The structure of the livestock production in the Cornwall. – Year 2000

Source: DEFRA (2004e)

Comparing the Table 5.4 with the Table 5.3, it can be concluded that the average size of livestock holdings, as well as the number of animals, in Cornwall are larger than those in the Region of EMTh. That means that the number of holdings is much lower in Cornwall than in EMTh.

5.4 Description of Meat Sector in Greece and U.K.

5.4.1 Meat Sector in Greece

The livestock population in Greece according to the National Statistic Service of Greece (N.S.S.G) for the years 1985 - 2000 (on December 31th of each year) is presented in Table 5.5.

Livestock	Cattle	Sheep	Goats	Pigs	Poultry
1985	712,916	8,341,833	4,934,760	1,008,795	28,029,077
1986	701,738	8,617,115	5,217,698	999,920	27,305,288
1987	682,976	8,612,322	5,282,363	995,485	26,889,037
1988	677,066	8,670,262	5,338,630	1,010,842	27,294,992
1989	653,860	8,723,025	5,347,827	1,000,700	27,577,856
1990	623,514	8,659,967	5,334,105	995,517	26,767,472
1991	601,831	8,692,286	5,336,443	986,243	27,376,468
1992	587,177	8,666,216	5,364,870	1,001,295	27,385,282
1993	579,038	8,706,146	5,377,808	1,013,620	27,844,031
1994	578,532	8,802,152	5,443,521	1,008,600	27,978,755
1995	581,081	8,869,126	5,525,252	994,177	27,682,670
1996	580,408	8,896,281	5,569,820	987,001	27,800,187
1997	579,317	8,884,153	5,600,492	998,245	28,265,519
1998	583,367	8,930,415	5,614,523	999,205	28,453,163
1999	601,932	8,950,971	5,614,453	972,976	29,514,677
2000	613,190	8,992,502	5,640,670	964,420	29,837,540

Table 5.5: The livestock population in Greece – Year 1985-2000 (heads)

Sources: N.S.S.G. (1991a), N.S.S.G. (1991b), N.S.S.G. (1992), N.S.S.G. (1993a), N.S.S.G. (1993b), N.S.S.G. (1994), N.S.S.G. (1995a), N.S.S.G. (1995b), N.S.S.G. (1996), N.S.S.G. (1998), N.S.S.G. (1999b), N.S.S.G. (1999c), N.S.S.G. (2001b), N.S.S.G. (2001c), N.S.S.G. (2003a), N.S.S.G. (2005a).

The cattle population decreased from 712,916 animals in 1985 to 583,367 in 1998 and increased to 613,190 in 2000. On the other hand, the sheep and goat population increased from 8,341,833 and 4,934,760 animals, respectively, in 1985 to 8,992,502 and decreased to 5,640,670 animals in 2000. The pig population is almost stable with small fluctuations between 972,976 and 1,008,795 animals during the examined period. The poultry

population is characterized by small fluctuations between 26,767,472 and 29,837,540 birds during the period 1985-2000 (Table 5.6).

The number of slaughtered animals in Greece for the years 1985 - 2000 is given in Table 5.6. There was a decline to the number of slaughtered calves during the examined period in Greece. Sheep included lambs were slaughtered in Greece between 1985-2000 fluctuated between 3,299,779 and 3,625,735 animals while the slaughtered goats during the examined period fluctuated between 2,038,611 and 2,438,183 animals. The number of slaughtered pigs is almost stable (there are only some small fluctuations between 1,050,558 and 1,170,236 animals) while poultry slaughtered between 1985-2000 fluctuated between 22,130,107 and 31,305,506 birds.

Livestock	Calves	Sheep and Lambs	Goats	Pigs	Fowls
1985	115,273	3,452,020	2,069,869	1,077,393	31,305,506
1986	108,497	3,299,779	2,223,419	1,136,496	30,803,602
1987	108,422	3,452,486	2,374,143	1,146,549	26,541,594
1988	112,890	3,480,520	2,368,718	1,096,246	25,686,687
1989	120,517	3,574,973	2,438,183	1,044,289	26,773,260
1990	114,727	3,625,735	2,416,048	1,080,423	25,111,279
1991	105,459	3,520,497	2,407,554	1,050,558	26,957,518
1992	101,059	3,509,782	2,400,278	1,111,016	28,359,852
1993	91,256	3,481,936	2,330,854	1,146,209	27,400,007
1994	91,918	3,461,931	2,339,591	1,103,312	28,831,425
1995	93,366	3,543,894	2,384,097	1,170,236	27,270,762
1996	85,929	3,455,615	2,357,856	1,115,003	24,937,107
1997	87,057	3,400,889	2,294,030	1,123,203	23,446,576
1998	93,991	3,437,179	2,038,611	1,138,644	23,087,208
1999	88,893	3,356,903	2,244,161	1,120,596	22,130,107
2000	84,155	3,339,352	2,240,760	1,057,018	22,916,855

Table 5.6: Slaughtered animals in Greece– Year 1985-2000 (head)

Compiled from N.S.S.G. (1991a), N.S.S.G. (1991b), N.S.S.G. (1992), N.S.S.G. (1993a), N.S.S.G. (1993b), N.S.S.G. (1994), N.S.S.G. (1995a), N.S.S.G. (1995b), N.S.S.G. (1996), N.S.S.G. (1998), N.S.S.G. (1999b), N.S.S.G. (1999c), N.S.S.G. (2001b), N.S.S.G. (2001c), N.S.S.G. (2003a), N.S.S.G. (2005a).

The number of animals that were slaughtered in the Region of EMTh in the years 1985-2000 is presented in Table 5.7.

Livestock	Calves	Sheep and Lambs	Goats	Pigs	Poultry
1985	14,819	101,576	120,596	79,399	1,737,637
1986	13,875	99,329	77,729	82,239	2,044,988
1987	13,613	103,004	90,553	76,560	1,521,824
1988	14,078	95,486	72,255	54,378	1,718,404
1989	15,268	114,801	82,879	52,374	1,684,711
1990	12,270	113,848	82,737	78,272	1,746,947
1991	13,546	101,147	86,004	62,575	1,596,172
1992	11,628	102,376	80,252	60,475	1,615,308
1993	8,739	104,988	76,462	81,508	1,687,936
1994	8,664	102,541	74,069	72,284	1,736,364
1995	7,754	95,353	74,386	75,248	1,799,035
1996	5,377	99,195	72,347	74,401	1,808,202
1997	5,413	83,425	58,654	67,112	1,716,569
1998	6,966	80,375	66,220	64,185	2,616,220
1999	7,143	86,438	72,727	83,931	2,830,261
2000	5,552	93,326	76,682	87,008	2,694,980

Table 5.7: Slaughtered animals in the Region of EMTh -Years 1985 –2000 (head)

Sources: N.S.S.G. (1991a), N.S.S.G. (1991b), N.S.S.G. (1992), N.S.S.G. (1993a), N.S.S.G. (1993b), N.S.S.G. (1994), N.S.S.G. (1995a), N.S.S.G. (1995b), N.S.S.G. (1996), N.S.S.G. (1998), N.S.S.G. (1999b), N.S.S.G. (1999c), N.S.S.G. (2001b), N.S.S.G. (2001c), N.S.S.G. (2003a), N.S.S.G. (2005a).

Table 5.7 illustrates that there was a decline in the number of the calves that were slaughtered during 1985-2000. More particularly, there was a significant decline in the slaughtered calves during 1996 and 2000 due to Food and Mouth outbreaks that appeared in the Region of EMTh in those years. The number of sheep and lambs that were slaughtered within 1985-2000 fluctuated between 80,375 and 114,801 animals, while the goats that were slaughtered during the examined period within EMTh fluctuated between 58,654 and 120,596 animals. Moreover, the number of pigs that were slaughtered during

the same period fluctuated between 52,374 and 87,008 animals, while the birds that were slaughtered fluctuated between 1,521,824 and 2,830,261.

5.4.2 Meat Sector in U.K.

The meat market in U.K. consists of a very important sector of the national economy. The livestock population in U.K., for the years 1985-2000 is represented Table 5.8 (MAFF 2000b), illustrating that there was a continual decline in cattle and calves population during the examined period. On the other hand, there was a continual increase in the poultry population during the same period. Sheep and pigs fluctuated between 35,824 – 44, 656 and 6,482 – 8,146 animals, respectively.

Years	Cattle and Calves	Sheep	Pigs	Poultry
1985	13,028	35,824	7,967	109,149
1986	12,648	37,228	8,038	110,538
1987	12,293	39,204	8,044	118,965
1988	12,008	41,495	8,084	122,228
1989	12,101	43,588	7,606	108,851
1990	12,192	44,469	7,548	112,718
1991	12,003	44,166	7,695	114,997
1992	11,924	44,540	7,707	116,342
1993	11,851	44,436	7,853	122,897
1994	11,954	43,813	7,892	118,762
1995	11,857	43,304	7,627	119,474
1996	12,040	42,086	7,590	n/a
1997	11,633	42,823	8,072	n/a
1998	11,519	44,471	8,146	152,886
1999	11,423	44,656	7,284	153,581
2000	11,133	42,261	6,482	157,252

Table 5.8: The livestock population in U.K. – Year 1985-2000 (thousand head)

Source: MAFF (2000b)

The numbers of animals that were slaughtered in U.K. between 1985 and 2000 are shown in (Table 5.9). Slaughtered cattle and calves in U.K. fluctuated between 4,286 – 2,284 thousand head during the period 1985-2000. A continual increase in the number of slaughtered sheep appeared between 1987 and 1991, while during the period 1992-2000 there was a fluctuation between 21,844 – 16,660 thousand head. The number of slaughtered pigs fluctuated between 15,807 and 12,690 thousand head within the period 1985-2000.

Years	Cattle and Calves	Sheep	Pigs
1985	4,286	15,892	15,305
1986	3,943	15,473	15,609
1987	4,043	15,465	15,514
1988	3,373	17,114	15,807
1989	3,443	19,618	14,544
1990	3,524	20,012	14,203
1991	3,617	20,918	14,457
1992	3,350	19,145	14,327
1993	2,963	18,864	14,610
1994	3,112	18,962	15,069
1995	3,293	19,310	14,376
1996	2,312	18,049	14,220
1997	2,284	16,660	15,495
1998	2,306	18,402	16,088
1999	2,286	19,104	14,727
2000	2,433	21,844	12,690

Table 5.9:Slaughered animals in U.K.– Year 1985 –2000 (thousand head)

Source: MLC (2001a)

The data in Table 5.10 represent the number of animals slaughtered in Devon and Cornwall in 1985-2000.

Years	Cattle excluding calves			Total sheep			Total pigs		
	Corn wall	Devon	Devon & Cornwall	Corn wall	Devon	Devon & Cornwall	Corn wall	Devon	Devon & Cornwall
1985	50.6	140.9	191.5	339.4	1,072.1	1,411.5	141.5	426.4	567.9
1986	49.0	156.8	205.8	294.3	1,117.0	1,411.3	157.2	438.7	595.9
1987	54.7	178	232.7	292.5	1,230.4	1,522.9	167.6	461.5	629.1
1988	56.5	157.6	214.1	333.9	1,362.9	1,696.8	170.1	524.9	695.0
1989	68.0	153.9	221.9	401.3	1,471.8	1,873.1	113.2	437.6	550.8
1990	70.4	133.1	203.5	446.6	1,368.0	1,814.6	81.8	371.3	453.1
1991	79.0	113.9	192.9	533.8	1,509.1	2,042.9	64.0	360.5	424.5
1992	92.5	124.2	216.7	525.5	1,345.3	1,870.8	51.9	358.1	410.0
1993	84.2	105.5	189.7	555.4	899.9	1,455.3	48.0	389.3	437.3
1994	n/a	n/a	185.2	n/a	n/a	1,267.7	n/a	n/a	381.2
1995	n/a	n/a	203.9	n/a	n/a	1,406.3	n/a	n/a	355.8
1996	n/a	n/a	154.8	n/a	n/a	1,351.8	n/a	n/a	341.7
1997	93.2	80.7	173.9	685.2	649.8	1,335.0	31.4	361.9	393.3
1998	n/a	n/a	160.5	n/a	n/a	1,380.o	n/a	n/a	366.2
1999	n/a	n/a	148.5	n/a	n/a	1,434.0	n/a	n/a	307.6
2000	n/a	n/a	158.3	n/a	n/a	1,544.0	n/a	n/a	228.9

Table 5.10: Slaughtered animals in Devon and Cornwall in 1985-2000

(thousand head)

Sources: MAFF (1988), MAFF (1989), MLC (1991), MLC (1992), MLC (1993), MLC (1995), MLC (1997), MLC (1998), MLC (2000), DEFRA(2005)

Since the number of slaughtered animals, as they are presented by DEFRA and MLC, for the years 1994-1996, and 1998 – 2000 is given for Devon and Cornwall as a sum (without any specification for each county), Table 5.10 illustrates the number of slaughtered animals for each county separate and for both counties together. Therefore, the number of slaughtered cattle in Cornwall fluctuated between 49.0 – 93.2 thousand animals during the period 1985 –2000 and between 148.5 and 232.7 thousand heads in both counties. Slaughtered sheep fluctuated during the examined period, between 292.5 and 685.2 thousand heads in Cornwall and between 1,267.7 and 2,042.9 thousand head in both counties. The number of pigs slaughtered during the same period in Cornwall as well as in

Devon and Cornwall together fluctuated between 31.4 – 170.1 and 228.9 – 695.0 thousand head, respectively.

Therefore, cattle and sheep that were slaughtered in EMTh are, respectively, almost 5 and 3 time less compared with those that were slaughtered in Cornwall. The number of pigs that were slaughtered in Cornwall during the period 1985-1990 was almost double those which were slaughtered in EMTh during the same period, while the number of pigs slaughtered during the period 1991-2000 was almost the same in both areas. Due to the fact that there are no available data for poultry and goats slaughtered in Cornwall, a comparison between the two regions can not take place.

5.5 Description of Milk Sector in Greece and U.K.

5.5.1 Milk Sector in Greece

Milk market in Greece is one of the most important parts of the Greek agricultural sector, comprising the cow milk market and the market for sheep and goat milk. Cow milk is used for the production of liquid milk, butter, ice cream, yogurt, cheese and cream powder, while sheep and goat milk is used for the production of some yogurts and white cheese like Feta. Milk production in Greece for the years 1985-2000 according to the National Statistic Service of Greece is illustrated in Table 5.11.

The production of cow's milk is characterized by a continual increase during the years 1985-2000 as has as the production of sheep's and goat's milk (Table 5.11). It has to be mentioned that the quantities of cow milk that are produced in Greece, as well as other member states of the E.U., are restricted by milk quota.

Years	Milk from Cows	Milk from Sheep	Milk from Goats
1985	570,427	624,556	464,578
1986	567,043	625,231	468,640
1987	591,202	652,874	492,253
1988	603,478	662,257	503,729
1989	624,668	668,230	502,448
1990	618,947	673,524	498,614
1991	621,101	686,987	496,495
1992	672,312	690,547	497,274
1993	718,950	700,559	503,735
1994	719,726	706,413	507,282
1995	737,751	720,521	512,975
1996	739,879	720,712	515,933
1997	736,704	722,242	522,760
1998	743,674	729,916	520,366
1999	735,723	731,221	526,132
2000	748,387	743,238	520,433

Table 5.11: Milk Production in Greece - Years 1985-2000 (tonnes)

Sources: N.S.S.G. (1991a), N.S.S.G. (1991b), N.S.S.G. (1992), N.S.S.G. (1993a), N.S.S.G. (1993b), N.S.S.G. (1994), N.S.S.G. (1995a), N.S.S.G. (1995b), N.S.S.G. (1996), N.S.S.G. (1998), N.S.S.G. (1999b), N.S.S.G. (1999c), N.S.S.G. (2001b), N.S.S.G. (2001c), N.S.S.G. (2003a), N.S.S.G. (2005a).

The number of animals milked in Greece during 1985-2000 are shown in Table 5.12.

Livestock	Cows	Sheep	Goats
1985	271,274	6,672,956	3,772,297
1986	262,059	6,683,931	3,804,465
1987	259,767	6,881,845	3,992,330
1988	257,771	6,959,888	4,081,270
1989	253,971	6,983,376	4,101,860
1990	246,690	7,021,955	4,110,588
1991	238,819	7,061,420	4,085,247
1992	239,022	7,067,466	4,085,351
1993	236,297	7,074,995	4,127,944
1994	230,409	7,050,053	4,108,543
1995	231,899	7,148,788	4,158,670
1996	229,090	7,180,951	4,231,028
1997	225,507	7,156,395	4,272,423
1998	226,911	7,181,248	4,264,642
1999	225,710	7,117,639	4,272,266
2000	224,528	7,148,290	4,237,176

Table 5.12: Milked Animals in Greece - Years 1985-2000 (head)

Sources: N.S.S.G. (1991a), N.S.S.G. (1991b), N.S.S.G. (1992), N.S.S.G. (1993a), N.S.S.G. (1993b), N.S.S.G. (1994), N.S.S.G. (1995a), N.S.S.G. (1995b), N.S.S.G. (1996), N.S.S.G. (1998), N.S.S.G. (1999b), N.S.S.G. (1999c), N.S.S.G. (2001b), N.S.S.G. (2001c), N.S.S.G. (2003a), N.S.S.G. (2005a).

There was a decline to the number of cows milked during 1985-2000 while there was a rise to the number of milked sheep and goats.

The milk production in the Region of EMTh for the years 1985-2000 is represented in Table 5.13.

Years	Milk from cows	Milk from sheep	Milk from goats
1985	87,274	30,989	25,435
1986	81,305	31,542	25,399
1987	83,366	33,016	27,261
1988	85,095	33,970	28,291
1989	81,839	33,369	27,408
1990	78,676	34,466	28,425
1991	73,234	35,611	28,457
1992	75,700	34,478	27,024
1993	78,871	35,577	28,509
1994	75,597	35,084	28,973
1995	75,665	34,724	28,760
1996	74,076	34,003	29,840
1997	79,986	32,386	31,397
1998	83,310	32,605	34,401
1999	86,747	32,645	32,187
2000	92,892	35,901	36,889

Table 5.13: Milk Production in the Region of EMTh - Years 1985-2000 (tonnes)

Sources: N.S.S.G. (1991a), N.S.S.G. (1991b), N.S.S.G. (1992), N.S.S.G. (1993a), N.S.S.G. (1993b), N.S.S.G. (1994), N.S.S.G. (1995a), N.S.S.G. (1995b), N.S.S.G. (1996), N.S.S.G. (1998), N.S.S.G. (1999b), N.S.S.G. (1999c), N.S.S.G. (2001b), N.S.S.G. (2001c), N.S.S.G. (2003a), N.S.S.G. (2005a).

The production of milk from cows in the Region of EMTh during the years 1985-2000 fluctuated between 73,234 and 92,892 tonnes while the fluctuation in production of sheep's and goat's milk were between 30,989 – 35,901 tonnes and 25,399 – 36,889 tonnes, respectively.

5.5.2.Milk Sector in U.K.

The milk market in U.K. comprises a very important sector of the British agricultural industry and mainly consists of the market in cow milk and to a very small degree, the market in goat milk. Cow milk is used for the production of liquid milk, butter, ice cream, yogurt, cheese and cream powder, while the goat milk is also used for the production of various dairy products.

The number of dairy cows and goats in U.K. in the years 1985-2000 is illustrated below (Table 5.14).

Years	Dairy Cows (thousand head)	Dairy Goats (head)
1985	3149.7	n/a
1986	3138.1	n/a
1987	3043.1	n/a
1988	2912.7	n/a
1989	2865.9	n/a
1990	2848.3	22,605
1991	2769.7	21,007
1992	2682.5	20,773
1993	2667.8	20,510
1994	2716.0	21,125
1995	2602.8	20,859
1996	2587.4	21,732
1997	2478.4	22,738
1998	2424.1	23,513
1999	2440.3	23,922
2000	2334.6	24,983

Table 5.14: Dairy cows and goats- Years 1985-2000

Source: DEFRA (2002b)

According to Table 5.14, there was a decline to the number of dairy cows during the study period. Historical data relating to the number of dairy goats that were breeding in U.K. before 1990, were not routinely kept. The data in Table 5.14 illustrate that the number of dairy goats in U.K. fluctuated between 20,510 and 24,983 animals during the years 1990 – 2000.

The U.K. milk production from the national dairy herd for the period 1985 –2000 is presented in Table 5.15.

Years	Milk Production (million litres)	Milk Production (tonnes)[1]	Years	Milk Production (million litres)	Milk Production (tonnes)[1]
1985	15,653	16,123	1993	14,310	14,739
1986	15,872	16,348	1994	14,542	14,978
1987	15,062	15,514	1995	14,252	14,680
1988	14,744	15,186	1996	14,249	14,676
1989	14,530	14,966	1997	14,413	14,845
1990	14,816	15,260	1998	14,210	14,636
1991	14,344	14,774	1999	14,581	15,018
1992	14,249	14,676	2000	14,047	14,468

Table 5.15: Milk Production from dairy herd in U.K. (million litres)

Source: MAFF (2001c)

[1] An estimation of cow milk production in tonnes took place by multiplying the cow milk production in litres with the specific gravity of cow milk as was given by the Greek Code of Food and Drinks (1971), Anyfantakis (1992), Kyriakopoulos (1995) and dividing the product by a thousand.

Therefore, there was a decline in the production of cow milk in U.K. during the study period.

The UK milk production from dairy goats for the years 1985-2000 was estimated as multiplied the number of dairy goats in each year (stated by DEFRA) with the average milk yield per dairy goat as was given by Nix's Farm Management Pocketbook (Nix 1989; 1990; 1991; 1992; 1993; 1994; 1995; 1996; 1997; 1998; 1999; 2000), in each of these years.

According to the following table (Table 5.16), the milk production from goats in U.K. fluctuated between 15,383 – 19,986 litres during the period 1990 – 2000. Besides, there were not any statistical data available regarding the dairy goat population and the average yield per dairy goat for the years 1985- 1989.

Years	Dairy Goat Population (head)[1]	Milk Yield per goat (litres)[2]	Milk Production (litres)	Milk Production (tonnes)[3]
1985	n/a	n/a	n/a	n/a
1986	n/a	n/a	n/a	n/a
1987	n/a	n/a	n/a	n/a
1988	n/a	n/a	n/a	n/a
1989	n/a	n/a	n/a	n/a
1990	22,605	800	18,084	18.66
1991	21,007	800	16,806	17.34
1992	20,773	750	15,580	16.08
1993	20,510	750	15,383	15.88
1994	21,125	750	15,844	16.35
1995	20,859	750	15,644	16.14
1996	21,732	750	16,299	16.82
1997	22,738	800	18,190	18.77
1998	23,513	800	18,810	19.41
1999	23,922	800	19,138	19.75
2000	24,983	800	19,986	20.63

Table 5.16: Milk Production from goats in U.K. – Years 1985-2000

[1]Compiled from MAFF (1996), MAFF (1997), MAFF (1998) , MAFF (1999a), MAFF (2000a), MAFF (2001a) , DEFRA (2002a)
[2]Compiled from Nix (1989), Nix (1990), Nix (1991), Nix (1992), Nix (1993), Nix (1994), Nix (1995) , Nix (1996), Nix (1997), Nix (1998), Nix (1999) and Nix (2000)
[3] An estimation of goat milk production in tonnes took place by multiplying the goat milk production in litres with the specific gravity of goat milk as was given by the Greek Code of Food and Drinks (1971), Anyfantakis (1992), Kyriakopoulos (1995) and dividing the product by a thousand.

An estimation of cow milk and goat milk production in Cornwall is presented in the Tables 5.17 and 5.18, respectively.

Cow milk production was estimated by multiplying the dairy cow population in Cornwall with the average milk yield in U.K. for each year of the examined period as (MAFF 2001b; MAFF 2001c).

Years	Dairy Cow Population (head) [1]	Milk Yield per cow (litres) [2]	Milk Production (litres)	Milk Production (tonnes) [3]
1985	111,818	4,872	544,777,296	561,121
1986	113,270	4,973	563,291,710	580,190
1987	110,433	4,892	540,238,236	556,445
1988	105,084	4,986	523,948,824	539,667
1989	103,439	4,998	516,988,122	532,498
1990	103,115	5,151	531,145,365	547,080
1991	100,630	5,134	516,634,420	532,133
1992	98,801	5,238	517,519,638	533,045
1993	97,971	5,260	515,327,460	530,787
1994	100,187	5,299	530,890,913	546,818
1995	96,547	5,397	521,064,159	536,696
1996	94,841	5,546	525,988,186	541,768
1997	91,617	5,788	530,279,196	546,188
1998	87,936	5,774	507,742,464	522,975
1999	89,747	5,964	535,251,108	551,309
2000	85,501	5,915	505,738,415	520,911

Table 5.17:Milk production from cows in the County of Cornwall – Years 1985-2000

[1]MAFF (2001b)
[2]MAFF (2001c)
[3] An estimation of cow milk production in tonnes took place by multiplying the cow milk production in litres with the specific gravity of cow milk as was given by the Greek Code of Food and Drinks (1971), Anyfantakis (1992), Kyriakopoulos (1995) and dividing the product by a thousand

Goat milk production in Cornwall, as presented in Table 5.18 for the years 1990-2000, was estimated by multiplying the number of dairy goats in each year with the average yield per dairy goat as was given by Nix's Farm Management Pocketbook (Nix 1989; 1990; 1991; 1992; 1993; 1994; 1995; 1996; 1997; 1998; 1999; 2000) for each of these years. There are no data available for the years 1985-1990.

As illustrated in Tables 5.17 and 5.18, milk production from cows in Cornwall fluctuated between 520,911 and 580,190 tonnes during the examined period while milk from goats fluctuated between 641 and 1,066 tonnes.

Years	Dairy Goat Population (head)[1]	Milk Yield per goat (litres)[2]	Milk Production (litres)	Milk Production (tonnes)[3]
1985	n/a	n/a	n/a	n/a
1986	n/a	n/a	n/a	n/a
1987	n/a	n/a	n/a	n/a
1988	n/a	n/a	n/a	n/a
1989	n/a	n/a	n/a	n/a
1990	777	800	621,600	641
1991	762	800	609,600	629
1992	641	750	480,750	496
1993	844	750	633,000	653
1994	974	750	730,500	754
1995	1232	750	924,000	954
1996	1377	750	1,032,750	1066
1997	958	800	766,400	791
1998	913	800	730,400	754
1999	938	800	750,400	774
2000	901	800	720,800	744

Table 5.18: Milk production from goats in the County of Cornwall – Years 1985-2000

[1]Compiled from MAFF (1996), MAFF (1997), MAFF (1998) , MAFF (1999a), MAFF (2000a), MAFF (2001a) , DEFRA (2002a)
[2]Compiled from Nix (1989), Nix (1990), Nix (1991), Nix (1992), Nix (1993), Nix (1994), Nix (1995) , Nix (1996), Nix (1997), Nix (1998), Nix (1999)and Nix (2000)
[3] An estimation of goat milk production in tonnes took place by multiplying the goat milk production in litres with the specific gravity of goat milk as was given by the Greek Code of Food and Drinks (1971), Anyfantakis (1992), Kyriakopoulos (1995) and dividing the product by a thousand

Compared with milk production in East Macedonia and Thrace, Cornwall produces 7 times more cow's milk than the EMTh region. On the other hand, the region of East Macedonia and Thrace produces 40 times more goat's milk than Cornwall.

5.6 Description of Marketing Channels of Sheep Meat Sector in the Region of EMTh and the County of Cornwall

5.6.1 Marketing Channels in Sheep and Goat Meat Sector in EMTh

In Greece, there are not any live or electronic auction markets for selling livestock. Farmers usually sell their produce live to wholesalers (usually based in the large markets of Athens and Thessaloniki) who slaughter the livestock through local abattoirs paying commission. They then sell the carcases, mostly to the supermarkets or to butchers in the big cities (e.g. Athens, Thessaloniki, Patra). Alternatively, farmers may sell some of their produce live to local butchers who slaughter the animals in local abattoirs, paying commission. There are also some private abattoirs that operate as wholesalers. These abattoirs buy livestock from farmers and sell the carcass to local butchers. Some farmers use more than one marketing channel in order to sell their sheep and goats (they may sell the 60% of their lambs to wholesalers, and 40% to abattoir). In 2000, in the Region of EMTh, there were nine abattoirs that belonged to the municipalities, and five other private abattoirs. All the municipal abattoirs slaughtered animals for both wholesalers and retailers, taking commission. Two of the private abattoirs belonged to a large scale meat processing company that bred pigs, but also procured livestock (e.g sheep and goats) from other farmers, slaughtered them, processed the carcass, and sold it to supermarkets, butchers and some quantities direct to consumers through their retail shops. Another abattoir belonged to a company that breeds cattle, but which also bought sheep and goats from other farmers, slaughtered them, and sold the carcass to butchers and supermarkets. There was also one abattoir that belonged to a butcher who purchased animals from farmers, slaughtered them in his abattoir, processed the carcass and sold it direct to consumers. And the last one acted purely as a wholesaler. All private abattoirs also slaughtered animals of wholesalers, keeping some commission.

Data for the use of a particular marketing channel is not routinely collected in Greece. Therefore, a number of telephone surveys were performed in 2001 as Appendix IX describes. The results of this preliminary survey are presented in Figure 5.5.

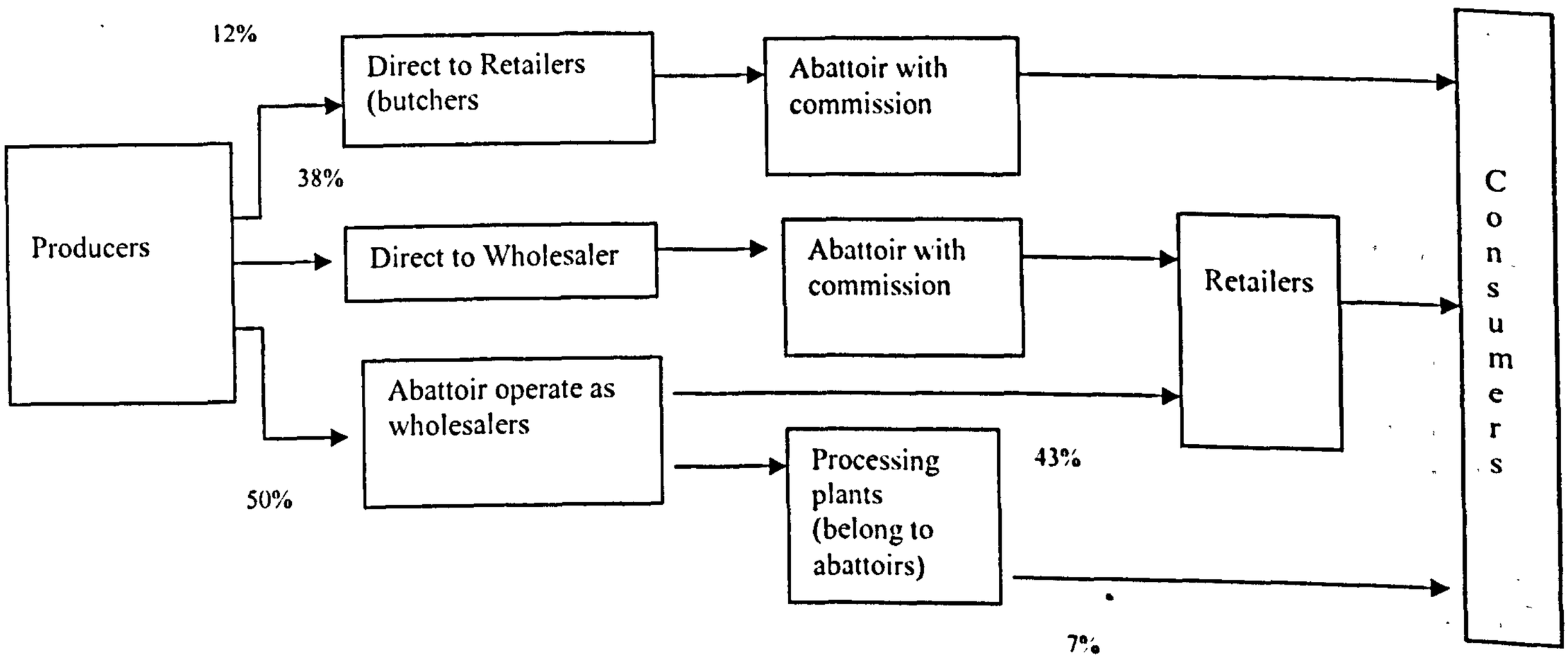

Figure 5.5 Sheep and goat meat marketing channels in the Region of EMTh

The quantities of livestock that were distributed through each of the above main marketing outlets may be subject to change from one year to another due to a possible expansion of some wholesalers from other parts of Greece. Thus, it is possible for farmers to change their preferences when a new wholesaler offers them better prices for their livestock. Very few sheep and goat farmers in EMTh sell some of their lambs (live weight) direct to consumers (Personal communication with farmers, abattoirs and local authorities, 2001). This marketing channel is used mostly during the Easter period for the Christian population and Kourbani (slaughtered animal) Bayram period for the Muslim population. The number of animals sold through this marketing channel is not possible to be estimated because these animals were slaughtered by the consumers themselves, and these data are not collected by any governmental body or organisation. There are also many farmers that keep some of their sheep and goats for self-consumption. These quantities are very difficult to be estimated due to lack of any available data.

5.6.2 Marketing Channels in Sheep Meat Sector in Cornwall

In Britain, except the direct sale between farmers and abattoir, livestock are sold at weekly markets, seasonal and annual fairs as well as through electronic auction markets (Murray *et al.* 1996). Sheep producers may also market their livestock produce through indirect marketing channels e.g. group marketing schemes.

Data for the use of a particular marketing channel on a county basis are not routinely collected in U.K.. Therefore, in order to quantify the marketing channels that sheep farmers follow in Cornwall in the year 2000, a number of telephone surveys in the end of 2001 and the beginning of 2002 were performed as Appendix IX presents. The results of this preliminary survey are illustrated in the following Figure 5.6.

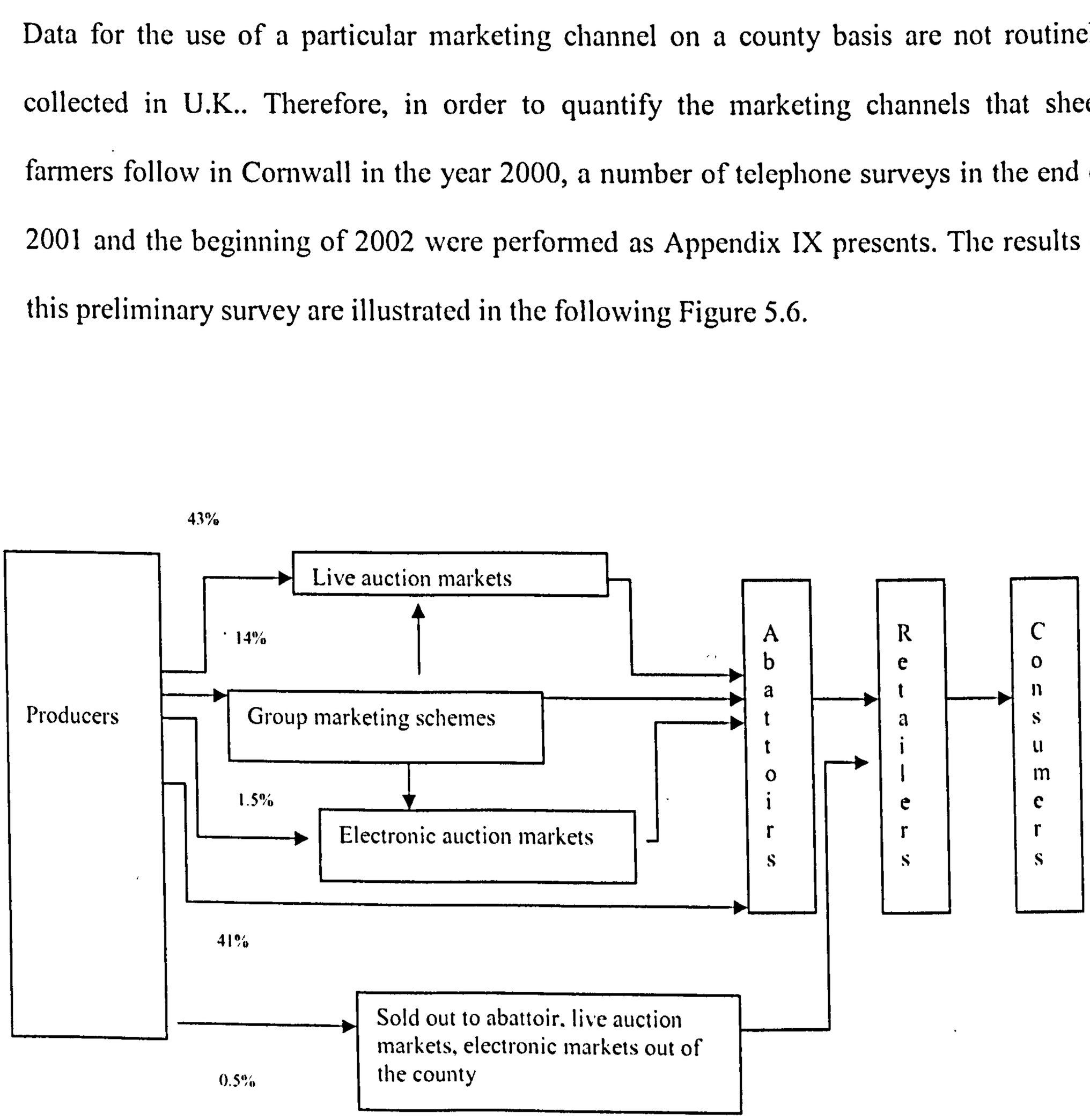

Figure 5.6 Sheep meat marketing channels in the County of Cornwall

It is important to note that the Foot and Mouth outbreak that occurred in 2001 in U.K. very possibly had a significant impact on the structure of the marketing channels or to the quantities of livestock that were sold through each channel in the following years.

The above analysis indicates that the marketing channels in the Region of East Macedonia and Thrace and the County of Cornwall are completely different.

5.7 Description of Marketing Channels of Sheep and Goat Milk Sector in the Region of EMTh and of Cow milk sector in the County of Cornwall

5.7.1 Marketing Channels in Sheep and Goat Milk Sector in EMTh

The sheep and goat milk produced in EMTh were mainly sold direct from farmers to local processing plants, to local co-operative processing plants and to big national or regional dairy companies (that produce cheese and yoghurt).

Data for the use of a particular marketing channel are not routinely collected in Greece. Therefore, in order to identify the quantities are sold through each marketing outlet during the year 2000 a number of telephone surveys were carried out in 2001 as presented in Appendix X. Figure 5.7, below, illustrates the results of this preliminary survey.

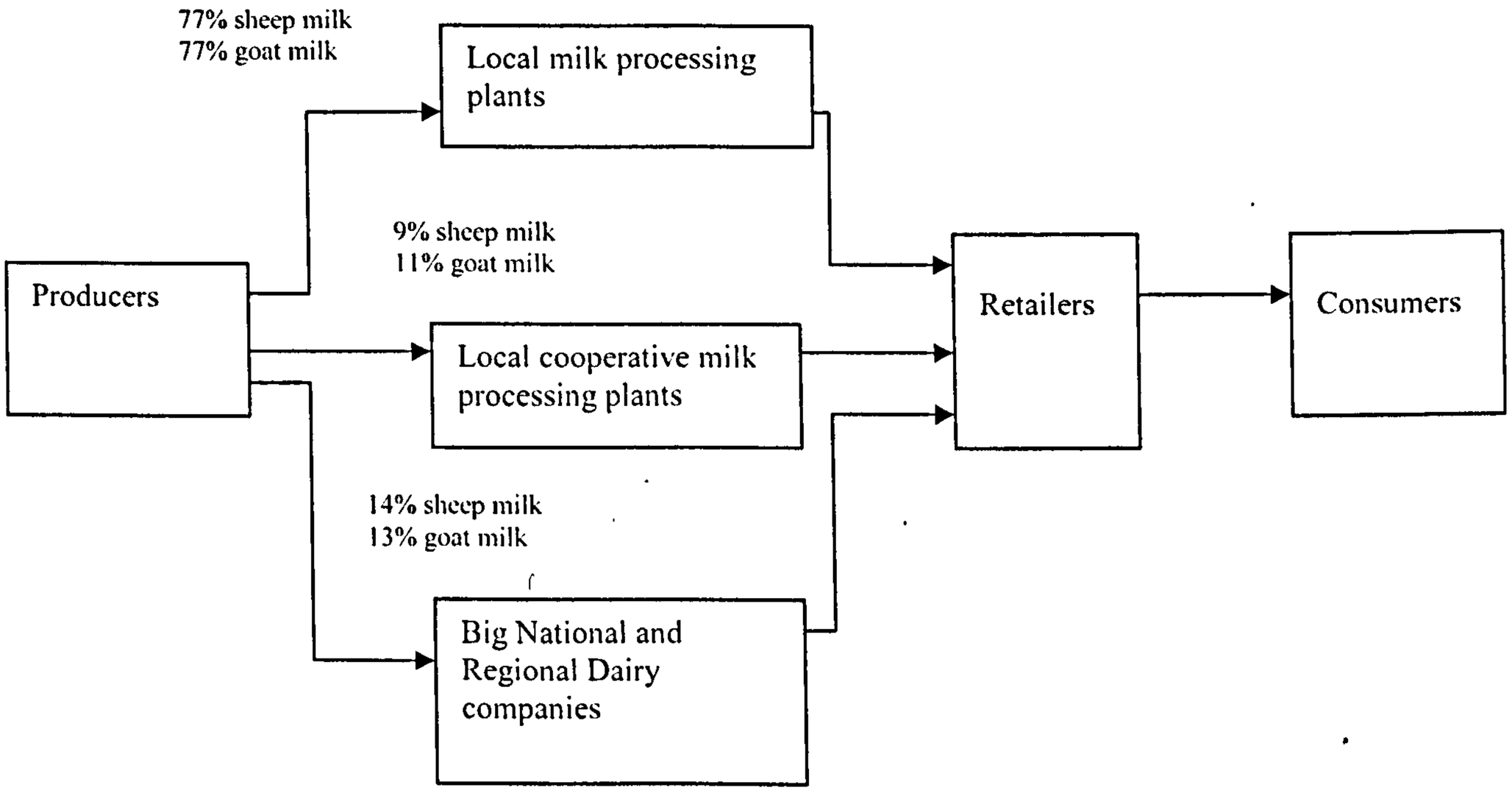

Figure 5.7 Sheep and goat milk marketing channels in the Region of EMTh

The above quantities may be subject to change due to any possible expansion into the Region of EMTh of any dairy company operated in another part of Greece. Thus, a farmer who used to sell his milk produce to retailers because there was not any dairy company that collected the milk in his area, is very likely to sell his milk to a new dairy firm that will offer better prices.

5.7.2 Marketing Channels in Cow Milk Sector in Cornwall.

The market for cow's milk is a very important sector in U.K. as it comprises the raw material that can be used for the production of a variety of dairy products (such as butter, cheese, fresh cream, condensed milk, whole milk power, ice cream, and milk for liquid consumption). The cow milk market is also the most important sector in Cornwall as the gross output of the milk represents 27.7% of the total gross agricultural output of the county (Cornwall County Council 1998). According to Cornwall Dairy Focus Group (2000), in Cornwall there were 1,040 holdings with dairy cows, as well as 1 holding with

dairy sheep, and 4 holdings with dairy goats. Due to the fact that dairy cow's sector is more developed than the other two in the county of Cornwall, this study will consider the marketing channels of the cow milk sector.

Data for the use of a particular marketing channel on a county basis are not routinely collected in U.K.. Therefore, in order to quantify the marketing channels that dairy cow farmers follow in Cornwall a number of telephone surveys were carried out at the end of 2001 and beginning of 2002 as described in Appendix X. The data in Figure 5.8 represent the results of this preliminary survey.

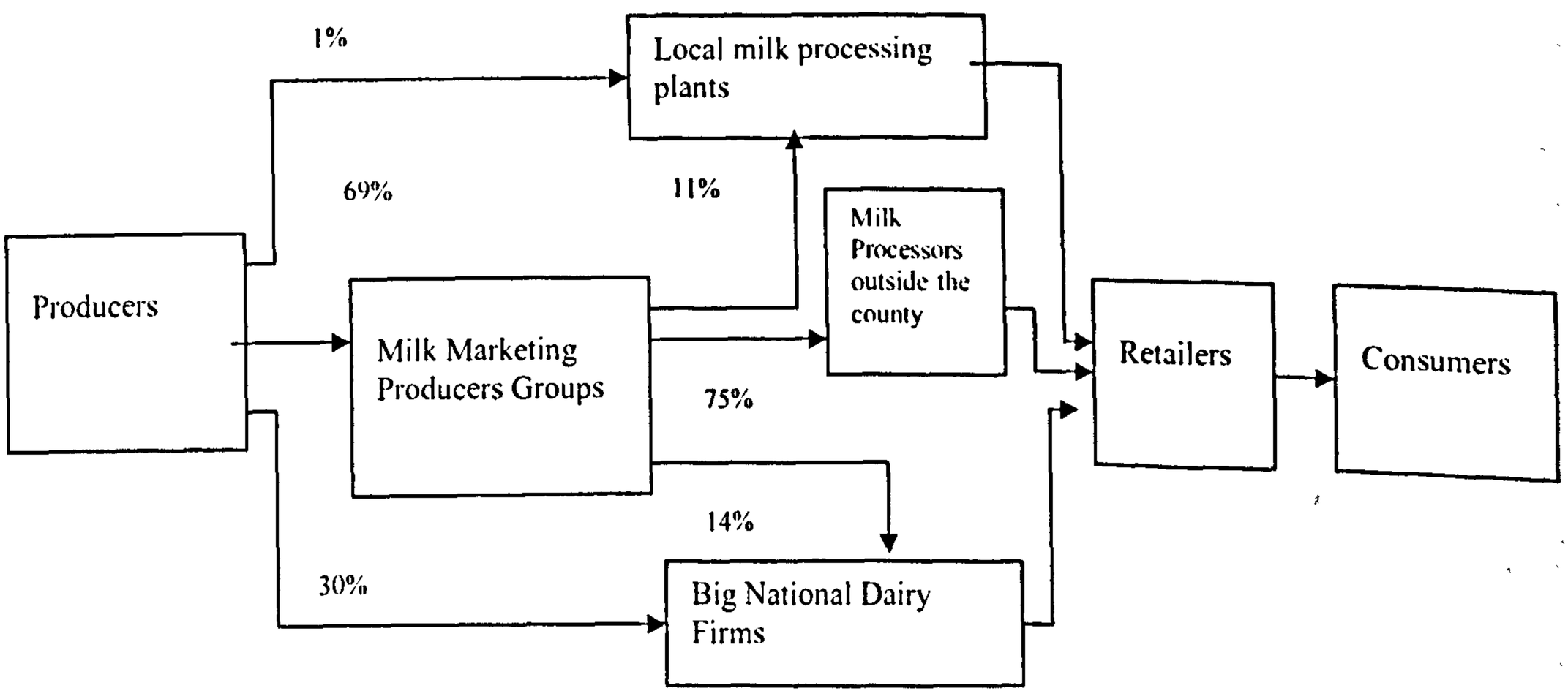

Figure 5.8 Cow milk-marketing channels in the County of Cornwall

The structure of the marketing channels, or the quantities of livestock that were sold through each of them, is likely to change in the coming years due to the Foot and Mouth outbreak that took place during the year 2001 in U.K..

The marketing channels that sheep and goat farmers use in the region of East Macedonia and Thrace to market their milk produce are very similar with those that dairy cow farmers

use in Cornwall. Farmers in both regions may sell their milk direct to the big national or regional dairy firms or to the small local processing plants. The main difference is that the co-operative milk processing plants in Greece belongs to the Unions of Agricultural Cooperatives operated within the region, and milk producers may sell their milk to these plants whether or not they are members of these Unions. In Cornwall, on the other hand, the milk co-operative marketing groups do not own milk processing plants, but they collect the milk only from their members and sell it to milk processors within or outside the county.

Furthermore, the majority of milk production in EMTh was sold directly to local processing plants, while in Cornwall most was sold through marketing groups. Besides, the quantities of sheep and goat milk that move for processing out of the Region of EMTh can not be estimated due to the fact there are no statistical data available.

5.8 Conclusions

The Region of East Macedonia and Thrace in Greece has many similarities with the county of Cornwall in U.K.. Both regions are characterized by the E.U. as Objective One Regions on the basis of their per capita income.

Both regions are dominated by ruminant livestock production. The sheep and goat sector (producing meat and milk) comprises the most important livestock sector in terms of gross output in the Region of EMTh. In Cornwall, the most important livestock sector in terms of gross output is the dairy cow sector followed by the beef sector and the sheep sector.

Chapter 5: Description of the Livestock and Dairy Sector in the Region of EMTh and Cornwall

The livestock marketing channels that sheep farmers use in EMTh seem to be completely different than those followed by Cornish sheep farmers, while the only common marketing outlet is the direct sale to abattoir that comprise the most important part in both marketing systems. Even the marketing system is different in both areas, the marketing strategies that sheep farmers follow in both areas and the factors that influence them in their marketing channel selection could be similar. Furthermore, the marketing system of sheep and goat milk in EMTh and of cow milk in Cornwall is almost similar.

Thus, both regions appear to be wholly appropriate for a comparative study of the livestock and milk marketing strategies adopted by farmers and the factors that influence their marketing channel utilization.

CHAPTER 6

THE DEMAND FOR MEAT, MILK AND DAIRY PRODUCTS IN GREECE AND UNITED KINGDOM

6.1 Introduction

This chapter aims to describe the changes have occurred in the consumption of meat, milk and dairy products in Greece and U.K. in the recent years, as well as to highlight the main factors affected these changes. It also suggests that there are potential influences on the utilisation of the livestock and milk marketing channels.

6.2 Meat Consumption in Greece.

Greek consumers preferred eating more vegetable products than livestock products until the 1980s when the dietary habits changed and they started consuming more livestock based foods instead of vegetables, fruits and cereals. Furthermore, in the middle of 1990s, the Greek dietary patterns changed again, mostly due to health concerns, when the consumption of vegetatable products exceeded that of livestock products (Sotiropoulos and Demoussis 2002).

In 1960, the country spent 14.5% of its total food expenditure on meat, while in 1983 this increased to 30%. and during the past several years it is about 25%, making meat consumption the major component of the country's food expenditure (Fousekis and Pantzios 2000; Lazaridis 2003; N.S.S.G 2004a). With average monthly household meat

expenditures of 55 euros, the meat market accounts for 22.76% of consumer monthly expenditure on food and around 4% of the total monthly expenditures (N.S.S.G 2004a; N.S.S.G 2004b).

The average monthly household food expenditure increased by 0.5% between 1994 and 1999, while the overall average monthly household expenditures increased by 21.7%, highlighting the income inelasticity of food expenditure (Table 6.1). Moreover, the average monthly household meat expenditure declined by 14.5% during the same period.

	1994		1999		Difference	
	Euros	%	Euros	%	Euros	%
Overall expenditure	1136.97	100.00	1383.24	100.00	246.27	21.7%
Food expenditure	239.34	21.05	240.65	17.40	1.30	0.5%
Meat expenditure	64.04	26.76	54.78	22.76	-9.27	-14.5%

Table 6.1: Average monthly household meat expenditures between 1994 and 1999.

Compiled data from N.S.S.G (2004b) and N.S.S.G (2004c)

The per capita consumption of meat as well as the meat production and the grade of self-sufficiency in Greece for the period 1985 – 2003 are presented in Table 6.2 (Food and Agricultural Organisation (F.A.O.) data).

The consumption of mutton and lamb, as well as the consumption of goat meat was not characterized by big fluctuations as Figure 6.1 and Table 6.2 illustrate due to the fact that the Greek population consumes the majority of these kinds of meat during Easter, as a matter of religious tradition. Generally, Greek consumers mostly prefer white meat. The consumption of the pigmeat was the highest among the other kinds of meat during the period 1985-2003, and reached almost the 35.6 kg per capita in 2001 due to big imports

that occurred in Greece that year, while it reduced to 25.7 and 25.5 kg per capita in 2002 and 2003, respectively, mainly because of a reduction of the Greek imports in pigmeat in those years. The consumption of poultry meat was also high, but lower than pigmeats. The consumption of beef and veal declined in 1997, while there was an increase in the consumption of pigmeat due to the BSE crisis in U.K.. On the other hand, there was a large rise of the beef and veal consumption in the year 2000 due to a high increase of the Greek imports of this kind of meat that occurred due to better prices that existed abroad. In 2001, there was a rapid decline in beef and veal imports and consumption because the BSE crisis appeared in France in 2000/01 and this was the reason of an increase of imports in pigmeat.

From the production point of view, Greece is very strong in the production of mutton and lamb, goat meat and poultry meat as they have a level of self-sufficiency around 90%, 100% and 91% in each sector, respectively.

Products		1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Beef and veal	Imports (tonnes)	87,971	87,333	115,909	65,252	104,781	96,158	78,403	111,841	93,963	93,296
	Exports (tonnes)	13	7	14	207	256	188	196	229	302	260
	Production (tonnes)	84,365	85,073	84,468	83,870	84,318	79,431	79,188	75,825	72,667	70,865
	Consumption (tonnes)	172,323	172,399	200,363	148,915	188,843	175,401	157,395	187,437	166,328	163,901
	Per capita consumption (kg)	17.3	17.3	20.0	14.8	18.7	17.3	15.4	18.3	16.1	16.1
	Grade of self sufficiency	49.0%	49.3%	42.2%	56.3%	44.6%	45.3%	50.3%	40.5%	43.7%	4.25%
		1995	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	
	Imports (tonnes)	106,404	136,824	94,353	111,263	135,524	323,665	72,093	75,447	68,226	
	Exports (tonnes)	278	332	359	680	366	135	242	372	143	
	Production (tonnes)	72,262	70,989	70,076	69,497	66,605	63,300	59,900	62,000	62,000	
	Consumption (tonnes)	178,388	207,481	164,070	180,080	201,763	386,830	131,751	137,075	130,083	
	Per capita consumption (kg)	17.1	19.7	15.6	16.8	18.6	35.5	12.0	12.5	11.9	
	Grade of self sufficiency	40.5%	34.2%	43.5%	38.6%	33.0%	16.4%	45.5%	45.2%	47.7%	
Poultry meat		**1985**	**1986**	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**
	Imports (tonnes)	4,321	4,300	7,180	6,612	9,276	10,364	10,989	15,162	23,767	29,972
	Exports (tonnes)	1,195	619	1,993	1,791	1,944	1,655	2,190	2,395	8,067	8,874
	Production (tonnes)	146,000	146,000	148,000	149,961	153,915	159,940	160,565	146,625.	146,835	148,751
	Consumption (tonnes)	149,126	149,681	153,187	154,782	161,247	168,649	169,364	159,392	162,535	169,849
	Per capita consumption (kg)	15.0	15.0	15.3	15.4	15.9	16.6	15.5	15.8	16.4	18.1
	Grade of self sufficiency	97.9%	97.5%	96.6%	96.9%	95.4%	94.8%	94.8%	92.0%	90.3%	87.6%
		1995	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	
	Imports (tonnes)	32,994	26,398	32,457	47,123	46,518	47,712	76,512	52,731	85,848	
	Exports (tonnes)	7,362	5,398	5,982	3,968	5,253	6,063	5,270	3,387	5,774	
	Production (tonnes)	163,415	153,638	157,604	148,083	153,373	154,173	154,373	154,373	154,373	
	Consumption (tonnes)	189,047	174,638	184,079	191,238	194,638	195,822	225,615	204,717	225,447	
	Per capita consumption (kg)	18.1	16.6	17.3	17.8	18.0	18.0	20.6	18.7	20.5	
	Grade of self sufficiency	86.4%	88.0%	85.6%	77.4%	78.8%	78.7%	68.4%	75.9%	64.5%	

Pigmeat		**1985**	**1986**	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**
	Imports (tonnes)	55,445	59,366	71,995	49,202	73,034	58,725	49,151	76,119	45,922	57,960
	Exports (tonnes)	9	5	11	240	352	298	322	307	178	267
	Production (tonnes)	138,267	142,344	150,693	139,903	138,868	139,839	140,216	144,650	136,170	136,818
	Consumption (tonnes)	193,703	201,705	222,677	188,865	211,550	198,266	189,045	220,462	181,914	194,511
	Per capita consumption (kg)	19.5	20.2	22.2	18.8	20.9	19.5	18.5	21.5	17.6	18.7
	Grade of self sufficiency	71.4%	70.6%	67.7%	74.1%	65.6%	70.5%	74.2%	65.6%	74.9%	70.3%
		1995	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	
	Imports (tonnes)	69,753	78,815	129,282	96,641	177,462	194,713	254,524	142,797	140,354	
	Exports (tonnes)	310	380	431	782	826	1,115	956	737	306	
	Production (tonnes)	136,886	135,510	142,100	142,600	138,300	141,400	136,600	139,400	140,000	
	Consumption (tonnes)	206,329	213,945	270,951	238,459	314,936	334,998	390,168	281,460	280,048	
	Per capita consumption (kg)	19.7	20.3	24.6	21.4	29.1	30.7	35.6	25.7	25.5	
	Grade of self sufficiency	66.3%	63.3%	50.9%	58.4%	43.9%	42.2%	35.0%	49.5%	50.0%	
Goat meat		**1985**	**1986**	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**
	Imports (tonnes)	0	0	0	13	48	164	77	60	99	148
	Exports (tonnes)	0	0	0	0	0	4	3	9	10	34
	Production (tonnes)	44,719	44,274	47,781	49,450	51,250	50,715	51,662	51,448	51,815	52,359
	Consumption (tonnes)	44,719	44,274	47,781	49,463	51,298	50,875	51,736	51,499	51,904	52,473
	Per capita consumption (kg)	4.5	4.4	4.8	4.9	5.1	5.0	5.1	5.0	5.0	5.1
	Grade of self sufficiency	100.0%	100.0%	100.0%	100.0%	99.9%	99.7%	99.9%	99.9%	99.8%	99.7%
		1995	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	
	Imports (tonnes)	168	46	82	76	88	76	350	509	547	
	Exports (tonnes)	12	57	81	133	96	83	133	287	268	
	Production (tonnes)	53,077	54,036	53,860	55,716	47,000	47,500	42,800	44,600	44,500	
	Consumption (tonnes)	53,233	54,025	53,861	55,659	46,992	47,493	43,017	44,822	44,779	
	Per capita consumption (kg)	5.1	5.1	5.1	5.1	5.1	4.1	3.9	4.1	4.1	
	Grade of self sufficiency	99.7%	100.0%	100.0%	100.1%	100.0%	100.0%	99.5%	99.5%	99.4%	

Mutton and lamb		**1985**	**1986**	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**
	Imports (tonnes)	13,750	15,832	12,853	13,766	17,907	14,857	12,649	18,623	14,368	13,896
	Exports (tonnes)	6	23	68	293	579	517	379	208	383	469
	Production (tonnes)	81,749	80,524	84,044	84,786	88,214	89,652	88,247	88,033	88,869	89,348
	Consumption (tonnes)	95,493	96,333	96,829	98,259	105,542	103,992	100,517	106,448	102,854	102,775
	Per capita consumption (kg)	9.6	9.7	9.7	9.8	10.4	10.2	9.8	10.3	10.0	9.9
	Grade of self sufficiency	85.6%	83.6%	86.8%	86.3%	83.6%	86.2%	87.8%	83.0%	86.4%	86.9%
		1995	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	
	Imports (tonnes)	10,549	13,745	14,379	15,032	17,903	18,549	19,764	14,461	16,085	
	Exports (tonnes)	433	247	323	386	376	380	677	417	310	
	Production (tonnes)	90,377	91,155	89,463	92,753	79,500	77,500	79,400	81,500	82,000	
	Consumption (tonnes)	100,493	104,653	103,519	107,399	97,027	95,669	98,487	95,544	97,775	
	Per capita consumption (kg)	9.6	9.9	9.7	9.7	9.9	9.1	9.0	8.7	8.9	
	Grade of self sufficiency	89.9%	87.1%	86.4%	86.0%	83.6%	81.6%	80.6%	85.3%	83.9%	

Table 6.2: The Greek meat market in the years 1985 –2003

Source : After F.A.O. (2004a), F.A.O. (2004b), F.A.O. (2004c), F.A.O. (2004d)

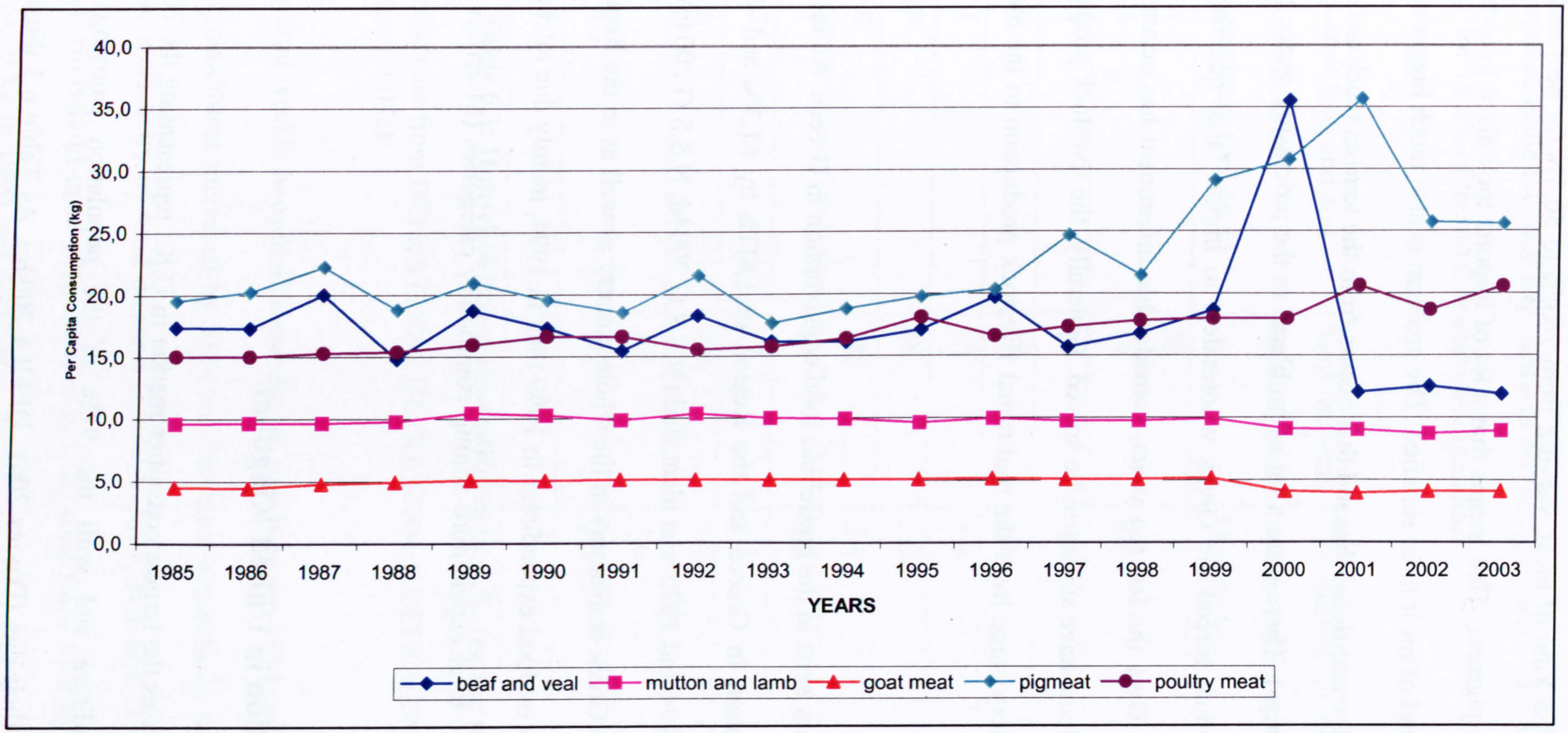

Figure 6.1: Meat Per capita consumption in Greek market during 1985-2003

Source : After F.A.O. (2004a), F.A.O. (2004b), F.A.O. (2004c), F.A.O. (2004d)

The level of self-sufficiency of beef and veal as well as of pigmeat in Greek market was rather lower than the other kind of meat, varying from 16.4% to 56.3% for beef and veal and 42.2% to 74.9% for pigmeat. That means that a lot of imports took place in order the demand for the above kind of meat to be satisfied. The problem is also much bigger during the summer because of the additional demand that occurs from the tourists (such as hotels, restaurants and cruise ships). There were a lot of problems in the processing sector of the meat except poultry, which forced the Greek wholesalers to import large quantities of frozen, processed meat. Over the last ten years, considerable investment has occurred in this sector and the problems have started to be solved. Generally, the livestock production in Greece is in a transitory stage from the traditional livestock production to the modern one.

Some regional differences exist in the household food consumption in Greece. An increase of the overall consumption in Greece and the Region of EMTh by 61.3% and 46.3% respectively, between 1994 and 1999 was identified (N.S.S.G 2004d; N.S.S.G 2004e). The same data indicated that Greek consumers in the whole country as well as in the Region of EMTh spent less money on food expenditure in 1999 than in 1994, mainly due to changes in the distribution of the total expenditure among commodity categories (Morrison *et al.* 2003).

6.3 Meat Consumption in United Kingdom.

The meat market comprises the largest consumer market in U.K., representing the 26% of household food expenditure and with the 97% of the population enjoying meat consumption as part of their diet (Davies 2001; DEFRA 2004c). As Table 6.3 illustrates, the country spent 20% of the total expenditure on food and non – alcoholic drink expenditures in 1986 and 28.9% of the food expenditure on meat. During the last five years

meat expenditure in U.K. comprised on average about the 26% of the overall food consumption, while the total expenditures on food and non – alcoholic drinks accounts on average for 16.5% of the total household expenditure.

Years	Overall food and non alcoholic drink expenditure (billion £)	% of the total expenditures	Expenditure on meat and meat products (billion £)	% of the overall food expenditure
1986	5.1	20	1.5	28.9
1988	5.6	19	1.6	28.2
1990	6.4	18	1.8	27.8
1992	6.9	18	1.8	26.3
1994	7.1	18	1.9	26.9
1996	8.9	18	2.2	25.1
1997	9.0	18	2.3	25.2
1998	9.1	17	2.2	24.6
1999	9.3	17	2.3	24.5
2000	9.6	17	2.4	24.8
2001	9.7	16	2.6	27.0
2002	10.0	16	2.6	26.1
2003	10.2	16	2.7	26.2

Table 6.3: Household meat expenditures in U.K. for the period 1986-2003

Compiled data from DEFRA (2003), DEFRA (2004c), DEFRA(2004d) and National Statistics (2004a).

The overall weekly household expenditures rose between 1994 and 2000 by 16% while the food expenditures increased by 35% and the meat expenditure by 32%, highlighting the income inelasticity of food demand (DEFRA 2003; National Statistics 2004b; DEFRA 2004c). Household meat consumption in U.K. rose from 57.9 kg per person per year in 1955 to 70 kg in 1990 and declined to 49.4 kg in 2003 (Bansback 1995; DEFRA 2004c). These changes in the nutritional habits of British people presumably occurred due to an increase in health concerns and to the several nutritional crises that appeared in U.K. and

across Europe such as BSE, Foot and Mouth Disease, Salmonella and *E-coli* outbreak, dioxins.

The effects of the BSE crisis and the Foot and Mouth outbreak on the U.K. meat production (mainly in beef and veal), imports, exports and consumption are obvious in Table 6.4 (which illustrates the U.K. production, imports, exports, consumption and degree of self sufficiency in various kinds of meat for the period 1985-2003). Furthermore, Figure 6.2 shows the U.K. per capita consumption for beef and veal, mutton and lamb, pigmeat and poultry meat during the same period.

Besides, the data in the following table (Table 6.4) illustrate that the country has almost 100% self-sufficiency in all kind of meat. The per capita consumption is higher in pig meat and poultry rather than in beef and lamb. Price and income factors as well as some demographic and social changes may explain these consumption preferences.

Products		1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Beef and veal	Imports (tonnes)	69,686	107,242	96,965	90,832	58,968	37,665	43,178	33,058	34,454	17,566
	Exports (tonnes)	122,055	98,311	124,735	72,598	91,694	81,837	80,252	74,419	117,771	141,706
	Production (tonnes)	1,179,000	1,062,037	1,118,256	946,101	977,789	1,001,743	1,019,566	973,000	888,000	947,000
	Consumption (tonnes)	1,126,631	1,070,931	1,090,486	964,335	945,063	957,571	982,492	931,639	804,683	822,860
	Per capita consumption (kg)	20.0	19.0	19.3	17.0	16.6	16.8	17.2	16.2	14.0	14.3
	Grade of self sufficiency	104.6%	99.2%	102,5%	98.1%	103.5%	104.6%	103.8%	104.4%	110.4%	115.1%
		1995	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	
	Imports (tonnes)	21,296	16,313	20,866	28,194	43,044	42,287	62,054	61,368	77,289	
	Exports (tonnes)	148,304	31,893	269	995	322	339	1,078	414	673	
	Production (tonnes)	1,002,000	710,000	688,000	699,000	679,000	707,000	652,000	692,000	696,000	
	Consumption (tonnes)	874,992	694,420	708,597	726,199	721,722	748,948	712,976	752,954	772,616	
	Per capita consumption (kg)	15.1	11.9	12.2	12.4	12.3	12.7	12.1	12.7	13.0	
	Grade of self sufficiency	114.5%	102.2%	97.1%	96.3%	94.1%	94.4%	91.4%	91.9%	90.1%	
Poultry meat		**1985**	**1986**	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**
	Imports (tonnes)	76,374	101,265	94,864	97,173	106,944	158,636	163,906	210,936	188,887	237,089
	Exports (tonnes)	33,641	41,667	54,607	65,648	72,190	68,790	92,369	97,878	106,291	140,868
	Production (tonnes)	873,776	942,670	986,828	1,048,190	974,091	988,998	1,037,221	1,229,869	1,295,996	1,364,000
	Consumption (tonnes)	916,509	1,002,268	1,027,225	1,079,715	1,008,845	1,078,844	1,108,758	1,342,927	1,378,592	1,460,221
	Per capita consumption (kg)	16.3	17.8	18.2	19.1	17.8	18.9	19.4	23.5	24.0	25.3
	Grade of self sufficiency	95.3%	94.1%	96.1%	97.1%	96,6%	91.7%	93.5%	91.6%	94.0%	93.4%
		1995	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	
	Imports (tonnes)	244,076	274,294	251,291	367,786	389,677	406,712	411,571	457,398	530,536	
	Exports (tonnes)	168,218	196,823	226,220	204,275	209,991	182,657	197,765	223,739	262,278	
	Production (tonnes)	1,405,000	1,462,000	1,520,000	1,545,900	1,524,800	1,513,200	1,566,828	1,530,703	1,572,987	
	Consumption (tonnes)	1,480,858	1,539,471	1,545,071	1,709,411	1,704,486	1,737,255	1,780,634	1,764,362	1,841,245	
	Per capita consumption (kg)	25.6	26.5	26.5	29.2	29.0	29.5	30.1	29.8	31.0	
	Grade of self sufficiency	94.9%	95.0%	98.4%	90.4%	89.5%	87.1%	88.0%	86.8%	85.4%	

Pigmeat		**1985**	**1986**	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**
	Imports (tonnes)	33,384	31,126	45,158	56,093	87,815	76,206	70,369	84,617	36,436	32,134
	Exports (tonnes)	42,819	50,100	43,428	52,676	51,772	49,013	73,138	93,994	63,320	75,588
	Production (tonnes)	970,700	983,328	1,007,081	1,016,593	939,285	946,080	978,980	1,002,000	1,023,000	1,061,000
	Consumption (tonnes)	961,265	964,354	1,008,811	1,020,010	975,328	973,273	976,211	992,623	996,116	1,017,546
	Per capita consumption (kg)	17.1	17.1	17.9	18.0	17.2	17.1	17.1	17.3	17.3	17.6
	Grade of self sufficiency	100.9%	102.0%	99.8%	99.7%	96.3%	97.2%	100.3%	100.9%	102.7%	104.3%
		1995	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	
	Imports (tonnes)	38,325	51,085	45,608	52,176	85,894	85,501	76,574	87,237	142,612	
	Exports (tonnes)	66,936	644,06	76,702	78,383	119,362	103,381	22,673	58,212	42,119	
	Production (tonnes)	1,017,000	1,044,000	1,091,000	1,135,000	1,042,000	923,000	781,400	795,300	714,000	
	Consumption (tonnes)	988,389	1,030,679	1,059,906	1,108,793	1,008,532	905,120	835,301	824,325	814,493	
	Per capita consumption (kg)	17.1	17.7	18.2	18.9	17.2	15.4	14.1	13.9	13.7	
	Grade of self sufficiency	102.9%	101.3%	102.9%	102.4%	103.3%	102.0%	93.5%	96.5%	87.7%	
Mutton and lamb		**1985**	**1986**	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**
	Imports (tonnes)	145,103	135,134	132,798	120,226	111,975	130,161	101,880	108,016	106,559	107,246
	Exports (tonnes)	48,316	59,220	70,757	75,318	88,675	79,598	79,930	104,959	107,924	120,091
	Production (tonnes)	304,000	289,544	295,694	321,940	366,109	370,226	385,461	401,000	402,000	395,000
	Consumption (tonnes)	400,787	365,458	357,735	366,848	389,409	420,789	407,411	404,057	400,635	382,155
	Per capita consumption (kg)	7.1	6.5	6.3	6.5	6.9	7.4	7.1	7.0	7.0	6.6
	Grade of self sufficiency	75.9%	79.2%	82.7%	87.8%	94.0%	88.0%	94.6%	99.2%	100.3%	103.4%
		1995	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	
	Imports (tonnes)	126,880	132,672	123,895	114,990	113,807	108,649	93,004	101,300	111,408	
	Exports (tonnes)	133,778	108,542	94,484	103,209	109,105	88,819	30,280	55,348	74,867	
	Production (tonnes)	394,000	373,000	342,000	375,000	392,000	382,000	259,000	300,000	300,000	
	Consumption (tonnes)	387,102	397,130	371,411	386,781	396,702	401,830	321,704	345,952	336,541	
	Per capita consumption (kg)	6.7	6.8	6.4	6.6	6.8	6.8	5.4	5.8	5.7	
	Grade of self sufficiency	101.8%	93.9%	92.1%	97.0%	98.8%	95.1%	80.5%	86.7%	89.1%	

Table 6.4: The U.K meat market in the years 1985 –2003

Source : After F.A.O. (2004a), F.A.O. (2004b), F.A.O. (2004c), F.A.O. (2004d)

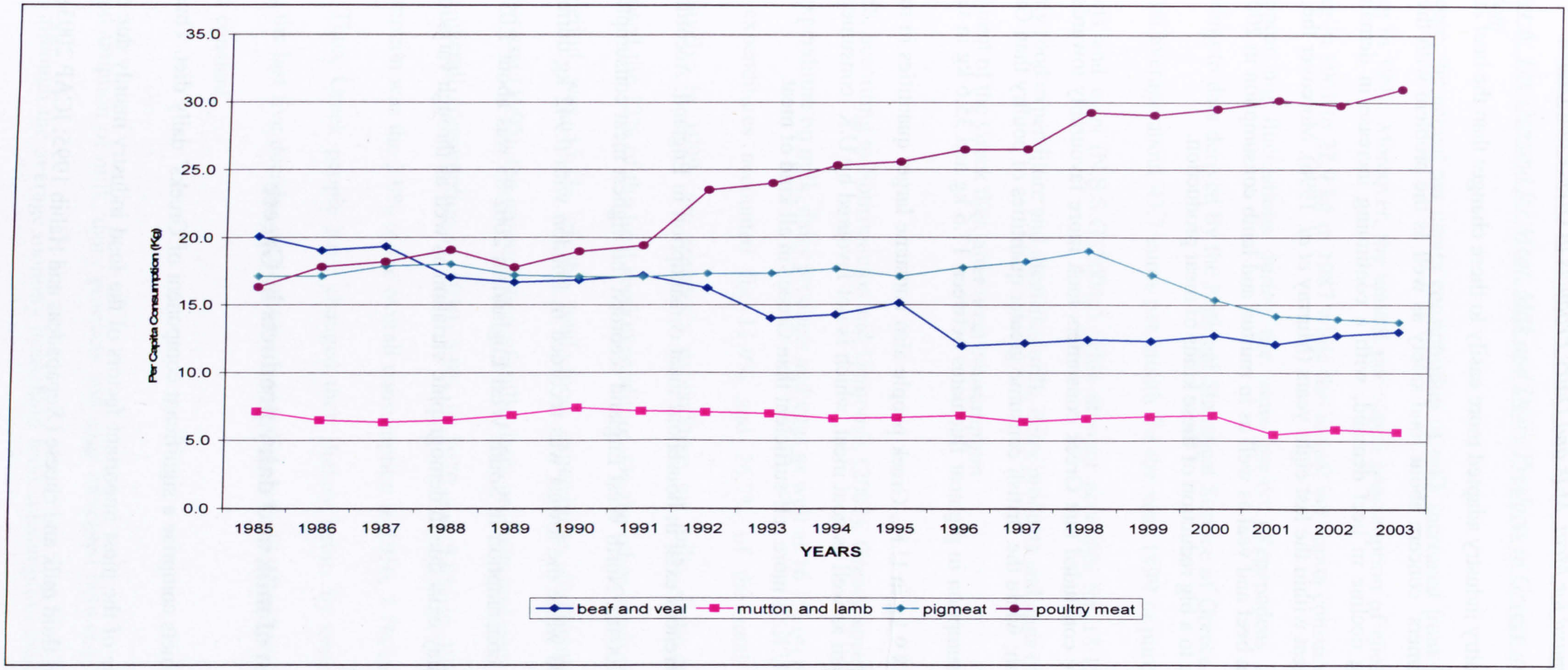

Figure 6.2: Meat Per capita consumption in U.K. market during 1985-2003

Source : After F.A.O. (2004a), F.A.O. (2004b), F.A.O. (2004c), F.A.O. (2004d)

The pig and the poultry industry adapted more easily to these changes than the beef and the lamb sector. Consumers' concern about food safety as well as the problem with the BSE led to a continuing decline in beef demand, with a continuing increase in demand for poultry and pork meat within the last eight years (Murray *et al.* 1996). Moreover the FMD induced a decline in beef and veal as well as in mutton and lamb consumption in 2001 and beyond, mainly due to a big reduction of these kinds of meat production.

Generally, it can be concluded that Greek consumers look more favourably towards beef and veal than British; while the British consume greater quantities of poultry than Greeks. The per capita consumption in pigmeat fluctuates between 17.6 kg and 35.6 kg in Greece contrary to 13.7– 18.9 kg in U.K.. Greek people also consume larger quantities in mutton and lamb than British as well as goat meat, which is not favoured by U.K. consumers. On the other hand, the U.K. is more self-sufficient than Greece in all kind of meat.

Some regional differences exist in household meat consumption in England. According to DEFRA (DEFRA 2004c), North West England recorded the highest meat consumption of 1.147 kg in 2002/03 while the lowest was recorded in London with 0.942 kg during the same period. Meat consumption in South West England in 2002/03 was about 1.034 kg. These differences may exist due to demographic variation as well as through variations in disposable income.

6.4 Consumption of milk and dairy products in Greece

Milk and dairy products comprise a significant component of Greeks' daily diet. Thus, the dairy industry is one of the most important factors of the food industry mainly due to the high consumption of fluid milk and cheese (Xepapadeas and Habib 1995; ICAP 2003).

In Greece, the annual per capita consumption of milk increased from 34.8 kg in 1960 to 90.1 kg in 1991. Moreover, the annual per capita consumption of cheese increased from 10.8 kg in 1961 to 22.9 kg in 1987 while the annual per capita consumption of butter did not appear big fluctuations during the same period (Xepapadeas and Habib 1995). According to data derived by the National Statistical Service of Greece, Greek consumers spent on average about 43.7 euros per month for the year 1999 in purchasing milk, dairy products and eggs (N.S.S.G 2004c). This amount accounts for 18.15% of the overall monthly food expenditure and identifies milk, dairy products and eggs on the second major component of the Greek diet, after meat consumption.

In 1958, according to Sotiropoulos and Demousis (2002), Greece spent 12.1% of its total food expenditure on milk, dairy products and eggs as well as 16.1% on meat, while in 1982 these expenditures accounted for 11.9% and 26.7% of the total food expenditure respectively. In 1999, the country's expenditure on milk, dairy products and eggs comprised the 12% of the total food expenditure. On the other hand, meat expenditure in this period was 15.1% of the total food expenditure. Furthermore, according to Karathanassi (1995), the consumption of milk, dairy products and eggs consisted of 5.8% of the overall consumption in 1950, 5.9% in 1970 and 5.8% in 1986 while the meat consumption was the 3.9% of the overall consumption in 1950, 7.7% in 1970 and 8.5% in 1986. Thus, Greek people have changed their dietary habits by consuming more meat during the last five decades while their consumption on milk, dairy products and eggs was almost constant.

The consumption of milk, dairy products and eggs increased between 1994 and 1999, by 41.6% although the average monthly household food consumption increased by 0.5% and the average monthly household expenditures increased by 21.7%. Changes in consumption

patterns over time appear mainly due to shifts in income, prices and tastes (Mantzouneas *et al.* 2004).

	1994		1999		Difference	
	Euros	%	Euros	%	Euros	%
Overall expenditure	1136.97	100.00	1383.24	100.00	246.27	21.7%
Food expenditure	239.34	21.05	240.65	17.40	1.30	0.5%
Milk, dairy products and eggs expenditure	30.85	17.21	43.68	18.15	12.83	41.6%

Table 6.5: Average monthly household expenditures in milk and dairy products between 1994 and 1999.

Compiled data from N.S.S.G (2004b) and N.S.S.G (2004c)

The production, per capita consumption of milk and dairy products as well as the level of self-sufficiency in Greece in these products for the period 1985 – 2003 are presented in Table 6.6, based on F.A.O. data.

As Figure 6.3 presents, the consumption of cow milk was characterised by a continuous increase during the period 1985 – 2003 due to a continuous increase of cow milk production as a result of C.A.P. and imports. Another factor that affects the per capita consumption as well as the imports of milk and dairy products in Greece is tourism, as every year Greece hosts on average 10 million tourists from abroad (H.O.T. 2003). The consumption of sheep and goat milk were almost stable during the period 1985-2003, but it has to be mentioned that all sheep and milk production in Greece is used for cheese and

yoghourt production. On the other hand, the per capita consumption of butter (of cow milk), fluctuated between 0.7 kg and 2.4 kg and is relative low mainly due to the high consumption of margarine. The high increase of butter imports in 2002 presumably occurred due to better prices and caused a rise of the consumption that year. The per capita consumption of skimmed milk as Figure 6.3 and Table 6.6 illustrate, was more or less the same during the examined period. Furthermore, there was a continuous reduction in the consumption of evaporated milk which declined from 17 kg per person in 1986 to 7.5 kg in 2002. This reduction occurred because Greek people mostly prefer to consume fresh milk of which consumption (as already mentioned) is rising. Besides, there is a continuous rise of the per capita consumption of cheese that is made from cow milk. On the other hand, the consumption of cheese, produced from sheep and goat milk, did not show great fluctuations over the last 19 years.

Products		1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Cow Milk (fresh)	Imports (tonnes)	9,862	10,977	12,099	6,957	8,743	10,025	6,583	10,877	11,992	11,479
	Exports (tonnes)	8	4	26	150	231	326	305	104	313	204
	Production (tonnes)	570,427	567,116	591,318	603,478	624,668	618,947	621,101	672,312	718,950	719,809
	Consumption (tonnes)	580,281	578,089	603,391	610,285	633,180	628,646	627,379	683,085	730,629	731,084
	Per capita consumption (kg)	58.4	57.9	60.2	60.6	62.6	61.9	61.5	66.6	70.8	70.4
	Grade of self sufficiency	98.3%	98.1%	98.0%	98.9%	98.7%	98.5%	99.0%	98.4%	98.4%	98.5%
		1995	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	
	Imports (tonnes)	11,705	17,940	29,547	32,498	68,258	79,199	66,454	82,568	107,094	
	Exports (tonnes)	279	547	497	375	415	315	109	29	145	
	Production (tonnes)	737,751	739,890	736,692	743,670	735,715	789,000	815,000	830,500	820,000	
	Consumption (tonnes)	749,177	757,283	765,742	775,793	803,558	867,884	881,345	913,039	926,949	
	Per capita consumption (kg)	71.7	71.8	71.9	72.2	74.2	79.6	80.5	83.2	84.5	
	Grade of self sufficiency	98.5%	97.7%	96.2%	95.9%	91.6%	90.9%	92.5%	91.0%	88.5%	
Sheep milk		**1985**	**1986**	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**
	Imports (tonnes)										
	Exports (tonnes)										
	Production (tonnes)	624,556	625,231	652,955	662,257	668,230	673,524	686,987	690,547	700,559	706,409
	Consumption (tonnes)	624,556	625,231	652,955	662,257	668,230	673,524	686,987	690,547	700,559	706,409
	Per capita consumption (kg)	62.9	62.7	65.1	65.8	66.1	66.3	67.3	67.3	67.9	68.1
	Grade of self sufficiency	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		1995	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	
	Imports (tonnes)										
	Exports (tonnes)										
	Production (tonnes)	720,521	720,714	722,240	729,917	731,215	700,000	753,314	735,500	700,000	
	Consumption (tonnes)	720,521	720,714	722,240	729,917	731,215	700,000	753,314	735,500	700,000	
	Per capita consumption (kg)	68.9	68.4	67.9	67.9	67.5	64.2	68.8	67.0	63.8	
	Grade of self sufficiency	100%	100%	100%	100%	100%	100%	100%	100%	100%	

Goat milk		**1985**	**1986**	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**
	Imports (tonnes)										
	Exports (tonnes)										
	Production (tonnes)	464,578	468,640	492,288	503,729	502,448	498,614	496,495	497,274	503,735	507,725
	Consumption (tonnes)	464,578	468,640	492,288	503,729	502,448	498,614	496,495	497,274	503,735	507,725
	Per capita consumption (kg)	46.8	47.0	49.1	50.0	49.7	49.1	48.6	48.5	48.8	48.9
	Grade of self sufficiency	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		1995	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	
	Imports (tonnes)										
	Exports (tonnes)										
	Production (tonnes)	512,975	515,927	522,760	520,367	526,134	462,000	521,133	465,000	456,000	
	Consumption (tonnes)	512,975	515,927	522,760	520,367	526,134	462,000	521,133	465,000	456,000	
	Per capita consumption (kg)	49.1	48.9	49.1	48.4	48.6	42.4	47.6	42.4	41.6	
	Grade of self sufficiency	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Butter of cow milk		**1985**	**1986**	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**
	Imports (tonnes)	4,630	4,859	5,082	4,903	5,883	6,218	6,213	6,369	6,943	7,719
	Exports (tonnes)	56	21	6	58	84	115	44	162	264	64
	Production (tonnes)	4,701	4,026	3,949	3,493	3,803	3,934	4,074	4,158	4,426	4,767
	Consumption (tonnes)	9,275	8,864	9,025	8,338	9,602	10,037	10,243	10,365	11,105	12,422
	Per capita consumption (kg)	0.9	0.9	0.9	0.8	0.9	1.0	1.0	1.0	1.1	1.2
	Grade of self sufficiency	50.7%	45.4%	43.8%	41.9%	39.6%	39.2%	39.8%	40.1%	39.9%	38.4%
		1995	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	
	Imports (tonnes)	7,749	4,461	3,754	7,011	7,767	5,035	5,543	22,292	8,925	
	Exports (tonnes)	138	56	107	119	64	23	13	9	27	
	Production (tonnes)	3,943	3,797	3,535	3,693	4,392	3,550	3,650	4,154	4,000	
	Consumption (tonnes)	11,554	8,202	7,182	10,585	12,095	8,562	9,180	26,437	12,898	
	Per capita consumption (kg)	1.1	0.8	0.7	1.0	1.1	0.8	0.8	2.4	1.2	
	Grade of self sufficiency	34.1%	46.3%	49.2%	34.9%	36.3%	41.5%	39.8%	15.7%	31.0%	

Skim Milk		**1985**	**1986**	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**
	Imports (tonnes)	844	1,139	1,456	5,559	6,305	6,640	4,134	5,692	5,625	5,014
	Exports (tonnes)	1	2	18	15	8	6	8	0	1	87
	Production (tonnes)	0	0	0	0	0	0	0	0	0	0
	Consumption (tonnes)	843	1,137	1,438	5,544	6,297	6,634	4,126	5,692	5,624	4,927
	Per capita consumption (kg)	0.1	0.1	0.1	0.6	0.6	0.7	0.4	0.6	0.5	0.5
	Grade of self sufficiency	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
		1995	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	
	Imports (tonnes)	4,414	3,826	3,384	3,361	2,303	2,886	3,053	4,157	4,291	
	Exports (tonnes)	100	42	6	19	38	31	53	74	105	
	Production (tonnes)	0	0	0	0	0	0	0	0	0	
	Consumption (tonnes)	4,314	3,784	3,378	3,342	2,265	2,855	3,000	4,083	4,186	
	Per capita consumption (kg)	0.4	0.4	0.3	0.3	0.2	0.3	0.3	0.4	0.4	
	Grade of self sufficiency	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Whole milk evaporated		**1985**	**1986**	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**
	Imports (tonnes)	139,797	169,201	138,736	117,186	132,937	127,235	103,722	114,321	103,113	111,702
	Exports (tonnes)	20	8	12	157	242	200	198	237	586	811
	Production (tonnes)	0	0	0	0	0	0	0	0	0	0
	Consumption (tonnes)	139,777	169,193	138,724	117,029	132,695	127,035	103,524	114,084	102,527	110,891
	Per capita consumption (kg)	14.1	17.0	13.8	11.6	13.1	12.5	10.1	11.1	9.9	10.7
	Grade of self sufficiency	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
		1995	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	
	Imports (tonnes)	128,791	112,702	101,353	102,952	94,935	111,092	88,807	83,166	97,455	
	Exports (tonnes)	115	156	127	509	474	455	443	466	453	
	Production (tonnes)	0	0	0	0	0	0	0	0	0	
	Consumption (tonnes)	128,676	112,546	101,226	102,443	94,461	110,637	88,364	82,700	96,992	
	Per capita consumption (kg)	12.3	10.7	9.5	9.5	8.7	10.1	8.1	7.5	8.8	
	Grade of self sufficiency	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Cheese of cow milk		**1985**	**1986**	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**
	Imports (tonnes)	27,912	31,798	30,758	28,347	36,723	40,047	47,227	48,096	53,176	60,831
	Exports (tonnes)	3,309	3,680	4,047	1,701	2,489	2,523	2,490	2,657	3,254	2,838
	Production (tonnes)	34,628	35,944	35,678	35,474	36,132	42,836	37,852	37,454	35,989	33,312
	Consumption (tonnes)	59,231	64,062	62,389	62,120	70,366	80,360	82,589	82,893	85,911	91,305
	Per capita consumption (kg)	6.0	6.4	6.2	6.2	7.0	7.9	8.1	8.1	8.3	8.8
	Grade of self sufficiency	58.5%	56.1%	57.2%	57.1%	51.3%	53.3%	45.8%	45.2%	41.9%	36.5%
		1995	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	
	Imports (tonnes)	58,512	49,780	67,315	94,338	63,966	73,362	61,567	68,428	96.650	
	Exports (tonnes)	3,545	3,792	3,886	4,963	4,301	5,426	5,126	3,737	6,359	
	Production (tonnes)	35,635	37,239	36,201	35,012	36,228	39,194	35,006	36,659	35,000	
	Consumption (tonnes)	90,602	83,227	99,630	124,387	95,893	107,130	91,447	101,350	122,291	
	Per capita consumption (kg)	8.7	7.9	9.4	11.6	8.9	9.8	8.4	9.2	11.1	
	Grade of self sufficiency	39.3%	44.7%	36.3%	28.1%	37.8%	36.6%	38.3%	36.2%	28.6%	
Cheese of sheep milk		**1985**	**1986**	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**
	Imports (tonnes)	0	144	5	445	643	276	342	616	2,410	2,710
	Exports (tonnes)	3	24	43	4,158	6,029	7,706	7,197	7,945	9,145	10,128
	Production (tonnes)	106,971	111,411	111,306	123,894	132,388	126,705	116,817	115,592	118,225	118,524
	Consumption (tonnes)	106,968	111,531	111,268	120,181	127,002	119,275	109,962	108,263	111,490	111,106
	Per capita consumption (kg)	10.8	11.2	11.1	11.9	12.6	11.7	10.8	10.6	10.8	10.7
	Grade of self sufficiency	100.0%	99.9%	100.0%	103.1%	104.2%	106.2%	106.2%	106.8%	106.0%	106.7%
		1995	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	
	Imports (tonnes)	549	345	447	447	779	1347	1174	1330	833	
	Exports (tonnes)	10,341	3,886	4,690	8,131	6,996	19,862	28,708	13,621	23,454	
	Production (tonnes)	125,623	125,499	126,778	129,863	130,786	122,934	127,452	133,407	125,000	
	Consumption (tonnes)	115,801	121,958	122,535	122,179	124,569	104,419	99,918	121,116	102,379	
	Per capita consumption (kg)	11.1	11.6	11.5	11.4	11.5	9.6	9.1	11.0	9.3	
	Grade of self sufficiency	108.5%	102.9%	103.5%	106.3%	105.0%	117.7%	127.6%	110.1%	122.1%	

Cheese of goat milk		**1985**	**1986**	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**
	Imports (tonnes)	0	0	0	0	0	0	0	0	0	0
	Exports (tonnes)	0	0	0	0	0	0	0	0	0	0
	Production (tonnes)	46,000	45,000	44,000	45,000	46,000	48,000	48,000	48,000	48,000	48,000
	Consumption (tonnes)	46,000	45,000	44,000	45,000	46,000	48,000	48,000	48,000	48,000	48,000
	Per capita consumption (kg)	4.6	4.5	4.4	4.5	4.5	4.7	4.7	4.7	4.7	4.6
	Grade of self sufficiency	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		1995	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	
	Imports (tonnes)	0	0	0	0	0	0	0	0	0	
	Exports (tonnes)	0	0	0	0	0	0	0	0	0	
	Production (tonnes)	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	
	Consumption (tonnes)	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	
	Per capita consumption (kg)	4.6	4.6	4.5	4.5	4.4	4.4	4.4	4.4	4.4	
	Grade of self sufficiency	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	

Table 6.6: The Greek dairy market in the years 1985 –2003

Source : After F.A.O. (2004a), F.A.O. (2004b), F.A.O. (2004c), F.A.O. (2004d)

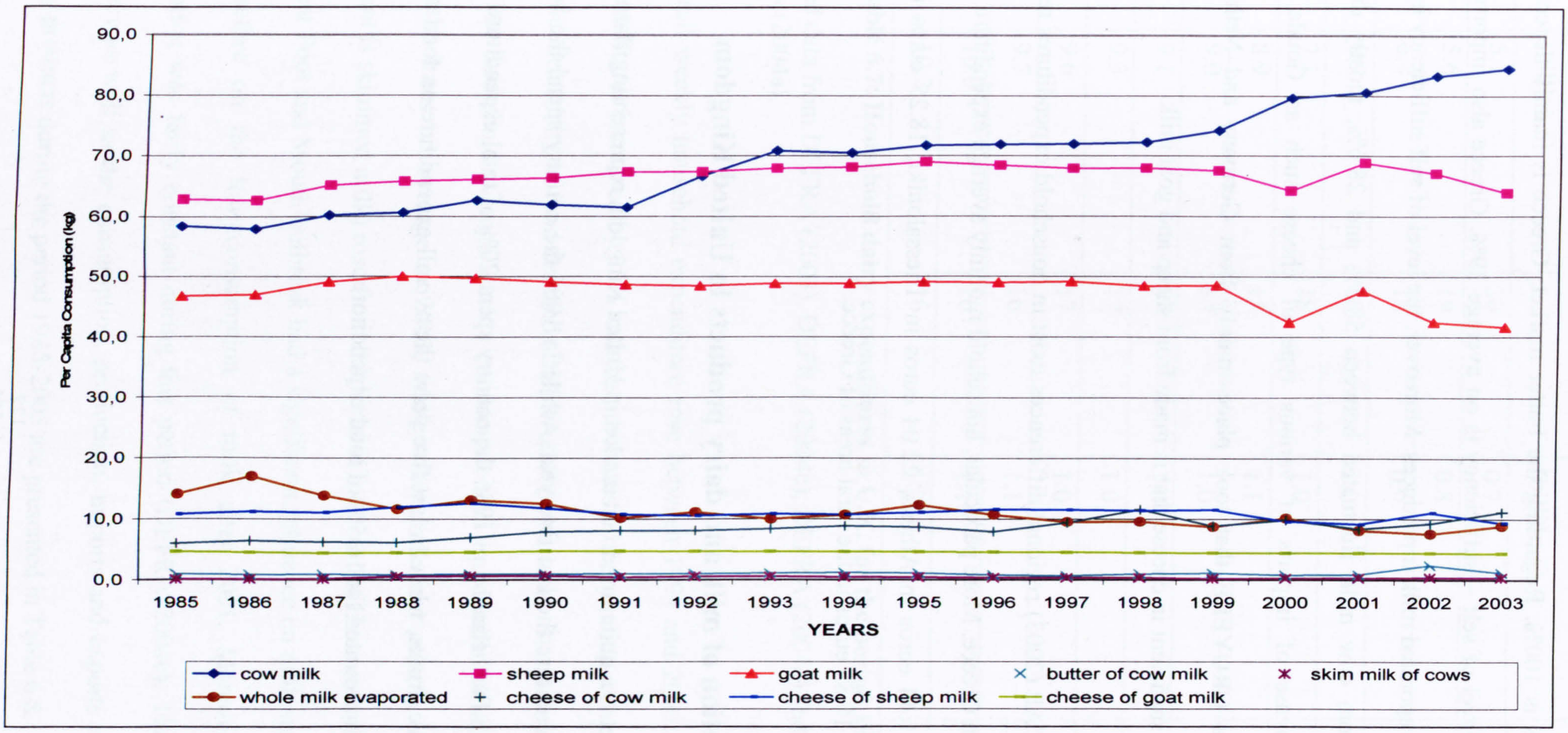

Figure 6.3: Per capita consumption of milk and dairy products in Greek market during 1985-2003

Source: After F.A.O. (2004a), F.A.O. (2004b), F.A.O. (2004c), F.A.O. (2004d)

The level of self-sufficiency of the Greek cow milk (fresh) market during the period 1985-2003 fluctuated between 88.5% and 99 % while the level of self sufficiency of milk from sheep and goats is 100%. Regarding the butter market, Greece is mainly dependent on imports as the level of self – sufficiency is on average 39%. Greece also imports all the skimmed and evaporated milk it produces. Moreover, the level of self sufficiency in cheese which made from cow milk fluctuated between 58.5% and 28.6%, mostly due to a continuous increase of imports of various type of cheese such as Gouda, Edam, Mozzarella, and GRUYERE that took place mainly from Germany and Netherlands. Greece is self – sufficient in cheese that is made from sheep and goat milk.

According to ICAP (2003) regional differences exist in household expenditures regarding dairy products in Greece. More particular, household monthly average expenditure in dairy products was 21.44 euros in Athens, 22.04 euros in Thessaloniki, 18.25 euros in other urban areas and 18.85 euros in the rural areas of Greece.

6.5 Consumption of milk and dairy products in United Kingdom

The dairy market is a quite important market in United Kingdom representing about 11.5% of the food expenditure the last five years while in 1986 the country spend the 14.0% of them (Table 6.7). Furthermore, in 1986 the country spent 20% of total expenditure on food and non-alcoholic drinks, while in last five years the overall expenditure on food and non-alcoholic drinks accounted for 16.5% of total expenditure.

Years	Overall food expenditure (billion £)	% of the total expenditures	Expenditures on meat and meat products (billion £)	% of the overall food expenditure
1986	5.1	20	0.7	14.0%
1988	5.6	19	0.8	14.0%
1990	6.4	18	0.9	13.9%
1992	6.9	18	1.0	14.7%
1994	7.1	18	1.0	14.2%
1996	8.9	18	1.1	11.9%
1997	9.0	18	1.0	12.0%
1998	9.1	17	1.0	11.4%
1999	9.3	17	1.0	11.2%
2000	9.6	17	1.0	11.2%
2001	9.7	16	1.1	11.6%
2002	10.0	16	1.1	11.5%
2003	10.2	16	1.2	11.4%

Table 6.7: Household dairy expenditures in U.K. for the period 1986-2003

Compiled data from DEFRA (2003), DEFRA (2004c), DEFRA (2004d) and National Statistics (2004a).

The overall weekly household expenditure rose between 1994 and 2000 by 16%, while food expenditures increased by 35% and the purchases of dairy products by 9%, indicating the income inelasticity of food demand (DEFRA 2003; National Statistics 2004b; DEFRA 2004c). The household average weekly consumption of liquid milk fell from 2.7 litres in 1975 to 0.6 litres on average in 2003, while other milk and creams (of which main component is skimmed milk) rose from 0.3 litres in 1975 to 1.4 litres over the same period. The recent Foot and Mouth outbreak had a significant influence on milk supply and prices and therefore on the low consumption of milk after 2001. Moreover, the cheese consumption was fairly constant during this period (DEFRA 2004c). The level of self-sufficiency as well as the consumption, production, imports and exports of U.K. in milk and dairy products during the period 1985-2003 are presented in Table 6.8.

Products		1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Cow Milk (fresh)	Imports (tonnes)	24,242	27,274	31,877	34,534	17,401	16,158	18,995	70,667	45,362	91,076
	Exports (tonnes)	4,514	3,222	2,690	4,728	53,714	64,820	67,777	70,290	91,429	125,106
	Production (tonnes)	16,022,000	16,234,000	15,508,000	15,133,000	14,913,000	15,251,204	14,762,812	14,776,300	14,828,900	14,990,700
	Consumption (tonnes)	16,041,728	16,258,052	15,537,187	15,162,806	14,876,687	15,202,542	14,714,030	14,776,677	14,782,833	14,956,670
	Per capita consumption (kgr)	285.4	288.6	275.1	267.7	261.9	266.8	257.5	257.7	257.0	259.1
	Grade of self sufficiency	99.9%	99.9%	99.8%	99.8%	100.2%	100.3%	100.3%	100.0%	100.3%	100.2%
		1995	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	
	Imports (mt)	74,183	41,527	61,953	76,448	84,364	98,243	79,838	37,349	145,896	
	Exports (mt)	114,594	25,275	71,045	160,914	207,540	158,212	63,298	64,506	195,439	
	Production (mt)	14,844,300	14,808,300	14,841,000	14,632,000	15,014,000	14,488,000	14,707,000	14,869,000	15,056,000	
	Consumption (mt)	14,803,889	14,824,552	14,831,908	14,547,534	14,890,824	14,428,031	14,723,540	14,841,843	15,006,457	
	Per capita consumption (kgr)	255.6	255.1	254.3	248.6	253.6	244.9	249.1	250.3	252.3	
	Grade of self sufficiency	100.3%	99.9%	100.1%	100.6%	100.8%	100.4%	99.9%	100.2%	100.3%	
Butter of cow milk		**1985**	**1986**	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**
	Imports (tonnes)	140,109	150,627	127,560	127,302	114,183	112,397	104,220	126,074	112,741	116,250
	Exports (tonnes)	24,499	33,007	132,878	118,712	64,977	38,359	38,948	50,464	51,881	52,645
	Production (tonnes)	201,900	222,200	176,224	140,376	130,171	138,239	111,712	127,000	151,557	155,000
	Consumption (tonnes)	317,510	339,820	170,906	148,966	179,377	212,277	176,984	202,610	212,417	218,605
	Per capita consumption (kgr)	5.6	6.0	3.0	2.6	3.2	3.7	3.1	3.5	3.7	3.8
	Grade of self sufficiency	63.6%	65.4%	103.1%	94.2%	72.6%	65.1%	63.1%	62.7%	71.3%	70.9%
		1995	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	
	Imports (tonnes)	102,764	111,619	101,210	109,287	122,076	122,922	112,918	75,282	118,431	
	Exports (tonnes)	49,966	50,405	70,022	63,962	56,117	45,321	40,830	38,766	44,364	
	Production (tonnes)	127,000	120,000	138,662	137,000	141,000	132,000	126,000	141,000	140,000	
	Consumption (tonnes)	179,798	181,214	169,850	182,325	206,959	209,601	198,088	177,516	214,067	
	Per capita consumption (kgr)	3.1	3.1	2.9	3.1	3.5	3.6	3.4	3.0	3.6	
	Grade of self sufficiency	70.6%	66.2%	81.6%	75.1%	68.1%	63.0%	63.6%	79.4%	65.4%	

Skim Milk		**1985**	**1986**	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**
	Imports (tonnes)	1,946	3,292	5,187	9,914	15,612	18,987	42,029	68,196	50,913	69,447
	Exports (tonnes)	6,497	371	1,331	3,385	5,724	11,957	2,339	4,208	2,450	5,524
	Production (tonnes)	333,000	362,700	315,700	258,900	283,700	287,692	279,201	222,000	226,044	243,290
	Consumption (tonnes)	328,449	365,621	319,556	265,429	293,588	294,722	318,891	285,988	274,507	307,243
	Per capita consumption (kg)	5.8	6.5	5.7	4.7	5.2	5.2	5.6	5.0	4.8	5.3
	Grade of self sufficiency	101.4%	99.2%	98.8%	97.5%	96.6%	97.6%	87.6%	77.6%	82.3%	79.2%
		1995	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	
	Imports (tonnes)	81,243	67,915	87,832	113,633	54,052	17,177	12,604	11,636	12,178	
	Exports (tonnes)	2,100	1,097	3,489	4,555	1,463	1,880	1,476	4,135	3,035	
	Production (tonnes)	207,000	208,000	209,000	207,000	202,000	183,000	171,000	171,000	171,000	
	Consumption (tonnes)	286,143	274,818	293,343	316,078	254,589	198,297	182,128	178,501	180,143	
	Per capita consumption (kg)	4.9	4.7	5.0	5.4	4.3	3.4	3.1	3.0	3.0	
	Grade of self sufficiency	72.3%	75.7%	71.2%	65.5%	79.3%	92.3%	93.9%	95.8%	94.9%	
Whole milk evaporated		**1985**	**1986**	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**
	Imports (tonnes)	4,314	8,598	9,883	8,728	8,242	9,547	8,699	9,675	7,087	7,770
	Exports (tonnes)	34,632	26,471	32,248	69,091	64,243	48,804	46,536	57,307	50,719	50,706
	Production (tonnes)	89,000	79,000	74,848	77,922	91,273	82,725	82,000	90,000	90,000	91,000
	Consumption (tonnes)	58,682	61,127	52,483	17,559	35,272	43,468	44,163	42,368	46,368	48,064
	Per capita consumption (kg)	1.0	1.1	0.9	0.3	0.6	0.8	0.8	0.7	0.8	0.8
	Grade of self sufficiency	151.7%	129.2%	142.6%	443.8%	258.8%	190.3%	185.7%	212.4%	194.1%	189.3%
		1995	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	
	Imports (tonnes)	9,484	6,556	9,940	9,499	10,958	9,810	9,137	7,014	11,104	
	Exports (tonnes)	60,362	57,129	59,733	63,008	50,957	29,979	20,795	29,345	20,031	
	Production (tonnes)	91,000	106,000	114,000	92,000	76,600	62,000	61,000	49,000	49,000	
	Consumption (tonnes)	40,122	55,427	64,207	38,491	36,601	41,831	49,342	26,669	40,073	
	Per capita consumption (kg)	0.7	1.0	1.1	0.7	0.6	0.7	0.8	0.4	0.7	
	Grade of self sufficiency	226.8%	191.2%	177.6%	239.0%	209.3%	148.2%	123.6%	183.7%	122.3%	

Cheese of cow milk		**1985**	**1986**	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**
	Imports (tonnes)	159,965	169,920	159,171	197,414	177,740	201,981	190,382	228,440	184,138	212,994
	Exports (tonnes)	26,348	27,761	34,301	26,800	35,985	40,192	50,529	47,960	57,221	60,282
	Production (tonnes)	255,600	258,700	265,803	300,431	282,529	311,899	298,052	327,000	331,004	330,000
	Consumption (tonnes)	389,217	400,859	390,673	471,045	424,284	473,688	437,905	507,480	457,921	482,712
	Per capita consumption (kg)	6.9	7.1	6.9	8.3	7.5	8.3	7.7	8.9	8.0	8.4
	Grade of self sufficiency	65.7%	64.5%	68.0%	63.8%	66.6%	65.8%	68.1%	64.4%	72.3%	68.4%
		1995	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	
	Imports (tonnes)	178,642	256,244	259,174	245,702	266,876	262,129	271,252	277,277	311,643	
	Exports (tonnes)	49,820	56,738	48,463	54,657	61,007	57,025	67,681	82,154	86,634	
	Production (tonnes)	354,000	369,000	377,000	366,000	368,000	340,000	385,000	396,000	396,000	
	Consumption (tonnes)	482,822	568,506	587,711	557,045	573,869	545,104	588,571	591,123	621,009	
	Per capita consumption (kg)	8.3	9.8	10.1	9.5	9.8	9.3	10.0	10.0	10.4	
	Grade of self sufficiency	73.3%	64.9%	64.1%	65.7%	64.1%	62.4%	65.4%	67.0%	63.8%^	
Cheese of sheep milk		**1985**	**1986**	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**
	Imports (tonnes)	17	12	15	475	661	392	369	566	803	905
	Exports (tonnes)	0	0	0	54	25	23	46	12	48	8
	Production (tonnes)	0	0	0	0	0	0	0	0	0	0
	Consumption (tonnes)	17	12	15	421	636	369	323	554	755	897
	Per capita consumption (kg)	0.0003	0.0002	0.0003	0.0074	0.0112	0.0065	0.0057	0.0097	0.0131	0.0155
	Grade of self sufficiency	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
		1995	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	
	Imports (tonnes)	748	914	1,047	1,256	1,704	2,282	1,808	1,678	2,207	
	Exports (tonnes)	9	104	31	21	4	33	15	67	116	
	Production (tonnes)	0	0	0	0	0	0	0	0	0	
	Consumption (tonnes)	739	810	1,016	1,235	1,700	2,249	1,793	1,611	2,091	
	Per capita consumption (kg)	0.0128	0.0139	0.0174	0.0211	0.0290	0.0382	0.0303	0.0272	0.0352	
	Grade of self sufficiency	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Table 6.8: The dairy market in U.K. in the years 1985 –2003

Source : After F.A.O. (2004a), F.A.O. (2004b), F.A.O. (2004c), F.A.O. (2004d)

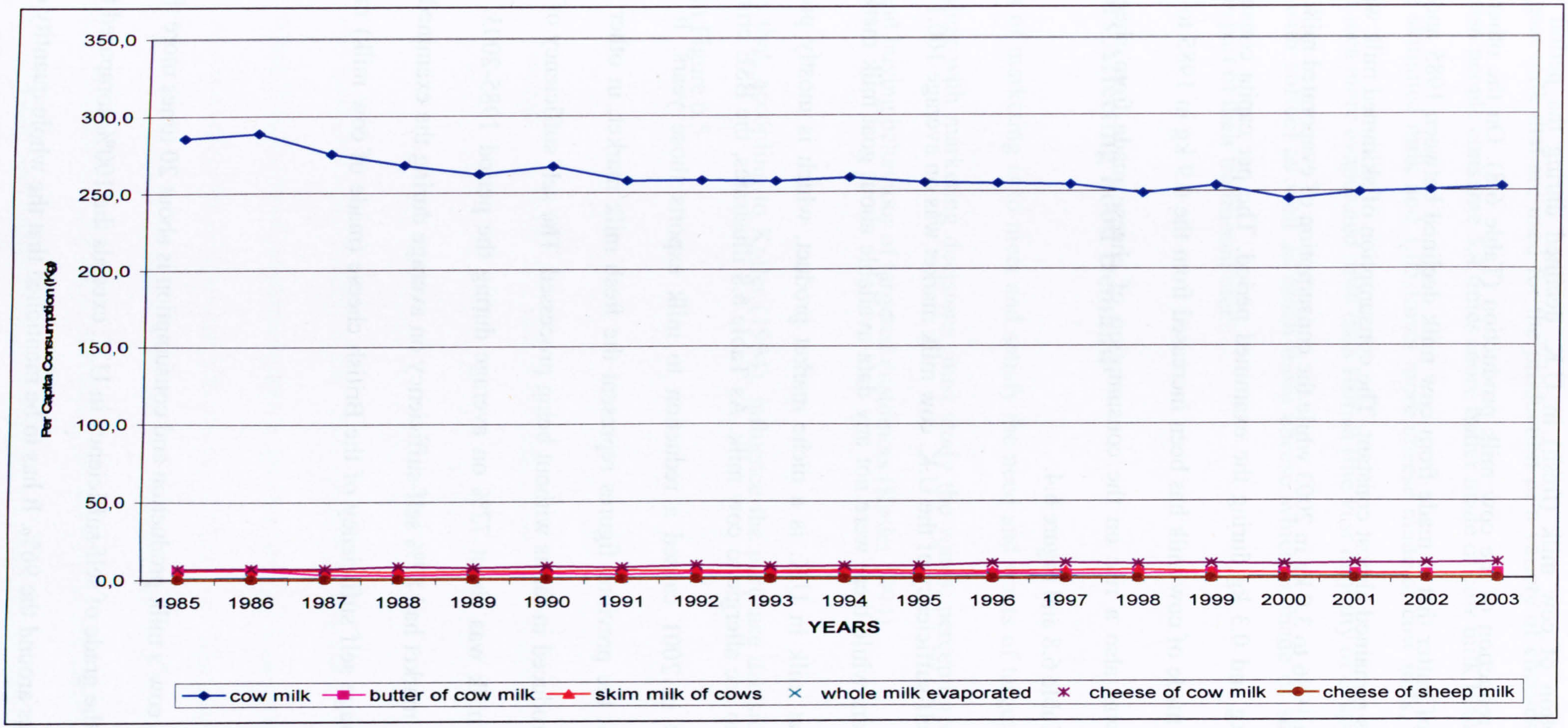

Figure 6.4: Per capita consumption of milk and dairy products in U.K market during 1985-2003

Source : After F.A.O. (2004a), F.A.O. (2004b), F.A.O. (2004c), F.A.O. (2004d)

The consumption of cow milk (fresh) in U.K. declined during the period 1985-2003 because of a reduction of the cow milk production (Table 6.8). On the other hand, the consumption of butter that is made from cow milk declined between 1985 and 1988, but since 1989 has remained almost constant. The consumption of skimmed milk was reduced from 6.5 kg in 1986 to 3.0 kg in 2003 while the consumption of evaporated milk fluctuated between 1.1 kg and 0.3 kg during the examined period. The per capita consumption of cheese that is made of cow milk has been increased from the 6.9 kg in 1985 to 10.4 kg in 2003. There was also a rise on the consumption of cheese made from sheep milk as illustrated in Table 6.8 and Figure 6.4.

The level of self-sufficiency of the U.K. cow milk market was on average 100.17% during the last 19 years while there were not any data available about goat milk market for the U.K.. The goat milk in U.K. is a niche market product, which is mostly preferred by consumers who are allergic to cow milk. As Table 6.8 illustrates, the BSE crisis in 1996 and the FMD in 2001 caused a reduction to milk exports those years. It has to be mentioned that the previous figures represent the fresh milk market, in other words the milk as it is produced in farms without being processed. The self sufficiency of the butter made of cow milk was about 72% on average during the period 1985-2003. The U.K. skimmed milk market had 87% self-sufficiency on average during the examined period of time. The average self sufficiency of the British cheese (made of cow milk) market was about 66%.

Thus, the U.K. cow's milk production and consumption is about 20 times more than that in Greece, while the grade of self-sufficiency in U.K. exceeds the 100% compared to Greece, which fluctuates around the 96%. It has to be mentioned that the whole quantity of sheep's milk production in U.K. is fed to animals. On the other hand, Greek farmers produce also

sheep and goat milk that are used for the production of a variety of cheeses such as Feta cheese. British people consume 3.4 times more butter made of cow milk than Greeks, 12.9 times more skimmed milk and 1.05 times more cheese made of cow milk, while Greeks drink 14.3 times more evaporated milk than British (the vast majority of evaporated milk is consumed with coffee) as well as much more cheese which is made of sheep and goat milk, as it is part of their traditional diet.

6.6 Factors Affecting Food Demand

As the aim of marketing is to meet and satisfy the need and wants of targeted customers, people dealing with marketing decisions must study the wants, perceptions, preferences, shopping and buying behaviour of targeted customers (Kotler 1994).

The factors that, according to Kotler (1994), influence the purchase decision process are presented in Figure 6.5.

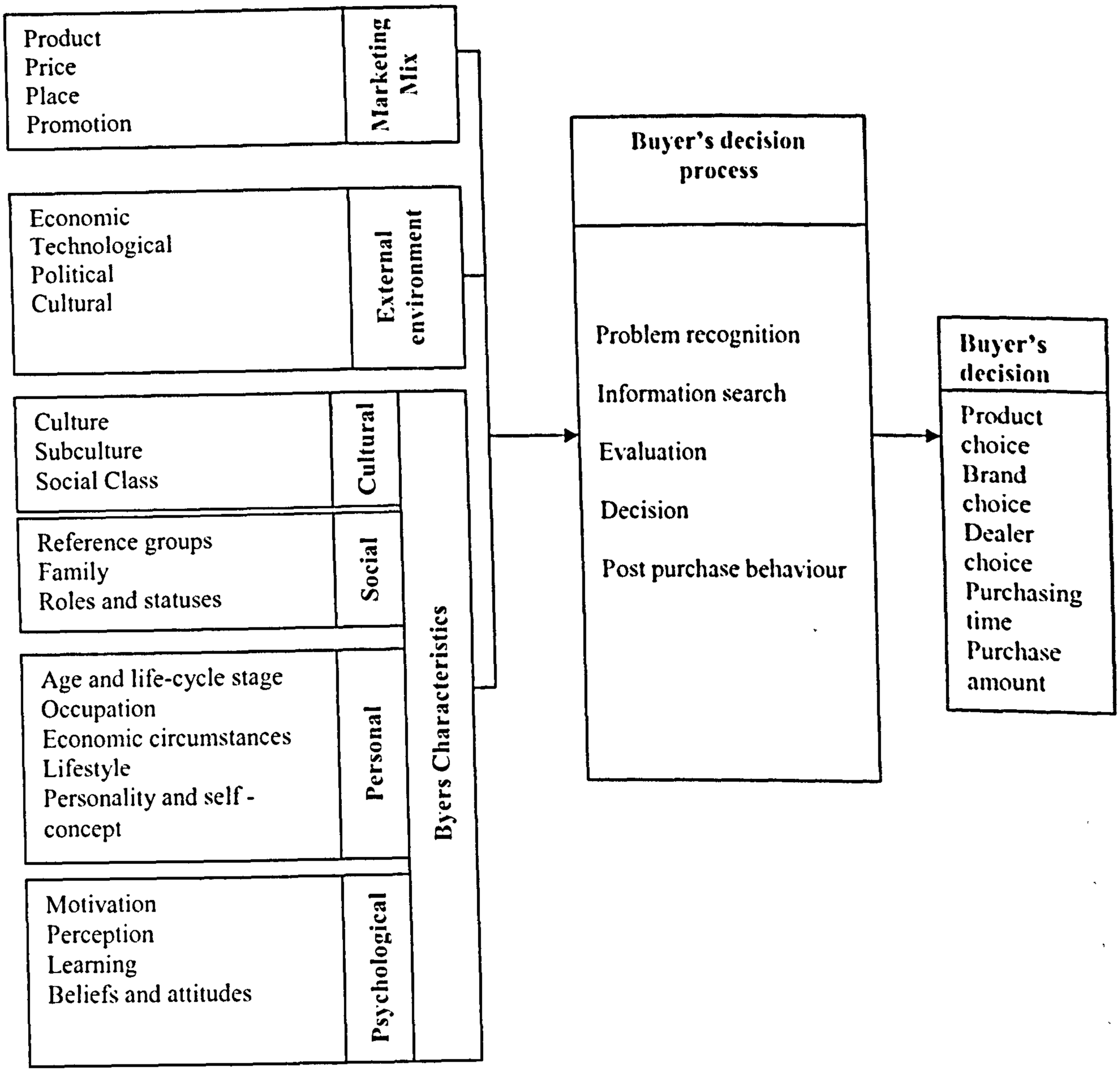

Figure 6.5: Factors Influencing Purchase Decision Process

Source: After Kotler (1994)

As Figure 6.5 presents, the components that comprise the marketing mix as well as external environmental factors and buyer's characteristics have a significant impact on the buyer's consciousness.

Meat and milk demand is affected by numerous, complex, diverse and dynamic factors which are explained in detailed in Appendix XI on the basis of the model presented above. More particularly, the analysis in Appendix XI focuses on key factors of the above model

and how they influence the meat and milk demand in Greece and U.K. as well as on their impact on marketing channel utilisation in these two countries.

Briefly, meat quality characteristics, the high importance given by consumers in diet and health issues and the recent food crises (as Appendix XI presents) affect meat demand in both countries. Price, governmental actions and distribution channels also affect the meat demand in Greece and U.K.. One of the consistent and continuing trends in the meat marketing system in the two countries was the shift of power towards retailers and the dominance of the supermarket chains (Murray *et al.* 1996; Allen 1997; Davies *et al.* 2000; OECD 2000). Logistical, distributional technologies related to animal production, traceability of the livestock products, food safety, transportation systems and slaughtering operations influence the meat demand in both counties (Appendix XI). Furthermore, the economic growth of Greece and United Kingdom has a positive impact on meat demand. Meat demand in both countries is also affected by political actions undertaken by the Government of each Member State within E.U. as well as by the European Commission and European Union in general. Religious prohibitions, cultural beliefs and counterculture attitudes have a significant influence on meat demand in both countries (Cooper *et al.* 1985). The social characteristics of the consumers, included the size of the family and the role of the head of the family, found to affect meat demand in Greece and U.K. (Michalopoulos and Demoussis 2001; Sdrali and Apostolopoulos 2002; Lazaridis 2003; DEFRA 2004c). Many personal characteristics of the British and Greek consumers such as the age of the consumer, the educational background of the meal planner, the sex of the head of the family, the occupation of the householder and the disposable income also influence meat demand in both countries. Furthermore, consumers' beliefs and attitudes and their the psychogenic needs affect their decisions concerning their food purchases (Hughes 1995; Davies 2001).

Moreover, taste, quality, flavour, shelf life packaging, health, safety and origin also influence consumers purchase decision towards dairy products (Davies and Worrall 1998; Kupiec and Revell 1998; Kneafsey *et al.* 2001). The demand for milk and dairy products is also influenced by price, promotion activities and distribution systems (as presented in detail in Appendix XI). Supermarkets consist of the most popular marketing outlet for the purchase of milk and dairy product in both countries (Stack and Sillen 1998; E.U. 1999a; McCarthy *et al.* 2001; ICAP 2003) Broader developments in the British, European and global economy have an impact on the demand of milk and dairy products in Greece and United Kingdom. The Common Agricultural Policy and the W.T.O. agreements also affected milk demand. Furthermore, the bio and information technologies and the new technologies in milk and dairy products processing also affect the demand of these products. In addition to cultural factors, the demand of milk and dairy products is also affected by the social characteristics of the Greek and British consumers included the size of the family and the social class (Davies and Worrall 1998; Kupiec and Revell 1998; Michalopoulos and Demoussis 2001; Sdrali and Apostolopoulos 2002; ICAP 2003; Dong *et al.* 2004). Consumers' personal characteristics such as their income, education, sex and age also influence the demand of milk and dairy products in Greece and U.K. (Mergos and Donatos 1989; Xepapadeas and Habib 1995; Karagiannis and Velentzas 1997; Davies and Worrall 1998; McCarthy *et al.* 2001; Michalopoulos and Demoussis 2001; Sdrali and Apostolopoulos 2002; Sotiropoulos and Demoussis 2002; DEFRA 2004c). Furthermore, psychological factors also affect the demand of milk and dairy products (Tansey 1994; Davies and Worrall 1998; Sotiropoulos and Demoussis 2002).

6.7 Conclusion

The above analysis has indicated that, even though there are different consumption patterns regarding meat and milk between Greek and British consumers, the factors, which influence the demand for both products in the two countries, are broadly similar.

Greek people are more orientated towards white meat and more particularly pigmeat, while British people mostly prefer to consume poultry meat. Furthermore, the consumption of beef and veal is more favoured in Greece than in the U.K.. Greek people consume more mutton and lamb as well as goat meat than the people in U.K., mainly during Easter due to religious tradition. The consumption patterns of milk and dairy products are also quite different in both countries. British people consume more fresh cow milk than do Greeks, but they do not use sheep milk for human consumption. Consumption of goat is very low and usually is consumed by the people who are allergic to cow milk. The sheep and goat milk in Greece is used for the production of traditional cheeses such as Feta, while the yellow cheeses are made mostly by cow milk. In the U.K., cheese is derived from cows and is usually yellow. The consumption of cheeses made from cow milk is higher in U.K. than in Greece while the opposite is true for the white cheese, as it comprises a fundamental part of the Greek diet. Furthermore, the British consume more butter (made from cow milk) and skimmed milk than Greeks, while the consumption of evaporated milk is higher in Greece than in the U.K..

The factors that affect the meat demand in Greece and United Kingdom are summarised in Figure 6.6. It is quite important for the purposes of this study to recognise that all these factors have an impact on the utilisation of the meat and milk marketing channels by the farmers as the distribution system of these products is related to the demand for them. The

above analysis has indicated that the livestock farmers considering the marketing of their meat and milk production should focus on adding value to their products and developing their own marketing outlets; in other words they have to develop new outlets (such as farm shops or farmers' markets) for their meat and milk in order to operate in a more profitable way.

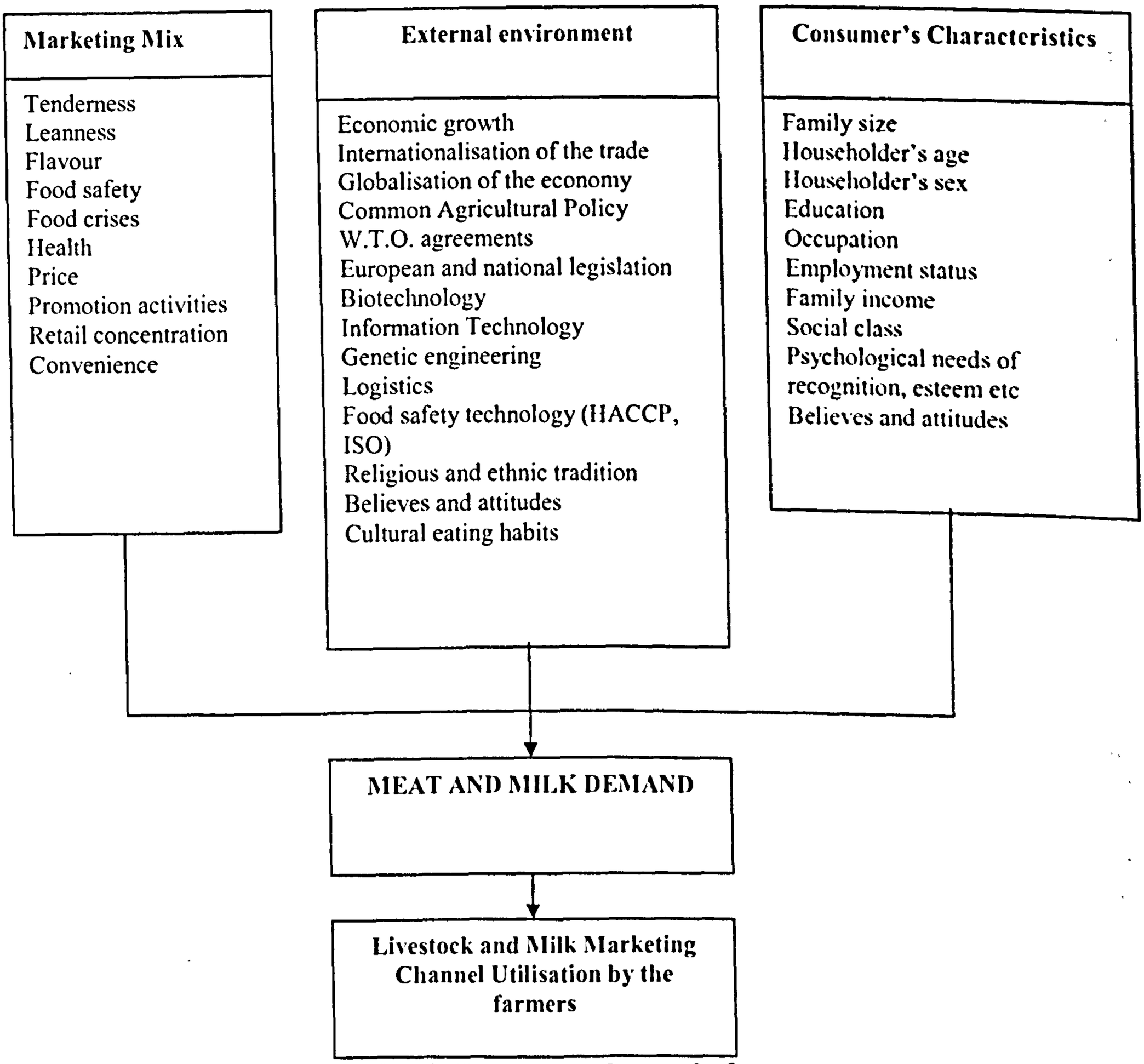

Figure 6.6: The factors that influence the demand of meat and milk in Greece and United Kingdom

CHAPTER 7

THE INFLUENCE OF THE COMMON AGRICULTURAL AND REGIONAL POLICY OF THE E.U. ON THE SHEEP AND DAIRY SECTOR IN OBJECTIVE ONE REGIONS

7.1 Introduction

The Common Agricultural Policy and Regional Policy comprise two legislative frameworks that have significant influences on the development of the agricultural sector of all the Member States of the European Union, and especially to Objective One Regions.

This chapter will focuses on the influences of the Common Agricultural Policy and the Regional Policy of E.U., as they were reformed within the framework of Agenda 2000, to the marketing and processing of agricultural products and more particularly of the sheep and dairy sector, especially in Objective One areas.

7.2 C.A.P. Reform and the rural development within E.U. regions

In 1997 the European Commission published "Agenda 2000" – a policy paper which included proposals for the reform of the Common Agricultural Policy. The proposals were based on the results of 1992 Reform, but took into consideration the new challenges and opportunities that the European Union's agricultural sector and rural economies faced at

the beginning of the new millennium. The major external factors influencing the reform of the C.A.P. were the growing world demand for food, moves towards a more liberal global trading environment and the challenge of the European Union's eastward enlargement. The internal factors that affected the reform of the C.A.P. were the very real risk of a return to market imbalances in some sectors, the Treaty of Amsterdam that makes the Community lawmakers integrate environmental concerns into all legislations as well as the rise of a consumer interest in food safety, quality and animal welfare. C.A.P. reform is characterized by more decentralization, greater transparency and simpler rules than before (E.C. DG VI 1999a)

Therefore, the C.A.P. reform included in "Agenda 2000" aims towards a multifunctional, sustainable and competitive European agriculture, which should continue to ensure a stable income for farm community. C.A.P. reform targets not only agricultural producers but also to the wider rural population, consumers and society as a whole.

The agricultural budget, according to Agenda 2000, is on average of EUR 40.5 billion annually for market policy (first pillar of C.A.P.) and EUR 14 billion for rural development and veterinary and plant health measures (second pillar of C.A.P.).

The Regulations that came into force from 2000 onwards concern: arable crops, beef, milk and wine sectors, the rural development framework, the horizontal rules for direct support schemes and the financing of the C.A.P..

The objective of rural development policy is to set a consistent and lasting framework for guaranteeing the future of rural areas and promoting the maintenance and creation of employment.

Farmers within the E.U. and more specifically in Objective One Regions, such as the Region of East Macedonia and Thrace in Greece and the County of Cornwall in U.K., can be supported by the C.A.P. 2000 in order to increase the profitability and efficiency as well as to ensure the economic validity of their farm enterprise as laid out in Reg (EC) 1257/1999.

In particular, the livestock farmers that this study examines may use the aids for the processing and marketing of agricultural products in order to increase the added value of their products, e.g. by establishment of a small milk processing plants in order to process their milk, produce cheese and trade it themeselves. They can also use the measures for the rural development in order to make investments for the modernization of their farming machinery (e.g purchase new equipment for milking cows) and improvement of animals' welfare. Farmers over 55 years old may use the early retirement program in order to be retired and to transfer their enterprise to their children that might be placed to the young farmers program (if they are under 40 years old). Furthermore, they may attend training programs relative to many agricultural subjects such as marketing of agricultural products, processing of livestock products such as milk and meat, sheep farming, dairy farming, soil sciences, environmental issues etc. Moreover, livestock farmers may use these measures to fund the development of non-farm activities relative to the rural sector such as agro-tourism activities in order to create alternative sources of income.

In this way, they can also allocate a proportion of their milk or meat production to their tourist enterprise (e.g. cottages, hotels, restaurants, pubs) creating a new marketing outlet.

Generally the C.A.P. as reformed within Agenda 2000 might create many opportunities for the improvement of living standards of people in rural areas of the E.U..

7.3 The C.A.P. 2000 and the dairy sector within the E.U. areas

The reform of the C.A.P. as it took place within the framework of AGENDA 2000 did not fundamentally affect the common organization of the market in milk and milk products (COM) established in 1968 and revised in 1984 and 1987. The changes that took place aimed to ensure the sector's stability and competitiveness through a progressive reduction in institutional prices from 2005 and onwards, partly offset by direct payments to producers. The target prices and intervention prices for milk and milk products as they have been specified by the E.U. in the Council Regulation (EC) No 1787/2003 amending the Council Regulation (EC) No 1255/99 are presented in Table 7.1.

Period	Target prices	Intervention prices	
	For milk containing 3.7% fat, delivered to dairies per 100kg	For butter per 100kg	For skimmed powder per 100kg
1/7/00-30/6/04	30.98 Euro/100 kg	328.20 Euro/100 kg	205.52 Euro/100 kg
1/7/04-30/6/05	30.98 Euro/100 kg	305.23 Euro/100 kg	195,24 Euro/100 kg
1/7/05-30/6/06	29.23 Euro/100 kg	282,44 Euro/100 kg	184.97 Euro/100 kg
1/7/06-30/6/07	27.47 Euro/100 kg	259,52 Euro/100 kg	174.69 Euro/100 kg
From 1/7/07	25.72 Euro/ 100kg	246,39 Euro/100 kg	174,69 Euro/100 kg

Table 7.1: Target and Intervention prices for milk and milk products

Sources: Council Regulation (EC) No 1787/2003; Council Regulation (EC) No 1255/99

As the table above illustrates, there is a continuous reduction in the target and intervention prices each year.

On the other hand, the E.U., in order to limit the impact from the planned reduction in target and intervention prices, grants the dairy farmers with direct payments.

The C.A.P. reform did not change the milk quota system as existed before the Agenda 2000 and which is extended from April 2000 to March 2008. The milk quota system has helped to regulate dairy production and ensured that production can take place across the E.U.. A review of the system took place in 2003, and on the basis of a report for the European Commission and according to the Council Regulation (EC) No 1788/2003, the milk quota system was extended until March 2015. The total reference quantities for Greece and U.K. as applicable from 1 April 1999 to 31 March 2015 are presented in Table 7.2 (Council Regulation (EC) No 1788/2003, Council Regulation (EC) No 1256/1999, Regulation (EEC) No 3950/92).

Period	Member State	Quantities (tonnes)	
1999-2000	Greece	630,513	0.5%
	United Kingdom	14,590,047	12.4%
	European Union	117,502,858	100.0%
2000-2001	Greece	675,313	0.6%
	United Kingdom	14,602,655	12.3%
	European Union	118,390,266	100.0%
2001-2002	Greece	700,513	0.6%
	United Kingdom	14,609,747	12.3%
	European Union	118,892,558	100.0%
2002-2003	Greece	700,513	0.6%
	United Kingdom	14,609,747	12.3%
	European Union	118,892,558	100.0%
2003-2004	Greece	700,513	0.6%
	United Kingdom	14,609,747	12.3%
	European Union	118,892,558	100.0%
2004-2005	Greece	820,513	0.7%
	United Kingdom	14,609,747	12.3%
	European Union	119,013,033.324	100.0%
2005-2006	Greece	820,513	0.7%
	United Kingdom	14,609,747	12.3%
	European Union	119,013,033.324	100.0%
2006-2007	Greece	820,513	0.7%
	United Kingdom	14,682,697	12.3%
	European Union	119,543,680.324	100.0%
2007-2008	Greece	820,513	0.7%
	United Kingdom	14,755,647	12.3%
	European Union	120,024,327.324	100.0%
2008-2015	Greece	820,513	0.7%
	United Kingdom	14,828,597	12.3%
	European Union	120,504,974.324	100.0%

Table 7.2 Milk quotas: total reference quantities per Member State

Sources: Council Regulation (EC) No 1788/2003, Council Regulation (EC) No 1256/1999, Regulation (EEC) No 3950/92

Thus, dairy cow farmers in Greece and U.K. will be affected by the C.A.P. Reform and more precisely by the reductions of the target prices of milk as well as of the intervention prices of butter and skimmed milk powder from the year 2004 and onwards. European Union's aid through the direct payments and *"national envelopes"* [1] will have a positive impact on the profitability of dairy enterprises. Dairy farmers in both countries are also affected by the restrictions of milk quota status as it was described above. However, these farmers in both examined regions have to add value to their products in order to ensure the viability, and increase the profitability, of their enterprise. They can achieve this aim by producing and marketing niche market products such as organic milk (that must be certified according to Regulation EC No 1804/1999) or by using their milk production in order to produce and market their own milk products, e.g. cheese, yogurt and ice-cream. Moreover, they have the opportunity to add value to their products by producing Protected Designation of Origin – (P.D.O.) products (these products are linked with a particular geographical area such as Cornwall or East Macedonia and Thrace, at the production, processing and preparation stages), Protected Geographical Indication – (P.D.I.) products (these products are linked with a particular geographical area at least to one of the production, processing and preparation stages) or Traditional Specialty Guaranteed – (T.S.G.) products (products that their specific features are due to a production method or traditional composition without any link with a particular area).

7.4 The C.A.P. 2000 and the sheep and goat sector within the E.U. areas

The Common Agriculture Policy (through the Council Regulation (EC) No 2529/2001) provides a structure to sheepmeat and goatmeat with a price and trading system to cover these kind of products.

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[1] National envelopes consist of extra money that is allocated as a top-up aid to each Member state.

Chapter 7: The Influence of the Common Agricultural and Regional Policy of the E.U. on the Sheep and Dairy Sector in Objective One Regions

Measures to improve sheep and goat farming, to promote better organization of production, processing and marketing, to improve quality, to permit the establishment of short and long term forecasts on the basis of the means of production used and measures to facilitate the recording of market price trends may be taken "*...in order to encourage action by trade and joint trade organizations to facilitate the adjustment of supply to market requirements*" (Council Regulation (EC) No 2529/2001).

More particularly, the E.U. subsidizes the sheep farmers keeping ewes (ewes according to the Council Regulation (EC) 2529/2001 means any female of the ovine species having lambed at least once or aged at least one year) on their holdings with the ewe premium. Moreover, the E.U. subsidizes the goat farmers keeping she-goat (she-goats according to the Council Regulation (EC) 2529/2001 means any female of the caprine species having kidded at least once or aged at least one year) on their holdings with the goat premium. The ewe premium is 21 Euro/animal but in cases where the sheep farmers market sheep's milk or products based on sheep milks, the premium is 16.8 Euro/animal. Furthermore, the goat premium is 16.8 Euro/animal. A supplementary premium of 7 Euro/animal, may be paid to the sheep and goat farmers if their livestock production comprises a traditional activity or contributes significantly to the rural economy.

According to the Council Regulations (EC) No 2529/2001 and No 1782/2003, all the Member States of E.U. must take the appropriate measures to ensure that the sum of the premium rights on their territory does not exceed the national ceilings as they are presented in the Table 7.3 below:

Member States	Rights (X1000 euros)
Greece	11,023
United Kingdom	19,492
E.U Total	79,164

Table 7.3: National Ceilings of Sheep and Goat Premiums

Moreover, each country within the E.U. should make additional payments totalling the global amounts presented in Table 7.4. These payments may include: (a) payments to farmers engaged in specific types of production, in particular related to quality, which are important for the local economy or the protection of the environment, (b) an increase in the premium due to the application of stocking density requirements, (c) support for restructuring of farmer's holdings or the development of producers' organisations, (d) area payment to farmers to be granted per hectare of forage area, (e) payments to farmers who surrender their rights on a voluntary basis, (f) support for the improvement and rationalisation of processing and marketing of sheep and goat meat.

Member States	Amounts (thousands of Euro)
Greece	8,767
United Kingdom	20,162
E.U Total	72,000

Table 7.4: Global amounts for additional payments

Conclusively, the sheep and goat farmers in Greece and U.K. can use the ewe and goat premiums set by C.A.P. as a support for their livestock enterprise. In addition to the sheep and goat meat marketing, these farmers should market the sheep and goat milk, in order to increase the efficiency of their livestock enterprise. They can also add value to their products by producing niche market products using traditional farming methods and qualifying in that way, for the supplementary premium. Moreover, they can be helped

financially by the additional payments in order to process and marketing the meat they produce by themselves and gaining in that way the added value of their meat production. Furthermore, the sheep and goat farmers in both examined regions can ensure the viability and increase the profitability of their enterprise by producing and certifying their meat as organic according to instructions of the Regulation EC No 1804/1999.

7.5 The Regional Policy and the sheep and goat sector within the E.U.

The regional policy (structural policy) reformed in 1999 aims to: (a) improve the effectiveness of the structural instruments by strengthening concentration through a reduction in both the structural policy objectives and the Community Initiatives, by improving management and by clarifying the share out of responsibilities between the various parties involved, (b) maintain the budget for economic and social cohesion and (c) extend efforts on regional cohesion to the future Member States.

More particularly the E.U., through the European Regional Development Fund (ERDF), finances a productive investment to create and safeguard sustainable jobs, investment in infrastructure and the development of endogenous potential by measures that encourage and support local development, employment initiatives and the activities of small and medium sized enterprises.

Furthermore, the European Agricultural Guidance and Guarantee Fund (EAGGF) consists of the framework of E.U. support for sustainable rural development and, with regard to the Objective 1 regions that it supports financially, the measures that promote the development and structural adjustment of regions whose development is lagging behind.

Besides, the reform of the regional policy according to Council Regulation (EC) No 1260/1999 provided a reduction to the number of E.U. initiatives from 13 to 4 which are:

(a) INTEREG III that aims to stimulate cross-border, transnational and interregional cooperation intended to encourage the harmonious, balanced and sustainable development of the whole E.U. area,

(b) EQUAL which provides new means of combating all forms of discrimination and inequalities in connection with the labour market,

(c) URBAN II which targets to the economic and social regeneration of cities and of urban neighborhoods in crisis, with a view to promoting a sustainable urban development and

(d) LEADER+ that promotes rural development through initiatives of local action groups. The local action groups should experiment with new ways of: (i) enhancing natural and cultural heritage, (ii) reinforcing the economic environment in order to create new jobs and (iii) improving the organizational capabilities of their community.

Conclusively, the livestock farmers in the Region of EMTh and in the County of Cornwall which both are Objective 1 areas can be benefit from the structural policy of the E.U. as it has been reformed in 1999.

More particularly, they can be supported from the EAGGF in order to make investments to improve the structure of their livestock holding (investments in buildings, machinery equipment etc) as well to the processing and marketing their livestock products. They can also be supported to diversify their farm into complementary or alternative activities such agro-tourism. Furthermore they can be benefit by the EAGGF through the LEADER+ initiative in order to combine their livestock farming activity with activities of the other sectors of the economy such as tourism and manufacture, developing agro-tourism enterprises such as cottages, inns and plants in order to process their livestock products.

LEADER+ may also have a positive indirect influence on the livestock farmers in EMTh and Cornwall through the inter-territorial or transnational cooperation among the local actors regarding the livestock and dairy sector.

Furthermore, the European Regional Development Fund may support the livestock farmers in the examined regions to make investments in their farms regarding the use of renewable energy sources (such as the use of their farm's wastes as source of energy) as well as the development of activities that will contribute to the attraction of tourists and the promotion of the local culture. In that way, they can establish tourism enterprises that will include traditional cottages, inns and small private museums that will present exhibits relative to the local culture (such as local clothes, equipment or tools) mainly associated with the traditional farming way of life. On the other hand, the livestock farmers in EMTh and Cornwall may be funded by ERDF in their investments associated with information technology in order to improve the effectiveness of their farm.

The farmers also benefit indirectly through cross border or inte-regional projects associated with the primary sector which can be developed mainly by the local authorities and may be funded by the INTEREG III initiative. More particularly the INTEREG III C program allows the development of inter – regional projects in which partners from the Region of EMTh and the County of Cornwall can participate.

Finally, farmers in both examined regions may be benefit by the ESF through their participation in training programs relative to their enterprise which will be funded by this structural fund or by the EQUAL initiative.

7.6 Conclusions

Livestock farmers within E.U. and more particular in Objective 1 regions may be supported by rural development measures in order to make investments in the farm business, to join the young farmers and early retirement programs as well as training programs about friendly environmentally production techniques. The dairy sector has been affected by C.A.P. reform and in particular by the reductions in target and intervention prices, as well as by the direct payment and national envelopes which will offset the impact of from these reductions.

Furthermore, the sheep and goat as well as the dairy cow farmers in E.U. and particularly in Objective 1 regions, may use the aids for the processing and marketing of agricultural products in order to increase the added value of their products, e.g. by establishment of a small processing plants in order to process the products they produce (milk or meat), and to market the processed products on their own through local retailers, supermarkets or own shops. The production of niche market products can also increase the added value of their milk or meat and contribute to an increase of the farm's competitiveness. The development of income sources that are complementary or alternative to farming through agrotourism services may increase the profitability and efficiency of the farm.

Hence, the Common Agricultural Policy and the Regional Policy contribute fundamentally to the development a sustainable future of the livestock farmers in Objective 1 regions.

CHAPTER 8

METHODOLOGICAL APPROACH: LIVESTOCK AND MILK MARKETING SURVEY IN SHEEP AND GOAT FARMERS IN THE REGION OF EAST MACEDONIA AND THRACE IN GREECE

8.1 Introduction

The aim of this chapter is to describe the way that this research has been designed and carried out. The conceptual model around which this research is based on is provided in addition to a synthesis of the literature in order to identify the hypothesis of the research. This chapter also operationalises the study in order to develop a suitable and satisfactory methodology which meets the objectives of this project.

8.2 The Conceptual Model

As was identified in the literature review, the typologies of business strategies described in the Chapter 3 are very difficult to apply to agribusinesses due to the nature of farm firms and their environment. For example, it is very difficult for farmers to differentiate their produce while the large number of small farm businesses impedes the creation of the economy of scale required for cost leadership. The farm management literature (Mitchell 1976; Barker 1989) tends not to include the way farm businesses behave concerning marketing activities within its domain. On the other hand, the strategic business literature

(Miles and Snow 1978; Porter 1980; Douglas and Rhee 1989) argue that strategic management and marketing processes are quite complex, and that a variety of business strategies may need to be adopted in order to achieve a competitive advantage. Therefore, due to the limited understanding of the dimensions, factors and farm/farmers characteristics that influence the farm business strategy, this study is mostly empirical rather than conceptual. It aims to examine the existence of a strategic typology regarding the marketing patterns of livestock farmers at farm level as well as the relationship between the strategic groups and the farm/farmers characteristics.

According to Frankford-Nachmias (1996), there are two different stages where social scientists can operate: the conceptual – theoretical and observational – empirical; and the transition from the conceptual to the empirical level is related to two important issues. The first is dealing with the degree of congruence between conceptual and operational definitions. The second is related with the concepts that cannot be defined operationally or which cannot be observed directly or indirectly. In those cases, it is suggested that concepts should not be evaluated only in terms of their observability, but also in terms of their theoretical importance. A conceptual framework comprises the third level of a theory where "descriptive categories are systematically placed in a broad structure of explicitly assumed propositions" (Frankford-Nachmias and Nachmias 1996). It also summarizes and provides explanations and predictions of a large number of empirical observations. The notion of a conceptual framework can be presented in terms of models since models can be viewed as a relation between several aspects.

In this study, a conceptual model aims to place the key concepts outlined in the literature review into an identifiable framework, which is illustrated in the Figure 8.1 below. The model below tries to investigate the relationships between aspects of the internal and

external environment of the farming businesses and the development of strategic dimensions that may influence the farmers to adopt a specific distribution pattern, as well as to examine the association between the farm /farmer characteristics and the adoption of a specific marketing strategy and a particular marketing outlet.

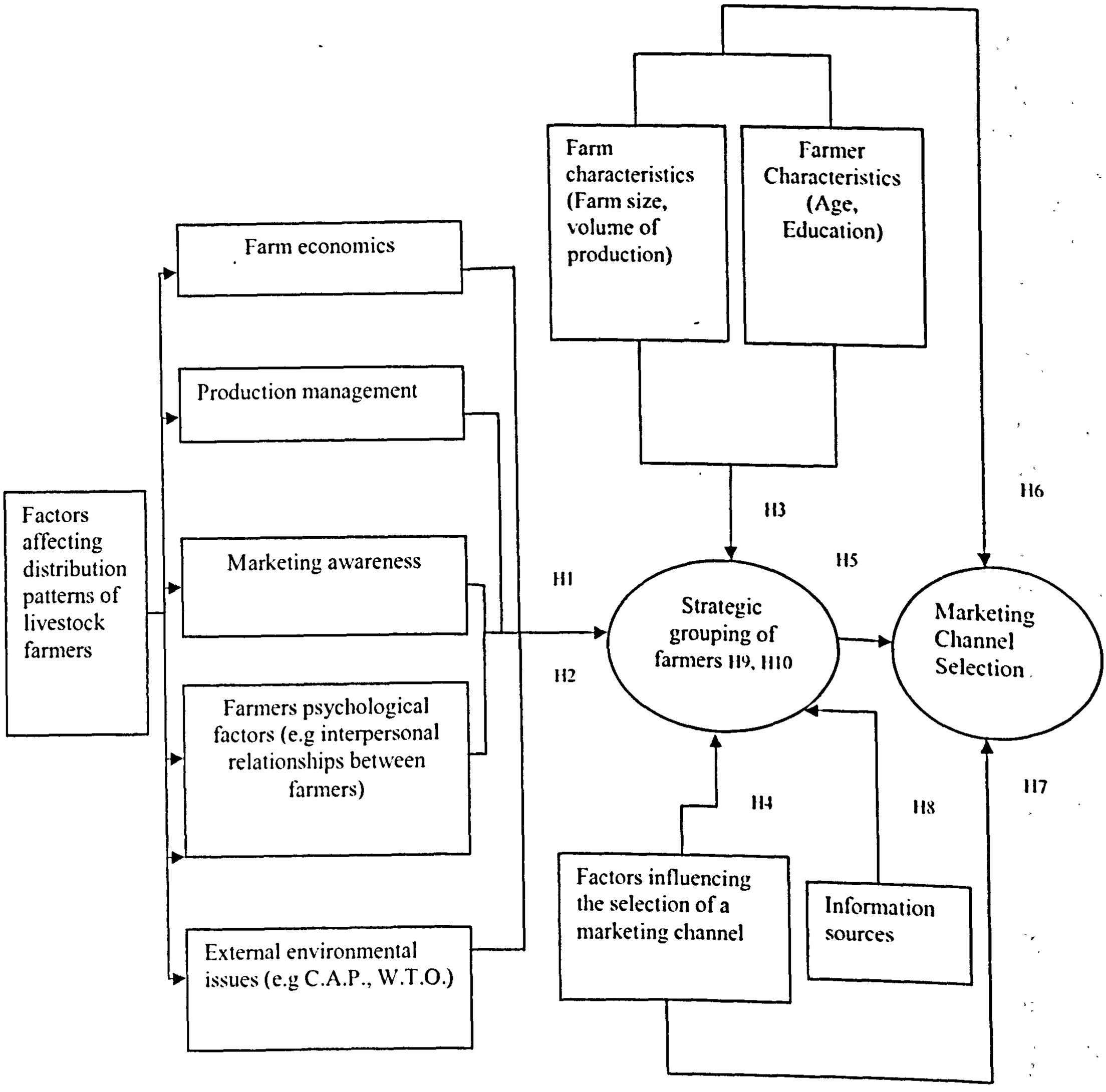


Figure 8.1: The Conceptual Model

8.3 Hypotheses and Operationalisation

The aims of a research should be turned into operationalised aims,which are the hypotheses to be investigated (Oppenheim 2000). An hypothesis, according to Bouma and Atkinson (1995) is a statement that examines the relationships between two or more concepts. When a movement from the conceptual level to the operational is taking place, the concepts are conveyed to variables (Frankford-Nachmias and Nachmias 1996). Thus, when a conceptual model is operationalising, the hypothesis asserts the relationships between the setting variables. A hypothesis usually takes the form "X causes Y" or "X is related to Y" (Bouma and Atkinson 1995). In the conceptual level of this research the hypotheses that are investigated are presented in Appendix I:

Adopting the model that Davies (2001) used in his thesis; the operationalisation of the conceptual model of this study is presented in the Figure 8.2 below.

Operationalizing the Conceptual Model, the concepts transformed to the variables presented in Appendix II:

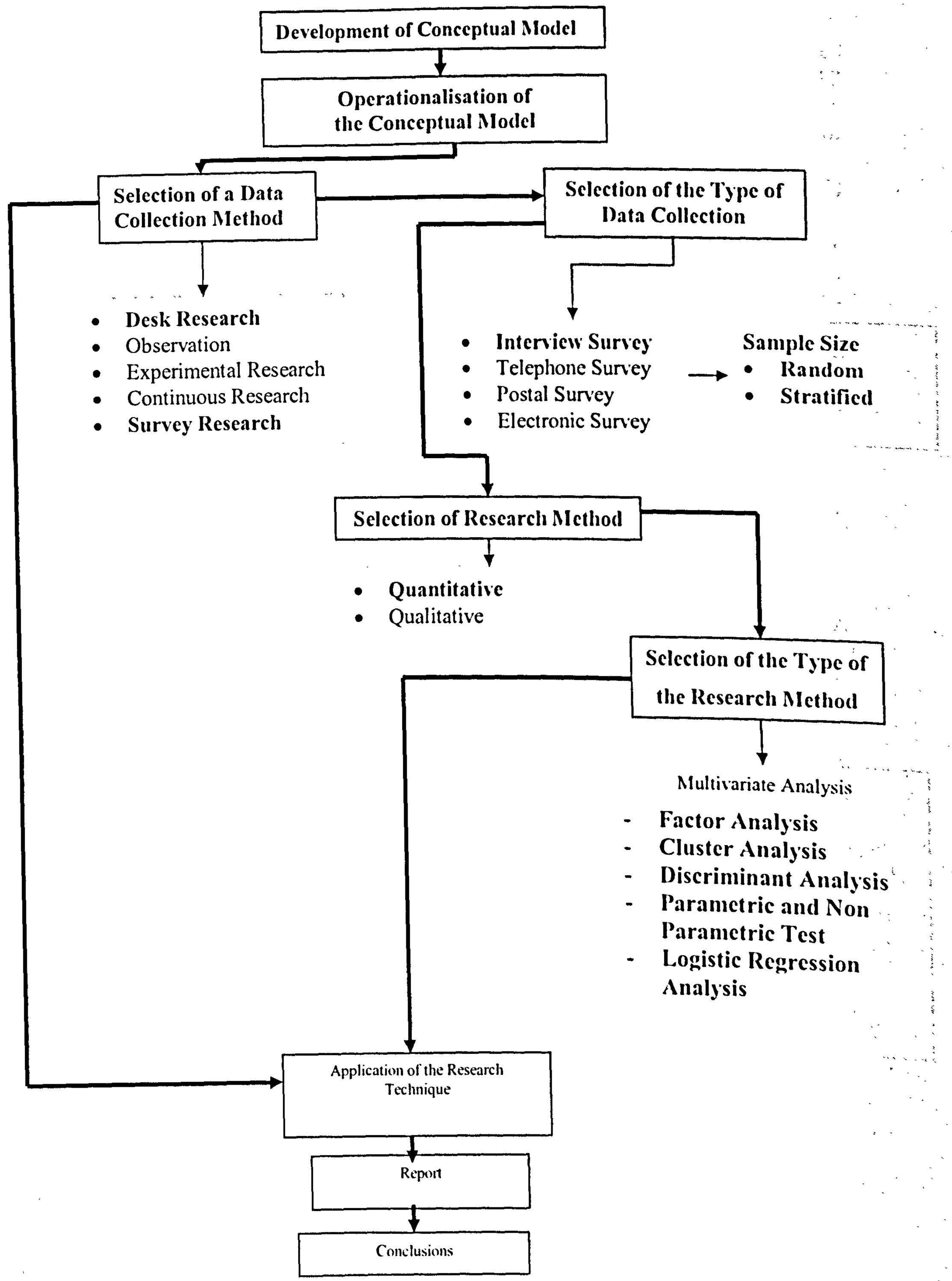


Figure 8.2 Operationalisation Model[1]

[1] Typeface in Bold indicates methods used

8.4 Research Methodology

The author of this thesis undertook a survey of sample farms to gather data necessary to identify the marketing channels that the sheep and goat farmers use in the Region of EMTh regarding milk and livestock marketing as well as exploring the relationship between various variables and the marketing orientations of farm businesses. In the design and conduct of such a survey, Errington (1984b) noted that in "*...such a survey, many decisions have to be made. What sampling frame should be used? Is random or purposive sampling appropriate? Should the sample cover units throughout the U.K. or be confined to a smaller area? Should time-series data be gathered or is a cross-sectional survey adequate? Are personal interviews essential or would a postal survey gather the appropriate data? Is some form of participant observation or activity sampling necessary? What questions should be asked? How should they be worded?*" According to Errington (1984b) many of the above choices are interrelated as the suitability of a postal survey depends on the type of information should be gathered as well as the possibility of using a random number sample depends on the suitability of the sampling frame. Even if there is an ideal approach to data collection of a specific research problem, it is rarely adopted and is very often limited due to financial and time constraints.

In this section, the methodological approach as well as the main choices that were made for data collection will be presented.

8.4.1 Postal Survey or Field Interviews?

The advantages and disadvantages of field interviews against postal surveys are summarised below (Moser 1958; Errington 1985b; Barnett 1991; Oppenheim 2000).

The main advantages of postal questionnaires are:

(a) the low cost of data collection,

(b) the low cost of processing,

(c) the avoidance of interview bias and

(d) the ability to reach respondents who live at widely dispersed addresses or abroad

The main disadvantages of the postal questionnaire are that:

(a) They generally have low response rates and consequent biases.

(b) They are unsuitable for responsdents of poor literacy, for the visually handicapped, very old people or for children below the age of, say, ten; and often unsuitable for people with language difficulties.

(c) They do not provide the opportunity to correct misunderstandings, to probe, or to offer explanations.

(d) They do not have the control over the order in which the questions are answered, no check on incomplete responses, incomplete questionnaires or the passing on of the questionnaires to others.

(e) They do not give the opportunity to collect ratings or assessments based on observation.

The main advantages of the field interviews are that :

(a) They allow the interviewer to clarify questions.

(b) They allow the interviewer to probe responses more comprehensively and can succeed more often with respondents who have reading or language difficulties.

(c) They provide the opportunity to the interviewer to "sell" the survey and hence to reduce the no-responses.

(d) They allow the interviewer to catch some of the richness of expression of individual language of respondents when expressing their opinions and views.

The disadvantages of the field interviews are that:

(a) They have high costs in terms of time and finance.

(b) Due to the in built desire of most people not to antagonize the interviewer, the respondents may alter their response to what they believe will gain the approval from the interviewer.

(c) The immediacy of the interview situation may do not provide to the respondent a sufficient time to reflect on his/her answer and give a considered reply.

(d) The interviewer might not pose a question to each respondent in an identical manner (e.g. different wording or emphasis in the way he asked the question).

There are many different ways in which a researcher may overcome the disadvantages of a particular approach as well as much of the skill in the design and execution of surveys are dealing with finding ways to minimize these disadvantages.

Therefore, the postal surveys can be used more effectively in cases of gathering information from a large sample of respondents while field interviews are needed when information is required in depth, particularly where the research subject is relatively unfamiliar to the respondent, covers sensitive topics or respondents who have poor literacy, face language difficulties or are either quite old people or very young children.

For the present study, the author decided to gather information through field interviews due to the poor literacy of most sheep and goat farmers in the Region of East Macedonia in Greece. The majority of these farmers are not familiar with this kind of research and

therefore the field interviews provided the opportunity for the interviewer to explain the utility of the project and its aims and objectives. The length of the questionnaire, the size of the sample, the dispersion of the farms and the fact that the author (who conducted the interviews) is based exactly in the middle of the area that the farmers are dispersed, were some of the factors that worked towards the adoption of the interview method. Also the cost of the research was not much higher by using field interviews compared to a postal survey (cost of sending questionnaires, mailing back, sending a reminder letter) due to the fact that the author himself conducted the interviews.

8.4.2 The Area and Unit of Study.

The Region of East Macedonia and Thrace in Greece has many similarities with the county of Cornwall in U.K.. Both regions have been designated by the E.U. as Objective One Regions; are isolated compared to the rest of their countries; and their population is about half million people.

Both regions are dominated by ruminant livestock production. The sheep and goat sector (producing meat and milk) consists of the most important livestock sector in terms of gross output in the Region of EMTh. In Cornwall the most important livestock sector in terms of gross output is the dairy cow sector followed by the beef sector and sheep sector. Thus, both regions comprise wholly appropriate areas to study the livestock and milk-marketing strategies adopted by farmers and to compare each other.

8.4.3 The Sampling Frame.

Ideally, samples that researchers use in order to accomplish their researches mirror the population in which they are interested. In many cases an ideal sample is not available, and researchers attempt to identify alternatives.

Chapter 8: Methodological Approach: Livestock and Milk Marketing Survey in Sheep and Goat Farmers in the Region of East Macedonia and Thrace in Greece

The population in which any researcher is interested is defined by the unit into which the research will be carried out (e.g. farm businesses, land owners, agricultural enterprises) and by the characteristics of these units (cultivated area of the farm, headage of livestock, quantity of milk production). According to Emerson and McFarland (1995), sampling frames rarely include all the units of a population, but are used as a source from which to draw a sample for study.

In order to generalize their findings to a larger population than the sample from which the data has been collected, researchers should ensure that the sample is representative of the population. Three potential sources of bias in the sampling, survey procedure and execution processes are identified in the social science literature (Moser 1958; Kish 1965; Errington 1985b; Barnett 1991; Emerson and McFarland 1995; Frankford-Nachmias and Nachmias 1996; Burton and Wilson 1998; Oppenheim 2000).

- The Sampling Frame: A comprehensive catalogue is required in order that members of the population who are target for the survey, can be identified. Suitable catalogues are often confidential, expensive, incomplete or unsatisfactory.
- The Sampling Procedure: The representativeness of the sample relative to the population should be ensured. An accepted method of ensuring the representativeness of a sample is the random selection. Sometimes, ensuring representativeness is problematic especially in a view of the limited number of available and feasible sampling frames for farm surveys.
- Rate of response: Even the sample is representative, non response rates may not be randomly distributed and certain types of respondent categories may be over or under represented.

Errington (1985b) argued that non-responses far outweigh the potential bias on most accepted sampling frames. According to Emerson and McFarland (1995) an inadequate sampling frame is the first source of bias in the sampling and survey procedure. There are many potential sampling frame inadequacies or sources of bias that have been identified by the social science literature (Moser 1958; Kish 1965; Errington 1985b; Barnett 1991; Emerson and McFarland 1995; Frankford-Nachmias and Nachmias 1996; Burton and Wilson 1998; Oppenheim 2000):

- Inaccuracies (factual): these tend to be occasional rather than systematic, e.g. an incomplete address or wrong geographic location.
- Missing Elements: A sample frame may be inadequate or incomplete. It may also not be representative of the population in which the researcher is interested.
- Cluster of elements: Sometimes there are a number of subjects that are grouped together under one entry in the sample frame catalogue, e.g. as one business.
- Foreign Elements: It is quite common in many sample frame catalogues for objects to be included that normally are not members of the population.
- Duplicate Listings: The subject may appear in the sample frame lists more than once, many times under different categories.

Due to these possible biases, researchers should choose a sampling frame that would best possible fit to their research objectives.

In the case of the present research, there were two possible sources of sampling frame. The first was the lists of sheep and goat farmers of the Unions of Agricultural Cooperatives that operate in each prefecture of the Region of East Macedonia and Thrace. The problem with this framework is that many farmers might not be members of the Union of the Agricultural Cooperatives. The second source was the lists of sheep and goat producers of

the Ministry of Agriculture that could be obtained by the Local Authorities of each examined prefecture. These lists include all the sheep and goat holdings that operate in each prefecture. Therefore, the author preferred to use the second source in order to identify the sampling frame for this research.

8.4.4 The Sample.

The author contacted the Local Authorities in the five prefectures of the Region EMTh in order to determine the type of information that could be identified from their lists prior to deciding upon a selected sample. The catalogues of the local authorities included all the sheep and goat holdings operated in each prefecture of the Region of EMTh in the year 2000. The officers of the local authorities were willing to provide the lists including information about name and address, but they could not give information about the size of the flock as this information were subject to the protection of personal sensitive data. Thus, the sample frame of this research included information about 6,826 farmers operating in the Region of EMTh as presented in Table 8.1.

Prefecture	Sheep and Goat Farmers Population
RHODOPI	2,051
DRAMA	7,11
KAVALA	1,241
EVROS	1,657
XANTHI	1,166
Total	**6,826**

Table 8.1: Description of the Sample Frame

In this survey, a random selection of sheep and goat farmers was chosen to form the sample due to the fact that the author wished to generalize his findings beyond the sample of farms covered by the survey. As Errington (1985b) argued the only way in which this can be achieved is to ensure that the units for survey are selected at random from the larger

population about which generalization are to be made. The sample that was selected consists of 343 farmers which would be reasonably representative of some larger population about which useful generalization could be made. The size of the sample is similar to the size that other researchers used in this kind of surveys (Errington 1984b; Oglethorpe and McLeay 1998; Davies 2001) and is detailed in the following table:

Prefecture	**Sheep and Goat Farmers Population**	**Percentage Composition of the population** *(County population /Total population)*	**Sample**
RHODOPI	2,051	0.30	103
DRAMA	7,11	0.10	36
KAVALA	1,241	0.18	62
EVROS	1,657	0.24	83
XANTHI	1,166	0.17	59
Total	**6,826**	**1.00**	**343**

Table 8.2: Description of the sample

It is a stratified random sample, with each county being represented in the sample in the same proportion as it appears in the main population. Hence, a more efficient estimation of some population characteristics that might exist in each prefecture (e.g the proportion of Muslim farmers, large and small farmers) will take place rather than sampling from the population at large (Barnett 1991; Fink 1995a). In order to check that this sample was reasonably representative, the author compared the characteristics of the sample with those of the total population following the methodology that Errington (1984b) used in his survey. The characteristics of the selected sample with those of the Region of EMTh as a whole are compared in Table 8.3. The sample comprises the 5% of the total population of sheep and goat farmers that are registered in local authorities' lists and is reasonable

representative of them as all the characteristics (as described in Table 8.3) do not differ from those of the total population.

	Sample	Region of EMTh	Sample as % of Region EMTh
Number of sheep and goat holdings[1]	343	6826[1]	5.0%
Sheep livestock population	31295	580451[2]	5.5%
Goat livestock population	27257	491372[2]	5.6%
Average size of sheep farms (heads)	91	90[2]	
Average size of goat farms (heads)	79	79[2]	

Table 8.3: Evaluation of the sample

[1]Compiled of Drama Prefectural Authority (2001), Evros Prefectural Authority (2001), Kavala Prefectural Authority (2001), Rhodopi Prefectural Authority (2001), and Xanthi Prefectural Authority (2001),
[2] N.S.S.G. (2001a)

8.5 Survey Procedure

8.5.1 Pre – tested

The survey was pre-tested on six sheep and goat farmers in the Prefecture of Xanthi. As a result minor alterations were made to questionnaire prior to the pilot survey.

8.5.2. Pilot Survey

The author carried out the pilot survey consisting of field interviews in Autumn 2001 to 30 farmers comprising 6 farmers in each prefecture. Farmers were selected by using random numbers. The purpose of the pilot survey was to test and validate the questionnaire design and to assess a response rate for the main survey. The response rate for the pilot survey was 93% and was not felt that any further changes were required for the main survey.

8.5.3 Main Survey

The survey was started in March and completed in April 2002 to 343 farmers as were described in the previous section of this chapter. The author, during afternoon hours, weekends and his vacations carried out all the interviews. The standard approach to potential respondents was to call them by telephone, where that was possible, in order to secure an appointment at which the interview was conducted. In cases where the respondents had not any telephone number, interviews were conducted without appointment. The most suitable time for interviewing farmers was during the afternoon or early in the morning but many interviews were conducted during the other hours of the day. The season the main survey took place was not the busiest time of the year for sheep and goat farmers.

At the beginning of each interview, the author explained the purposes of the survey while the Prefectural Authority of Drama – Kavala – Xanthi where the author is employed provided a letter (presenting in Appendix V) that accompanied the questionnaire stated its support for this survey. This support was helped the author for the better promotion of the research.

There was a productive response rate of 92% as 314 farmers answered the questionnaires while 17 farmers had sold the flock within the year 2000, 4 farmers passed away, 1 farmer moved to another part of the country, 2 farmers denied to answer and 5 farmers were not found.

8.5.4 Questionnaire Design

Marketing and strategic variables were identified after searching the business and agricultural marketing, farm management, agricultural economics, and strategic

management literature. Attention was given to existing conceptual frameworks such as Porter's (1980) generic strategies, Miles and Snow's (1978), Barker's (1989), Fearne and Bates' (2000) strategic typologies, Mitchell's (1976) and Davies' (2001) livestock as well as McLeay's *et al.* (1996) arable typologies as a starting point. Taxonomic classifications of strategy including strategic group studies were also reviewed. This was followed by informal interviews with farmers, business consultants specialized in agricultural sector, managers of firms processing and trading agricultural products and agricultural economics academics in order to gain a detailed knowledge of the industry prior to selecting the appropriate variables.

The ten-page questionnaire (Appendix VII) was designed to meet the research objectives referred in Chapter 1:

- To identify and quantify the criteria that sheep and goat producers in the Region of EMTh use in order to select marketing channels regarding their milk and meat produce.
- To examine the links between farmer/farm types in relation to their business and marketing orientations in order to model farm marketing behaviour.
- To determine farm marketing behavioural influences market channel utilisation
- To compare the characteristics and the factors that influence the decision making of the farmers in relation to the marketing channel utilization in the Region of East Macedonia and Thrace in Greece and in the County of Cornwall in U.K., and to identify the similarities and the differences of these characteristics.

The questionnaire was designed in seven parts in order to meet the research objectives:

Part 1 – Choice criteria for selecting marketing channels in the meat sector : comprise 5 questions related to marketing channel used, choice criteria, agricultural cooperative

membership and sales price regarding meat – livestock marketing. This section would be used to determine the channel utilization, to identify the relation between various factors and the selection of a particular marketing strategy after bivariate statistical analysis and to discover if intergroup differences exist between, for example, carcass attributes and choice criteria by using multivariate analysis.

Part 2 – Choice criteria for selecting marketing channels in the milk sector: comprised 4 questions related to marketing channel used, choice criteria and price regarding milk marketing. This section would be used to determine the channel utilization, to identify the relation between various factors and the selection of a particular marketing strategy after bivariate statistical analysis and to discover if intergroup differences exist between management attitudes and choice criteria by using multivariate analysis.

Part 3 – Management activities and attitudes: comprised 35 attitudinal statements on a 5 point Likert scale relating to marketing and business orientations. These questions cover areas such as non-controllable factors, marketing activities, consumer/buyer orientation, production planning and budgetary control. This part of the survey is particularly important because the attitude variables would be used to derive a set of strategic dimensions from which the typologies would be modelled and predicted.

Part 4 – Information sources and types: comprised 12 information sources and 8 information types used as source of marketing intelligence. Responses based on a 5 point Likert scale. Market information may be relevant to farmer's marketing decision and would be used to discover if intergroup differences exist.

Part 5 – Marketing or added value questions relating to differentiation. This part is important in respect of whether farmers perceived themselves to be differentiators.

Part 6 – General farm characteristics: comprised 11 questions related to characteristics such as farm size, flock size, volume of produce and farm area. This section was of particular relevance with regard to profiling the derived typologies after multivariate statistical analysis.

Part 7 – General farmer's characteristics: comprised 10 questions related to characteristics such as farm and non-farm previous working experience, income, debt level, age and education. This part was also of particular relevance with regard to profiling the derived typologies after multivariate statistical analysis.

8.6 Methodology of the statistical analysis

The aim of this research, as previously mentioned, is to classify the sheep and goat farmers operating in the Region of EMTh in Greece into strategic groups and to identify marketing implications in relation to marketing channel utilization. Due to the limited understanding of the strategic dimension at the farm level, this study was empirical, which means that the researcher was forced to collect primary data on the attitudes of the individual farmers towards strategic and marketing variables.

An approach to strategic group analysis that, according to Davies (2001), is frequently used in strategic management and marketing literature, involves an identification of strategic groups by:

a) measuring the business position of a firm towards a number of strategic variables and

b) classifying the firms into strategic groups and developing profiles for the members of each group by using several statistical tests.

Many statistical techniques have been developed to classify firms into strategic groups, including *ad hoc* methods that place businesses into *a priori* determined strategic groups on the basis of a limited number of strategic dimensions (Davies 2001). As these *a priori* procedures are not well-developed at a farm level studies, factor analysis was conducted in the first stage of this research in order to reduce the examined strategic variables V1-V25 of Appendix II that relate to the factors that affect the selection of livestock distribution patterns by sheep and goat farmers in Region of EMTh in Greece as well as the variables V1-V24 which relate to the factors that affect the selection of milk distribution patterns by sheep and goat farmers in the same Region (Tabachnick and Fidell 1989; Malhotra 1996; Hair *et al.* 1998).

In the second step, factor scores were subjected to hierarchic and non-hierarchic cluster analysis in order to classify the farmers with similar strategic behavioral patterns into strategic groups (Punj and Stewart 1983; Harrigan 1985; Helsen and Green 1991; Malhotra 1996; Hair *et al.* 1998). Discriminant analysis was then employed to predict cluster membership and to assess if reasonable discrimination had been achieved between the identified groups (Tabachnick and Fidell 1989; Malhotra 1996; Hair *et al.* 1998).

Descriptive statistics were used to identify the marketing channels the sheep and goat farmers use for the distribution of their livestock and milk produce. Bivariate statistical analysis such as chi-square analysis, Kruskal – Wallis and Friedman non-parametric one-way ANOVA tests were used to develop the profile of the farmers who adopt each livestock and milk marketing channel.

In addition, logistic regression analysis was conducted in order to identify the impact of the examined factors and the farm/farmers's characteristics on marketing channel selection in a multivariate level. The same bivariate techniques were performed in order to develop the strategic group profiles and investigate any possible association between each marketing strategy and the examined farm and farmers characteristics (V26-V49 of Appendix II for livestock strategic profile and V25-V48 for milk strategic profile) as well as the factors that influence the farmers to adopt a particular livestock (V50-V66 of Appendix II) and milk (V49-V71) marketing outlet. Furthermore, Kruskal – Wallis and Friedman non-parametric one-way ANOVA tests were employed to profile each strategic group regarding the type of information sources (V67-V79 of Appendix II for livestock strategic profile and V72-V84 for milk strategic profile) and the type of information (V80-V86 of Appendix II for livestock strategic profile and V85-V91 for milk strategic profile) the sheep and goat farmers use in the Region of EMTh in Greece. Logistic regression analysis was also employed to identify which factors, farm's and farmer's characteristics as well as information sources and types of information influence the sheep and goat farmers in the Region of EMTh to adopt a particular marketing strategy.

The stages of the statistical approach that were used in this study are illustrated in Figure 8.3.

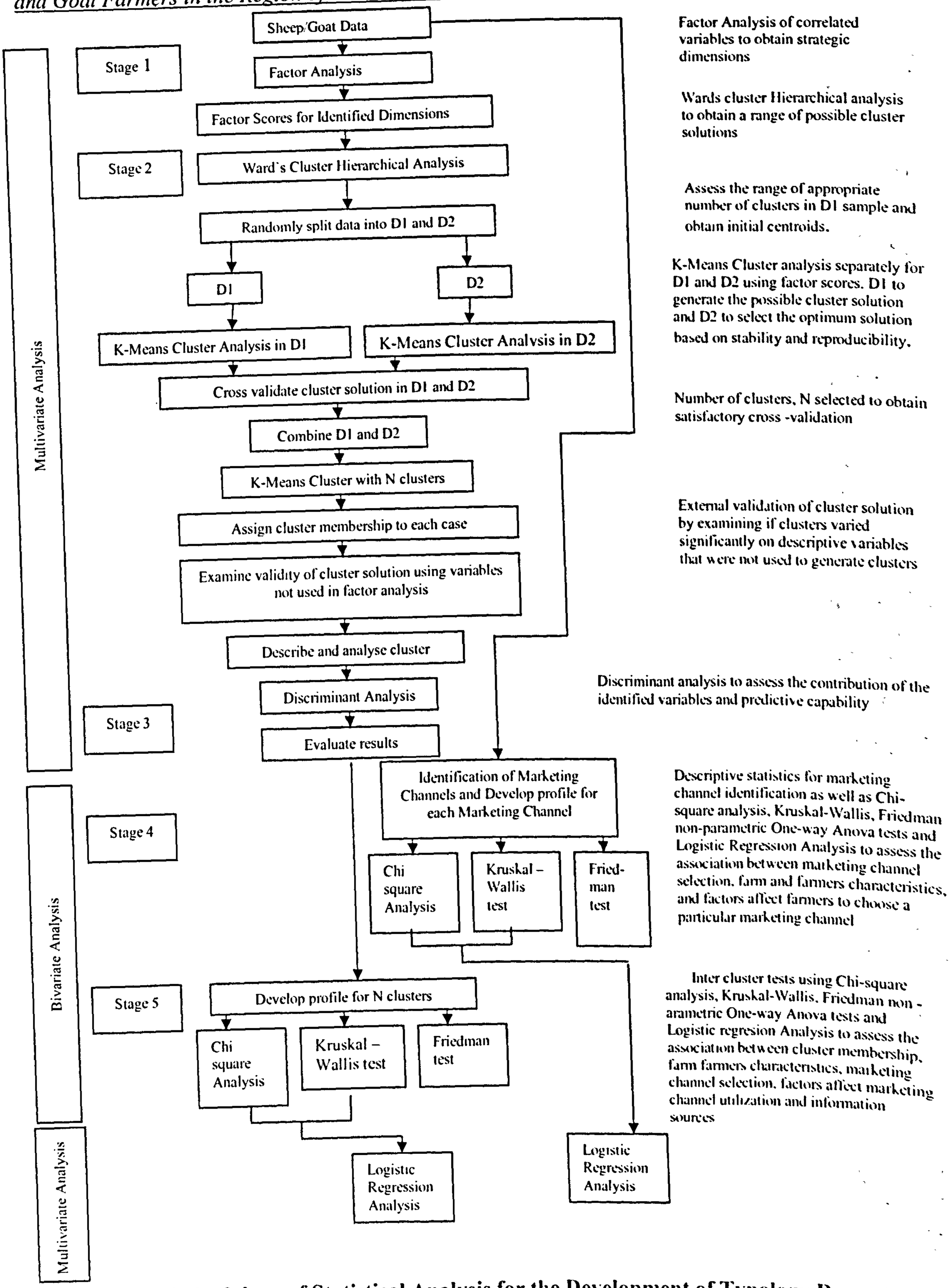


Figure 8.3 Methodology of Statistical Analysis for the Development of Typology Regarding the Marketing Strategies that Sheep and Goat Farmers adopt in Greece (Region of EMTh)

8.6.1 Factor Analysis: Identification of Key Strategic Dimensions

Factor analysis was used to reduce the variables describing the marketing and business attitudes of the farmers (V1-V25 of Appendix II for livestock marketing and V1-V24 for milk marketing) to a smaller and meaningful set of strategic dimensions suitable for subsequent statistical analysis (Kline 1994; Malhotra 1996; Hair *et al.* 1998).

The general purpose of the factor analysis was to find a way to summarize the information included in a set of original variables to a smaller number or strategic dimensions (factors) with a minimal loss of information. The data reduction technique that was used for this purpose was the principal component analysis. This method was appropriate because the primary concern was to determine the minimum number of key strategic dimensions (factors) that accounted for maximum variance in the data for use in subsequent multivariate analysis (Malhotra 1996). It used the attitude scores (Likert Scale) of the business and marketing attitudes of the farmers (V1-V25 for livestock marketing and V1-V24 for milk marketing) in order to identify a smaller number of key strategic dimensions that characterize farmers' strategic way of thinking and acting.

In cases with samples of fewer than 50 observations, factor analysis does not provide a suitable technique; and as a general rule, the minimum is to have four or five times more observations than the number of the examined variables (Kline 1994; Malhotra 1996; Hair *et al.* 1998). In the present study there were 314 observations while there were 25 variables describing the livestock marketing and business attitudes of the sheep and goat farmers in the Region of EMTh in Greece and 24 variables regarding the milk marketing and business attitudes of these farmers. Hence, the sample was suitable for factor analysis.

The next step is the computation of the correlation matrix. The examined variables must be sufficiently correlated to one another. If visual inspections do not show substantial number of correlations greater than ± 0.3 then factor analysis may not work properly (Malhotra 1996; Hair *et al.* 1998). The correlations among variables can also be analyzed by computing **partial correlations or anti – image correlations** which are the negative values of partial correlations. Large partial or anti – image correlations indicate that the data matrix may not be suitable for factor analysis (Malhotra 1996; Hair *et al.* 1998). The **Bartlett test of sphericity** provides the statistical probability that the correlation matrix has significant correlations among variables and is also a measure of the multivariate normality of the data. If the significance value is less than 0.05 then the data do not produce an identity matrix which means that there are significant correlations among variables as well as the data are multivariate normal and appropriate for factor analysis (Hair *et al.* 1998; Darren and Mallery 2001). The **Measure of Adequacy (MSA)** consists of another test that measures the intercorrelations among the variables and the appropriateness of the data for factor analysis. This measure ranges between 0 -1 whilst every variable that reaches 1 is perfectly predicted by the other variables. According to Hair *et al.* (1998), MSA> 0.50 is acceptable.

Determinant of Correlation Matrix tests the correlation matrix for multicolliniarity and singularity and the adequacy is assured if the determinant is larger than 0.0001 (Darren and Mallery 2001; Davies 2001).

The anti-image correlation matrix was provided by SPSS v.9 as well as the Bartlett test of sphericity and measure of sampling adequacy (MSA) in order to check the appropriateness of the data for factor analysis. The variables that had high proportion of large absolute values of anti –image correlations as well as MSA less than 0.5 were removed before the

analysis took place. Finally, factor analysis was conducted for only 11 of the 25 variables regarding the livestock marketing attitudes (V3, V4, V5, V6, V7, V10, V11, V12, V13, V24 and V25) and 15 of the 24 variables regarding the milk marketing attitudes (V1, V3, V4, V6, V9, V11, V12, V14, V15, V16, V18, V20, V21, V23, V24).

The examnination of the final anti-image correlation matrix, the Bartlett test of sphericity, the Kaiser – Meyer – Oklin Measure of Adequacy, the MSA for each variable and the determinant of correlation matrix (as presented in Appendix XII) indicated the adequacy of the data for factor analysis.

The third step is the factor extraction as was computed from the correlation matrix. Four criteria can be used to evaluate the number of factors to be extracted. The most common technique is the **Latent Root Criterion**. The rationale of this method is that any individual factor should account for the variance of at least a single variable if it is to be retained for interpretation. Hence, only factors with eigenvalues greater than 1.0 are considered significant (Malhotra 1996; Hair *et al.* 1998). A **scree plot test** is another technique that can be used for factor extraction. The scree plot is a plot of the eigenvalues against the number of factors in their order of extraction. The shape of the resulting curve is used to determine the number of factors. The point at which the curve begins to straighten out indicates the maximum number of factors to be extract. Generally, the scree plot test criterion determines one or a few more factors to be included than the latent root criterion (Malhotra 1996; Hair *et al.* 1998). **The percentage of variance** is another criterion, which is also used for factor extraction. According to this method, the number of factors extracted depends on achieving a specified cumulative percentage of total variance extracted by the factors. The level of variance that is considered satisfactory depends on the problem. In social sciences, a solution that accounts for 60% of the total variance considers satisfactory

(Malhotra 1996; Hair *et al.* 1998). Finally, **a priori determination** is a technique which is applied for factor extraction in cases where the researcher knows how many factors to extract before taking the factor analysis. In this method the analysis stops when the desired number of factors has been extracted (Malhotra 1996; Hair *et al.* 1998).

The latent root criterion, the scree plot test and the percentage of variance were used in this research for the determination of the number factors as there was not any prior knowledge of the identified key strategic dimensions regarding the livestock and milk marketing farmers' attitudes.

Factor rotation is the fourth step of factor analysis. The coefficients which are also called *factor loadings,* consist of the factor matrix and represent the correlation between the derived factors and the examined variables. As factors usually are correlated with many variables, the factor matrix sometimes fails to provide factors that can be interpreted. Thus, factor rotation is a procedure that aims to redistribute the variance from earlier factors to later ones in order to achieve a simpler and more meaningful factor pattern. Rotation does not affect the communalities and the percentage of total variance explained. The simplest case of rotation is the **orthogonal rotation** in which axes are maintained, at 90^{o} to each other during the rotation. Orthogonal rotation results in factors that are uncorrelated. On the other hand, **oblique rotation** is the rotational procedure where the axes are not retained at 90^{o} angle and the factors are correlated (Malhotra 1996; Hair *et al.* 1998).

The factors that derived from both livestock and milk marketing strategic attitudes were rotated orthogonally using the varimax method of SPSS v.9. The varimax method attempts to minimize the number of variables that had high loadings on a factor and resulted in a clearer separation of the factors (Malhotra 1996; Hair *et al.* 1998).

Interpretation of the factors consists of the next stage of factor analysis. Interpretation is conducted by identifying the variables that have large loadings on the same factor. Tabachnick and Fidell (1989) suggested that the loadings in excess of 0.55 be regarded as good, 0.60 as very good and those over 0.71 as excellent. Hair *et al.* (1998) taking into consideration the objective of obtaining a statistical power level of 80%, the use of 0.05 significance level and the inflation of the standard errors of factor loadings, provided the following guidelines represented in the table below (Table 8.4) for identifying significant factor loadings based on sample size.

Factor Loadings	Sample size needed for significance [a]
0.30	350
0.35	250
0.40	200
0.45	150
0.50	120
0.55	100
0.60	85
0.65	70
0.70	60
0.75	50

Table 8.4 Guidelines for identifying significant factor loadings based on sample size (after Hair *et al.* 1998)

[a] Significance is based on 0.05 significance level, a power level of 80% and standard errors assumed to be twice those of conventional correlation coefficient.

In the present study with a sample size of 314 farmers, factor scores more than 0.35 were considered significant and acceptable. Hence, the principal component factor scores of the underlying key strategic dimensions (for livestock and milk marketing strategies), which were obtained through the use of the varimax rotation method, were interpreted and named. The factor scores (mean 0, standard deviation 1) were then saved for subsequent multivariate analysis (cluster and discriminant).

8.6.2 Cluster Analysis: Classification to Strategic Groups

Cluster analysis is widely used in marketing research. Both academic researchers and marketing application researchers employ this multivariate statistical technique to classify persons, products or other entities to groups so that each member of a particular group is very similar to other members with respect to some predetermined selection criterion. The resulting groups should be characterized by high internal (within cluster) homogeneity as well as high external (between cluster) heterogeneity (Punj and Stewart 1983; Hair *et al.* 1998).

In the present study, cluster analysis aimed to develop a classification of the sheep and goat farmers in the Region of EMTh in Greece, and to identify the relationship between the key strategic dimensions (derived from factor analysis) and cluster membership.

The first step of cluster analysis is the formulation of the problem. The variables on which the clustering have to be selected. They should characterize the objects being clustered and relate specifically to the objectives of cluster analysis (Malhotra 1996; Hair *et al.* 1998). In this research, the variables were the identified orthogonal standardized factor scores (mean 0, standard deviation 1) of the respondents. According to Bailey's (1974) recommendations, factor scores should be used as input in cluster analysis instead of raw variables, because the latter contain interdependencies which might bias cluster results. The use of latent root variables via varimax solution removes such interdependencies and reduces potential problems of noise due to these interdependencies by representing an independent and small set of factors (Hair *et al.* 1998). Althought this might result in some loss of information, it has the advantage of generating orthogonal dimensions for subsequent analysis. Before cluster analysis took place, the data were examined for outliers as they are sensitive to this statistical technique. Due to the fact that factor scores were

standardized variables, values that exceeded ±3.0 were outliers and hence were removed before the analysis was conducted (Tabachnick and Fidell 1989; Hair *et al.* 1998). In this study, cluster analysis was conducted to 289 observations as 25 cases were removed due to to the fact that their factor scores exceeded the ±3.0 and considered outliers.

Selection of a distance measure consists of the second step of cluster analysis. Due to the fact that cluster analysis groups similar objects together, a measure is needed to assess the similarities of differences among the objects. There are many different kinds of measures that compute the difference between two objects. The **Euclidean distance** which is the square root of the sum of the square root of differences in values for each variable comprises the most widely used (Malhotra 1996; Hair *et al.* 1998). The **squared Euclidean distance** is the sum of the square root of differences in values for each variable (Malhotra 1996; Hair *et al.* 1998). The **city block** or **Manhattan distance** between the objects is equal to the sum of the absolute differences in values for each variable (Hair *et al.* 1998). The maximum absolute difference in values for each variable between two objects consists of the **Chebychev distance** (Malhotra 1996; Hair *et al.* 1998). The squared Euclidean distance was adopted in this study because it has the advantage that speeds computations markedly as it does not calculate the square root (Hair *et al.* 1998).

The third step of cluster analysis is the selection of a clustering procedure. There are two major categories of clustering techniques: (a) hierarchical clustering techniques and (b) non-hierarchical clustering methods (Tabachnick and Fidell 1989; Malhotra 1996; Hair *et al.* 1998; Siardos 1999).

Hierarchical clustering techniques are characterized by a hierarchic structure and are either agglomerative or divisive. In agglomerative methods, clustering starts with each object

comprising a separate cluster. Clusters are developed by grouping objects into bigger and bigger clusters until all the objects become members of one cluster (Everrit 1980; Malhotra 1996; Hair *et al.* 1998; Siardos 1999). In contrast, divisive clustering, starts with all the objects comprising one single cluster. Clusters are split until each object becomes a separate cluster (Everrit 1980; Malhotra 1996; Hair *et al.* 1998; Siardos 1999). Various techniques have been developed to split or combine clusters based on similarity between adjacent clusters. The **single linkage method** is based on the minimum distance between two objects. The **complete linkage method** is based on the maximum distance between two objects, while **the average linkage method** is based on the average of the distances between all pairs of objects. The **variance method** develops clusters aiming to minimize the within cluster variance. The **Ward's procedure** is a variance method in which the squared Euclidean distance to the cluster mean is minimized, while in **centroid method** the distance between two clusters is the distance between their centroids (means for all the variances(Everrit 1980; Malhotra 1996; Hair *et al.* 1998; Siardos 1999). **Non-hierarchical methods** which are frequently referred as **k-means clustering** firstly determine a cluster seed as the initial cluster centre and then groups all objects within a prespecified threshold value from the centre.

In this study, both hierarchical and non-hierarchical methods were employed according to recommendations of Harrigan (1998), Helsen and Green (1999), Hair *et al.* (1998) and Siardos (1999). A hierarchical technique was used to predetermine the number of clusters, profile the cluster centers and identify any obvious outliers, while the K-means method was employed to group the farmers with the cluster centroids from the hierarchical results as the initial seed points.

Ward's procedure was the hierarchical clustering method that was employed to determine the initial clustering solution using the squared Euclidean distance measure as according to (Hair *et al.* 1998); this is the recommended distance method for centroid and Ward's methods. Ward's method was employed because it avoids problems with chaining of observations (Steven 1986; Tabachnick and Fidell 1989; Helsen and Green 1991; Hair *et al.* 1998). As there are no statistically valid methods to determine the appropriate number of clusters, the rule of looking for a substantial increase in the cluster coefficients as the algorithm successfully combines clusters was used. A substantial increase of the coefficient suggests that two relatively dissimilar clusters have been combined and, therefore, the number of clusters prior to the merger provided the most probable solution (Hair *et al.* 1998).

Using the initial centroids estimated from Ward's procedure, K –means cluster analysis was conducted (as presented in Appendix XII) for several different cluster values suggested by agglomeration schedule and dendograms produced from Ward's method.

Interpretation of clusters comprise the next stage of cluster analysis. It involves examination of each cluster in terms of cluster variate to assign a label that describes accurately the nature of each cluster (Malhotra 1996; Hair *et al.* 1998). In this study, clusters were interpreted based on cluster centroids regarding the key strategic dimensions.

Finally, validation and profiling of the clusters is the last stage of cluster analysis. The validation process includes researcher's attempts to assure that a cluster solution is representative of the general population and, therefore, is generalizable and stable over time. Cluster validation can be achieved by examining if a selection of variables not included in the cluster analysis differ significantly among the determined clusters (Hair *et*

al. 1998). A non parametric Kruskal – Wallis one way ANOVA test was conducted in this study to examine if variables not used in cluster analysis differ significantly among the identified clusters.

The profiling stage involves describing the characteristics of each cluster. The researchers usually use data not used in cluster analysis which are typically demographically characteristics, psychographics profiles, consumption patterns and so on (Hair *et al.* 1998). In this study, clusters profiling comprise a separate stage of the statistical methodology.

8.6.3 Discriminant Analysis: Assessment of Identified Key Strategic Dimensions

Discriminant analysis is a multivariate technique that aims to predict group membership from a set of predictor variables. It is the appropriate method in cases where the independent variables (predictor variables) are metric and the dependent variables (e.g cluster membership) are categorical (nomimal or non – metric; Tabachnick and Fidell 1989; Malhotra 1996; Hair *et al.* 1998).

In this study, disciminant analysis was conducted to assess how accurately the identified key strategic dimensions regarding livestock and milk marketing strategies could predict cluster membership of the sheep and goat farmers in Greece (Region of EMTh).

Due to the fact that discriminant analysis is quite sensitive to the ratio of the sample size to the number of predictor variables' a "rule of thumb" of a minimum of 5 observations per each independent variable is suggested, while the smallest group size must exceed the number of the independent variables (Hair *et al.* 1998). In the present study this assumption was met.

Key assumptions for discriminant analysis are the existence of multivariate normality of independent variables, of homogeneity of variance - covariance matrices, and non-multicollinearity among the independent variables (Tabachnick and Fidell 1989; Malhotra 1996; Hair *et al.* 1998). However, discriminant analysis is robust to failures of normality if violation is caused by skewness, rather than outliers, and if the sample is large. Robustness is assured with 20 cases in the smallest group if there are only a few independent variables (Tabachnick and Fidell 1989). On the other hand, unequal covariance matrices will possibly affect the classification process mostly when samples are unequal and small. In these circumstances, quadratic discriminant analysis can be conducted, as unlike the linear discriminant analysis, it is free from the requirement of equality of matrices (MINITAB 1997; Hair *et al.* 1998; Adams *et al.* 2000; Borini and Guimaraes 2003).

In this study, the normality of the key strategic dimensions (factors derived from factor analysis) that would be used as independent variables in discriminant analysis was checked before the analysis took place. Outliers were removed and discriminant analysis was conducted on 177 cases for livestock marketing and 188 cases for milk marketing (after outliers were removed). The Box's M test statistic was evaluated to test if there was equality of covariance of the independent variables across the identified group (Tabachnick and Fidell 1989). The small probability (Box M= 295.290, approx F= 22.921, df =3191.7, P<0.001 in the case of livestock marketing and Box M= 293.083, approx F= 11.895, df =1448.09, P<0.001 in the case of milk marketing) indicated that the equality of variance – covariance matrices were violated and Bartlett Box F statistic as well as the Levene's test were conducted using Minitab 12 to asses the homogeneity of variance for each dependent variable (Siardos 2000).The statistics as presented in Appendix XII indicated that the equality of variance for each strategic dimension was violated and quadratic disciminant analysis (Minitab 12) was conducted in order to determine whether the identified variables

could predict cluster membership in both cases. The squared distance (also called Mahalanobis distance) was used by Minitab to evaluate the discriminant power of the variables. However in quadratic discriminant analysis, the squared distance did not simplify into a linear function (MINITAB 1997).

Cross-validation is a method that calculates the percentage of misclassified observations. This procedure works by omitting each observation one at time, recalculating the classification function using the remaining data and then classifying the omitted observation (MINITAB 1997). Cross-validation was performed through the use of Minitab 12 in order to determine the percentage of misclassified farmers in each strategic group.

8.6.4 Identitification and Profiling of Marketing Channels.

Bivariate statistical tests are used to determine significant differences between the distributions of two variables. When the data are categorical or nominal in nature, a non parametric test has to be used in order for the association between the two variables to be explored, while if the data are non-categorical (ordinal or ratio/interval) a decision regarding the use of a parametric or non-parametric test should be made (Brymar and Cramer 1997; Kinnear and Gray 2000; Darren and Mallery 2001). The use of parametric tests is appropriate when the following assumptions are met: (a) The data are interval or ratio, (b) the distribution of the data is normal and (c) the variances of both variables are equal or homogeneous. Non-parametric tests are free or independent of any precise form of the distribution of the data (Brymar and Cramer 1997). The choice of the appropriate statistical test is also dependent on the question whether the experiment – survey would have resulted in independent or related samples of scores. An experiment in which an independent sample of participants is tested under each condition, is called **between-**

subjects experiment while an experiment in which each participant is tested under all conditions is known as **within-subjects experiment** (Kinnear and Gray 2000).

One way Analysis of Variance is a parametric test that is used to assess the difference of means of the corresponding populations (Eddison 2000; Kinnear and Gray 2000; Darren and Mallery 2001). Due to the fact that the ANOVA does not provide any detail of the differences the between treatments, a multiple comparison test should be conducted additionally. One way ANOVA can be used in both between - and within - subject comparison; while the non-parametric tests that can be adopted when the assumptions of a parametric tests are violated are the Kruskal – Wallis test and the Friedman test in between subject - and within - subject comparison, respectively (Eddison 2000; Kinnear and Gray 2000; Darren and Mallery 2001). If the two non-parametric tests have to be employed, additional non-parametric multiple comparison tests should be utilised (Eddison 2000).

The one sample chi-square analysis tests is used if the observed association in a variable which has more than two categories has arisen by chance (Eddison 2000).

The aim of this stage of the analysis is to identify the marketing channels that sheep and goat farmers used in the Region of EMTh in Greece regarding their livestock and milk marketing produce. Descriptive statistical analysis was used in order to identify the livestock and milk marketing channels.

The non-parametric Kruskal-Wallis test, which is suitable for categorical data, was employed to identify the marketing channels that mostly were influenced by each factor (V50-V66 of Appendix II for livestock marketing and V48-V70 for milk marketing). The

Q non-parametric equivalent multiple comparison test was conducted to identify the details of differences among the channels (Eddison 2000).

While the Kruskal – Wallis test indicated which marketing channel's selection is mostly affected by the examined factors (the factors influence them in their distribution channel selection), the non-parametric Friedman test was employed to profile the farmers who use a particular livestock and milk marketing outlet regarding these factors. In other words, this test was used to identify which factors mainly affect the selection of each marketing channel.

The one-sample chi – square analysis for each livestock and milk marketing channel was conducted in order to profile each of the identified livestock and milk marketing outlets regarding the farm and farmers characteristics (V26-V47 of Appendix II for livestock marketing and V24-V47 for milk marketing).

The above non-parametric tests examine the association between two variables only. As the factors and the farm/farmer's characteristics are more than two, the one-sample chi-square analysis, Kruskal – Wallis Test and Friedman Test do not take into consideration the multivariate impact of all the examined factors and farm/farmers' characteristics that consist of the profile of each marketing channel. Although these tests can perfectly profile each marketing outlet regarding the examined factors and farm/farmers' characteristics the logistic regression analysis (which is a multivariate statistical technique) was also conducted in order to explore which of them mostly affect the distribution pattern selection as well as to what extent and in which way. Logistic regression analysis, as well as linear regression analysis, investigates the response variable and one or more predictors. The main difference between these two statistical techniques is that logistic regression analysis

is used with categorical response variables while the linear regression analysis is employed in case of continuous response variables (MINITAB 1997).The MINITAB statistical package provides three logistic regression procedures for the exploitation of relationship between one or more predictors and a categorical response variable of the following types:

(a) Binary Logistic Regression Analysis when the response variable is a binary,

(b) Ordinal Logistic Regression Analysis when the response variable is ordinal and

(c) Nominal Logistic Regression Analysis when the response variable is nominal.

In this study, the nominal logistic regression was used because the response variable that consisted of the marketing channel selection or the marketing strategy selection is a categorical variable with four levels and no natural ordering.

8.6.5 Profiling of Strategic Groups

The final stage of the analysis is to develop the profile of each of the identified by the cluster analysis livestock and milk marketing strategies regarding the farm and farmers' characteristics, the marketing outlets and the factors that influence the farmers to select a particular distribution channel.

The Kruskal-Wallis non-parametric test was used to assess the relationship between the livestock and milk marketing strategies identified by the cluster analysis and the factors that influence the sheep and goat farmers in the Region of EMTh in Greece to select a particular livestock and milk marketing channel (V50-V66 and V48-V70, respectively). More particularly, this test was employed to identify the strategic groups of farmers that mostly were influenced by each factor. The Q non-parametric equivalent multiple comparison test was conducted to identify the details of differences among the groups (Eddison 2000).

The non-parametric Friedman test was employed to profile each strategic group regarding the factors (V50-V66 and V48-V70 for livestock and milk marketing, respectively) that affect them to adopt a particular marketing outlet.

The Kruskal – Wallis test, Q test and Friedman test were also conducted in order to determine the association between each strategic group, the type of information sources the farmers use (V67-V79 for livestock marketing and V72-V84 for milk marketing) and the type of information the farmers are interested in (V80-V86 for livestock marketing and V85-V91 for milk marketing).

One-sample chi – square analysis was used in order to develop the profile of each strategic group regarding the farm and farmers characteristics (V26-V49 for livestock marketing and V24-V47 for milk marketing) and the preferred livestock and milk marketing outlets.

Furthermore, logistic regression analysis was employed to identify the impact of each factor, farm/farmers's characteristic, information source and type of information that comprise the profile of each strategic group, on marketing strategy selection taking under consideration their multivariate effect. Where the algorithm had not converged after 1000 iteration, the results could not be regarded as reliable (MINITAB 1997). In such cases the analysis was conducted again excluding the predictors, which in the initial analysis appeared statistically insignificant.

8.7 Conclusions

As the development of marketing typologies using multivariate statistical analysis is not a new concept, the present study employed a multivariate methodological approach like most of the studies that have been presented in the Chapters 3 and 4. Furthermore, the author using the methodological approach of the earlier mentioned researchers applied a novel and innovative approach to measure the strategic marketing behaviour of livestock farming enterprises and conducted various cross-check measures to ensure the robustness of cluster models. Additionally, discriminant analysis is used here in order to check and assure the predictability of the derived typology. Davies (2001) employed a discriminant analysis and bivariate parametric statistical tests (including ANOVA and cross – tabulation) in order to provide additional insights to in farm business decision-making and marketing channel utilisation. The author of the present study, based on Davies's (2001) methodological approach, also conducted bivariate statistical techniques but, in contrast to Davies (2001) used non-parametric tests like Chi-square analysis, Kruskal – Wallis and Friedman tests because these tests are more robust in case of ordinal data than the parametric tests. Beyond the approaches of the other researchers, the author employed logistic regression analysis in order to investigate the relationship between the identified marketing strategies and distribution patterns, as well as to explore the factors and the farm/farmers characteristics that affect marketing channel utilisation and marketing strategy selection, taking into consideration the multivariate impact of the examined variables used for the development of the profile of each strategic group. Therefore, the profiles of each marketing channel, as well as of each strategic group, were developed. Besides, this study comprises a more holistic methodological model compared to the other studies that were developed by other researchers in the past, regarding the farm business decision – making and channel utilisation relative to the livestock and milk marketing.

CHAPTER 9

THE LIVESTOCK MARKETING STRATEGIES THAT SHEEP AND GOAT FARMERS ADOPT IN THE REGION OF EMTh IN GREECE

9.1 Introduction

The aim of this chapter is to identify the marketing channels that sheep and goat farmers use in the Region of EMTh in Greece in order to market their livestock produce, and to develop a typology describing the livestock marketing strategies they follow. The profiles of the farmers that follow each marketing strategy regarding their farm and farmers' characteristics as well as their marketing channel utilization are also presented. Finally, it profiles the farmers who use each distribution channel in order to market their livestock regarding their farm and farmers' characteristics.

9.2 Stage 1: Determining Key Strategic Dimensions Using Principal Components Analysis

In this stage of the statistical analysis twenty five variables (V1-V25 of Appendix II regarding livestock marketing strategies) which describe the livestock marketing attitudes of sheep and goat farmers in EMTh in Greece, were subjected to principal components analysis.

Chapter 9: The Livestock Marketing Strategies that Sheep and Goat Farmers Adopt in the Region of EMTh in Greece

After checking the anti-iamge correlation matrix and MSA, factor analysis conducted for only 11 (V3, V4, V5, V6, V7, V10, V11, V12, V13, V24 and V25) of the 25 variables. The examination of the final anti-image correlation matrix, the Bartlett test of sphericity, the Kaiser – Meyer – Oklin Measure of Adequacy and the MSA for each examined variable (as describing in Chapter 8 and Appendix XII), indicated that the data were appropriate for factor analysis (Malhotra 1996; Hair *et al.* 1998; Darren and Mallery 2001).

The latent root criterion (eigenvalue =1), the scree plot test and the percentage of variance determined 3 factors in the first rotation (but several different trial rotations where factor interpretability was compared, were conducted; Tabachnick and Fidell 1989; Child 1990; Malhotra 1996 Hair *et al.* 1998) The cut-off point for interpretation of loading scores was 0.59. This score was much higher than the 0.35 that is the minimum requirement according to Hair *et al* (1998). for samples of at least 250 observations in order to achieve 0.05 significance level and 80% level of power. The results of the scree plot test are presented in Figure 9.1.

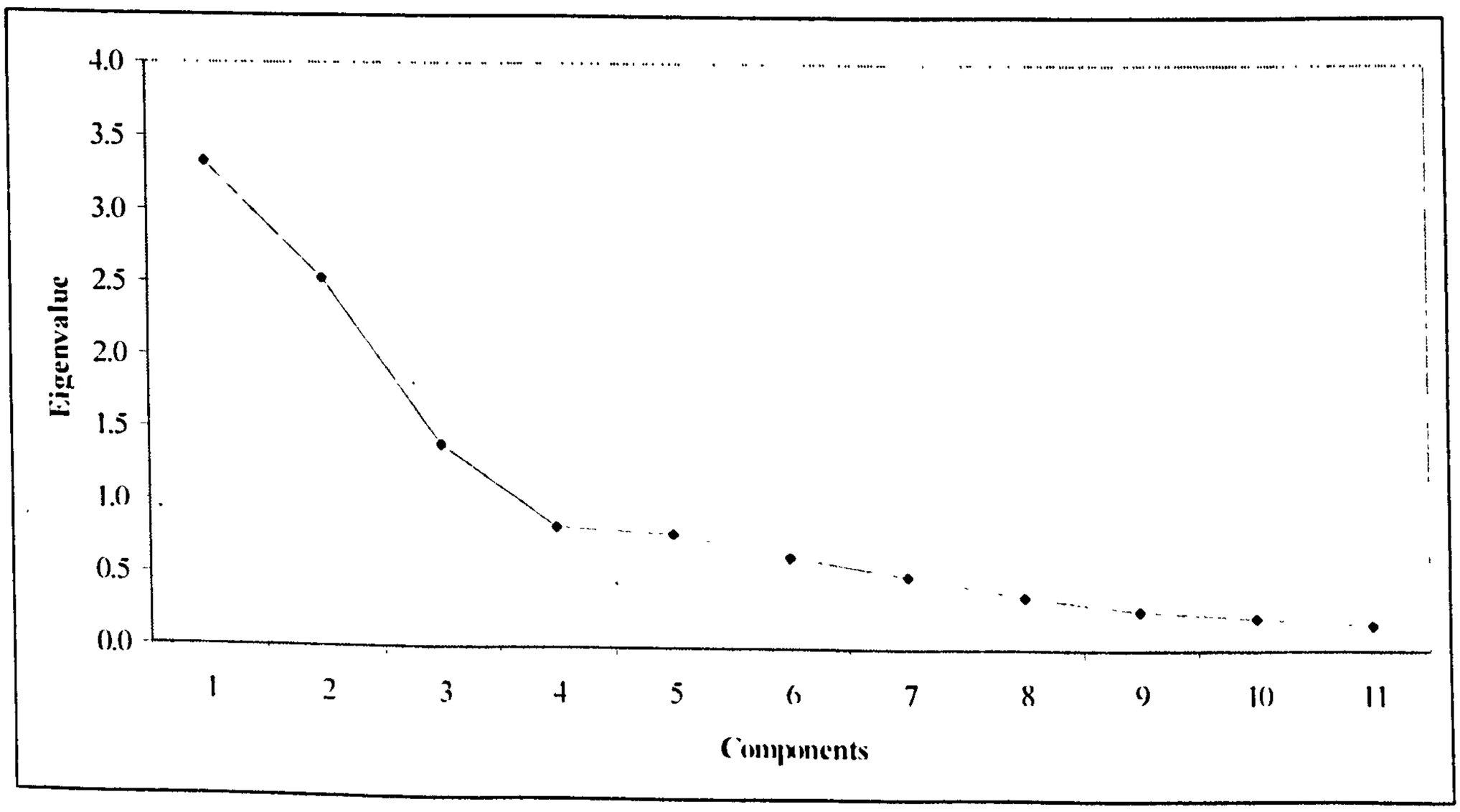


Figure 9.1. Scree plot Test

Three factors, which explained the 66% of the total variance were derived by the factor analysis (Table 9.1). Variables with low communalities (less than 0.5) were ignored, as the objective of the factor analysis is the reduction of variables (Hair *et al.* 1998).

Components	Eigenvalues	% of Variance	Cumulative Variance %	Variables	Communalities
1	3.335	30.318	30.318	V3	0.868
2	2.531	23.007	53.325	V10	0.721
3	1.397	12.700	66.025	V11	0.461
4	0.8229	7.537	73.561	V4	0.781
5	0.775	7.046	80.607	V7	0.726
6	0.624	5.676	86.284	V24	0.529
7	0.498	4.532	90.815	V12	0.419
8	0.362	3.290	94.106	V25	0.374
9	0.265	2.412	96.518	V5	0.887
10	0.218	1.980	98.499	V6	0.742
11	0.165	1.501	100.00	V13	0.756

Table 9.1 Results of Principal Components Analysis of Strategic Variables.

The three identified factors that appeared to give the best representation of the underlying relationship among the selected variables are illustrated with their factor loading scores in Table 9.2.

	KEY STRATEGIC DIMENSIONS	Factor Loading
	Profit Orientation	
V4	Maximizing profit is my most important farming goal	0.861
V6	When I have finished my livestock I must sell immediately and can not afford to wait for prices to improve	0.854
V7	I have no influence over the price I receive for my meat produce	0.829
V24	Policies of other countries have little influence on my farm profitability relative to meat sector	-0.687
V25	Disease is the major cause of fluctuations on my farm returns	0.593
	Production Orientation	
V13	I always set a side a proportion of my production flock to experiment with livestock techniques relative to meat production I am not familiar	0.848
V10	I breed animals which requires special knowledge, equipment or facilities that other farmers do not have	0.836
V11	I maximize meat quality by using special techniques such e.g. artificial insemination	0.660
V12	I adapt my enterprise mix to minimize risk	0.617
	Cost focus	
V5	Budgeting and planning to obtain the lowest possible farm costs is the most important management activity I undertake	0.924
V3	I am aware of the exact costs and returns of the meat I produce	0.913

Table 9.2 The identified key strategic dimensions.

Determinant of Correlation Matrix: 0.008149
KMO MSA = 0.73
Bartlett test of Sphericity = 1483.86 <0.001

Therefore the key strategic dimensions that the three factors represent are the following:

Factor 1: Profit Orientation

This strategic dimension, accounts for 30.3% of variance. According to this dimension, profit maximization was considered by the sheep and goat farmers as their most important farming goal. Farmers could not afford to wait for price improvements as the quality of their livestock would be reduced, so they sold their livestock just after they finished it. They had the impression that they could not influence the determination of the livestock

prices, as well as considering that other countries' policies had major impacts on their farm profitability.

Factor 2: Production Orientation

The sheep and goat farmers, according to this factor, experimented with livestock production techniques with which they were not familiar as they always set a side a proportion of their flock for this purpose. This factor which accounts for 23% of the variance is also associated with breeding animals that required special knowledge, equipment and facilities.

Factor 3: Cost Focus

The sheep and goat farmers that scored highly on the third strategic dimension, which accounts for 12.7% of the variance, appeared to consider the budgeting and planning as their most important management activity, aiming to obtain the lowest possible farm cost. They were also very interested in being informed about the exact costs and returns for their livestock produce in order to find ways to increase their gross margins, profitability and production efficiency.

9.3 Stage 2: Identification of Marketing Strategies using Cluster Analysis

Hierarchical and non-hierarchical cluster analysis were conducted as described in Chapter 8.The Ward's procedure suggested a solution between two and four clusters. In the next stage, the 289 observations were randomly split into the test (D1) and the internal validation sample (D2). The k-mean cluster analysis performed in D1 and D2 samples for the three cluster values (n=2,3,4), as presented in Chapter 8 and Appendix XII. The kappa coefficient for each cluster solution was 0.011 for n=2 ($P>0.05$), 0.147 for n=3 ($P<0.01$)

and -0.131 for n=4 (P<0.01). Since the decision is based on a criterion of kappa maximization, the three cluster solution appeared optimal. However, before accepting this solution all cluster solutions (based on all cases) were examined for interpretability and external validity. The examination of cluster interpretability and external validity is presented in Appendix XII. The three cluster solution was found to be the most meaningful as it was highly interpretable and also had external validity, i.e. significant inter-cluster differences were identified in variables that were not used in the cluster analysis.

The three clusters (based on the cluster means for the derived factor scores and the cluster sizes) were named according to the business strategy that the farmers in each group appeared to follow (Table 1 of Appendix XII). Thus, the three business strategies that the sheep and goat farmers follow in the Region of EMTh in Greece are: (a) Cost Focus Strategy, (b) Production Orientation Strategy and (c) Return Focus Strategy.

The **cost focus strategy** accounts for 135 farmers that comprise 47% of the sample. They scored highly on the strategic dimension associated with cost focus. They were highly aware of the exact cost of the livestock they produced and very interested in budgeting and planning their production in order to achieve the lowest possible farm cost. They were not so keen on strategic dimensions regarding profit maximization, since these farmers were mostly concerned with reducing their farm cost and not in achieving high sale prices or dealing with financial aspects that would lead to profit making. On the other hand, they were not interested in production orientation strategic issues, presumably because activities relative to increasing livestock quality, experimenting with new livestock production techniques, breeding animals that required special knowledge that would increase the farm

cost. Figure 9.2 illustrates the association between the key strategic dimensions and the cost focus strategy.

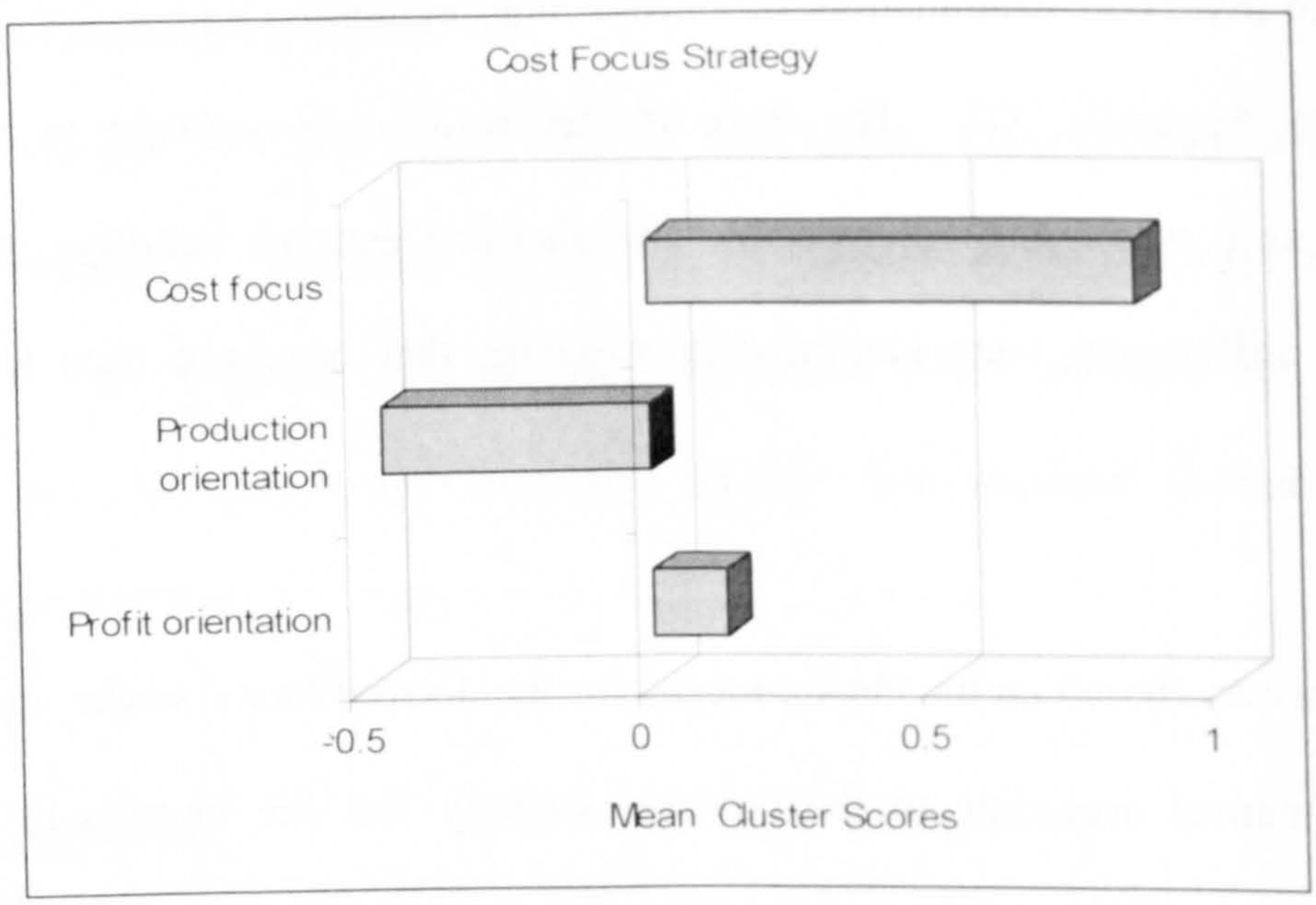


Figure 9.2: Strategic Dimensions associated with Cost Focus Strategy.

On the other hand, a **production orientation strategy** was preferred by the 11% of the examined farmers. These farmers scored highly on the strategic dimension associated with production orientation. They set aside a proportion of their flock in order to experiment with new livestock techniques and they bred animals that required special knowledge and equipment. They were a little bit concerned in the cost focus strategic dimension due to the fact that they preferred to invest more money in production facilities, equipment or genetic material compared to other farmers, aiming in this way to increase their productivity and therefore to reduce their farm cost in the long term. Moreover, they were aiming to improve the quality of the meat they produce and thus to differentiate their farm. On the other hand, they scored negatively in profit orientation as these farmers did not consider profit maximization as their primary farm goal, neither were they interested in external factors which might influence their farm profitability. Probably, these farmers were aiming to increase their returns in long term through the increase of their productivity and the

development of a reputation that they produce high quality products. The way the key strategic dimensions are associated with Production Orientation Strategy is represented in Figure 9.3.

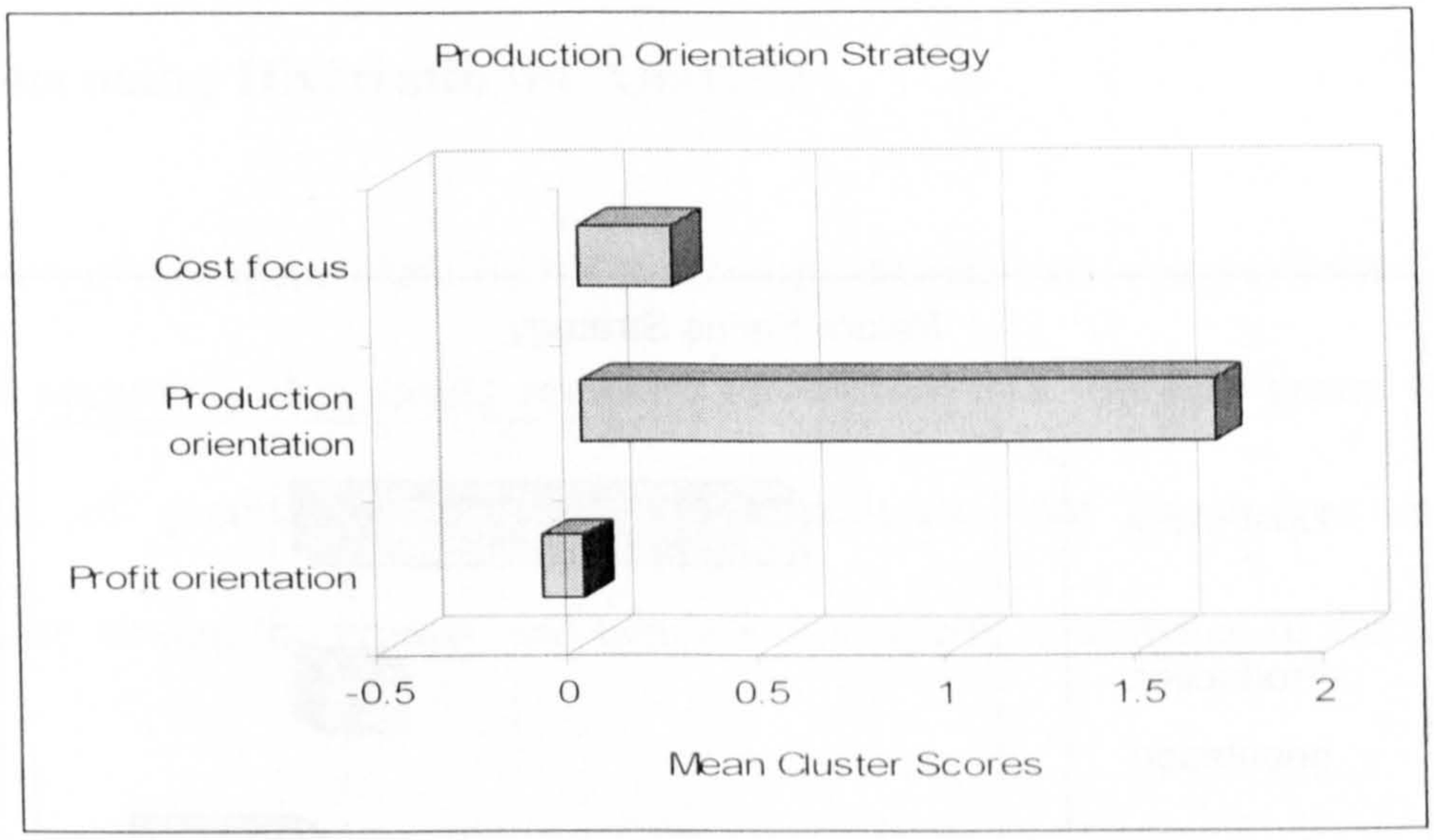


Figure 9.3: Strategic Dimensions associated with Production Orientation Strategy.

Finally, the **return focus strategy** is preferred by the 42% of the sample (121 farmers) who scored highly on profit orientation strategic dimension. They were very much interested in maximizing their profits and tried to sell their livestock immediately because they could not wait for better prices as the quality of their livestock would be reduced. They believed that they were not able to influence the configuration of the prices in which they would sell their produce as they considered that those prices were mostly affected by other external to their farm factors such as Common Agricultural Policy, GATT, or a globalisation of the economy. Hence, they thought that policies of the other countries highly affected their farm profitability. On the other hand, they were not interested in improving the quality of their products, breeding livestock that required special knowledge, equipment and facilities that other farmers in their area did not have; neither were they concerned in budgeting and programming their facilities in order to reduce their

farm cost. This may be because these farmers were interested in achieving short term profits rather than structuring their farm operation in order to increase their productivity and to reduce their operational cost in the long term. The association between the return focus strategy and the three strategic dimensions derived from factor analysis is illustrated in Figure 9.4.

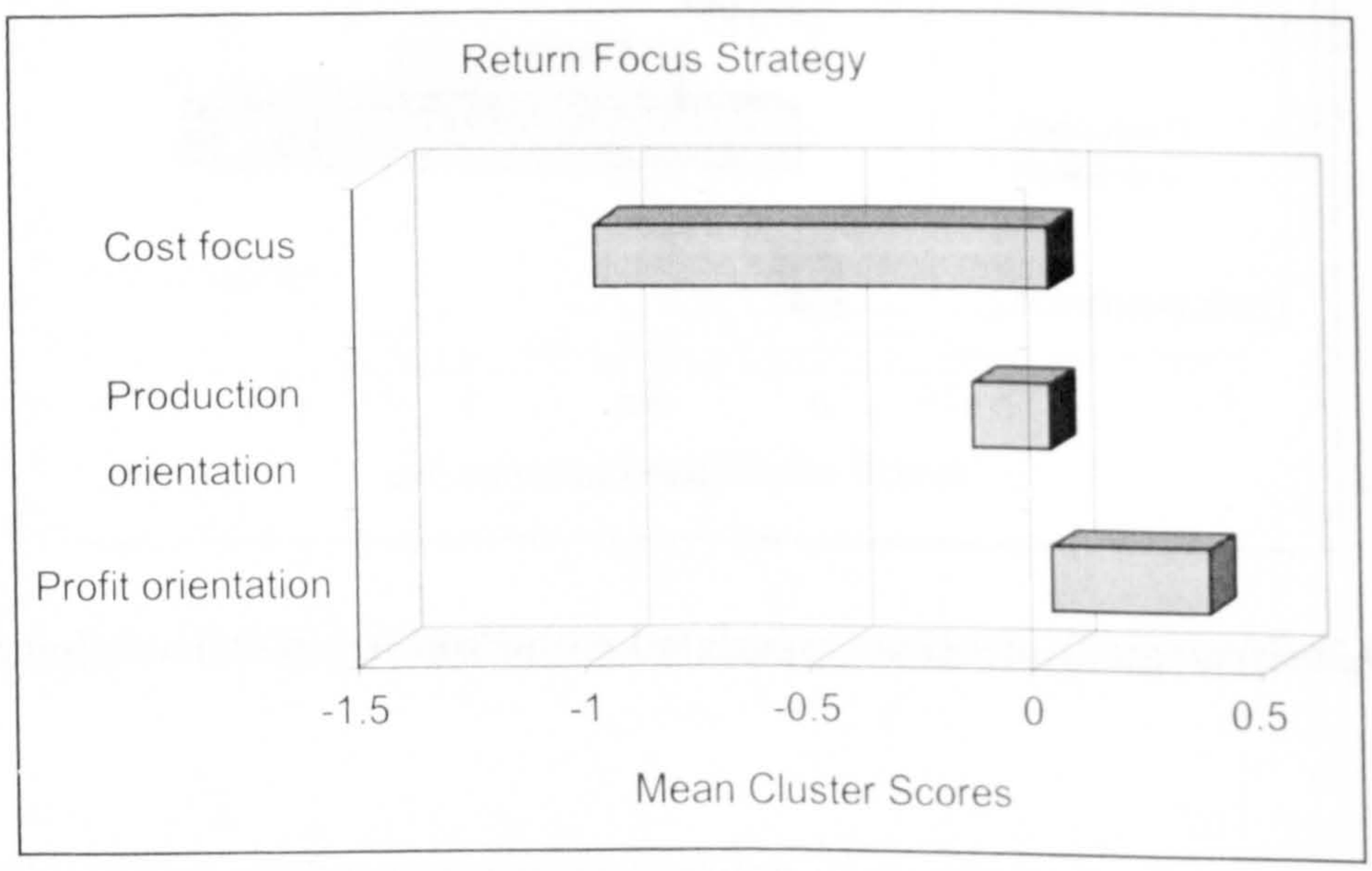


Figure 9.4: Strategic Dimensions associated with Return Focus Strategy.

Examination of the inter-cluster differences of the 8 variables which were used for cluster external validation (Table 3 of Appendix XII) showed that all the strategic variables appeared to be important for all the strategic groups, but more important for the production orientation strategy. This means that production orientation farmers were more concerned in marketing aspects such as seasonal fluctuations and distribution channels as well as in farm economics (monitoring market prices, input cost) and production management (updating production techniques, animal welfare, intensive production methods) than the other two groups. They also believed, more than the other two groups, that the other farmers in their area were their main competitors. On the other hand, all the variables

except animal welfare were more important for the cost focused compared to return focused farmers.

9.4 Stage 3: Assessing the Cluster Predictability of the Key Strategic Dimensions using Discriminant Analysis

An evaluation of the three identified key strategic dimensions was performed in order to assess how accurately they could predict and discriminate strategic group membership. High levels of predictive accuracy would indicate that there was a significant discrimination among the groups, and hence would verify confidence in the three clusters solution.

Therefore, quadratic discriminant analysis was employed as described in Chapter 8. Unlike linear distance in linear discriminant analysis, quadratic distance is not symmetric. In other words, the quadratic discriminant function of group *i* evaluated with the mean of group *j* is not equal to the quadratic discriminant function of group *j* evaluated with the mean of group *i* (MINITAB 1997). The quadratic distances of the quadratic discriminant functions (also called generilized squared distances; MINITAB 1997) of the three examined groups are illustrated in Table 9.3 and illustrate that each strategic group differs from the other two. The negative generized square distances indicate that the determinant of the sample group covariate matrix is less than one (MINITAB 1997).

From Group	To Group: Cost Focus Strategy	Production Orientation Strategy	Return Focus Strategy
Cost Focus Strategy	-12.36	221.98	11.04
Production Orientation Strategy	5778.67	-8.34	3976.75
Return Focus Strategy	3.68	77.60	-12.74

Table 9.3 The Quadratic Distances of the Quadratic Discriminant Functions

The group means of each cluster for each strategic dimension are presented in Table 9.4. This table indicates that the three key strategic dimensions discrimate cluster group membership.

Key Strategic Dimensions	Means for Groups: Cost Focus Strategy	Production Orientation Strategy	Return Focus Strategy
Profit Orientation	0.2534	0.2514	0.5619
Production Orientation	-0.5720	0.9443	-0.3642
Cost Focus	0.9097	0.4197	-0.9781

Table 9.4 The Group Means of the Strategic Groups for each Strategic Dimension

The predictive accuracy of the discriminant model was evaluated using the cross validation technique that Minitab 12 provided. The analysis indicated that 97.2% of the examined farmers were classified correctly. More specifically, the proportion of the farmers that were classified correctly in the strategic group that follow the cost focus strategy was 98%, while the 100% of the farmers that appeared to follow the production orientation strategy were correct classified. On the other hand, the 95.5% of the farmers that adopted the return focus strategy were correctly classified. The summary of the cross validation classification is shown in Table 9.5.

Actual Classification	Predicted Classification		
	Cost Focus Strategy	Production Orientation Strategy	Return Focus Strategy
Cost Focus Strategy	97	0	3
Production Orientation Strategy	0	11	0
Return Focus Strategy	2	0	64
Total N	99	11	67
N Correct	97	11	64
Proportion of Correct Classification	98.0%	100.0%	95.5%
N=177	N Correct = 172		Proportion Correct = 97.2%

Table 9.5Summary of Classification with Cross - validation

Conclusively, the results of the discriminant analysis indicated that the three strategic dimensions could accurately predict and discriminate strategic group membership.

9.5 Stage 4: Profiling the Livestock Marketing Channels

Ten marketing channels were identified from the survey. Five of them are direct channels and five are multiple channels of two or more direct channels as detailed in Table 9.6.

	Description of marketing channel	Farmers using the marketing channel	Sheep and goats were sold through the marketing channel (heads)
	Direct Channel Selection		
1	Direct sales to Retailers	68 (21.66%)	6122 (11.97%)
2	Direct sales to wholesalers	177 (56.37%)	38978 (76.22%)
3	Direct sales to consumers (in livestock)	17 (5.41%)	1197 (2.34%)
4	Self consumption	19 (6.05%)	331 (0.65%)
5	Direct sales to other farmers in livestock (for breeding)	3 (0.96%)	104 (0.20%)
	Multi-channel selection		
6	Direct sales to Retailers + Direct sales to Wholesalers	18 (5.73%)	3473 (6.79%)
7	Direct sales Retailers + Direct sales to Consumers (livestock)	8 (2.55%)	738 (1.44%)
8	Direct sales to Wholesalers + Direct sales to Consumers (livestock)	1 (0.32%)	36 (0.07%)
9	Direct sales to Consumers (livestock) + Self consumption	2 (0.64%)	30 (0.06%)
10	Direct sales to Retailers +Direct sales to Wholesalers + Direct sales to Consumers (livestock)	1 (0.32%)	131 (0.26%)
	TOTAL	**314 (100%)**	**51140 (100%)**

Table 9.6 Market Channel Selection and Utilization for Sheep and Goat Producers Regarding Livestock Marketing

Initial chi-square tests of associations between channel selection and associated variables proved to be invalid because of low expected values (Brymar and Cramer 1997; Kinnear and Gray 2000). It was therefore necessary to merge channels to achieve valid results. Hence, the following four categories of marketing channels are illustrated in the Figure 9.5.

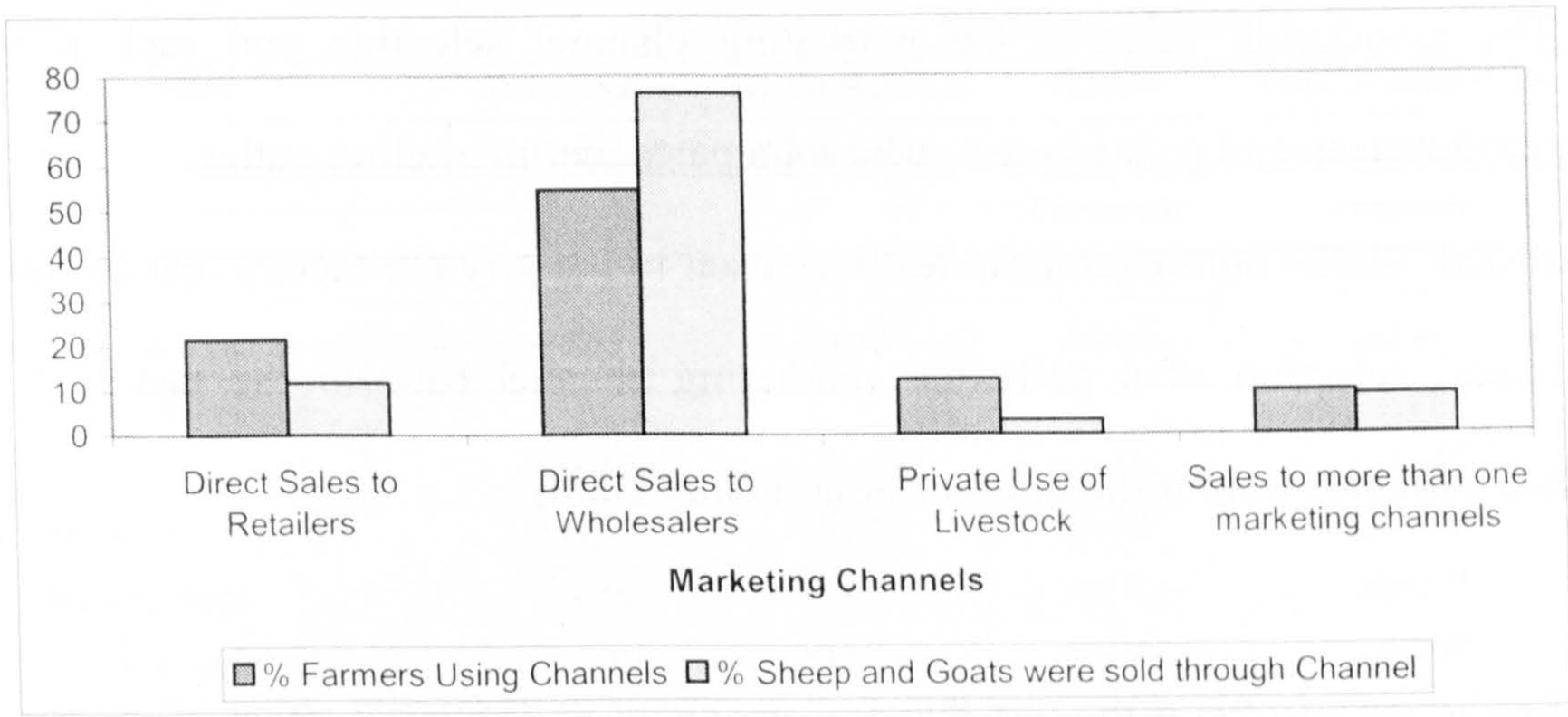


Figure 9.5 Categorization of sheep and goat marketing channels regarding livestock marketing.

The 21.7% of the sheep and goat farmers preferred to market their livestock direct to retailers while through this marketing channel was sold the 12% of the finished sheep and goats. On the other hand, 56.4% of the farmers sold their livestock direct to wholesalers. Through this distribution channel was sold the 76.2% of the sheep and goat produce. The 12.4% of the examined farmers preferred the private use of their livestock, while the 3.2% of the sold animals were sold direct to consumers, to other farmers for breeding, or self consumed. The remaining 9.6% of the sheep and goat farmers sold their animals to any of the multi-channels described in the above table (Table 9.6). The animals that were sold to more than one marketing channel consisted of the 8.6% of the total sold animals. An examination of the marketing channel utilization indicates that the farmers who preferred the private use of livestock might be small scale farmers. On the other hand, the farmers that sold their livestock direct to wholesalers appeared to be large scale livestock producers.

9.5.1 The association between the marketing channel selection and each factor that influence the sheep and goat farmers to adopt a particular marketing outlet.

The Kruskal–Wallis non-parametric test was used to identify the factors that are related to the farmers' selection of a particular marketing channel (due to the fact that all the examined variables were ordinal; Kinnear and Gray 2000).

According to the results of the test that are presented in Table 9.7, most of the sheep and goat farmers that were interested in sale price, preferred to market their lambs direct to retailers or to more than one marketing channel. Farmers that were influenced by the capability of the buyer to purchase large quantities of livestock preferred to sell them direct to wholesalers, as only these could buy many lambs at once. Most of the farmers that wanted to be sure that would be paid, sold their livestock direct to retailers, wholesalers or to more than one marketing channel, while the farmers who wanted to be paid quickly marketed their lambs to more than one marketing outlets. On the other hand, in cases where there were personal relationships between the farmers and their buyers, they preferred to place their livestock to the local retailers. Finally, the farmers that had small quantities of livestock preferred the private use of livestock, presumably in order to increase the added value of their products.

Factors	Marketing Channels				P
	Direct Sales to Retailers	Direct Sales to Wholesalers	Private Use of Livestock	Sales to more than one marketing channels	
Sales Price	171.15[a]	159.99[b]	103.09[c]	182.63[b]	<0.001
Capability of the buyer to purchase large quantities of livestock	94.63[a]	206.04[b]	38.40[c]	168.48[b]	<0.001
Loyalty	169.17[a]	170.67[a]	62.46[b]	176.90[a]	<0.001
Speed of payment	159.67[a]	163.34[a]	90.97[b]	204.60[c]	<0.001
Personal Relationships	226.99[a]	134.93[b]	105.86[c]	200.28[d]	<0.001
Small quantity of lambs	155.45[a]	139.50[b]	240.46[c]	160.50[a,b]	<0.001

Table 9.7: The influence of each factor for the selection of a particular marketing channel.

N.B Within factors (rows), marketing channels (average ranks presented in cells) with different letters differ significantly at $P<0.05$.

There was no significant association found between any of the following factors and a marketing channel selection:

i) Monopolistic phenomena (v55)

ii) Experimentation with different marketing channels (v56)

iii) The fact that the farmer is not interested in selling his livestock (v58)

iv) The fact that most of the farmers prefer the same marketing outlet (v59)

v) The fact that the farmer is interested in selling in live weight (v60)

vi) Local demand (v61)

vii) The fact that the farmer sold the lambs late (v62)

viii) Invoice issue by the wholesalers which means that the farmer will get the VAT back (v63)

ix) Lack of enough space to stock the lambs (v64)

x) The fact that the farmer get used to sell his livestock through a particular marketing channel (v65)

xi) Contractual obligations (v66)

9.5.2 Profiling the farmers of each marketing channel

Consisely the farmers who use each one of the described marketing channels have many similarities regarding their farm and personal characteristics. More particularly they had small farms while they preferred to let up to 30% of the cultivated land they owned to other farmers, presumably in order to obtain an additional income. Furthermore, none of the farmers were involved with farm-related activities away from their farm such as Meetings in the Local Agricultural Cooperatives and making contacts in the market with potential livestock buyers neither with off-farm activities. They had long experience in livestock farming. The vast majority of them had low debt to service and their educational level was quite low as most of them attended only the primary school. They did not hold any responsible position within agricultural cooperatives or in any other agricultural organisations. Moreover, they did not hold any responsible posistion in a non-farm business they might own or in a non-farm business they did not own.

On the other hand, there are some differences in the profile of the farmers who use each marketing channel reagarding the factors that influence them in the marketing outlet choice as well as some farm and farmers characteristics as presented in Table 9.8.

Direct sales to retailers	**Direct sales to wholesalers**	**Private use of livestock**	**Sales to more than one marketing channel**
Factors			
Loyalty	Capability of buyer to purchase large quantities of livestock	Small quantity of lambs	Speed of payment
Sales price	Loyalty	Sales price	Loyalty
Speed of payment	Sales price	Speed of payment	Sales price
Personal relationship	Speed of payment	Loyalty	Capability of buyer to purchase large quantities of livestock
Farm Characteristics			
n.s	Size of flock:> 151 heads	Size of flock:< 50 heads	n.s
Volume of livestock production: <50 heads	Volume of livestock production: >151 heads	Volume of livestock production: <50 heads	n.s
n.s	n.s	Volume of milk production: <2,000 kg	n.s
Farm land owned by the farmer:>61%	Farm land owned by the farmer:>61%	Farm land owned by the farmer:>61%	n.s
Farm land rent from other farmers: <30%	Farm land rent from other farmers: <30%	Farm land rent from other farmers: <30%	n.s
n.s	Farm allocation to sheep and goat enterprise: >61%	Farm allocation to sheep and goat enterprise: <30%	Farm allocation to sheep and goat enterprise: >61%
Farmer's characteristics			
Obtained Livestock price: Average	Obtained Livestock price: Average	Obtained Livestock price: Below Average	Obtained Livestock price: Average
Previous non-farm working experience: NO	Previous non-farm working experience: NO	n.s	n.s
Long experience in farming decision making	Long experience in farming decision making	n.s	Long experience in farming decision making
Farm Income:>50%	Farm Income:>50%	Farm Income:< 24%	Farm Income:>50%
Financial performance: Below average	n.s	Financial performance: Below average	n.s

Table 9.8: Summary of marketing channel profile

9.5.2 a Profiling the farmers of each marketing channel regarding the factors that influence them in their marketing outlet choicel

As the Friedman one – way non parametric test indicated (Figure 9.6) the farmers who prefer to market their livestock produce direct to retailers were mainly interested in buyers' loyalty, sale price, speed of payment and personal relationships with their buyers. Sometimes they preferred this marketing channel because it consisted of their only option as in some areas there were retailers who operated monopolistically. On the other hand, the farmers who sold their produce direct to wholesalers were mainly interested in the

capability of the buyer to absorb large quantities of livestock, buyers' loyalty, sale price and speed of payment. The farmers who market their produce to more than one marketing channel were influenced in their choice by speed of payment, loyalty, sale price and the capability of the buyer to purchase large quantities of livestock. The farmers who prefer the private use of their livestock were influenced in their marketing outlet choice by their small volume of livestock production as well as by the same factors with the farmes who preferred the direct sales to retailers except the personal relationships with their buyres. Furthermore, they were more interested in all the other examined factors presented in Figure 9.6 than the famers who use the other three marketing channels.

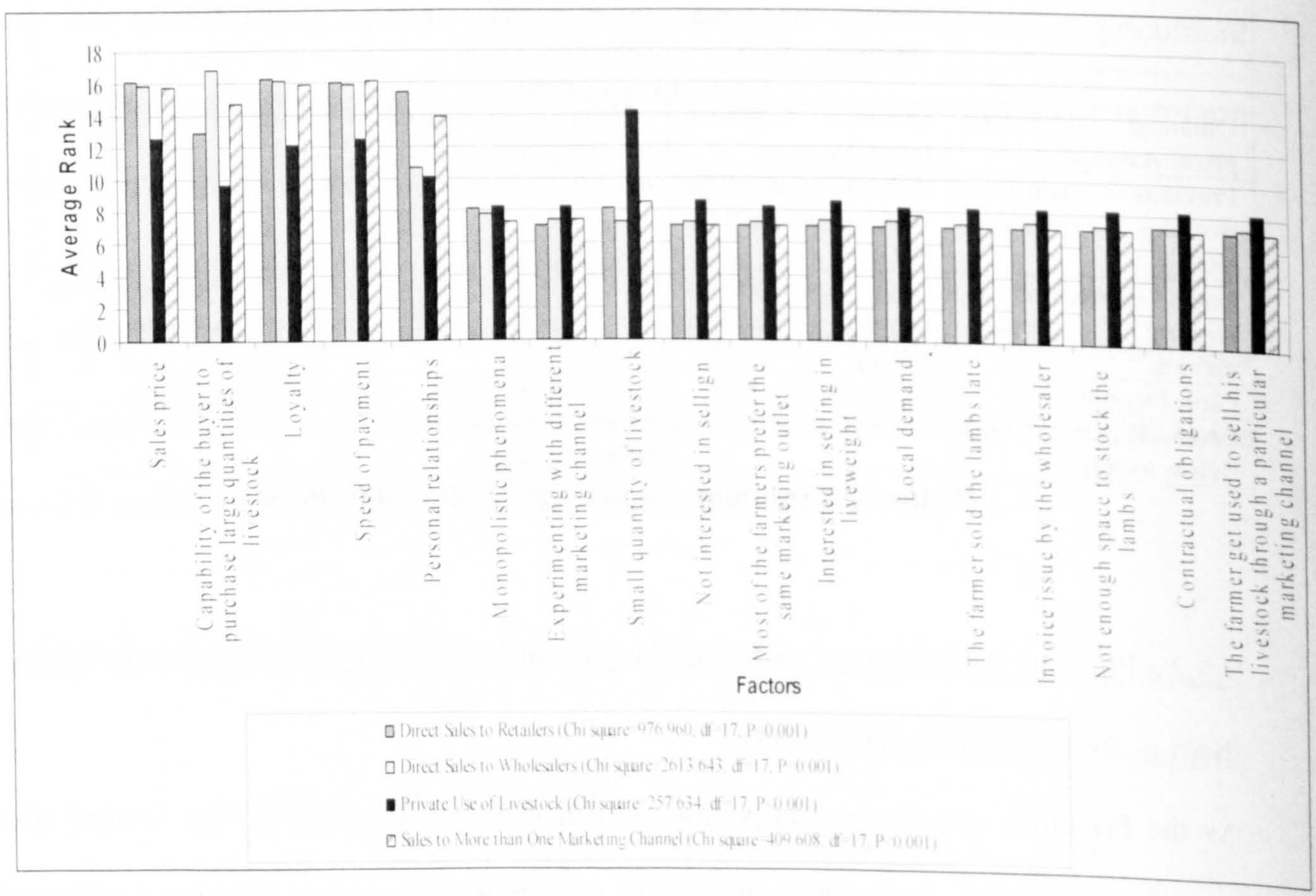


Figure 9.6: The importance of each factor for the farmers who preferred each marketing channel

The results of the Friedman-non parametric as presented in Figure 9.6, identified that there was a significant influence of the examined factors to the selection of each marketing

channel, but it was not possible to identify the significance of difference between each factor for each marketing channel (Darren and Mallery 2001).

Nominal logistic regression analysis (MINITAB 1997) was employed to investigate the impact of the factors presented above to the marketing channel selection taking into consideration their multivariate effect. The factors that were significantly related with marketing channel selection by the sheep and goat farmers in the Region of EMTh according to the results of Kruskal – Wallis test were used as predictors in the logistic regression models while the marketing channel selection consisted of the response variable. The results of the final nominal regression analysis are presented in Table 9.9.

Logit	Predictors	Coef	P	Odds Ratio
Logit 1: (Private use of livestock / Sales to more that one marketing channel)	Constant	13.274	0.001	
	Capability of the buyer to purchase large quantities of livestock	-1.1346	0.001	0.32
	Loyalty	-1.9043	0.014	0.15
	Speed of payment	-0.3172	0.652	0.73
	Personal relationships	-0.6169	0.009	0.54
Logit 2: (Direct Sales to wholesalers / Sales to more that one marketing channel)	Constant	5.738	0.019	
	Capability of the buyer to purchase large quantities of livestock	0.4676	0.021	1.60
	Loyalty	0.9337	0.104	2.54
	Speed of payment	-2.0487	0.001	0.13
	Personal relationships	-0.4561	0.001	0.63
Logit 3: (Direct Sales to retailers / Sales to more that one marketing channel)	Constant	6.135	0.018	
	Capability of the buyer to purchase large quantities of livestock	-0.6523	0.001	0.52
	Loyalty	1.1298	0.059	3.09
	Speed of payment	-2.0378	0.001	0.13
	Personal relationships	0.1823	0.251	1.20
Log-likehood = -200.093		Reference Group= Sales to more than one marketing channel		
G= 314.392, df = 12, P<0.001				
Goodness of Fit				
Deviance x^2 = 185.649, df=207, P= 0.854				

Table 9.9 The factors that affect the livestock marketing channel selection by the sheep and goat farmers in EMTh according to Logistic Regression Analysis.

Therefore, the negative coefficient and the odds ratio of less than one indicated that the farmers who prefer to market their sheep and goats to more than one marketing channel

instead of making private use of them were mostly influenced by the capability of the buyer to purchase large quantities of livestock, loyalty and personal relationships between themselves and their buyers. On the other hand, the positive coefficient and an odds ratio greater than one indicated that the capability of the buyers to absorb large quantities of livestock mainly influenced the sheep and goat farmers in the Region of EMTh to place their livestock direct to wholesalers rather than market them to more than one marketing channel. The analysis also proved that the speed of payment and personal relationships between farmers and buyers influenced them to prefer selling to more than one marketing channel rather than direct sales to wholesalers. Besides, the speed of payment and the capability of the buyer to purchase large quantities of livestock were the main reasons that affected the examined farmers in EMTh to market their livestock to more than one marketing channel over direct to retailers. The deviance goodness of fit test indicates that the model fits to the data (MINITAB 1997).

9.5.2.b Profiling each livestock marketing channel regarding the farm characteristics.

The one-sample chi-square analysis indicated (Table 9.10) that the farmers who prefer each marketing channel have similar profiles regarding their farm characteristics. On the other hand, the farmers who preferred the direct sales to wholesales had big flocks compared to the farmers that preferred the private use of their livestock who had flock with less than 50 animals. They were also large scale livestock producers, while the farmers who preferred the direct sales to retailes or the private use of their livestock had small volume of livestock production. The farmers who preferred the private use of their livestock allocated less than 30% of the land they cultivate to their sheep and goat enterprise presumably in order to use the remaining land either for crop cultivation (such as wheat, corn, cotton and tobacco cultivation) or to let to other farmes in order to obtain an additional income. On the other hand, the farmers who marketed their production either to

wholesalers or to more than one marketing channel allocated more than 61% of the land they cultivate to their sheep and goat enterprise in order to reduce the feeding cost. Furthermore, the farmers who sold their livestock direct to retailers, wholesalers or prefer the private use of it, own more than 61% of the land they cultivate. They also rent up to 30% of their farm land from other land owners.

More particularly Table 9.10 illustrates the profile of each marketing channel (columns) regarding the farm characteristics (rows). For example, the farm size is significantly associated with direct sales to retailers ($x^2 = 57.735$, df=2, P<0.001) and in particular the majority of the farmers (76.5%) who prefer the direct sales to retailers have small farms (standardised residual = 6.16, P<0.001). Furthermore, the farm size is also significantly associated with direct sales to wholesalers ($x^2 = 114.339$, df=2, P<0.001) and more particularly the 71.2% of the farmers who prefer the direct sales to wholesalers have small farms (standardised residual = 8.72, P<0.001). On the other hand, the size of the flock is not significantly associated with direct sales to retailers (n.s) but is related with direct sales to wholesalers ($x^2 = 77.729$, df=2, P<0.001). More specifically, the majority of these farmers (62.1%) have large flocks (standardised residual = 6.64, P<0.001).

Farm Characteristics		Direct sales to retailers			Direct sales to wholesalers			Private use of livestock			Sales to more than marketing channels		
		X^2 statistic	% farmers	Standardized Residuals	X^2 statistic	% farmers	Standardized Residuals	X^2 statistic	% farmers	Standardized Residuals	X^2 statistic	% farmers	Standardized Residuals
Farm size	<5 ha	x^2=57.735, df=2, P<0 001	76.5%	6.16[c]	x^2=114.339, df=2, P<0.001	71.2%	8.72[c]	x^2=37.538, df=2, P<0.001	79.5%	4.99[c]	x^2=12.200, df=2, P<0.01	63.3%	2.85[b]
	5.1 – 10 ha.		16.2%	-2.45[b]		15.8%	-4.04[c]		12.8%	-2.22[a]		16.7%	n.s
	>10.1 ha		7.4%	-3.71[c]		13.0%	-4.69[c]		7.7%	-2.77[b]		20.0%	n.s
Flock size	<50 heads	n.s			x^2=77.729, df=2, P<0.001	8.5%	-5.73[c]	x^2=26.923, df=2, P<0.001	71.8%	4.16[c]	n.s		
	51-150 heads					29.4%	n.s		20.5%	n.s			
	>151 heads					62.1%	6.64[c]		7.7%	-2.77[b]			
Volume of livestock production	<50 κεφάλια	x^2=12.824, df=2, P<0.01	50.0%	2.38[b]	x^2=37.599, df=2, P<0.001	11.9%	-4.95[b]	x^2=34.308, df=2, P<0.001	76.9%	4.71[c]	n.s		
	51-150 heads		35.3%	n.s		41.2%	n.s		17.9%	n.s			
	>151 heads		14.7%	-2 66[c]		46.9%	3.12[c]		5.1%	-3.05[b]			
Volume of milk production	<2,000 kg	n.s			n.s			x^2=34.308, df=2, P<0.001	76.9%	4.71[c]	n.s		
	2.001-10,000 kg								17.9%	n.s			
	>10,001 kg								5.1%	-3.05[b]			
Farm land owend by the farmer	<30%	x^2=20.941, df=3, P<0.001	20.6%	n.s	x^2=51.588, df=3, P<0.001	18.6%	n.s	x^2=23.872, df=3, P<0.001	12.8%	n.s	n.s		
	31-60%		8.8%	-2.67[c]		13.6%	-3.04[b]		5.1%	-2.48[a]			
	>61%		47.1%	3.64[c]		48.0%	6.13[c]		56.4%	3.92[c]			
	Do not farm any land		23.5%	n.s		19.8%	n.s		25.6%	n.s			
Farm land rent from other farmers	<30%	x^2=20.941, df=3, P<0.001	47.1%	3.64[c]	x^2=42.910, df=3, P<0.001	45.8%	5.52[c]	x^2=16.897, df=3, P<0.001	51.3%	3.28[b]	n.s		
	31-60%		8.8%	-2.67[c]		13.6%	-3.04[c]		7.7%	-2.17[a]			
	>61%		20.6%	n.s		20.09%	n.s		15.4%	n.s			
	Do not farm any land		23.5%	n.s		19.8%	n.s		25.6%	n.s			

Farm land let to other farmers	<30%	x^2=62.235, df=3, P<0.001	54.4%	4.85[c]	x^2=243.994, df=3, P<0.001	71.8%	12.44[c]	x^2=53.821, df=3, P<0.001	71.8%	5.84[c]	x^2=37.467 df=3, P<0.001	70.0%	4.93[c]
	31-60%		0%	-4.12[c]		0%	-6.65[c]		0%	-3.12[b]		0%	-2.74[b]
	>61%		2.9%	-3.64[c]		0%	-6.65[c]		0%	-3.12[b]		3.3%	-2.37[a]
	Do not farm any land		42.6%	2.91[c]		28.2%	n.s		28.2%	n.s		26.7%	n.s
Farm land allocated to the sheel and goat enterprise	<30%	n.s			x^2=44.944, df=3, P<0.001	20.3%	n.s	x^2=14.231, df=3, P<0.01	48.7%	2.96[b]	x^2=12.400, df=3, P<0.01	26.7%	n.s
	31-60%					13.6%	-3.04[b]		7.7%	-2.16[a]		26.7%	-2.01[a]
	>61%					46.3%	5.67[c]		17.9%	n.s		50.0%	2.74[b]
	Do not farm any land					19.8%	n.s		25.6%	n.s		16.7%	n.s

Table 9.10 Profile of farmers who prefer each marketing channel regarding their farm characteristics

[a]P<0.05, [b]P<0.01 and [c]P<0.001.

9.5.2 c Profiling each livestock marketing channel regarding farmers' characteristics.

A one-sample chi-square analysis conducted in order to profile the farmers who prefer each marketing channel regarding the characteristics of themselves. The analysis indicated that the farmers who use all the marketing channels have similar profiles. On the other hand, the farmers who preferred the direct sales to retailers, to wholesalers and to more than one marketing channels obtained average livestock prices while the farmers who preferred the private use of livestock obtained livestock prices below average. Furhermore, the farmers who preferred the private use of livestock derived less than one quarter of their farm income from their sheep and goat enterprise. On the other hand, the sheep and goat enterprise consisted of the main source of farm income for the farmers who use the other three marketing channels. The farmers who sold their livestock to retailers, wholesalers or to more than one marketing channels had long experience in farming decision making. Moreover, the farmers who prefer the direct sales to retailers or to wholesalers as their main marketing outlet did not have any previous working experience. The financial performance of the farmers who marketed their produce direct to retailers or make private use of it was low.

More particularly Table 9.11 illustrates the profile of each marketing channel (columns) regarding the farmers' characteristics (rows). For example, farm related activities are significantly associated with direct sales to retailers ($x^2 = 56.529$, df=1, P<0.001) and in particular the majority of the farmers (95.6%) who prefer the direct sales to retailers are not involved with farm related activities away from their farm (standardised resisual = 5.32, P<0.001). Furthermore, farm related activities are significantly associated with direct sales to wholesalers ($x^2 = 125.429$, df=1, P<0.001) and more particularly the 92.1% of the farmers who prefer the direct sales to wholesalers were not involved with farm related activities away from their farm (standardised resisual = 7.92, P<0.001).

Farmers' characteristics		Direct salers to retailers			Direct sales to wholesalers			Private use of livestock			Sales to more than one marketing channels		
		X^2 statistic	% farmers	Standardized Residuals	X^2 statistic	% farmers	Standardized Residuals	X^2 statistic	% farmers	Standardized Residuals	X^2 statistic	% farmers	Standardized Residuals
Farm related activities	YES	x^2=56 529, df=1, P 0 001	4.4%	-5.32[c]	x^2=125.429, df=1, P<0 001	7.9%	-7.92[c]	x^2=39.000, df=1, P<0.001	0.0%	-4.42[c]	x^2=22.533, df=1, P<0 001	6.7%	-3.36[c]
	NO		95.6%	5.32[c]		92.1%	7.92[c]		100.0%	4.42[c]		93.3%	3.36[c]
Off-farm activities	YES	x^2= 36.375, df=1, P 0.001	13.2%	-4.29[c]	x^2=109.158, df=1, P<0 001	10.7%	-7.39[c]	x^2=16.026, df=1, P<0.001	17.9%	-2.83[b]	x^2=10.800, df=1, P<0 001	20.0%	-2.32[a]
	NO		86.8%	4.29[c]		89.3%	7.39[c]		82.1%	2.83[b]		80.0%	2 32[a]
Membership in agricultural cooperative	NO	x^2=5 882, df=2, P 0 05	64 7%	n.s	n.s			n.s			n.s		
	YES		35 3%	n.s									
Livestock farming experience	5 years	x^2 -43.265, df 2, P< 0 001	10.3%	-3 29[b]	x^2=92 983, df=2, P< 0.001	10.2%	-5.34[c]	x^2=11.231, df=2, P<0.001	12.8%	-2 22[a]	x^2=20.600, df=2, P<0.001	3.3%	-2.85[b]
	6-15 years		19.1%	-2 03[c]		23.2%	-2.34[c]		30.8%	n.s		26.7%	n.s
	16 years		70 6%	5.32[a]		66.7%	7 68[c]		56.4%	2.50[a]		70.0%	3 48[c]
Experience in farming decision making	5 years	x^2 36 824, df 2, P 0 001	11.8%	-3.08[c]	x^2=81.898, df 2, P 0 001	13.0%	-4 69[c]	x^2=6.000, df=2, P 0.05	20.5%	n.s	x^2=18.200, df=2, P< 0.001	3.3%	-2.85[b]
	6-15 years		20 6%	n s		22.0%	-2.60[b]		28.2%	n s		30 0%	n.s
	16 years		67 6%	4.90[c]		65.0%	7.29[c]		51.3%	n.s		66 7%	3.16[b]
Previous non-farm experience	YES	x^2 19.059 df=1, P 0.001	23 5%	-3.09[b]	x^2=44.751 df=1, P< 0.001	24.9%	-4 73[c]	n s			x^2=6 533 df=1, P<0.05	26.7%	n s
	NO		76.5%	3.09[b]		75.1%	4.73[c]					73.3%	n.s
Debt level	9%	x^2 175.471, df=3, P 0 001	94.1%	11.40[c]	x^2=350.412, df=3, P< 0.001	85.3%	16.05[c]	x^2=101.615, df=3, P<0.001	94.9%	8.73[c]	x^2=67.867, df=3, P<0.001	90 0%	7 12[c]
	10-29%		4.4%	-3.40[c]		10.2%	-3.95[c]		2 6%	-2.80[b]		3.3%	-2.37[a]
	30%		0.0%	-4.12[c]		3.4%	-5.75[c]		2.6%	-2.80[b]		6.7%	-2.01[a]
	Do not know		0.0%	-4.12[c]		0.0%	-6.65[c]		0.0%	-3.12[b]		0.0%	-2.74[b]
Farm income derived from the sheep and goat enterprise	24%	x^2 -49.441, df- 2, P 0.001	13.2%	-2.87[b]	x^2 =168.237, df=2, P 0.001	6.8%	-6.12[c]	x^2=18.000, df=2, P< 0.001	56.4%	2.50[a]	x^2=25.800, df=2, P<0.001	16.7%	n s
	25-49%		13.2%	-2.87[b]		14.1%	-4 43[c]		2.6%	-3.33[c]		6.7%	-2.53[a]
	50%		73 5%	5.74[c]		79.1%	10.55[c]		41.0%	n.s		76.7%	4.11[c]
Educational level	Primary	x^2=173.294, df=3, P 0.001	94 1%	11.40[c]	x^2=377.147, df=3, P< 0.001	88.1%	16 80[c]	x^2=87.462, df=3, P< 0.001	89.7%	8.05[c]	x^2=49.467, df=3, P<0.001	80.0%	6.02[c]
	Secondary		1.5%	-3.88[c]		5.1%	-5.30[c]		5.1%	-2.48[a]		13.3%	n s
	High school or technical education		2.9%	-3.64[c]		5.6%	-5.15[c]		5.1%	-2.48[a]		6.7%	-2.01[a]
	Highest education		1.5%	-3.88[c]		1.1%	-6.35[c]		0%	-3.12[b]		0.0%	-2.74[b]

Financial performance	Below average	x^2 26.941, df 2, P 0.001	61.8%	4.06[c]	n.s			x^2=42.000, df=2, P<0.001	82.1%	5.27[c]	n.s			
	Average		26.5%	n.s					12.8%	-2.22[a]				
	Above average		11.8%	-3.08[c]					5.1%	-3.05[b]				
Obtained livestock prices	Below average	x^2 87.912, df 2, P 0.001	10.3%	-3.29[c]	x^2 296.847, df 2, P 0.001	1.1%	-7.42[c]	x^2=10.308, df=2, P 0.01	56.4%	2.50[a]	x^2=34.200, df=2, P<0.001	3.3%	-2.85[b]	
	Average		86.8%	7.63[c]		94.4	14.06[c]		28.2%	n.s		83.3%	4.74[c]	
	Above average		2.9%	-4.34[c]		4.5	-6.64[c]		15.4%	n.s		13.3%	n.s	
Holding of responsible position in an agricultural cooperative	YES	x^2 56.529, df 1, P 0.001	4.4%	-5.32[c]	x^2=142.831, df=1, P 0.001	5.1%	-8.45[c]	x^2=35.103, df=1, P<0.001	2.6%	-4.19[c]	x^2=19.200, df=1, P<0.001	10.0%	-3.10[b]	
	NO		95.6%	5.32[c]		94.9%	8.45[c]		97.4%	4.19[c]		90.0%	3.10[b]	
Holding of responsible position in an agricultural organisation	YES	x^2 68.000, df 1, P 0.001	0.0%	-5.83[c]	x^2=177.000, df=1, P 0.001	0.0%	-8.45[c]	x^2=39.000, df=1, P<0.001	0.0%	-4.42[c]	x^2=30.000, df=1, P<0.001	0.0%	-3.87[c]	
	NO		100.0%	5.83[c]		100.0%	8.45[c]		100.0%	4.42[c]		100.0%	3.87[c]	
Holding of responsible position in a non-farm business they might own	YES	x^2 60.235, df=1, P 0.001	2.9%	-5.49[a]	x^2=165.203, df=1, P<0.001	1.7%	-9.41[c]	x^2=35.103, df=1, P<0.001	2.6%	-4.19[c]	x^2=22.533, df=1, P<0.001	6.7%	-3.36[c]	
	NO		97.1%	5.49[a]		98.3%	9.41[c]		97.4%	4.19[c]		93.3%	3.36[c]	
Holding of responsible position in a non-farm business they did not own	YES	x^2 68.000, df=1, P 0.001	0.00%	-5.83[c]	x^2=177.000, df=1, P 0.001	0.0%	-8.45[c]	x^2=39.000, df=1, P<0.001	0.0%	-4.42[c]	x^2=30.000, df=1, P<0.001	0.0%	-3.87[c]	
	NO		100.0%	5.83[c]		100.0%	8.45[c]		100.0%	4.42[c]		100.0%	3.87[c]	

Table 9.11 Profile of farmers who prefer each marketing channel regarding farmers' characteristics

[a]P<0.05, [b]P<0.01 and [c]P<0.001.

9.5.3 The impact of the farm and farmers' characteristics on marketing channel selection

The influence of the farm and farmers' characteristics on livestock marketing channel selection by the sheep and goat farmers was explored conducting nominal logistic regression analysis. The farm and farmers' characteristics that comprise the profiles of the livestock marketing channels were used as predictors in the logistic regression model. Table 9.12 presents the results of the analysis regarding the impact of the farm characteristics on the marketing channel selection.

The farmers who focused the sales of their sheep and goats on more than one marketing channel instead of the private use of them are more influenced by the size of their flocks. Furthermore, the size of farm land they let to other farmers has a significant positive impact on the preference of the farmers to market their livestock direct to wholesalers rather than to more than one marketing channel. Besides, the livestock producers who preferred the direct sales to retailers over the sales to more than one marketing channel are mainly influenced by an increase in their flock size and by an increase in the size of farm land they let to other farmers. The goodness of fit test indicates that the model fits to the data (MINITAB 1997).

Logit	Predictors	Coef	P	Odds Ratio
Logit 1: (Private use of livestock / Sales to more that one marketing channel)	Constant	2.980	0.039	
	Farm size	-0.6313	0.128	0.53
	Flock size	-1.4891	0.020	0.23
	Volume of livestock production	0.3053	0.329	1.36
	Farm land owned by the farmer	0.5039	0.181	1.66
	Farm land rent from other farmers	-0.3389	0.343	0.71
	Farm land rent to other farmers	-0.3900	0.520	0.68
Logit 2: (Direct Sales to wholesalers / Sales to more that one marketing channel)	Constant	0.338	0.758	
	Farm size	-0.2349	0.412	0.79
	Flock size	-0.4775	0.310	0.62
	Volume of livestock production	0.1233	0.572	1.13
	Farm land owned by the farmer	0.1102	0.692	1.12
	Farm land rent from other farmers	0.1920	0.434	0.83
	Farm land rent to other farmers	1.1331	0.014	3.11
Logit 3: (Direct Sales to retailers / Sales to more that one marketing channel)	Constant	1.639	0.178	
	Farm size	-0.2347	0.495	0.79
	Flock size	1.6894	0.001	0.18
	Volume of livestock production	0.1314	0.588	1.14
	Farm land owned by the farmer	-0.3656	0.269	0.69
	Farm land rent from other farmers	0.4991	0.083	1.65
	Farm land rent to other farmers	1.0176	0.044	2.77
Log-likehood = -294.342		Reference Group= Sales to more than one marketing channel		
G= 125.894, df = 18, P<0.001				
Goodness of Fit				
Deviance x^2 = 158.624, df=213, P= 0.998				

Table 9.12 The impact of farm's characteristics on livestock marketing channel selection by the sheep and goat farmers in EMTh according to Logistic Regression Analysis.

The results of the final logistic regression analysis regarding the impact of the farmers' characteristics on the marketing channel selection are presented in Table 9.13. The financial performace and livestock prices that the farmers have been able to achieve compared with the other farmers in their area mostly influenced the livestock farmers in EMTh to market their sheep and goats to more than one marketing channel rather than making private use of them. On the other hand, the preference of these farmers to market their livestock to more than one marketing channel instead of sell it to retailers, is mainly affected by their financial performance. The goodness of fit test indicates that the model fits to the date (MINITAB 1997).

Logit	Predictors	Coef	P	Odds Ratio
Logit 1: (Private use of livestock / Sales to more that one marketing channel)	Constant	7.512	0.001	
	Livestock prices	-2.2313	0.001	0.11
	Previous non farm experience	-0.5348	0.353	0.59
	Financial performance	-0.9347	0.033	0.39
	Debt	0.2214	0.743	1.25
	Farm Income	-0.5474	0.124	0.58
	Educational level	0.2540	0.598	1.29
Logit 2: (Direct Sales to wholesalers / Sales to more that one marketing channel)	Constant	1.976	0.210	
	Livestock prices	-0.4410	0.418	0.64
	Previous non farm experience	0.1339	0.769	1.14
	Financial performance	-0.0874	0.745	0.92
	Debt	-0.0137	0.975	0.99
	Farm Income	0.3173	0.304	1.37
	Educational level	0.1464	0.641	0.86
Logit 3: (Direct sales to retailers / Sales to more that one marketing channel)	Constant	3.601	0.048	
	Livestock prices	-0.9707	0.121	0.38
	Previous non farm experience	0.4020	0.438	1.49
	Financial performance	-0.7769	0.014	0.46
	Debt	-0.8135	0.219	0.44
	Farm Income	0.3352	0.321	1.40
	Educational level	-0.1373	0.737	0.87
Log-likehood = -313.301		Reference Group= Sales to more than one marketing channel		
G= 87.978, df = 18, P<0.001				
Goodness of Fit				
Deviance x^2 = 199.242, df=171, P= 0.069				

Table 9.13 The impact of farmers' characteristics on livestock marketing channel selection by the sheep and goat farmers in EMTh according to Logistic Regression Analysis.

9.6 Stage 5: Profiling of Marketing Strategic Groups

9.6.1 The association between marketing strategy selection and each factor that influences the sheep and goat farmers to adopt a particular marketing outlet.

The Kruskal–Wallis non-parametric test was used to identify which of the factors that are related to the farmers' choice of a particular marketing channel affected the marketing strategy selection by the sheep and goat farmers in the Region of EMTh in Greece.

Factors	Marketing Strategies			
	Cost Focus Strategy	Production Orientation Strategy	Return Focus	P
Capability of the buyer to purchase large quantities of livestock	146.6 [a]	175.4 [b]	134.9 [c]	0.029
Loyalty	137.6 [a]	186.3 [b]	142.0 [c]	<0.001
Speed of payment	140.8 [a]	184.1 [b]	139.0 [a]	<0.001
Monopolistic phenomena	137.1 [a]	144.5 [b]	154.0 [c]	<0.001

Table 9.14: The influence of each factor for the selection of a particular marketing strategy

N.B Within factors (rows), strategic groups (average ranks presented in cells) with different letters differ significantly at $P<0.05$.

According to the results of test presented in Table 9.14, most of the sheep and goat farmers that were influenced by the capability of the buyer to purchase large quantities of livestock adopted the production orientation strategy, as these farmers were interested in producing many lambs. Furthermore, most of the farmers that wanted to be sure that they would be paid for the livestock they sold as well as that they will receive their money quickly, also followed the production orientation strategy. On the other hand, the farmers that were influenced by the monopolistic phenomena existing in their area regarding the marketing of their livestock adopted the return focus strategy.

This study did not identify any significant association ($P>0.05$) between the following factors and a marketing strategy selection:

(i) Sale price (v50)

(ii) Personal relationships (v54)

(iii) Experimentation with different marketing channels (v56)

(iv) Small quantities of lambs (v57)

(v) The fact that the farmer is not interested in selling his livestock (v58)

(vi) The fact that most of the farmers prefer the same marketing outlet (v59)

(vii) The fact that the farmer is interested in selling in live weigh (v60)

(viii) Local demand (v61)

(ix) The fact that the farmer sold the lambs late (v62)

(x) Invoice issue by the wholesalers which means that the farmer will get the VAT back (v63)

(xi) Lack of enough space to stock the lambs (v64)

(xii) The fact that the farmer get used to sell his livestock through a particular marketing channel (v65)

(xiii) Contractual obligations (v66)

9.6.2 Profiling marketing strategic groups

Consisely the farmers who adopt each marketing strategy have similar profiles regarind their farm and personal characteristics. In particular they have small farms, own most of the land they cultivate, and rent less than 30% of their farm land from other landowners. They also were not involved with farm related activities away from their farm nor with off-farm activities. They had not any previous non-farm experience, but they had long experience in livestock farming and in decision making relative to livestock sector. Most of them were low educated, had low debt and achieved average livestock prices compared to other farmers in their area. Furthermore, their sheep and goat enterprises consisted of the most important part of their farm business as they derived the largest part of their farm income from it. Moreover, they did not hold any responsible position in an agricultural cooperative or any other agricultural organisation. They also did not hold any responsible position in a non farm business they might own or in a non farm business they did not own.

On the other hand, there are some differences in the profile of the farmers who adopt each marketing strategy reagarding the factors that influence them in the marketing outlet choice as well as their farm and personal characteristics as Table 9.15 presents.

Cost Focus Strategy	**Production Orientation Strategy**	**Return focus strategy**
Marketing Channel		
Direct Sales to Wholesalers	Direct Sales to Wholesalers	Direct Sales to Wholesalers
Factors		
Sales price	Capability of buyer to purchase large quantities of livestock	Loyalty
Loyalty	Loyalty	Sales price
Speed of payment	Speed of payment	Speed of payment
Farm Characteristics		
Flock size: >151 heads	n.s	Flock size : > 151 heads
Volume of livestock production: >151 heads	n.s	Volume of livestock production: 51-150 heads
n.s	n.s	Volume of milk production: <10,001 kg
Farm land let to other farmers: <30%	n.s	Farm land let to other farmers: <30%
Farm allocation to sheep and goat enterprise: >61%	n.s	Farm allocation to sheep and goat enterprise: >61%
Farmer's characteristics		
n.s	Member of an agricultural cooperative NO	n.s
Financial performance: Not average	Financial performance: Average	Financial performance: Below average
Information sources		
Governmental bodies	Family	Family
Family	Other farmers	Governmental bodies
Other farmers	Governmental bodies	Other farmers
Cooperative Organizations		Cooperative Organizations
Types of information		
Livestock prices	Meat prices	Livestock prices
Meat prices	Livestock prices	Meat prices
Milk prices	Animal diseases	Animal diseases
Animal diseases	Milk prices	Milk prices

Table 9.15: Summary of strategic group profile

9.6.2 a Profiling marketing strategic groups regarding marketing channel selection

The one-sample chi-square analyis employed to identify which livestock marketing channel is mostly preffered by the farmers who adopt each marketing strategy. More particular this study identified that the majority of the farmers who adopted each marketing strategy preferred to sell their livestock produce direct to wholesalers (Table 9.16)

Marketing Channel Selection		% of farmers	Standardized residuals
Cost Focus Strategy x^2=114.630, df=3, P<0.001	Direct Sales to Retailers	20.7%	n.s
	Direct Sales to Wholesalers	63.7%	8.99[c]
	Private Use of Livestock	5.2%	-4.60[c]
	Sales to more than one marketing channel	10.4%	-3.40[c]
Production Orientation Strategy x^2=30.152 df=3, P<0.001	Direct Sales to Retailers	24.2%	n.s
	Direct Sales to Wholesalers	63.6%	4.44[c]
	Private Use of Livestock	0.0%	-2.87[b]
	Sales to more than one marketing channel	12.1%	n.s
Return Focus Strategy x^2=63.893, df=3, P<0.001	Direct Sales to Retailers	24.8%	n.s
	Direct Sales to Wholesalers	54.5%	6.50[c]
	Private Use of Livestock	13.2%	-2.59[b]
	Sales to more than one marketing channel	7.4%	-3.86[c]

Table 9.16 The livestock marketing channel utilization by the farmers who adopted the cost focus strategy.

[a]P<0.05, [b]P<0.01 and [c]P<0.001.

The reasons that explain this particular marketing channel preference by each strategic group were investigated through the Friedman one-way non-parametric test. This test was used to identify which factors mostly affect the farmers of each strategic group in their marketing channel choice. The results of the test are summarised in Figure 9.10. In particular, the farmers who adopted the cost focus strategy when they have to choose where to sell their produce are more interested than the other two groups in sales price but they are also influenced by other factors as Figure 9.10 presents including buyer's loyalty and speed of payment. On the other hand, the production orientation farmers are more influenced in their marketing channel selection in comparison with the other two groups by the capability of the buyers to absorb large quantities of livestock, loyalty, speed of payment and personal relationships with their buyers. These farmers they are also interested in other factors illustrating in Figure 9.10 including sale price. The return focused farmers were influenced in their marketing channel choice by their buyer's loyalty, sales price and speed of payment (Figure 9.7). Moreover, they were more affected in their

marketing outlet choice than the other two groups by monopolistic phenomena that may exist in their area as well as by their small volume of livestock production.

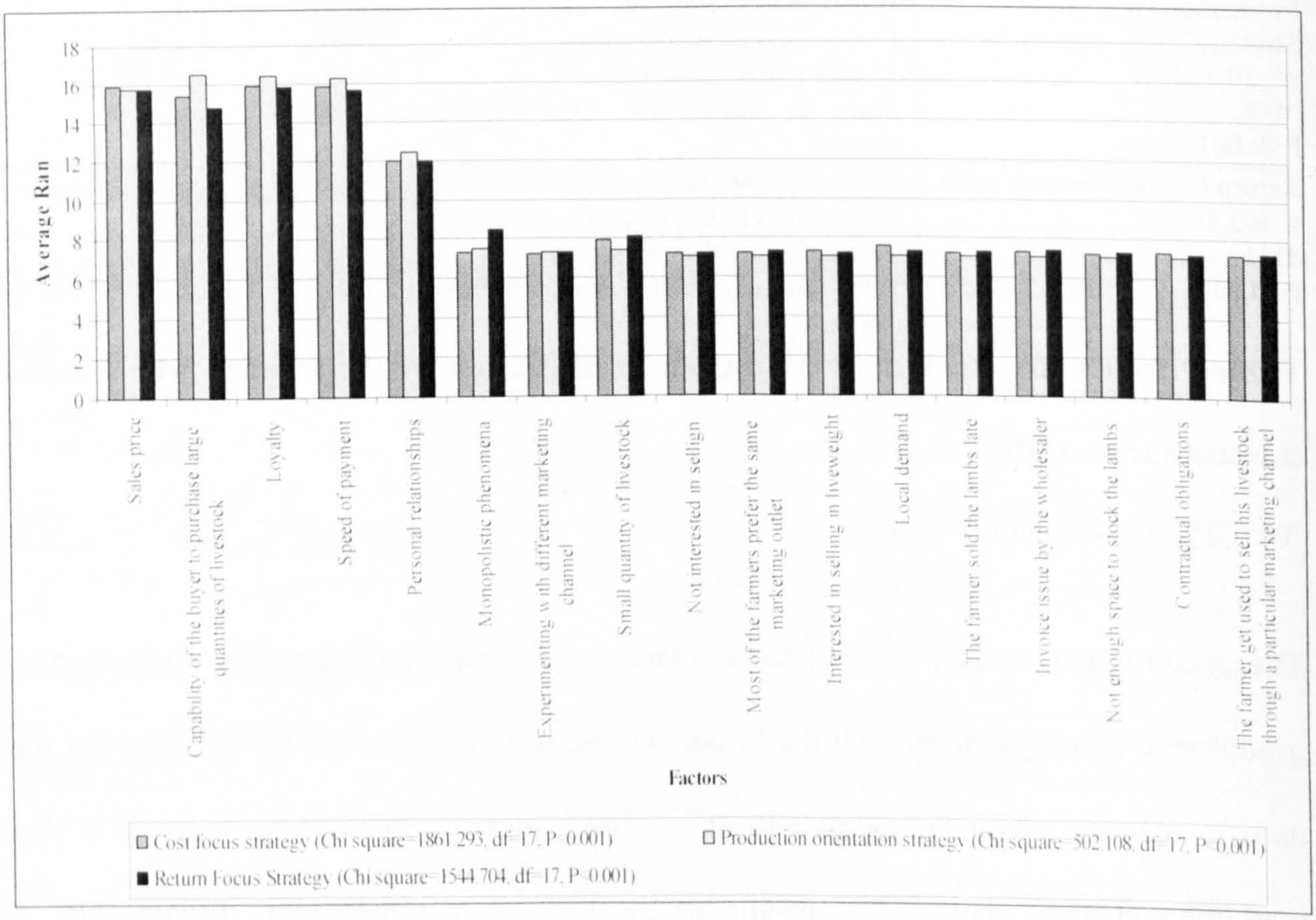


Figure 9.7: The importance of each factor for the farmers who adopted the cost focus strategy.

The nominal logistic regression was employed to identify the influcence of the factors that affect livestock marketing channel selection for each strategic group taking into consideration their multivariate impact. According to the results of the analysis that are presented in Table 9.17, the farmers who were more influenced in their marketing channel selection by the capability of the buyer to purchase large quantities of livestock as well as by the speed of payment followed the production orientation strategy rather than the return focus strategy. On the other hand, the livestock producers who were affected in their marketing outlet choice by the monopolistic phenomena that prevailed in their region

mostly adopted the return focus strategy over the cost focus strategy. The goodness of fit test indicates that the model fits to the data (MINITAB 1997).

Logit	Predictors	Coef	P	Odds Ratio
Logit 1: (Production Orientation / Return Focus)	Constant	-11.675	0.001	
	Capability of the buyer to purchase large quantities of livestock	0.4586	0.019	1.58
	Loyalty	0.7566	0.110	2.13
	Speed of payment	1.3317	0.010	3.79
	Monopolistic phenomena	-0.2957	0.388	0.74
Logit 2: (Cost Focus / Return Focus)	Constant	0.3066	0.739	
	Capability of the buyer to purchase large quantities of livestock	0.09804	0.281	1.10
	Loyalty	-0.1154	0.688	0.89
	Speed of payment	0.2416	0.425	1.27
	Monopolistic phenomena	-0.9477	0.012	0.39
Log-likehood = -257.835		Reference Group= Return Focus Strategy		
G= 43.749, df = 8, P<0.001				
Goodness of Fit				
Pearson x^2 = 131.945, df=78 P<0.001				
Deviance x^2 = 89.683, df=78, P= 0.172				

Table 9.17 The impact of the factors that affect the marketing channel choice on marketing strategy selection according to Logistic Regression Analysis.

9.6.2.b Profiling marketing strategic groups regarding farm characteristics

The one-sample chi-square analysis indicated (Table 9.18) that the farmers who follow each marketing strategy have similar profile regarding their farm characteristics. Both the cost focused and return focused farmers had big flocks, allocate the majority of their farm land to their sheep and goat enterprise in order to reduce the feeding cost as well as let a small part of their farm land to other farmers in order to have an additional income. On the other hand most of the return focused farmers are medium scale livestock producers in comparison with the cost focused famers who are large scale farmers because their main interest is was not the the increase of the production efficiency but the profit maximation (short term in most cases). For the same reason the majority of them produced less than 10 tonnes sheep and goat milk annually.

Farm Characteristics		Cost Focus Strategy			Production Orientation Strategy			Return Focus Strategy		
		x^2	% farmers	Standardized residuals	x^2	% farmers	Standardized residuals	x^2	% farmers	Standardized residuals
Farm size	<5ha	x^2=90.844, df=2, P<0.001	71.9%	7.75[c]	x^2=19.636, df=2, P<0.001	69.7%	3.62[c]	x^2=99.587, df=2, P<0.001	76.0%	8.14[c]
	5.1 – 10 ha		17.0%	-3.28[b]		15.2%	n.s		14.0%	-3.67[c]
	>10.1 ha		11.1%	-4.47[c]		15.2%	n.s		9.9%	-4.46[c]
Flock size	<50 heads	x^2=21.733, df=2, P<0.001	20.7%	-2.53[a]	x^2=6.545, df=2, P<0.05	15.2%	n.s	x^2=9.736, df=2, P<0.01	21.5%	-2.26[a]
	51-150 heads		27.4%	n.s		33.3%	n.s		23.9%	n.s
	>151 heads		51.9%	3.73[c]		51.5%	n.s		44.6%	2.15[a]
Volume of livestock production	<50 heads	x^2=7.778, df=2, P<0.001	25.9%	n.s	n.s			x^2=8.446, df=2, P<0.01	29.8%	n.s
	51-150 heads		29.6%	n.s					45.5%	2.32[a]
	>151 heads		44.4%	2.24[a]					24.8%	n.s
Volume of milk production	<2,000 kg	n.s			n.s			x^2=12.512, df=2, P<0.001	41.3%	n.s
	2,001 – 10,000 kg								40.5%	n.s
	>10,000kg								18.2%	-2.89[b]
Farm land owned by the farmer	<30%	x^2=28.881, df=3, P<0.001	21.5%	n.s	x^2=8.818, df=3, P<0.05	24.2%	n.s	x^2=50.603, df=3, P<0.001	14.9%	-2.23[a]
	31-60%		14.1%	-2.54[a]		6.1%	-2.18[a]		10.7%	-3.14[b]
	>61%		44.4%	4.52[c]		42.4%	2.00[a]		52.1%	5.95[c]
	Do not farm any land		20.0%	n.s		27.3%	n.s		22.3%	n.s
Farm land rent from other farmers	<30%	x^2=28.644, df=3, P<0.001	43.7%	4.35[c]	x^2=33.061, df=3, P<0.001	51.5%	3.05[b]	x^2=34.438, df=3, P<0.001	48.8%	5.23[c]
	31-60%		12.6%	-2.88[b]		0.0%	-2.87[b]		14.0%	-2.41[b]
	>61%		23.7%	n.s		0.0%	-2.87[b]		14.9%	-2.23[a]
	Do not farm any land		20.0%	n.s		48.5%	2.70[b]		22.3%	n.s
Farm land let to other farmers	<30%	x^2=157.178, df=3, P<0.001	65.9%	9.51[c]	n.s			x^2=167.430, df=3, P<0.001	71.9%	10.32[c]
	31-60%		0.0%	-5.81[c]					0.0%	-5.50[c]
	>61%		1.5%	-5.47[c]					0.0%	-5.50[c]
	Do not own any land		32.6%	n.s					28.1%	n.s
Farm land allocated to sheep and goat enterprise	<30%	x^2=34.215, df=3, P<0.001	16.3%	-2.02[a]	n.s			x^2=21.975, df=3, P<0.001	24.8%	n.s
	31-60%		17.0%	n.s					11.6%	-2.95[b]
	>61%		46.7%	5.03[c]					41.3%	3.59[c]
	Do not own any land		20.0%	n.s					22.3%	n.s

Table 9.18: Profiling the farmers who adopted each marketing strategy regarding the characteristics of their farms

[a]P<0.05, [b]P<0.01 and [c]P<0.001.

9.6.2.c Profiling marketing strategic groups regarding farmers' characteristics

The one sample chi-square analysis that was perfomed to profile each strategic group rerarding the farmers' characteristics indicated that the farmers of the three strategic groups have similar profiles. As Table 9.19 presents, the majority of the farmers who follow each marketing strategy have similar profiles. In particular, the return focused farmers contraty to the production orientated farmers whose financial performance was average, had low financial performance compared to the other farmers in their area because the operated opportunistically: they were neither interested in improving the production efficiency of their farm nor in reducing their farm cost. The financial performance of the cost focused farmers as Table 9.19 presents was not average. Moreover, the production orientated farmers were not members of an agricultural cooperative. Besides, no significant association (P>0.05) was found between the age of the farmer (v46) and the use of each marketing strategy.

Farmer's Characteristics		Cost Focus Strategy			Production Orientation Strategy			Return Focus Strategy		
		x^2	% farmers	Standardized residuals	x^2	% farmers	Standardized residuals	x^2	% farmers	Standardized residuals
Farm related activities	YES	x^2=78.585, df=1, P<0.001	11.9%	-6.27[c]	x^2=33.000, df=1, P<0.001	0.0%	-4.06[c]	x^2=113.132, df=1, P<0.001	1.7%	-7.52[c]
	NO		88.1%	6.27[c]		100.0%	4.06[c]		98.3%	7.52[c]
Off-farm activities	YES	x^2=64.067, df=1, P<0.001	15.6%	-5.66[c]	x^2=22.091, df=1, P<0.001	9.1%	-3.32[c]	x^2=77.760, df=1, P<0.001	9.9%	-6.24[c]
	NO		84.4%	5.66[c]		90.9%	3.32[c]		90.1%	6.24[c]
Livestock farming experience	<5 years	x^2=53.733, df=2, P<0.001	9.6%	-4.77[c]	x^2=19.918, df=2, P<0.001	12.1%	-2.11[a]	x^2=69.488, df=2, P<0.001	10.7%	-4.30[c]
	6-15 years		29.6%	n.s		18.2%	n.s		20.7%	-2.10[a]
	>16 years		60.7%	5.52[c]		69.7%	3.62[c]		68.6%	6.41[c]
Experience in farming decision making	<5 years	x^2=45.733, df=2, P<0.001	12.6%	-4.17[c]	x^2=16.545, df=2, P<0.001	15.2%	n.s	x^2=63.934, df=2, P<0.001	10.7%	-4.30[c]
	6-15 years		28.1%	n.s		18.2%	n.s		22.3%	-2.10[a]
	>16 years		59.3%	5.22[c]		66.7%	3.32[c]		66.9%	6.41[c]
Previous non-farm experience	YES	x^2=25.785 df=1, P<0.001	28.1%	-3.59[c]	x^2=8.758 df=1, P<0.05	24.2%	-2.09[a]	x^2=32.802 df=1, P<0.001	24.0%	-4.05[c]
	NO		71.9%	3.59[c]		75.8%	2.09[a]		76.0%	4.05[c]
Debt level	<9%	x^2=258.037, df=2, P<0.001	84.4%	13.81[c]	x^2=85.606, df=3, P<0.001	93.9%	7.92[c]	x^2=281.017, df=3, P<0.001	90.9%	14.50[c]
	10-29%		11.9%	-3.06[b]		0.0%	-2.87[b]		5.0%	-4.41[c]
	>30%		2.2%	-5.29[c]		3.0%	-2.52[a]		4.1%	-4.59[c]
	Do not know		1.5%	-5.47[c]		0.0%	-2.87[b]		0.0%	-5.50[c]
Farm income derived by the sheep and goat enterprise	<24%	x^2=141.111, df=2, P<0.001	11.1%	-4.47[c]	x^2=19.818, df=2, P<0.001	12.1%	-2.11[a]	x^2=74.248, df=2, P<0.001	14.0%	-3.67[c]
	25-49%		7.4%	-5.22[c]		18.2%	n.s		15.7%	-3.36[c]
	50%>		81.5%	9.69[c]		69.7%	3.62[c]		70.2%	7.02[c]
Financial Performance	Below average	x^2=11.511, df=2, P<0.01	43.0%	n.s	x^2=8.727, df=2, P<0.05	21.2%	n.s	x^2=31.256, df=2, P<0.001	52.9%	3.73[c]
	Average		20.0%	-2.68[b]		57.6%	2.41[a]		35.5%	n.s
	Above average		37.0%	n.s		21.2%	n.s		11.6%	4.15[c]
Obtained livestock prices	Below average	x^2=246.533, df=2, P<0.001	1.5%	-6.41[c]	x^2=13.636, df=2, P<0.01	18.2%	n.s	x^2=155.521, df=2, P<0.001	6.6%	-5.09[a]
	Average		97.0%	12.82[c]		63.6%	3.02[b]		86.8%	10.18[c]
	Above average		1.5%	-6.41[c]		18.2%	n.s		6.6%	-5.09[c]
Educational level	Primary	x^2=249.326, df=3, P<0.001	83.7%	13.64[c]	x^2=19.841, df=1, P<0.001	90.9%	7.57[c]	x^2=77.709, df=3, P<0.001	94.2%	15.23[c]
	Secondary		5.2%	-4.60[c]		9.1%	n.s		4.1%	-4.59[c]
	High school or technical education		8.9%	-3.74[c]		0.0%	-2.87[b]		1.7%	-5.14[c]
	Highest education		2.2%	-5.29[c]		0.0%	-2.87[b]		0.0%	-5.50[c]

Membership in an agricultural cooperative	NO YES				x^2=13.364, df=1, P<0.001	81.8% 18.2%	2.58[b] -2.58[b]	x^2=6.025, df=1, P<0.05	61.2% 38.8%	n.s n.s
Holding of responsible position in an agricultural cooperative	YES NO	x^2=91.267, df=1, P<0.001	8.9% 91.1%	-6.76[c] 6.76[c]	x^2=33.000, df=1, P<0.001	0.0% 100.0%	-4.06[c] 4.06[c]	x^2=109.298, df=1, P<0.001	2.5% 97.5%	-18.50[c] 18.50[c]
Holding of responsible position in an agricultural organisation	YES NO	x^2=135.000, df=1, P<0.001	0.0% 100.0%	-8.22[c] 8.22[c]	x^2=33.000, df=1, P<0.001	0.0% 100.0%	-4.06[c] 4.06[c]	x^2=121.000, df=1, P<0.001	0.0% 100.0%	-7.78[c] 7.78[c]
Holding of responsible position in a non-farm business they might own	YES NO	x^2=108.452, df=1, P<0.001	5.2% 94.8%	-7.36[c] 7.36[c]	x^2=33.000, df=1, P<0.001	0.0% 100.0%	-4.06[c] 4.06[c]	x^2=117.033, df=1, P<0.001	0.8% 99.2%	-7.65[c] 7.65[c]
Holding of responsible position in a non-farm business they did not own	YES NO	x^2=135.000, df=1, P<0.001	0.0% 100.0%	-8.22[c] 8.22[c]	x^2=33.000, df=1, P<0.001	0.0% 100.0%	-4.06[c] 4.06[c]	x^2=121.000, df=1, P<0.001	0.0% 100.0%	-7.78[c] 7.78[c]

Table 9.19: Profiling the farmers who adopted each marketing strategy regarding the characteristics of themselves

[a]P<0.05, [b]P<0.01 and [c]P<0.001.

9.6.3 The impact of the farm and farmers' characteristics on marketing strategy selection

The influence of the farm and farmers' characteristics on marketing strategy selection by the sheep and goat farmers was explored conducting nominal logistic regression analysis. The table below (Table 9.20) presents the results of the analysis regarding the impact of the farm characteristics on the marketing strategy choice. The farmers who preferred the production orientation instead of return focus strategy were more influenced in their marketing strategy selection by the farm land they let to other farmers. Furthermore, the volume of livestock and milk production mainly affected the sheep and goat farmers in EMTh to adopt the cost focus over the return focus strategy while the size of the flock has a significant positive impact on the selection of the return focus strategy instead of the cost focus strategy. The goodness of fit test indicates that the model fits to the data (MINITAB 1997).

Logit	Predictors	Coef	P	Odds Ratio
Logit 1: (Production Orientation Strategy / Return Focus Strategy)	Constant	-3.294	0.005	
	Farm size	0.2833	0.387	1.33
	Flock size	-0.3584	0.419	0.70
	Volume of livestock production	0.4894	0.264	1.63
	Volume of milk production	0.6074	0.059	1.84
	Farm land owned by the farmer	0.1262	0.615	1.13
	Farm land rent from other farmers	-0.2599	0.434	0.77
	Farm land let to other farmers	0.7317	0.009	2.08
	Farm land allocated to the sheep and goat enterprise	-0.4197	0.134	0.66
Logit 2: (Cost Focus Strategy / Return Focus Strategy)	Constant	-0.3569	0.629	
	Farm size	-0.0526	0.811	0.95
	Flock size	-0.6231	0.026	0.54
	Volume of livestock production	0.6188	0.028	1.86
	Volume of milk production	0.5183	0.011	1.68
	Farm land owned by the farmer	-0.2350	0.147	0.79
	Farm land rent from other farmers	-0.1358	0.499	0.87
	Farm land let to other farmers	0.2398	0.161	1.27
	Farm land allocated to the sheep and goat enterprise	0.0546	0.766	1.06
Log-likehood = -263.875		Reference Group= Return Focus Strategy		
G= 31.670, df = 16, P<0.011				
Goodness of Fit				
Deviance x^2 = 287.671, df=266, P= 0.173				

Table 9.20 The impact of farm's characteristics on marketing strategy selection by the sheep and goat farmers in EMTh according to Logistic Regression Analysis.

According to the results of the final logistic regression, which are presented in Table 9.21, the financial performance of the sheep and goat farmers in the Region of EMTh influenced them to follow the production orientation strategy over the return focus strategy. On the other hand, membership in agricultural co-operative mainly affects the adoption of return focus instead the production orientation strategy. Furthermore, farmers' financial performance and educational level affect the preference on cost focus strategy over the return focus one. The goodness of fit test indicates that the model fits the data (MINITAB 1997).

Logit	Predictors	Coef	P	Odds Ratio
Logit 1: (Production Orientation Strategy / Return Focus Strategy)	Constant	0.004	0.999	
	Livestock prices	-0.2755	0.652	0.76
	Membership in agricultural cooperative	-1.3162	0.012	0.27
	Involvement with off-farm activities	0.1041	0.900	1.11
	Previous non-farm experience	-0.3895	0.481	0.68
	Financial performance	1.0129	0.001	2.75
	Experience in livestock farming	0.7825	0.400	2.19
	Experience in decision making regarding livestock farming	-0.8571	0.340	0.42
	Debt	-0.8415	0.249	0.43
	Farm income	-0.1367	0.657	0.87
	Educational level	-0.0934	0.871	0.91
	Marketing Channel Selection	-0.0941	0.715	0.91
Logit 2: (Cost Focus Strategy / Return Focus Strategy)	Constant	-0.142	0.917	
	Livestock prices	-0.3256	0.419	0.72
	Membership in agricultural cooperative	0.2601	0.342	1.30
	Involvement with off-farm activities	-0.5195	0.265	0.59
	Previous non-farm experience	-0.1000	0.771	0.90
	Financial performance	0.4919	0.008	1.64
	Experience in livestock farming	0.6617	0.386	1.94
	Experience in decision making regarding livestock farming	-0.6739	0.363	0.51
	Debt	-0.0985	0.752	0.91
	Farm income	0.1341	0.514	1.14
	Educational level	0.7799	0.017	2.18
	Marketing Channel Selection	-0.272	0.867	0.97
Log-likehood = -257.355				
G= 44.710, df = 22, P=0.003				
Goodness of Fit				
Deviance x^2 = 331.263, df=171, P= 0.706				

Reference Group= Return Focus Strategy

Table 9.21The impact of farmers' characteristics on livestock marketing channel selection by the sheep and goat farmers in EMTh according to Logistic Regression Analysis.

9.6.4 Profiling marketing strategic groups regarding information sources and type of information.

The Kruskal–Wallis non-parametric test was used to determine which of the information sources (v67-v79) that the sheep and goat farmers in Region of EMTh in Greece used as well as which of the type of information (v80-v86) that these farmers accessed, are significant related to the marketing strategy selection. Therefore, the average ranks (Table 9.22) illustrate which type of information sources mostly affected the selection of a particular marketing strategy.

Factors	Marketing Strategies (average ranks) Cost Focus Strategy	Production Orientation Strategy	Return Focus	P
Newspaper	155.87[a]	176.97[b]	124.16[c]	<0.001
Farmer's file	158.71[a]	161.11[a]	125.31[b]	<0.001
Cooperative Organizations	170.29[a]	82.17[b]	133.92[c]	<0.001
Governmental Bodies	166.18[a]	130.27[b]	125.39[b]	<0.001
Agricultural Journals	145.21[a]	173.94[b]	136.87[c]	<0.001
TV Radio	146.73[a]	178.92[b]	133.82[c]	0.009
Family	120.59[a]	214.86[b]	153.18[c]	<0.001
Livestock, Meat and Milk Buyers	173.72[a]	70.61[b]	133.25[c]	<0.001

Table 9.22. The influence of each type of information sources to the selection of a particular marketing strategy

N.B Within factors (rows), strategic groups (average ranks presented in cells) with different letters differ significantly at $P<0.05$.

Thus, most of the sheep and goat farmers that were informed by the newspapers, agricultural journals, TV-radio and their family adopted the production orientation strategy. On the other hand, the farmers that were mostly informed by the cooperative organisations to which they belonged, governmental bodies and livestock, meat and milk buyers followed the cost focus strategy. The farmers that used their own files as information source adopted either cost focus or production orientation strategy.

Moreover the Kruskal –Wallis test did not indicate any significant association (P>0.05) between the following types of information sources and a marketing strategy:

(a) Other farmers (v70)

(b) Livestock dealers (v75)

(c) Representatives of feed companies (v77)

(d) Veterinarian (v78)

(e) Agricultural banks (v79)

The average ranks as presented in Table 9.23 illustrate which type of the information mostly influences the selection of a particular marketing strategy. Most of the farmers who were interested to be informed about the livestock, meat and milk prices followed the cost focus strategy while the farmers who wanted to be informed about production techniques and finance were production orientated. On the other hand, no significant association was found between the selection of a particular marketing strategy and type of information such as animal diseases (v84) and consumer preferences and attitudes (v86).

Factors	Marketing Strategies (average ranks)			P
	Cost Focus Strategy	Production Orientation Strategy	Return Focus	
Livestock prices	150.59[a]	113.82[b]	147.27[c]	<0.001
Meat prices	150.59[a]	118.14[b]	146.1[c]	<0.001
Milk prices	158.34[a]	139.03[b]	131.74[c]	0.004
Production techniques	146.39[a]	231.8[b]	119.77[c]	<0.001
Finance	160.87[a]	173.59[b]	119.5[c]	<0.001

Table 9.23: The influence of each type of information to the selection of a particular marketing strategy

N.B. Within factors (rows), strategic groups (cells) with different letters differ significantly at P<0.05.

The Friedman one-way non-parametric test was used to identify for each strategic group which are the most important type of information sources and the most important type of

information that the farmers are interested in. The results of the test that are presented in (Figure 9.8) indicated that there was a significant association between the examined types of information sources and the selection of each marketing strategy. The test also identified that there was a significance association between the examined types of information and the selection of each strategic group (Figure 9.9).

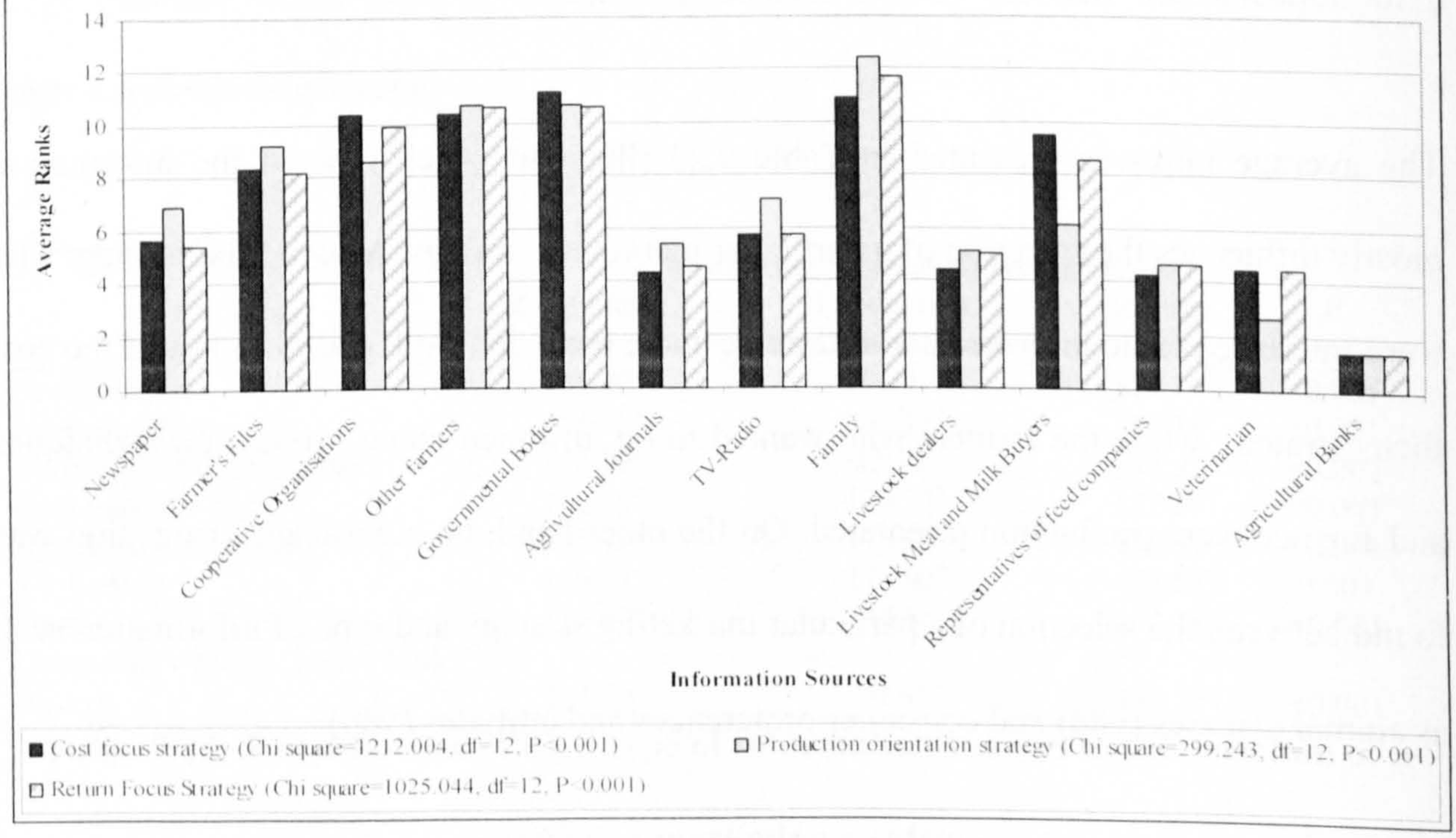


Figure 9.8: The importance of each type of information sources for the farmers who adopted each marketing strategy.

As Figure 9.8 illustrates, the sheep and goat farmers who adopted the cost focus strategy were mostly informed by governmental bodies, family, other farmers and cooperative organizations. On the other hand, the farmers who followed the production orientation strategy were mainly informed by their family, other farmers and governmental bodies,. The analysis also showed that the farmers who followed the return focus strategy were mostly informed in a rank order of importance by their family, other farmers, governmental bodies and the agricultural cooperatives they are members.

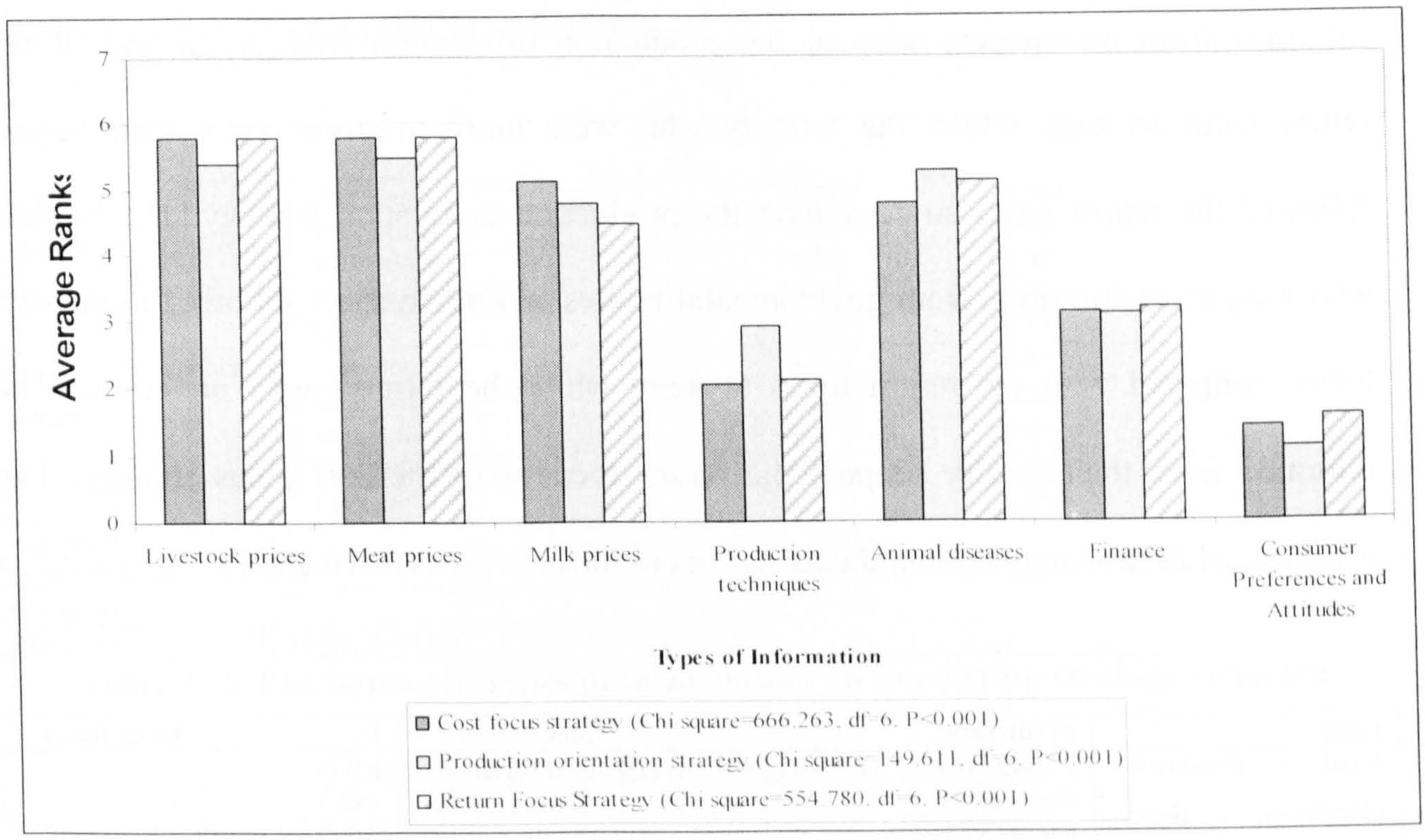


Figure 9.9: The importance of each type of information sfor the farmers who adopted each marketing strategy.

The cost focused farmers, as Figure 9.9 illustrates, were mostly interested in being informed (in a rank order of importance) about livestock prices, meat prices, milk prices and animal diseases. The production orientated farmers were also interested in being informed about meat prices, livestock prices, animal diseases and milk prices. Finally the return focused farmers were interested to be informed about livestock and meat prices and animal diseases.

The influence of the information sources as well as of the types of information on marketing strategy was explored conducting nominal logistic regression analysis. The information sources and type of information that significantly affect marketing strategy selection according to Kruskal – Wallis test were used as predictors in the logistic regression models.

According to the results of the analysis (Table 9.24) the farmers who preferred to be informed from newspapers adopted the production orientation strategy, instead of the return focus strategy whilst the farmers who were more informed from their buyers followed the return focus strategy over the production orientation strategy. The farmers who were more informed from governmental bodies and newspapers followed to the cost focus compared with the return focus strategy while the farmers who preferred to be informed from their family adopted the return focus over the cost focus strategy. The goodness of fit test supports that the model fits to the data (MINITAB 1997).

Logit	Predictors	Coef	P	Odds Ratio
Logit 1: (Production Orientation / Return Focus)	Constant	-8.085	0.003	
	Newspapers	1.0401	0.017	2.83
	Farmer's Files	0.5430	0.093	1.72
	Agricultural Cooperative	-0.4032	0.244	0.67
	Governmental Bodies	0.4628	0.167	1.59
	Agricultural Journals	1.4426	0.082	4.23
	TV - Radio	0.3175	0.332	1.37
	Family	0.6225	0.192	1.86
	Livestock, Meat and Milk Buyers	-0.7370	0.005	0.48
Logit 2: (Cost Focus / Return Focus)	Constant	-4.679	0.018	
	Newspapers	0.6259	0.024	1.87
	Farmer's Files	0.3715	0.080	1.45
	Agricultural Cooperative	-0.1103	0.647	0.90
	Governmental Bodies	1.0073	0.006	2.74
	Agricultural Journals	0.7215	0.366	2.06
	TV - Radio	0.2220	0.302	1.25
	Family	-0.5473	0.038	0.58
	Livestock, Meat and Milk Buyers	0.1878	0.243	1.21
Log-likehood = -217.128		Reference Group= Return Focus Strategy		
G= 125.164, df = 16, P<0.001				
Goodness of Fit				
Deviance x^2 = 287.035, df=348, P= 0.993				

Table 9.24 The impact of the sources of information on marketing strategy selection according to Logistic Regression Analysis.

The impact of the types of information on marketing strategy selection is presented in Table 9.25. The farmers who preferred to be informed about production techniques preferred the production orientation strategy instead of the return focus. Furthermore, the farmers who wanted to be informed about finance mainly adopted the cost focus strategy

over the return focus. The goodness of fit test indicates that there is sufficient evidence that the model fits to the data (MINITAB 1997).

Logit 1: (Production Orientation / Return Focus)	Constant	-2.692	0.204	
	Meat prices	-0.8837	0.066	0.41
	Milk prices	-0.169	0.925	0.98
	Production techniques	1.5213	0.001	4.58
	Finance	0.5593	0.123	1.75
Logit 2: (Cost Focus / Return Focus)	Constant	-3.800	0.077	
	Meat prices	0.2336	0.597	1.26
	Milk prices	0.1435	0.095	1.15
	Production techniques	0.2320	0.095	1.26
	Finance	0.5431	0.003	1.72
Log-likehood = -237.278		Reference Group= Return Focus Strategy		
G= 84.863, DF = 8, P<0.001				
Goodness of Fit				
Deviance x^2 = 117.341, df=94, P= 0.052				

Table 9.25 The impact of types of information on marketing strategy selection according to Logistic Regression Analysis.

9.7 Conclusions

This study has identified that the sheep and goat farmers in the Region of East Macedonia and Thrace in Greece market their livestock through four main distribution channels: (a) direct sales to retailers, (b) direct sales to wholesalers, (c) private use of livestock and (d) sales to more than one marketing channel.

Furthermore, the analysis presented in this chapter has verified the hypotheses presented in Chapter 8 and Appendix I regarding the marketing strategies and distribution channel utilisation of the sheep and goat farmers in the Region of EMTh in Greece. In particular:

- The sheep and goat farmers in Greece (Region of EMTh) can be classified into 3 strategic groups regarding their livestock and marketing activities and business orientation. These strategic groups are: (a) cost focused farmers, (b) production orientated farmers and (c) return focused farmers.

- The findings of this study support the hypothesis that existing generic and agricultural typologies and taxonomies are inadequate to describe the marketing strategies followed by the sheep and goat farmers in Greece and, more particular in the Region of EMTh. However, some comparisons can take place. More particularly, the cost focus strategy has many similarities with *the cost leadership strategy* of Porter's (1980) typology, *defenders* of Miles and Snow's (1978) taxonomy and *cost leadership strategy* of Fearne and Bates (2000) classification. On the other hand, production orientation strategy may fell into *prospectors* classification of Miles and Snow's (1978) taxonomy and has many similarities with *Production / Production Flexibility Strategy* of McLeay *et al.* (1996) typology, Mitchell's (1976) *production orientation strategy* and Davies (2001) *production strategy* of sheep farmers classification. Furthermore, the return focus strategy has some similarities with the *opportunist strategy* of Davies (2001) typology as both are interested in short-term price advantages.
- Farm and farmer's characteristics do have a significant impact on the selection of a particular livestock marketing strategy by the sheep and goat farmers in Greece.
- Factors (e.g. sale price, loyalty, speed of payment) that influence the sheep and goat Greek farmers to the selection of a particular livestock-marketing channel are significantly associated with the selection of a specific livestock marketing business strategy.
- The identified livestock marketing business strategies are significantly related to the selection of particular livestock marketing channel.
- Farm and farmer's characteristics do have a significant impact on the selection of a particular livestock-marketing channel by the sheep and goat farmers in Greece.

Chapter 9: The Livestock Marketing Strategies that Sheep and Goat Farmers Adopt in the Region of EMTh in Greece

- The examined factors (e.g. sale price, loyalty, speed of payment) do have a significant impact on the sheep and goat Greek farmers' selection about a particular livestock-marketing channel.
- Information sources have significant influence on the selection of a livestock marketing business strategy.

CHAPTER 10

THE MILK MARKETING STRATEGIES THAT SHEEP AND GOAT FARMERS ADOPT IN THE REGION OF EMTh IN GREECE

10.1 Introduction

The aims of this chapter are to determine the marketing channels that sheep and goat farmers use in the Region of EMTh in Greece in order to place their milk produce, and to develop a typology regarding the milk marketing strategies they follow. The profiles of the farmers that follow each marketing strategy regarding their farm and farmers characteristics as well as their marketing channel utilization are also presented in this chapter. Finally, it profiles the farmers who use each distribution channel in order to market their milk regarding their farm and farmers characteristics.

10.2 Stage 1: Determining Key Strategic Dimensions Using Principal Components Analysis

Twenty four variables (V1-V24 of Appendix II regarding milk marketing strategies) which were describing the milk marketing attitudes of sheep and goat farmers in EMTh in Greece, were subjected to principal components analysis.

After checking the anti –image correlation matrix and MSA, factor analysis conducted for only 15 of the 24 variables (V1, V3, V4, V6, V9, V11, V12, V14, V14, V16, V18, V20, V21, V23 and V24).

The examination of the final anti-image correlation matrix, the Bartlett test of sphericity, the Kaiser – Meyer – Oklin Measure of Adequacy and the MSA for each examined variable, as presented in Chapter 8, and Appendix XII, showed that the data were appropriate for factor analysis (Malhotra 1996; Hair *et al.* 1998; Darren and Mallery 2001).

The latent root criterion (eigenvalue =1), the scree plot test and the percentage of variance determined five factors in the first rotation, but several different trial rotations where factor interpretability was compared were conducted (Tabachnick and Fidell 1989; Child 1990; Malhotra 1996; Hair *et al.* 1998). The cut-off point for interpretation of loading scores was 0.55. This score was much higher than the 0.35 that is minimum required according to Hair *et al.* (1998) for samples of at least 250 observations in order to achieve 5% significance level and 80% level of power.

Five factors that explained the 64.28% of the total variance were identified from factor analysis (Table 10.1 and Figure 10.1).

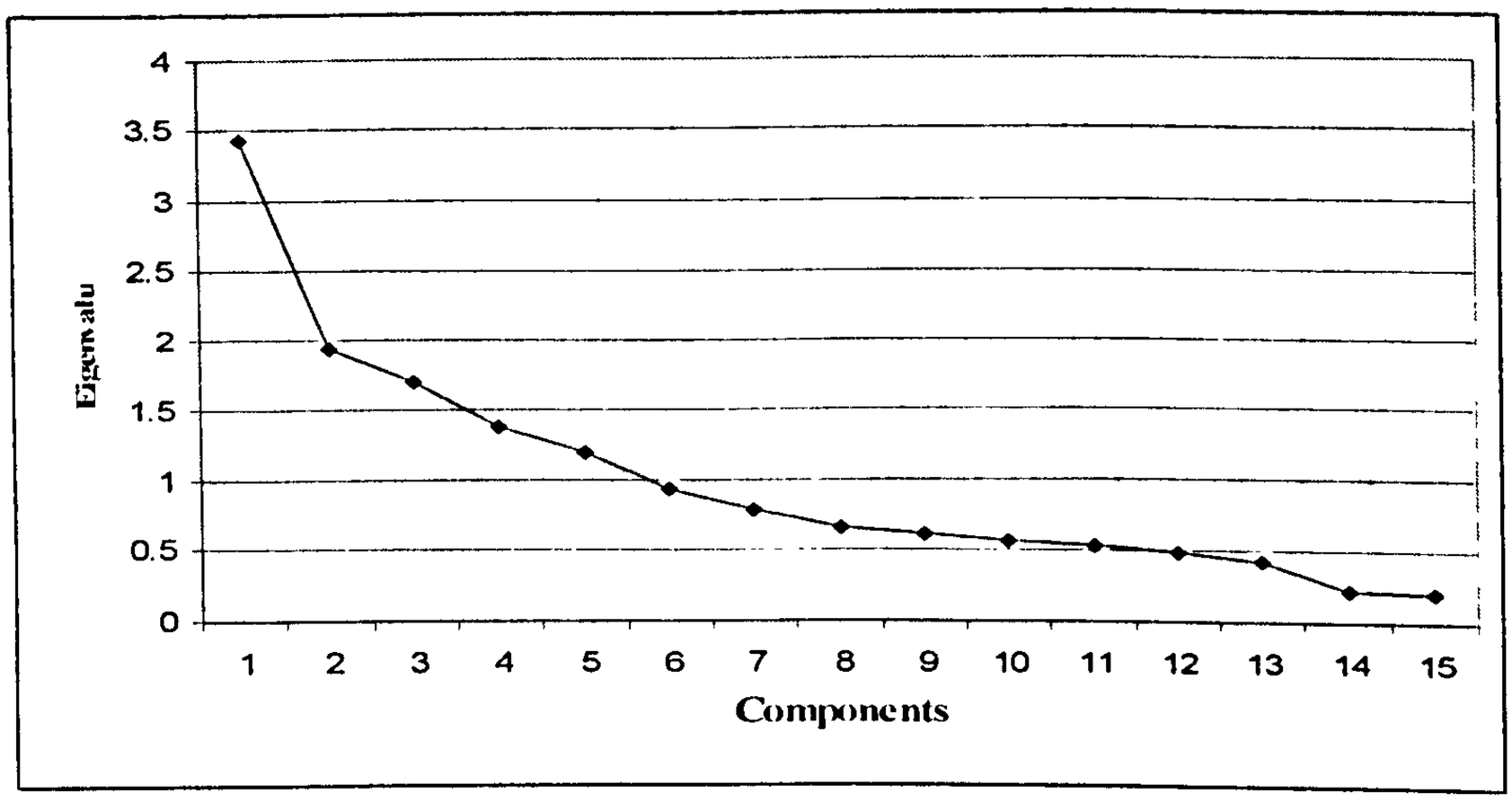


Figure 10.1 Scree Plot Test

Components	Eigenvalues	% of Variance	Cumulative Variance %	Variables	Communalities
1	3.421	22.810	22.810	V1	0.567
2	1.938	12.920	35.730	V3	0.801
3	1.700	11.331	47.061	V4	0.600
4	1.384	9.225	56.286	V6	0.831
5	1.199	7.995	64.281	V9	0.774
6	0.926	6.176	70.457	V11	0.346
7	0.775	5.167	75.624	V12	0.815
8	0.651	4.342	79.966	V14	0.522
9	0.605	4.035	84.001	V15	0.443
10	0.556	3.706	87.707	V16	0.607
11	0.527	3.512	91.219	V18	0.654
12	0.484	3.227	94.446	V20	0.717
13	0.413	2.753	97.200	V21	0.707
14	0.222	1.483	98.682	V23	0.664
15	0.198	1.318	100.00	V24	0.594

Table 10.1 Results of Principle Components Analysis of Strategy Variables.

The five factors derived from factor analysis that appeared to give the best representation of the underlying relationship among the selected variables are illustrated with their factor loading scores in Table 10.2.

	KEY STRATEGIC DIMENSIONS	Factor Loading
	Production Orientation	
V12	I always set a side a proportion of my production flock to experiment with livestock techniques relative to milk production I am not familiar	0.88
V9	I breed animals which requires special knowledge, equipment of facilities that other farmers do not have	0.86
V14	Intensive production methods are important to my farm business operation	0.65
V11	I adapt my enterprise mix to minimize risk	0.55
	Cost focus	
V6	Budgeting and planning to obtain the lowest possible farm cost is the most important management activity I undertake	0.90
V3	I am aware of the exact costs and returns of the milk I produce	0.86
V1	I plan my production decisions by continually monitoring market prices	0.65
	Profit Orientation	
V23	Disease is the major cause of fluctuations on my farm returns	0.81
V4	Maximizing profit is my most important farming goal	0.71
V24	The Common Agricultural Policy has the most important influence over my farm profitability	0.69
	Differentiation	
V18	I own or manage facilities that are normally owned by middlemen further down the milk distribution chain e.g farm shop, milk processing plant	0.78
V16	I produce specialty niche market products e.g organic	0.77
V15	I have detailed knowledge of the distribution channels my milk passes through after it leaves the farm gate	0.64
	Interpersonal Relationships	
V21	Keeping knowledge I have from other producers is essential to my farm business operation	-0.83
V20	Sheep and goat producers in my area are my main competitors	0.81

Table 10.2 The identified key strategic dimensions

Determinant of Correlation Matrix: 0.001362
KMO MSA = 0.70
Bartlett test of Sphericity = 1319.60 P<0.001

Thus, the key strategic dimensions that the five factors represent are the following:

Factor 1: Production Orientation

This strategic dimension, accounts for 22.81% of variance. The sheep and goat farmers in the Region of EMTh in Greece according to this factor, experimented with livestock techniques relative to milk production with which they were not familiar as they always set a side a proportion of their flock for this purpose. They also bred animals that required special knowledge and equipment that other farmers did not have. Moreover, they considered intensive production methods quite important to their farm business operation.

Factor 2: Cost Focus

According to this factor, which accounts for 12.92% of the variance, the sheep and goat farmers in the Region of EMTh in Greece considered budgeting and planning as their most important management activity, aiming to obtain the lowest possible farm cost. Moreover, these farmers were very interested in being informed about the exact costs and returns for their milk produce in order to find ways to increase their gross margins, profitability and production efficiency; as well as continually monitoring market prices in order to make their production decisions.

Factor 3: Profit Orientation

This strategic dimension explained the 11.33% of the variance. According to this strategic dimension, animal diseases were considered by the sheep and goat farmers in the Region of EMTh in Greece as the major cause of fluctuations on their farm returns, while profit maximization was their most important farming goal. They also had the impression that the Common Agricultural Policy exerts a very important impact over their farm profitability.

Factor 4: Differentiation

Differentiation comprises the fourth strategic dimension derived from the factor analysis and accounts for 9.23% of the variance. The sheep and goat farmers in the Region of EMTh in Greece, according to this factor, owned or managed facilities that normally were owned by the middlemen further down the milk distribution chain as well as producing niche market products.

Factor 5: Interpersonal Relationships

The last strategic dimension that factor analysis indicated explains the 8.00% of the variance. According to this factor, the farmers believed that knowledge obtained by other farmers was not essential for their farm business operation, and they considered that the other livestock farmers operating in their area were their main competitors.

10.3 Stage 2: Identification of Marketing Strategies using Cluster Analysis

Cluster analysis was conducted according to the methodology described in Chapter 8 in order to develop a typology about the marketing strategies that the sheep and goat farmers follow in the Region of EMTh in Greece regarding their milk produce.

Ward's hierarchical technique suggested a solution with between two and five clusters. In the next stage, the 291 observations were randomly split into the test sample (D1) and the internal validation sample (D2). K-mean cluster analysis performed in D1 and D2 samples for the four cluster values (n=2, 3, 4, 5) as presented in Chapter 8 and Appendix XII. The kappa coefficient for each cluster solution was -0.65 for n=2 ($P>0.05$);-0.362 for n=3 ($P<0.001$); -0.131 for n=4 ($P<0.001$) and 0.311 for n=5($P<0.001$). Since the decision is

based on the kappa maximization, the five cluster solution appeared optimal. However, before accepting this solution, all cluster solutions (based on all cases) were examined for interpretability and external validity. The three cluster solution was found to be more meaningful than the other three as it had better and higher external validity than the five cluster solution which appeared the optimal solution by the kappa coefficients as Appendix XII presents. Furthermore, the 5 cluster solution proved to be invalid for discriminant analysis (described in the next section) due to the existence of high correlations among the factors.

Therefore, the interpretation and the external validation of the cluster solution as presented in Appendix XII indicated that the three cluster solution is more robust than the five cluster solution.

The three clusters (based on the cluster means for the derived factor scores and the cluster sizes) were named according to the business strategy that the farmers in each group appeared to follow (Appendix XII, Table 4). Thus, the three business strategies that the sheep and goat farmers followed in the Region of EMTh in Greece, according to the results of cluster analysis were: (a) Differentiation Strategy, (b) Production Orientation Strategy and (c) Return Focus Strategy.

The **differentiation strategy** accounts for 37 farmers that comprise 13% of the sample. They were interested in strategic dimensions associated with differentiation and interpersonal relationships, even the last dimension was not significantly associated with farmers' classification (Figure 10.2). In particular, they owned or managed facilities that were normally owned by the middlemen further down the milk distribution chain such as small milk processing plants for making cheese or yogurt; as well as being very interested

in producing niche market products. Moreover, these farmers were mainly concerned with adding value to their products, by self processing their milk or by producing niche market products. They were not interested in production orientated strategic issues such as experimentation with livestock techniques relative to milk production, breeding animals that required special knowledge and equipment, intensive production methods and risk minimization. They were neither interested in being informed about the exact costs and returns for their milk produce nor in monitoring market prices in order to make their production decisions, as their main concern was to create profits by adding value to their products. The relatively low positive scores on differentiation strategic dimension is explained by the fact that these farmers recently start to be involved with such activities because they believe that the other three dimensions (profit orientation, cost focus and production orientation) are not suitable for their enterprise.

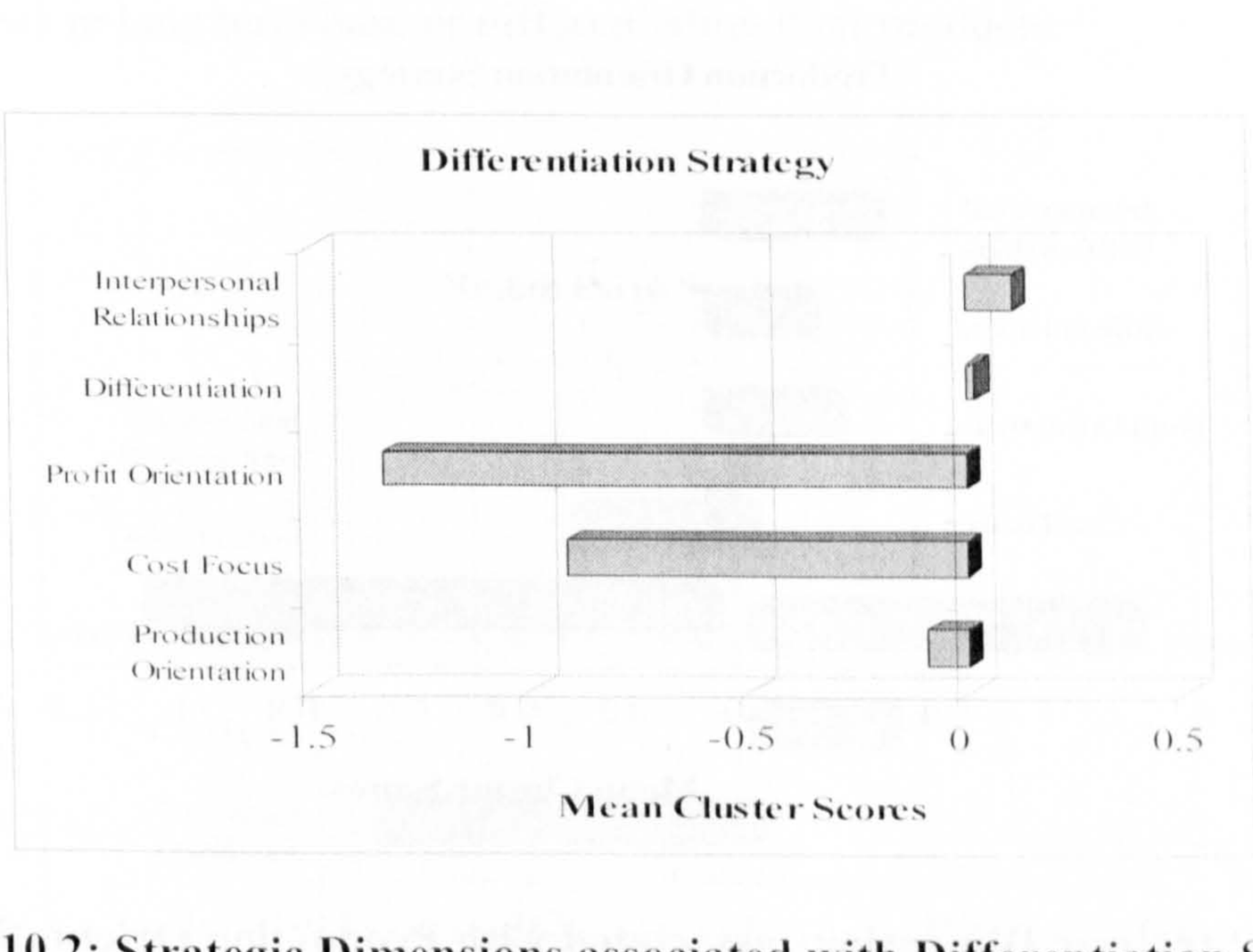


Figure 10.2: Strategic Dimensions associated with Differentiation Strategy.

The **production orientation strategy** was preferred by 16% (46) of the examined farmers. These farmers scored highly on the strategic dimension associated with production orientation (Figure 10.3). They kept a proportion of their flock in order to experiment with new milk production techniques as well as breeding animals that required special

knowledge and equipment that other farmers did not have. These farmers also considered intensive production methods quite important to their farm business operation. On the other hand, production orientated farmers were not interested in any of the other examined strategic dimensions. They were not aware of the exact cost of their produce as they preferred to invest more money in production facilities, equipment or genetic material compared to other farmers in order to increase their productivity and therefore to reduce their farm cost in a long term base. They neither considered profit maximization as their primary farm goal, nor were interested in external factors which might influence their farm profitability as, presumably, these farmers were aiming to increase their returns in the long-term through the increase of their productivity. Finally, they were not aware to differentiate themselves from the other farmers by adding value to their products.

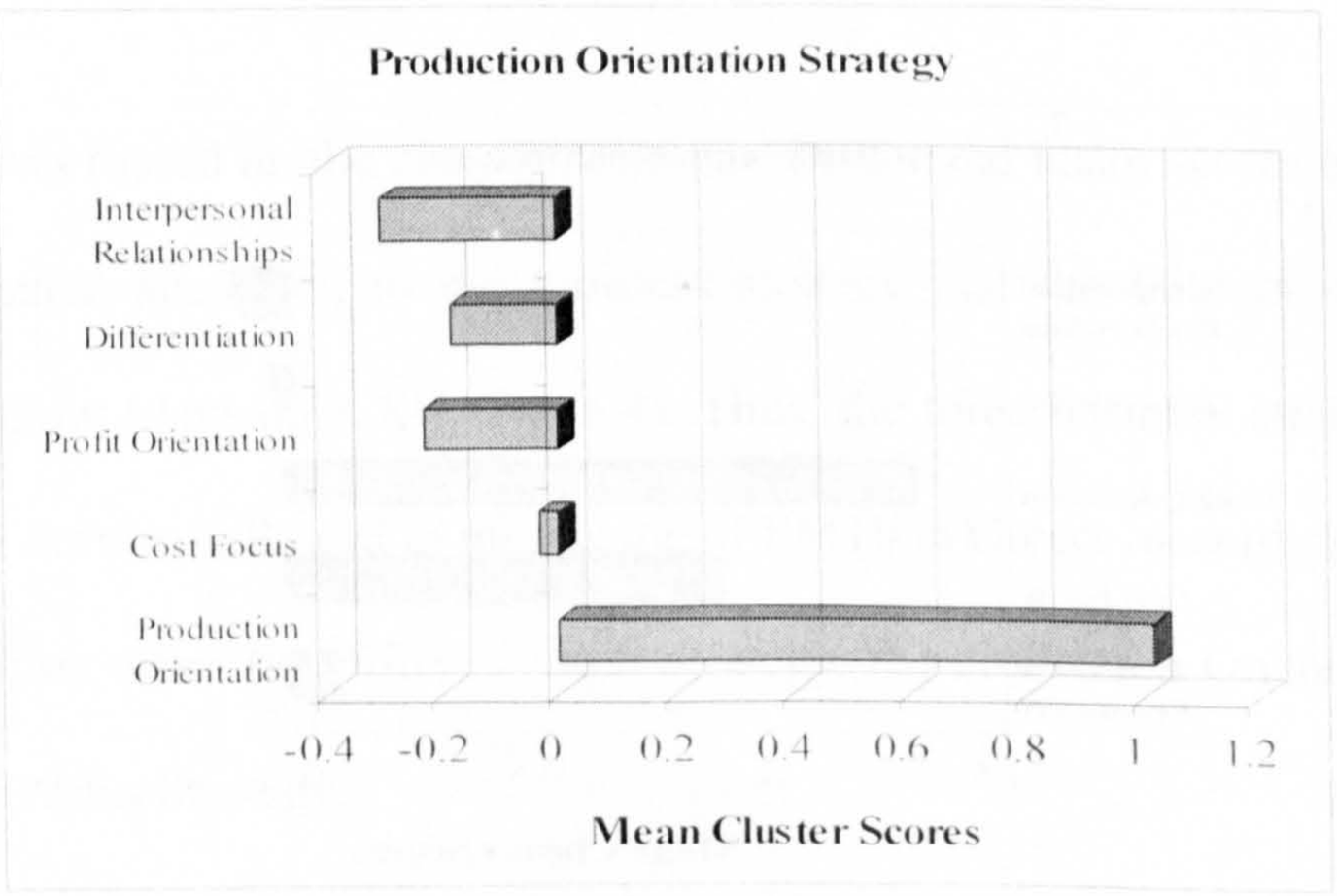


Figure 10.3: Strategic Dimensions associated with Production Orientation Strategy.

The **return focus strategy** was preferred by 71% of the sample (208 farmers) who scored highly in the profit orientation strategic dimension as profit maximization was their most important farming goal (Figure 10.4). They also had the impression that their farm profitability is affected by some external factors such as animal diseases. Common

Agricultural Policy, GATT, globalization of the economy, internationalization of the markets. Moreover, they considered budgeting and planning as their most important management activity, aiming to obtain the lowest possible farm cost while they were very highly aware about the exact costs and returns for their milk produce in order to find ways to increase their gross margins, profitability and production efficiency. Besides, the return focused farmers continually monitored market prices in order to make their production decisions. On the other hand, they were not interested in experimenting with new livestock techniques, breeding livestock that require special knowledge, equipment and facilities that other farmers in their area did not have, neither they were concerned in differentiating their enterprise by adding value to their products or by producing niche market products. Presumably, these farmers were interested in achieving short-term profits rather than programming their farm operation in order to increase their productivity and to reduce their operational costs in long term base or differentiating their products.

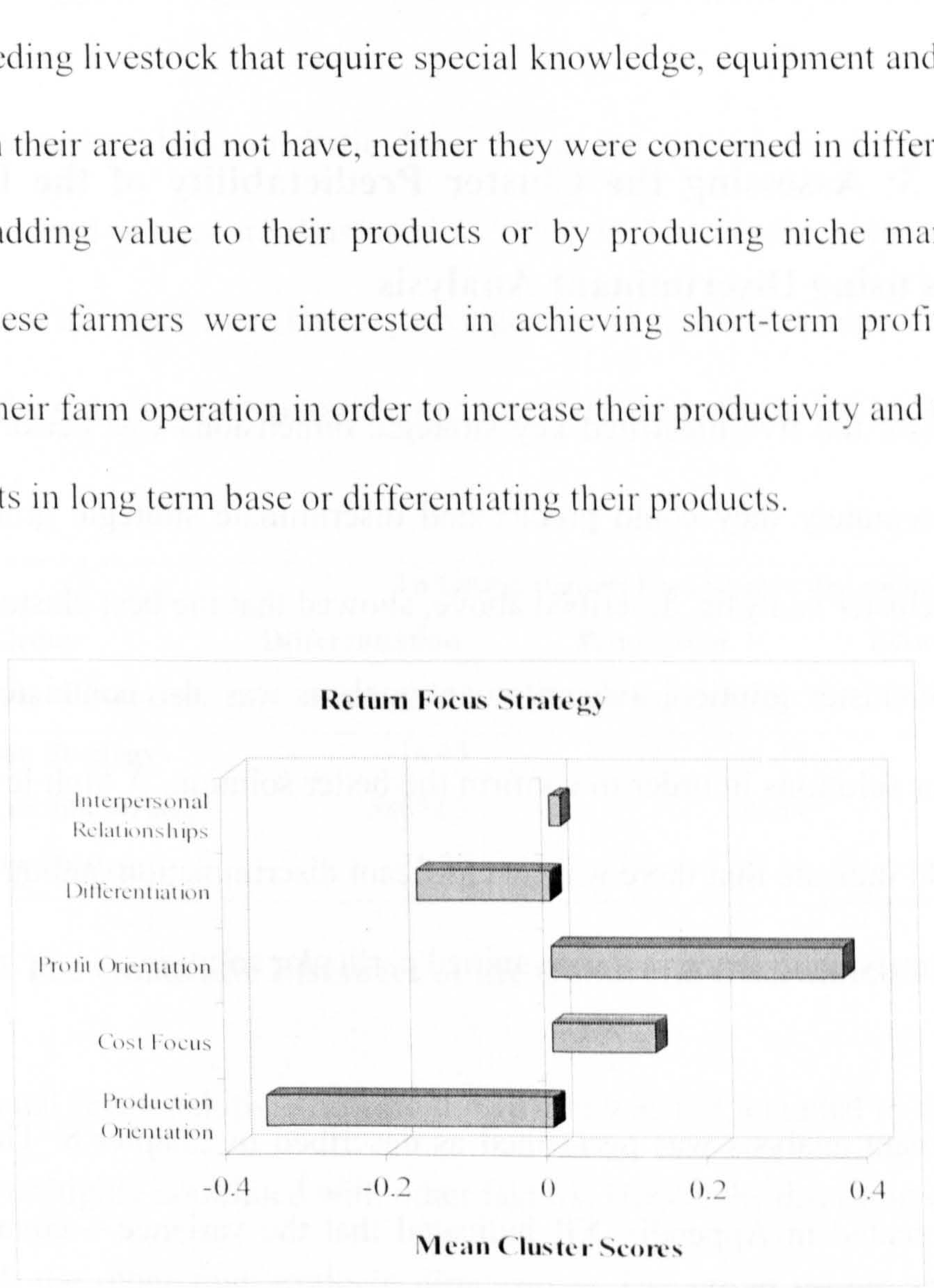


Figure 10.4: Strategic Dimensions associated with Return Focus Strategy.

A more detailed examination of the intecluster differences as presented in Table 8 of Appendix XII, showed that input costs, updating production techniques and maximization

of milk quality by using special production techniques were more important for the production orientated farmers. While those that followed the return focus strategy seemed to have the impression that they were unable to influence the price set. On the other hand, differentiation-orientated farmers appeared to believe that policies of other countries policies might have an impact on their farm profitability. Finally, animal welfare was more important for the farmers who adopted the differentiation and production orientation strategy compared to the farmers that followed the return focus strategy.

10.4 Stage 3: Assessing the Cluster Predictability of the Key Strategic Dimensions using Discriminant Analysis

An evaluation of the five identified key strategic dimensions was performed in order to assess how accurately they could predict and discriminate strategic group membership. Although the cluster analysis, described above, showed that the best cluster solution seems to be the three cluster solution, a discriminant analysis was also conducted for both three and five cluster solutions in order to confirm the better solution. A high level of predictive accuracy would indicate that there was a significant discrimination among the groups, and hence would verify confidence in the examined particular solution.

Thus, discriminant analysis was performed as described in Chapter 8. The Box's M test statistic as presented in Appendix XII indicated that the variance – covariance matrices were violated.

In inference both the Bartlett Box F and the Levene's test statistic (Appendix XII) indicated that the equality of variance for production orientation, cost focus and interpersonal relationships regarding the three cluster solutions and for all the strategic

dimensions regarding the five cluster solution was violated. Thus, quadratic discriminant analysis (Minitab 12) was conducted to in order to determine whether the identified variables could predict cluster membership for both cluster solution.

Due to the existence of high correlations among the factors, quadratic discriminant analysis was not possible to be performed for the five clusters solution, but was conducted for the three clusters solution (MINITAB 1997).

The quadratic distances of the quadratic discriminant functions (general square distances) of the three examined groups are illustrated in Table 10.3 and indicate that each strategic group differs from the other two. The negative generized square distances indicate that the determinant of the sample group covariate matrix is less than one (MINITAB 1997).

From Group (generalized square distances)	To Group (generalized square distances) Differentiation Strategy	Production Orientation Strategy	Return Focus Strategy
Differentiation Strategy	-16.45	54.27	7.58
Production Orientation Strategy	5867.03	-9.68	843.19
Return Focus Strategy	36.77	19.21	-13.53

Table 10.3 The Quadratic Distances of the Quadratic Discriminant Functions

The "interpersonal relationships" strategic dimension was not included in the discriminant analysis as it was highly correlated with other factors. Hence, the discriminant analysis was performed with the other four strategic dimensions. The group means and the standard deviations of each cluster for each strategic dimension are presented in Table 10.4 and indicate that the four key strategic dimensions discrimate cluster group membership.

Key Strategic Dimensions	Strategic Groups (means) Differentiation Strategy	Production Orientation Strategy	Return Focus Strategy
Production Orientation	0.2422	1.5980	-0.4493
	0.0772	*0.4320*	*0.1517*
Cost Focus	-1.0325	0.6709	0.0587
	0.4751	*0.3867*	*0.9997*
Profit Orientation	-0.9158	-0.5366	0.3805
	0.6197	*0.5907*	*0.5004*
Differentiation	-0.0050	-0.4159	-0.1624
	0.1202	*0.1033*	*0.0776*

Table 10.4 The Group Means of the Strategic Groups for each Strategic Dimension

NB: Group means are in standard text and standard deviations in *italics.*

The predictive accuracy of the discriminant model was evaluated using the cross-validation technique (Minitab 12). The analysis indicated that 97.2% of the examined farmers were classified correctly. More specifically, the proportion of the farmers that were classified correctly in the strategic group that follow the differentiation strategy was 81.8% while 100% of the farmers that appeared to follow the production orientation strategy were correctly classified, and 99.4% of the farmers that adopted the return focus strategy were correctly classified. The summary of the cross validation classification is shown in Table 10.5.

Actual Classification	Predicted Classification Differentiation Strategy	Production Orientation Strategy	Return Focus Strategy
Differentiation Strategy	9	0	3
Production Orientation Strategy	0	8	0
Return Focus Strategy	2	0	168
Total N	11	8	169
N Correct	9	8	168
Proportion of Correct Classification	81.8%	100.0%	99.4%
N=188	**N Correct = 185**		**Proportion Correct = 97.2%**

Table 10.5 Summary of Classification with Cross validation

Conclusively, the results of the discriminant analysis indicated that the examined strategic dimensions could accurately predict and discriminate strategic group membership i.e the 3 cluster solution.

10.5 Stage 4: Identification of Milk Marketing Channels and Profiling them using Bivariate Statistical Techniques

Seven milk marketing channels were identified from the survey and all of them are direct marketing channels as detailed in Table 10.6.

	Description of marketing channel	Farmers used each marketing channel	Quantity of milk was sold through the each marketing channel (kg)
1	Sales to local private milk processing plant	104 (33.12%)	1,046,630 (36.30%)
2	Sales to cooperative milk processing plant	41 (13.06%)	466,400 (16.18%)
3	Sales to big national and regional dairy companies	78 (24.84%)	1,167,305 (40.48%)
4	Feed to lambs or kids	70 (22.29%)	n/a
5	Self-consumption	12 (3.82%)	151,311 (5.25%)
6	Reward to person who stock the flock	4 (1.27%)	1,700 (0.06%)
7	Process the milk and sell it afterwards	5 (1.59%)	50,00 (1.73%)
	TOTAL	314 (100%)	2,883,346 (100%)

Table 10.6: Market Channel Selection and Utilisation for Sheep and Goat Producers regarding Milk Marketing

Initial chi-square tests of associations between channel selection and associated variables proved to be invalid because of low expected values (Brymar and Cramer 1997; Kinnear and Gray 2000). It was therefore necessary to merge channels to achieve valid results.

Thus, the following four categories of milk marketing channels were identified as shown in Figure 10.5.

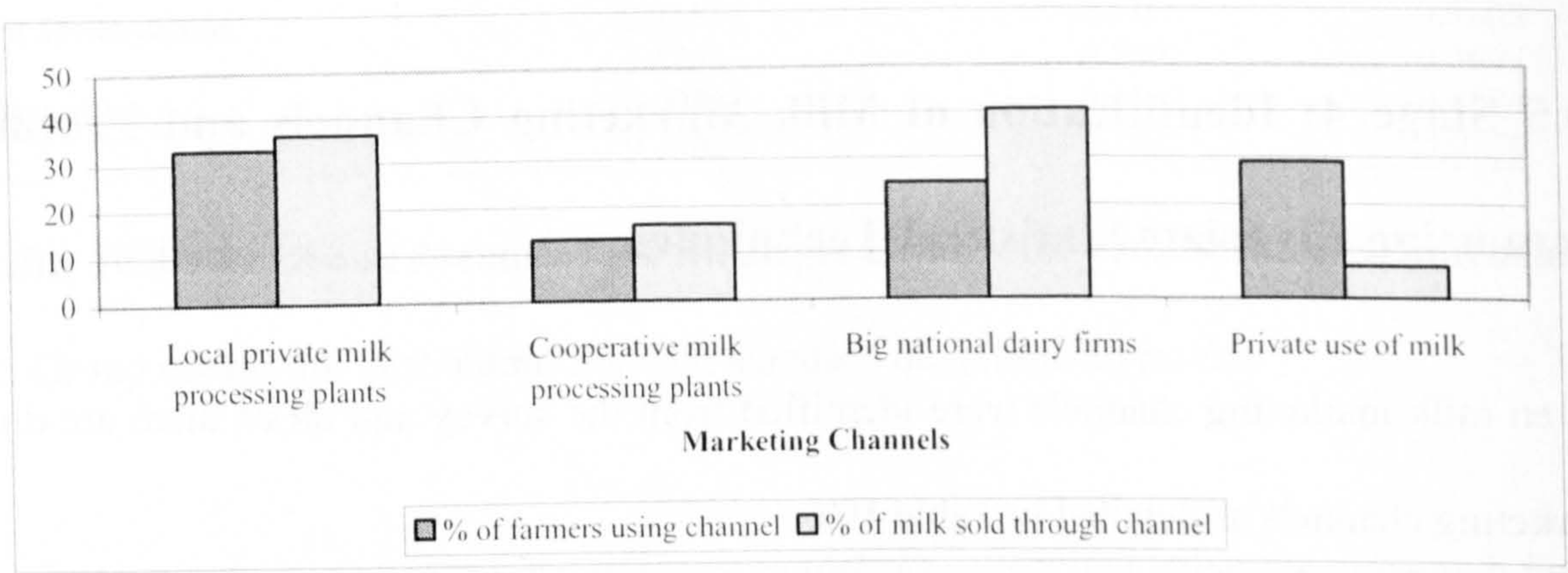


Figure 10.5 Categorization of sheep and goat milk marketing channels

About 33% of the sheep and goat farmers in the Region of EMTh in Greece preferred to market their milk to the local private milk processing plants, while through this marketing channel, 36.3% of the sheep and goat milk was sold. On the other hand, 13.1% of the farmers sold their milk to cooperative milk processing plants, through which distribution channel was sold 16.2% sheep and goat milk that was produced in the Region. The 24.8% of the sheep and goat farmers in EMTh marketed their milk to the big national and regional dairy firms while through this marketing outlet was sold 40.5% of the produced milk in the examined Region. Finally, 29.0% of the farmers preferred the private use of their milk while 7% of the milk produce was placed in the market through this distribution channel. An examination of the marketing channel utilization indicated that the farmers who preferred the private use of milk might be small scale farmers. On the other hand, the farmers that sold their milk to big national and regional dairy firms appeared to be large farmers.

10.5.1 The association between marketing channel selection and the factors that influence the sheep and goat farmers to adopt a particular marketing outlet.

The Kruskal–Wallis non-parametric test was used to identify the preferred marketing channel of the farmers that are mainly affected by each factor.

According to the results of the test presented in Table 10.7, most of the sheep and goat farmers that were interested in the price to which they would sell their milk, preferred to market their milk directly to cooperative milk processing plants as well as to big national and regional dairy firms. Farmers with small volume of milk production preferred to make private use of it, while the farmers that wanted to be sure that would be paid as well as wanted to receive their money quickly sold their milk to the big dairy firms. On the other hand, when there were personal relationships between the farmers and their buyers, the sheep and goat farmers in the Region of EMTh in Greece preferred to place their milk in the local private milk processing plants. Moreover, the farmers who operated in areas where monopolistic phenomena existed sold their milk to the local private and the cooperative milk processing plants, there were also some farmers who preferred the private use of it. The sheep and goat farmers who experimented with different marketing channels preferred to place their milk either to cooperative milk processing plants or to big national and regional dairy firms. The farmers, that were quite old, milked their animals either for a private use of the milk and, more particularly for self consumption or to market it to the cooperative milk processing plants; but could not milk the animals extensively in order to have contracts with a specific marketing outlet (big dairy firm or local private milk processing plant). On the other hand, the farmers that had quite isolated farms preferred either to self consume it or to process and sell it as an added value product (e.g. cheese or yoghurt). Another option for these farmers was to sell their produce to the cooperative milk processing plants that could afford the cost of collecting the milk from such isolated farms.

The farmers that were interested in having some easements in their payment by the sheep and goat milk buyers (e.g. advance payments in March and selling the milk in June) marketed their milk to the local private milk processing plant as well as to cooperative milk processing plants or they preferred the private use of it. On the other hand, the farmers whose sheep and goats were free in the mountain during the whole day, preferred the private use of their milk or the sales to cooperative milk processing plant. Finally, the good reputation of the milk buyers influenced the sheep and goat farmers to place their produce to the local private milk processing plant.

No significant association ($P>0.05$) was found between the following factors and a marketing channel selection:

xii) Small quantity of lambs (v56)

xiii) The fact that the farmer is not interested in selling his milk (v58)

xiv) The fact that most of the farmers prefer the same marketing outlet (v59)

xv) The fact that there is no buyer for the milk in their area (v59)

xvi) The farmer wants to add value to his products (v61)

xvii) The same buyer buys the cow and the sheep/goat milk (v62)

xviii) Easy delivery of the milk (v63)

xix) Small distance from the marketing outlet (v64)

xx) Most of the farmers prefer the same marketing channel (v66)

xxi) The farmer get used to sell his milk through the same marketing channel (v69)

xxii) Focus on meat production (v70)

Factors affecting marketing channel selection	Marketing Channels: Sales to local private milk processing plant	Sales to cooperative milk processing plant	Sales to big national and regional dairy firms	Private use of milk	P
Sales Price	192.99[a]	208.20[b]	201.76[b]	56.16[c]	<0.001
	4.000	*4.000*	*4.000*	*1.000*	
Quantity of milk	138.91[a]	130.80[b]	146.47[c]	200.23[d]	<0.001
	1.000	*1.000*	*1.000*	*1.000*	
Loyalty	195.95[a]	194.95[a]	217.42[b]	46.08[c]	<0.001
	4.000	*4.000*	*5.000*	*1.000*	
Speed of payment	200.24[a]	192.51[a]	206.56[b]	50.83[c]	<0.001
	4.000	*4.000*	*4.000*	*1.000*	
Personal Relationships	205.30[a]	194.33[b]	137.99[c]	103.00[d]	<0.001
	3.000	*3.000*	*1.000*	*1.000*	
Monopolistic phenomena	172.35[a]	172.95[a.c]	157.58[b]	133.50[c]	<0.001
	1.000	*1.000*	*1.000*	*1.000*	
Experimenting with different marketing channels	156.50[a]	156.50[a.b]	162.52[b]	154.79[a]	0.030
	1.000	*1.000*	*1.000*	*1.000*	
Quite old farmer to milk the animals	153.50[a]	153.50[a.b]	153.30[a]	167.30[b]	<0.001
	1.000	*1.000*	*1.000*	*1.000*	
Isolation of the farm	149.00[a]	149.00[a.b]	149.00[a]	178.33[b]	<0.001
	1.000	*1.000*	*1.000*	*1.000*	
Easements of payment	166.08[a]	162.52[a.c]	151.01[b]	151.00[b.c]	<0.001
	1.000	*1.000*	*1.000*	*1.000*	
Goats are free to the mountain during the day	151.50[a]	151.50[a.b]	151.50[a]	172.20[b]	<0.001
	1.000	*1.000*	*1.000*	*1.000*	
Good reputation of the farmer	163.56[a]	154.50[b]	154.50[b]	154.50[b]	0.006
	1.000	*1.000*	*1.000*	*1.000*	

Table 10.7 The influence of each factor for the selection of a particular marketing channel.

N.B: Within factors (rows), marketing channels (cells) with different letters differ significantly at P<0.05 according to Q test. Average ranks are reported in standard text and medians in *italics*.

15.5.2 Profiling the farmers of each marketing channel

The farmers who use each marketing channel in order to market their milk have similar profiles regarding the characteristics of their farms and themselves. In particular most of them had small farms, rented less than 30% of their farm land from other land owners and let a small part of their farm land to other farmers in order to have an additional income.

Moreover, they were not involved with any farm related activity away of their farm such as meetings in local agricultural cooperatives, contacts with potential buyers, or with any off-farm activities. They had long experience in livestock farming as well as in decision making relative to livestock farms but no previous non farm working experience. On the other hand, they did not hold any responsible position in an agricultural cooperatives, in an agricultural organization, in a non-farm business that they might own and in a non-farm business they do not own by directing or managing it. They were low indebted, derived the largest part of their farm income from their sheep and goat enterprise and were low educated.

There are some differences in the profile of of the farmers who use each marketing channel reagarding the factors that influence them in the marketing outlet choice as well as in some farm and farmers characteristics as presented in Table 10.8.

Local Private Milk Processing Plants	**Cooperative Milk Processing Plants**	**Big National and Regional Dairy Firms**	**Private Use of Milk**
Factors			
Loyalty	Loyalty	Loyalty	Small Volume of Milk production
Speed of payment	Sales price	Speed of payment	Isolation of the farm
Sale price	Speed of payment	Sale price	The sheep and goats are free to the mountain during the day
Farm Characteristics			
Size of flock: >151 heads	Size of flock:> 151 heads	Size of flock:> 151 heads	n.s
n.s	Volume of livestock production: >51 heads	Volume of livestock production: >151 heads	Volume of livestock production: <50 heads
Volume of milk production: 2001-10000 kg	n.s	Volume of milk production: >10,001 kg	Volume of milk production: <2,000 kg
Farm allocation to sheep and goat enterprise: :>61%	Farm allocation to sheep and goat enterprise: >61%	Farm allocation to sheep and goat enterprise: >61%	Farm allocation to sheep and goat enterprise: <30%
Farmer's characteristics			
Obtained milk price: Average	Obtained Milk price: Average	Obtained Milk price: Average	Obtained Livestock price: Below Average
n.s	n.s	n.s	Not member of an agricultural cooperative
n.s	n.s	n.s	Financial performance: Below average

Table 10.8: Summary of marketing channel profile

10.5.2 a Profiling the farmers of each marketing channe regarding the factors that influence them in their marketing outlet choicel

The Friedman one-way non-parametric test was used to identify which factors mainly affect the famers in their marketing channel selection. The results of the test that are presented in Figures 10.6 showing that there was a significant influence of the examined factors on the selection of each marketing channel. More particularly, the sheep and goat farmers who preferred to market their milk to the local private milk processing plants were mostly influenced in their choice in a rank order of importance by loyalty, speed of payment and sale price. The farmers who preferred to sell their milk to the cooperative milk processing plants were mostly influenced in a rank order of importance by loyalty, sales price and speed of payment. Loyalty was also the factor that mostly affected the sheep and goat farmers who marketed their milk to the big national and regional dairy

firms while also important for these farmers but to little lower degree were the speed of payment and sale price. Finally, the sheep and goat producers who preferred to use their sheep and goat milk on their own were mostly influenced in a rank order of importance by the small volume of their milk production, the isolation of their farm from most of the marketing outlets and the fact that the sheep and goats are free to the mountain during the whole day.

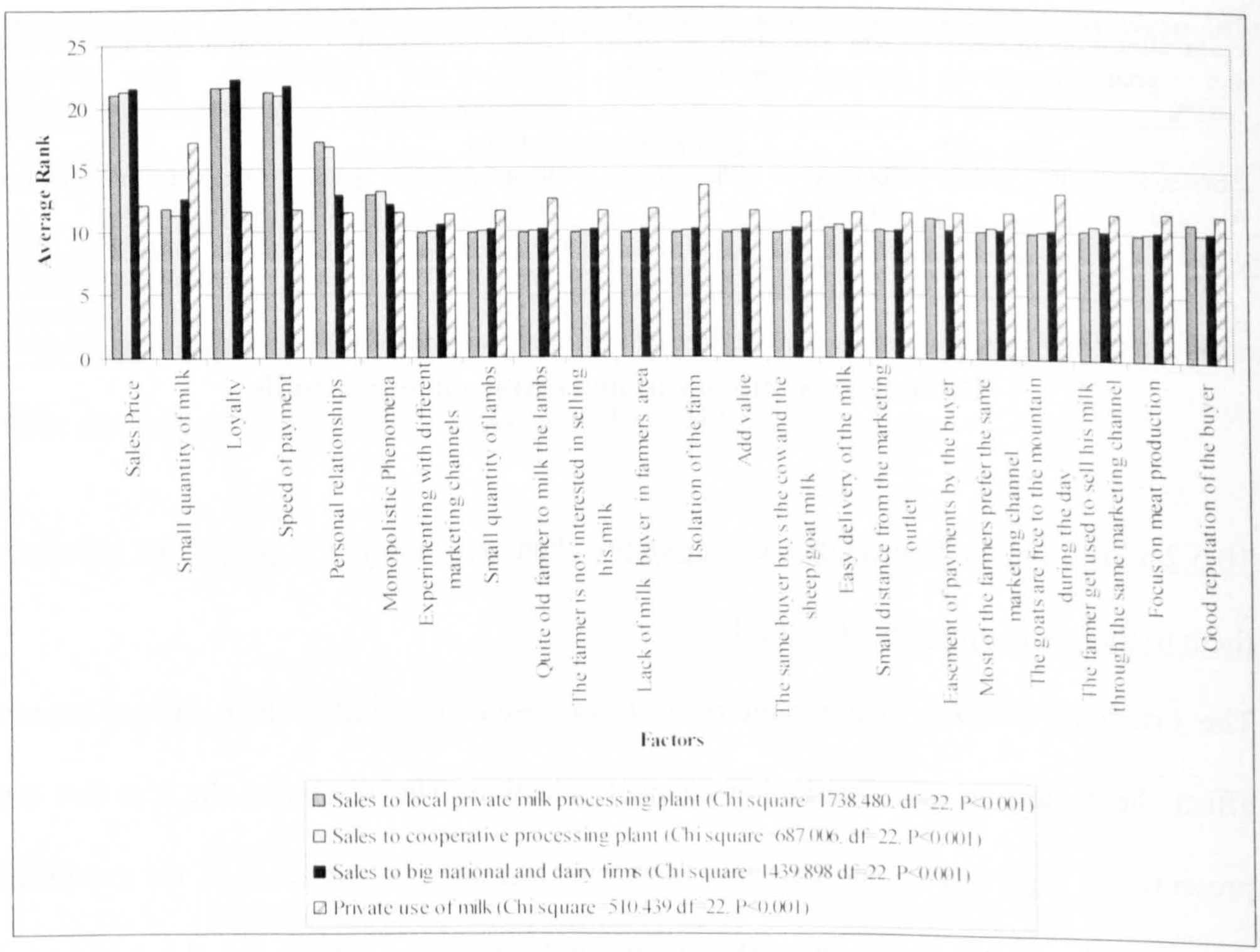


Figure 10.6: The importance of each factor for the farmers who preferred the sales to local private milk processing plants

Nominal logistic regression analysis was not possible to be conducted (Minitab 13) in order to investigate the impact of the factors presented above to the marketing channel selection (taking into consideration their multivariate effect) because all the factors (predictors) had high levels of insignificance and thus made it imposible.

10.5.2 b Profiling each milk marketing channel regarding the farm characteristics.

The one-sample chi-square analysis was performed for each marketing outlet in order to develop the profile of the farmers who prefer each distribution channel regarding their farm characteristics. As Table 10.9 presents the farmers who use each marketing channel in order to sell their milk have almost similar profiles regarding their farm characteristics. Most of the farmers who preferred to market their milk to local milk processing plants, to cooperative milk processing plants or to big national dairy firms had flocks with more than 151 animals. The farmers who used the big national or regional firms as their milk marketing outlet were large scale livestock and milk producers whilst the farmers who preferred the private use of their milk had small volume of livestock and milk production. Besides, the farmers who marketed their milk to the cooperative milk processing plants were not small scale livestock producers and the farmers that sold their milk to the local private milk processing plants were medium scale milk producers. The farmers who made private use of their milk allocated a small part of their farm land to their sheep and goat enterprise because they were small scale livestock farmers and wanted to have an addional farm income. On the other hand, the farmers who used all the other marketing channels allocated more than 61% of their farm land to their sheep and goat enteprise in order to reduce the feeding cost as they were medium or large scale farmers.

Farm Characteristics		Local Milk Processing Plants			Cooperative Milk Processing Plants			Big National and Dairy Firms			Private Use of Milk		
		x^2	% farmers	Standardized residuals	x^2	% farmers	Standardized residuals	x^2	% farmers	Standardized residuals	x^2	% farmers	Standardized residuals
Farm size	<5ha	x^2=81.403, df=2, P<0.001	75.0%	7.35[c]	x^2= 40.925, df=2, P<0.001	80.5%	5.21[a]	x^2=20.846, df=2, P<0.001	57.7%	3.73[c]	x^2= 69.471, df=2, P<0.001	80.0%	6.77[c]
	5.1 – 10 ha		14.4%	-3.34[c]		9.8%	-2.62[b]		21.8%	n.s		14.3%	-2.76[b]
	>10.1 ha		10.6%	-4.02[c]		9.8%	-2.62[b]		20.5%	-1.96[a]		5.7%	-4.00[c]
Size of the flock	<50 heads	x^2=9.818, df=2, P<0.01	19.2%	-2.50[a]	x^2=18.443, df=2, P<0.001	9.8%	-2.62[b]	x^2=29.769, df=2, P<0.001	10.3%	-3.53[c]	n.s		
	51-150 heads		37.5%	n.s		26.8%	n.s		29.5%	n.s			
	>151 heads		43.3%	1.75[a]		63.4%	3.32[c]		60.3%	4.12[c]			
Volume of livestock production	<50 heads	n.s			x^2=8.224, df=2, P<0.05	12.2%	-2.35[a]	x^2=12.538, df=2, P<0.01	15.4%	-2.75[b]	x^2=6.552, df=2, P<0.05	47.1%	2.01[a]
	51-150 heads					43.9%	n.s		37.2%	n.s		30.0%	n.s
	>151 heads					43.9%	n.s		47.4%	2.16[a]		22.9%	n.s
Volume of milk production	<2.000 kg	x^2=30.509, df=2, P<0.001	11.5%	-3.85[c]	n.s			x^2=21.308, df=2, P<0.001	9.0%	-3.73[a]	x^2=140.200, df=2, P<0.001	100.0%	9.67[c]
	2001-10000 kg		55.8%	3.96[c]					42.3%	1.37[c]		0.0%	-4.83[c]
	>10001 kg		32.7%	n.s					48.7%	2.35[a]		0.0%	-4.83[c]
Farm land allocated to sheep and goat enterprise	<30%	x^2=25.615, df=3, P<0.001	20.2%	n.s	x^2= 17.938, df=3, P<0.001	17.1%	n.s	x^2=41.692, df=3, P<0.001	17.9%	n.s	x^2= 20.171, df=3, P<0.001	42.9%	2.99[b]
	31-60%		14.4%	-2.16[a]		14.6%	n.s		11.5%	-2.38[a]		10.0%	-2.51[a]
	>61%		46.2%	4.31[c]		53.7%	3.65[c]		56.4%	5.55[c]		14.3%	n.s
	Do not farm any land		19.2%	n.s		14.6%	n.s		14.1%	n.s		32.9%	n.s
Farm land owned by the farmers	<30%	x^2=44.385, df=3, P<0.001	16.3%	n.s	x^2=21.239, df=3, P<0.001	12.2%	n.s	x^2=12.359, df=3, P<0.01	28.2%	n.s	x^2=32.514, df=3, P<0.001	14.3%	n.s
	31-60%		11.5%	-2.75[b]		17.1%	n.s		17.9%	n.s		4.3%	-3.47[c]
	>61%		52.9%	-5.69[c]		56.1%	3.96[c]		39.7%	2.60[b]		48.6%	3.94[c]
	Do not own any land		19.2%	n.s		14.6%	n.s		14.1%	n.s		32.9%	n.s
Farm land rent from other farmers	<30%	x^2=35.769, df=3, P<0.001	50.0%	5.10[c]	x^2=17.938, df=3, P<0.001	53.7%	3.65[c]	x^2=12.359, df=3, P<0.01	39.7%	2.60[b]	x^2=23.486, df=3, P<0.001	44.3%	3.23[c]
	31-60%		12.5%	-2.55[a]		14.6%	n.s		17.9%	n.s		7.1%	-2.99[b]
	>61%		18.3%	n.s		17.1%	n.s		28.2%	n.s		15.7%	n.s
	Do not own any land		19.2%	n.s		14.6%	n.s		14.1%	n.s		32.9%	n.s
Farm land rent to other farmers	<30%	x^2=129.308, df=3, P<0.001	68.3%	8.83[c]	x^2=76.190, df=3, P<0.001	82.9%	7.38[c]	x^2=87.641, df=3, P<0.001	65.4%	7.13[c]	x^2=75.600, df=3, P<0.001	60.0%	5.86[c]
	31-60%		0.0%	-5.10[c]		0.0%	-3.21[c]		0.0%	-4.42[c]		0.0%	-4.18[c]
	>61%		1.0%	-4.90[c]		0.0%	-3.21[c]		2.6%	-3.96[c]		0.0%	-4.18[c]
	Do not farm any land		30.8%	n.s		17.1%	n.s		32.1%	n.s		40.0%	2.51[a]

Table 10.9. Profile of farmers who use each marketing channel regarding their farm characteristics

[a]P<0.05, [b]P<0.01 and [c]P<0.001

10.5.2.c Profiling each milk marketing channel regarding the farmers' characteristics.

The one-sample chi square analysis was also used to develop the profile of the farmers who preferred each milk marketing channel regarding the characteristics of themselves. Therefore, the farmers who used each distribution channel in order to market their milk had similar profiles (Table 10.10). On the other hand, the farmers who preferred the private use of their milk were not members of any agricultural cooperative. Moreover, the farmers who were more interested in making the private use of their milk achieved low prices compared to the prices that other farmers in the area obtained while the farmers who marketed their milk to the other three marketing channels obtained average prices in the market. Furthermore the farmers who preferred the private use of their milk had low financial performance.

Farmer's Characteristics		Local Milk Processing Plants			Cooperative Milk Processing Plants			Big National and Dairy Firms			Private Use of Milk		
		x^2	% farmers	Standardized residuals	x^2	% farmers	Standardized residuals	x^2	% farmers	Standardized residuals	x^2	% farmers	Standardized residuals
Farm related activities	YES	x^2=84.962, df=1, P<0.001	4.8%	-6.52[c]	x^2=29.878, df=1, P<0.001	7.3%	-3.87[c]	x^2=66.462, df=1, P<0.001	3.8%	-5.76[c]	x^2=54.914, df=1, P<0.001	5.7%	-5.24[c]
	NO		95.2%	6.52[c]		92.7%	3.87[c]		96.2%	5.76[c]		94.3%	5.24[c]
Off farm activities	YES	x^2=55.538, df=1, P<0.001	13 5%	-5.27[c]	x^2=20.512, df=1, P<0.001	14.6%	-3.20[b]	x^2=52.513, df=1, P<0.001	9.0%	-5.12[c]	x^2=35.714, df=1, P<0.001	14.3%	-4.23[c]
	NO		86.5%	5.27[c]		85 4%	3.20[b]		91.0%	5.12[c]		85.7%	4.23[c]
Livestock farming experience	<5 years	x^2=50.394, df=2, P<0 001	8.7%	-4.36[c]	x^2=20.779, df=2, P<0.001	9.8%	-2.62[b]	x^2=35.154, df=2, P<0.001	11.5%	-3.33[c]	x^2=46.123, df=2, P<0.001	11.4%	-3.17[c]
	6-15 years		26.9%	n.s		24.4%	n.s		24.4%	n.s		17.1%	-2.34[a]
	>16 years		64.4%	5.48[c]		65.9%	3.59[c]		64.1%	4.71[c]		71.4%	5.53[c]
Experience in farming decision making	<5 years	x^2=48.434, df=2, P<0.001	10 6%	-4.02[c]	x^2=17.567, df=2, P<0.001	12.2%	-2.35[a]	x^2=27.769, df=2, P<0.001	12.8%	-3.14[b]	x^2=42.432, df=2, P<0 001	14.3%	-2.76[b]
	6-15 years		25.0%	n.s		24.4%	n.s		26.9%	n.s		15.7%	-2.55[a]
	>16 years		64.4%	5.48[c]		63.4%	3.32[c]		60.3%	4.12[c]		70.0%	5.32[c]
Holding of responsible position in an agricultural cooperative	YES	x^2=81.385, df=1, P<0.001	5.8%	-6 38[c]	x^2=29.878, df=1, P<0.001	7.3%	-3.87[c]	x^2=66.462, df=1, P<0.001	3.8%	-5.76[c]	x^2=58.514, df=1, P<0.001	4.3%	-5.41[c]
	NO		94.2%	6.38[c]		92.7%	3.87[c]		96.2%	5.76[c]		95.7%	5.41[c]
Holding of responsible position in an agricultural organisation	YES	x^2=104.000, df=1, P<0.001	0.0%	-7.21[c]	x^2=41.000, df=1, P<0 001	0.0%	-4.53[c]	x^2=78.000, df=1, P<0.001	0.0%	-6.24[c]	x^2=70.000, df=1, P<0.001	0.0%	-5.92[c]
	NO		100.0%	7 21[c]		100.0%	4.53[c]		100.0%	6.24[c]		100.0%	5.92[c]
Holding of responsible position in a non-farm business the farmer owned	YES	x^2=96.154, df=1, P<0 001	1.9%	-6.93[c]	x^2=41 000, df=1, P<0.001	0.0%	-4.53[c]	x^2=70.205, df=1, P<0.001	2.6%	-5.92[c]	x^2=62.229, df=1, P<0.001	2.9%	-5.58[c]
	NO		98.1%	6.93[c]		100.0%	4.53[c]		97.4%	5.92[c]		97.1%	5.58[c]
Holding of responsible position directing or managing a non-farm business the farmer did not own	YES	x^2=104.000, df=1, P<0.001	0.0%	-7.21[c]	x^2=41.000, df=1, P<0.001	0.0%	-4.53[c]	x^2=78.000, df=1, P<0.001	0.0%	-6.24[c]	x^2=70.000, df=1, P<0.001	0.0%	-5.92[c]
	NO		100.0%	7.21[c]		100.0%	4.53[c]		100.0%	6.24[c]		100.0%	5.92[c]

Previous non-farm experience	YES	x^2=16.962 df=1, P<0 001	29.8%	-2.91[b]	x^2=5.488 df=1, P<0.05	31.7%	n.s	x^2=22.615 df=1, P<0.001	23.1%	-3.36[c]	x^2=18.514 df=1, P<0.001	24.3%	-3.04[b]
	NO		70.2%	2.91[b]		68.3%	n.s		76.9%	3.36[c]		75.7%	3.04[b]
Debt level	<9%	x^2=204.462, df=3, P<0 001	85.6%	12.36[c]	x^2=72.346, df=3, P<0.001	87.8%	1.96[a]	x^2=156.564, df=3, P<0.001	85.9%	10.76[c]	x^2=202.114, df=3, P<0.001	98.6%	12.31[c]
	10-29%		8 7%	-3.33[c]		7.3%	-4.51[c]		11.5%	-2.38[a]		0.0%	-4.18[c]
	>30%		2.9%	-4.51[c]		4.9%	-4.71[c]		2.6%	-3.96[c]		1.4%	-3.94[c]
	Do not know		2.9%	-4.51[c]		0.0%	-5.10[c]		0.0%	-4.42[c]		0.0%	-4.18[c]
Farm income derived by the sheep and goat enterprise	<24%	x^2=86.129, df=2, P<0.001	7.7%	-4.53[c]	x^2=41.509, df=2, P<0.001	4.9%	-3.16[b]	x^2=97.000, df=2, P<0.001	6.4%	-4.12[c]	x^2=18.226, df=2, P<0.001	35.7%	n.s
	25-49%		16.3%	-3.00[b]		14.6%	-2.08[a]		7.7%	-3.92[c]		11.4%	-3.17[b]
	50%>		76.0%	7.52[c]		80.5%	5.21[c]		85.9%	8 04[c]		52.9%	2.84[b]
Educational level	Primary	x^2=217.615, df=3, P<0.001	87.5%	12.75[c]	x^2=67.452, df=3, P<0.001	80.5%	7.07[c]	x^2=168.256, df=3, P<0.001	88.5%	11.21[c]	x^2=179.371, df=3, P<0.001	94.3%	11.59[c]
	Secondary		7.7%	-3.53[c]		7.3%	-2.27[a]		2.6%	-3.96[c]		2.9%	-3.71[c]
	High school or technical education		3.8%	-4.31[c]		9.8%	-1.96[a]		7.7%	-3.06[b]		2.9%	-3.71[c]
	Highest education		1.0%	-4.90[c]		2.4%	-2 90[b]		1.3%	-4.19[c]		0.0%	-4.18[c]
Membership in an agricultural cooperative	YES	x^2=3.846, df=1, P<0.05	40.4%	n.s	n.s			n.s			x^2=11.200 df=1, P<0.001	30.0%	-2.37[a]
	NO		59 6%	n.s								70.0%	2.37[a]
Obtained milk prices	Below average	x^2=201.864, df=2, P<0.001	0.0%	-5.89[c]	x^2=68.238, df=2, P<0.001	2.4%	-5.72[c]	x^2=144.308, df=2, P<0.001	2.6%	-4.71[c]	x^2=107.239, df=2, P<0.001	91.4%	8.43[c]
	Average		99.0%	11.59[c]		97.6%	n.s		97.4%	9.81[c]		8.6%	-3.58[c]
	Above average		1.0%	-5.72[c]		0.0%	-5.89[c]		0.0%	-5.10[c]		0.0%	-4.83[c]
Financial performance	Below average	n.s			n.s			n.s			x^2=86.896, df=2, P<0 001	85.7%	7.60[c]
	Average											10.0%	-3.38[c]
	Above average											4.3%	-4.21[c]

Table 10.10 Profile of farmers who use each marketing channel regarding the characteristics of themselves

[a]P<0.05, [b]P<0.01 and [c]P<0.001

10.5.3 The impact of the farm and farmers' characteristics on marketing channel selection

The influence of the farm and farmers' characteristics on the milk marketing channel selection by the sheep and goat farmers was explored conducting nominal logistic regression analysis (Minitab 13). The farm and farmers' characteristics that comprise the profiles of the milk marketing channels were used as predictors in the logistic regression model. Table 10.11 presents the results of the analysis regarding the impact of the farm characteristics on the marketing channel selection.

The farmers who preferred to sell their sheep and goat milk to big national and regional dairy firms instead of the private use of them are more influenced by the size of their farm, flock and cultivated land allocated in the sheep and goat enterprise. On the other hand, the farm land owned by the farmer as well as the land the farmers rent from other land owners has a positive impact on the preference of private use of milk over sales to big national and regional dairy firms. Furthermore, the size of flock and the farm land allocated to the sheep and goat enterprise has a significant positive impact on the preference of the farmers to market their milk direct to cooperative milk processing plants rather than to make private use of it. Besides, the size of flock and the farm land allocated to the sheep and goat enterprise mostly resulted farmers sending their milk to local private milk processing plants instead of making private use of it. On the other hand, the sheep and goat farmers who preferred the private use of their milk over the sales to local private milk processing plants were mainly influenced by on the size of the farm land owned by the farmers or the farm land rented from other land owners. The goodness of fit test indicates that the model fits well to the data (MINITAB 1997).

Logit	Predictors	Coef	P	Odds Ratio
Logit 1: (Sales to Big National and Regional Dairy firms / Private Use of Milk)	Constant	-2.2949	0.016	
	Farm size	0.9436	0.001	2.57
	Flock size	0.9549	0.001	2.60
	Farm land owned by the farmer	-0.8332	0.001	0.43
	Farm land rent from other farmers	-0.9875	0.001	0.37
	Farm land rent to other farmers	0.4334	0.061	1.54
	Farm land allocated to sheep and goat enterprise	0.9150	0.001	2.50
Logit 2: (Sales to Cooperative Milk Processing Plants / Private Use of Milk)	Constant	-2.631	0.037	
	Farm size	0.0970	0.795	1.10
	Flock size	1.1135	0.001	3.05
	Farm land owned by the farmer	-0.3123	0.317	0.73
	Farm land rent from other farmers	-0.4446	0.216	0.64
	Farm land rent to other farmers	-0.3857	0.274	0.68
	Farm land allocated to sheep and goat enterprise	0.7090	0.010	2.03
Logit 3: (Sales to Milk Processing Plants/ Private Use of Milk)	Constant	-0.6154	0.451	
	Farm size	0.4336	0.122	1.54
	Flock size	0.5497	0.006	1.73
	Farm land owned by the farmer	-0.5321	0.008	0.59
	Farm land rent from other farmers	-0.8637	0.001	0.42
	Farm land rent to other farmers	0.3114	0.159	1.37
	Farm land allocated to sheep and goat enterprise	0.7363	0.001	2.09
Log-likehood = -374.086		Reference Group=Private Use of Milk		
G= 91.278, df = 18, P<0.001				
Goodness of Fit				
Deviance x^2 = 209.506, df=219, P= 0.666				

Table 10.11 The impact of farm's characteristics on livestock marketing channel selection by the sheep and goat farmers in EMTh according to Logistic Regression Analysis.

The results of the final logistic regression analysis regarding the impact of the farmers' characteristics on the marketing channel selection are presented in Table 10.12. More particularly, the financial performance, the farm income derived from the sheep and goat enterprise and the fact that the farmers were not members of an agricultural cooperative, mostly influenced them to market their milk to big national and regional dairy firms rather than making private use of it. Moreover, the farmers who preferred to sell their milk to cooperative milk processing platns or to local milk processing plants instead of making private use of it and were mainly affected by their financial performance as well as in the farm income derived from the sheep and goat enterprise.

Logit	Predictors	Coef	P	Odds Ratio
Logit 1: (Sales to Big National and Regional Dairy firms / Private Use of Milkl)	Constant	-4.593	0.002	
	Membership in agricultural cooperative	0.7094	0.047	2.03
	Involvement with off farm activity	0.4549	0.406	1.58
	Financial performance	1.2856	0.001	3.62
	Livestock farming experience	-0.3416	0.202	0.71
	Debt	0.0954	0.837	0.91
	Farm income	0.7874	0.003	2.20
	Educational Level	0.2279	0.592	1.26
Logit 2: (Sales to Cooperative Milk Processing Plants / Private Use of Milkl	Constant	-4.469	0.006	
	Membership in agricultural cooperative	0.5220	0.211	1.69
	Involvement with off farm activity	-0.2043	0.725	0.82
	Financial performance	1.1633	0.001	3.20
	Livestock farming experience	0.1392	0.667	0.87
	Debt	0.0305	0.953	0.97
	Farm income	0.6982	0.025	2.01
	Educational Level	0.5952	0.174	1.81
Logit 3: (Sales to Milk Processing Plants/ Private Use of Milk)	Constant	-2.389	0.055	
	Membership in agricultural cooperative	0.1734	0.607	1.19
	Involvement with off farm activity	-0.1321	0.774	0.88
	Financial performance	1.3637	0.001	3.91
	Livestock farming experience	-0.2680	0.284	0.76
	Debt	-0.0691	0.879	0.93
	Farm income	0.4821	0.023	1.62
	Educational Level	0.1494	0.720	1.16
Log-likehood = -376.798				
G= 85.854, df = 21, P<0.001				
Goodness of Fit				
Deviance x^2 = 275.865, df=270, P= 0.390				

Reference Group= Sales to more than one marketing channel

Table 10.12 The impact of farmers' characteristics on milk marketing channel selection by the sheep and goat farmers in EMTh according to Logistic Regression Analysis.

10.6 Stage 5: Profiling of Strategic Groups using Bivariate Statistical Techniques

10.6.1 The association between marketing strategy selection and the factors that influence the sheep and goat farmers to adopt a particular marketing outlet.

The Kruskal–Wallis non-parametric test was used to identify which of the factors, related to the farmers' choice of a particular milk marketing channel, affected the sheep and goat farmers to adopt a particular marketing strategy.

According to the results of the test presented in Table 10.13, most of the sheep and goat farmers that were interested in the price that they would receive, the loyalty of the buyer

and speed of payment, adopted the return focus strategy. The farmers that operated in areas where there were monopolistic phenomena preferred the same strategy. On the other hand, the small scale milk and livestock producers followed the differentiation strategy, presumably in order to increase their farm profitability by adding value to their products. The same marketing strategy was adopted by the farmers that were not interested in selling their milk but preferred to keep it in order to process it by making cheese or yoghurt.

Factors	Marketing Strategies			P
	Differentiation Strategy	Production Orientation Strategy	Return Focus	
Sales price	79.41[a]	136.92[b]	159.85[c]	<0.001
	1.000	*4.000*	*4.000*	
Quantity of milk	215.34[a]	189.87[b]	123.96[c]	<0.001
	5.000	*2.000*	*1.000*	
Loyalty	80.58[a]	133.83[b]	160.33[c]	<0.001
	1.000	*4.000*	*4.000*	
Speed of payment	80.88[a]	137.18[b]	159.53[c]	<0.001
	1.000	*4.000*	*4.000*	
Monopolistic phenomena	140.78[a]	128.63[b]	150.77[c]	0.036
	1.000	*1.000*	*1.000*	
Small quantity of lambs	149.43[a]	145.5[b]	145.5[b]	0.032
	1.000	*1.000*	*1.000*	
Not interesting in selling	149.43[a]	145.5[b]	145.5[b]	0.032
	1.000	*1.000*	*1.000*	

Table 10.13. The influence of each factor to the selection of a particular marketing strategy

N.B: Within factors (rows), marketing channels (cells) with different letters differ significantly at $P<0.05$ according to Q test. Average ranks are reported in standard text and medians in *italics*.

Besides, the statistical analysis did not identify any significant association ($P>0.05$) between the following factors and a marketing strategy selection:

(xiv) Personal relationships (v53)

(xv) Experimentation with different marketing channels (v55)

(xvi) The fact that the farmer was quite old to stock the flock (v57)

(xvii) The fact that there is no buyer for the milk in the area (v59)

(xviii) Isolation of the farm (v60)

(xix) The farmer wanted to add valued to his products (v61)

(xx) The fact that the same buyer buys the cow and the sheep/goat milk(v62)

(xxi) Easy delivery of the milk (v63)

(xxii) Small distance from the marketing outlet (v64)

(xxiii) Easements of payment by the buyer (v65)

(xxiv) Most of the farmers preferred the same marketing outlet (v66)

(xxv) The farmer sold the lambs late (v67)

(xxvi) The goats were free to the mountain during the daylight (v68)

(xxvii) The farmer get used to sell his milk through the same marketing channel (v69)

(xxviii)Focus on meat production (v70)

(xxix) The reputation of the buyer that is good businessman (v71)

10.6.2 Profiling marketing strategic groups

The profiles of the farmers who follow each marketing strategy have many similarities regarding the farm and farmers' characteristics. In particular, most of the farmers who adopted each marketing strategy had small farms and own most of the land they cultivate. They also rented a small part of the land they cultivate from other landowners and let less than 30% of their farm land to other farmers, presumably in order to achieve an additional income. Furthermore, they were not involved with farm related activities away from their farm neither with off-farm activities. On the other hand, they were well experienced in livestock farming and in decision making relative to livestock sector. Moreover, they were low indebted, had low financial performance and lowly educated. Besides, they did not hold any responsible position in an agricultural cooperative, in an agricultural organization, in a non-farm business they might own or in a non farm business they did not own, by directing or managing it.

On the other hand, there are some differences in the profile of each strategic group regarding the factors that influence them in the marketing outlet choice as well as some farm and farmers characteristics as presented in Table 10.14.

Differentiation Strategy	**Production Orientation Strategy**	**Return focus strategy**
Marketing Channels		
Private Use of Milk	Private Use of Milk	Local Private Milk Processing Plants
Factors		
Small volume of milk production	Loyalty	Loyalty
Loyalty	Speed of payment	Speed of payment
Speed of payment	Sale price	Sale price
Farm Characteristics		
Size of flock: <50 heads	n.s	Size of flock:>151 heads
Volume of livestock production: <50 heads	n.s	Volume of livestock production: >51 heads
Volume of milk production: <2,000 kg	Volume of milk production: <2,000 kg	Volume of milk production: 2,001-10,000 kg
Farm allocation to sheep and goat enterprise: <30%	Farm allocation to sheep and goat enterprise: <30%	Farm allocation to sheep and goat enterprise: >61%
Farmer's characteristics		
Obtained Milk Price: Below average	Obtained Milk Price: Average	Obtained Milk Price: Average
n.s	Member of an agricultural cooperative NO	n.s
Farm Income:<24%	Farm Income:>50%	Farm Income:>50%
n.s	Previous non-farm working experience: NO	Previous non-farm working experience: NO
Age: >61 years	n.s	n.s
Financial performance: Below average	n.s	Financial performance: Below average
Information sources		
Family	Family	Family
Other farmers	Other farmers	Governmental bodies
Governmental bodies	Governmental bodies	Other farmers
Types of information		
Animal diseases	Livestock prices	Livestock prices
Livestock prices	Meat prices	Meat prices
Meat prices	Animal diseases	Milk prices

Table 10.14 Summary of strategic group profile

10.6.2a Profiling marketing strategic group regarding marketing channel selection.

The one sample chi square analysis was used to identify which marketing channels is mostly preferred by the farmers who adopt each marketing strategy. More particularly, the majority of the sheep and goat farmers who adopted the differentiation strategy preferred, as Table 10.15 presents, the private use of milk in order to process their milk and sell it as an added value product e.g. cheese, yoghourt. Most of the production orientated farmers

preferred the same marketing outlet while the majority of the retutn focused farmers sold their milk to the local private milk processing plants.

Marketing Channel Selection		% of farmers	Standardized residuals
Differentiation strategy x^2=41.157, df=3, P<0.001	Local Private Milk Processing Plant	16.2%	n.s
	Cooperative Milk Processing Plant	5.4%	-2.39[a]
	Big National or Regional Dairy Firms	8.1%	-2.07[a]
	Private Use of Milk	70.3%	5.48[c]
Production orientation strategy x^2=8.609, df=3, P<0.05	Local Private Milk Processing Plant	23.9%	n.s
	Cooperative Milk Processing Plant	10.9%	n.s
	Big National or Regional Dairy Firms	23.9%	n.s
	Private Use of Milk	41.3%	2.21[a]
Return focus strategy x^2=35.462, df=3, P<0.001	Local Private Milk Processing Plant	40.9%	4.58[c]
	Cooperative Milk Processing Plant	14.9%	-2.91[b]
	Big National or Regional Dairy Firms	27.4%	n.s
	Private Use of Milk	16.8%	-2.36[a]

Table 10.15. The milk marketing channel utilization by the farmers who adopted the differentiation strategy.

[a]P<0.05, [b]P<0.01 and [c]P<0.001

The Friedman one way non-parametric test was used to identify the factors that affected the farmers of each strategic group in their marketing channel choice. The results of the test, presented in Figure 10.7 indicated that there was a significant association between the examined factors and the selection of each marketing strategy. More particular, the sheep and goat farmers who adopted the differentiation strategy were mostly influenced in their milk marketing channel choice, which is the private use of their milk, by the small volume of milk production as well as by the loyalty of the buyer, speed of payment and sale price. On the other hand the production orientated farmers preferred the same marketing outlet but they were influenced by the loyalty of the buyer, speed of payment and sale price. Buyer's loyalty, speed of payment and sales price were the factors that mostly affected in a rank order of importance the sheep and goat farmers who followed the return focus strategy to market their milk to local private milk processing plants.

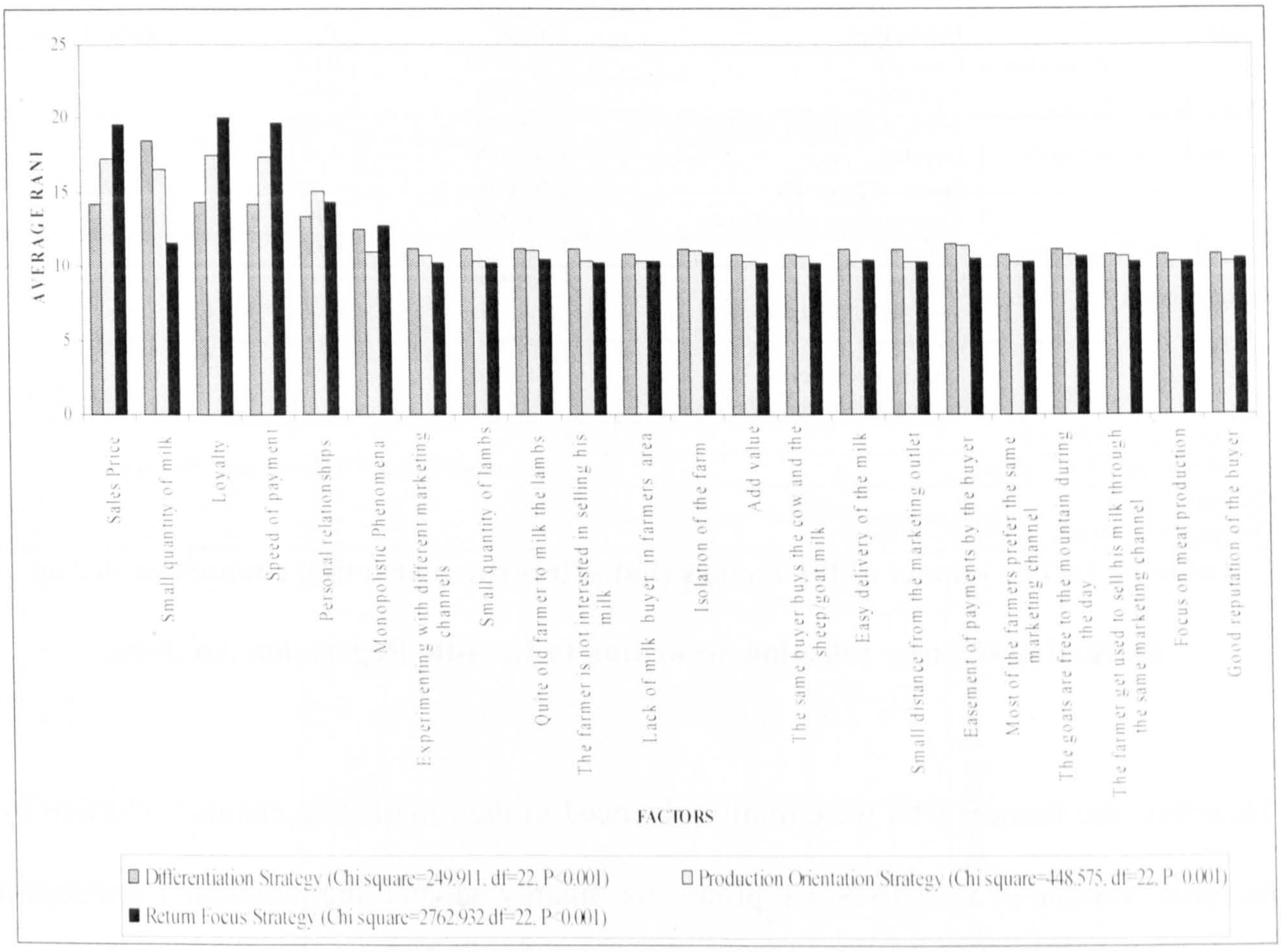


Figure 10.7: The importance of each factor in each strategic group marketing channel selection.

The influence of the factors that affect milk marketing channel choice on the adoption of particular marketing strategy by the sheep and goat farmers, was explored conducting nominal logistic regression analysis (Minitab 13). The factors that comprise the profiles of the identified strategic groups were used as predictors in the logistic regression models. The results of the final nominal regression analysis are presented in Table 10.16.

Logit	Predictors	Coef	P	Odds Ratio
Logit 1: (Production Orientation Strategy / Return Focus Strategy)	Constant	-1.9540	0.003	
	Sale price	0.0483	0.903	1.05
	Small quantity of lambs	0.6676	0.001	1.95
	Loyalty	-0.1930	0.618	0.82
	Speed of payment	0.1001	0.806	1.11
	Monopolistic phenomena	-0.3659	0.073	0.69
Logit 2: (Differentiation / Return Focus)	Constant	-2.4688	0.001	
	Sale price	-0.6646	0.374	0.51
	Small quantity of lambs	0.8608	0.001	2.37
	Loyalty	0.2769	0.667	1.32
	Speed of payment	-0.1220	0.868	0.89
	Monopolistic phenomena	0.1912	0.256	1.21
Log-likehood = -181.535		Reference Group= Return Focus Strategy		
G= 98.946, df = 10, P<0.001				
Goodness of Fit				
Deviance x^2 = 89.081, df=78, P= 0.184				

Table 10.16 The impact of the factors that affect the marketing channel choice on marketing strategy selection according to Logistic Regression Analysis.

Therefore, the farmers who were more influenced in their marketing channel selection by the small volume of their livestock production mainly adopted the production orientation strategy over the return focus strategy, presumably in order to improve their productivity in the future. Furthermore, the small quantity of lambs has a significant impact on the preference of the differentiation strategy instead of return focused strategy, probably because those farmers aimed to increase their profitability by differentiating their milk from their competitors and adding value to it by self processing and selling it as cheese or, yogurts. Besides, the goodness of tests indicates that the model fits to the data (MINITAB 1997).

10.6.2 b Profiling each milk marketing strategy regarding farm characteristics.

The one-sample chi-square analysis as Table 10.17 presents indicates that the three strategic groups had similar profiles regarding their farm characteristics.

Farm Characteristics		Differentiation Strategy			Production Orientation Strategy			Return Focus Strategy		
		x^2	% farmers	Standardized residuals	x^2	% farmers	Standardized residuals	x^2	% farmers	Standardized residuals
Farm size	<5ha	x^2=38.103, df=2, P<0.001	81.1%	5.05[c]	x^2=34.161, df=2, P<0.001	73.9%	4.78[c]	x^2=145.984, df=2, P<0.001	72.6%	9.81[c]
	5.1 – 10 ha		8.1%	-2.65[c]		13.0%	-2.38[a]		17.3%	-4.00[c]
	>10.1 ha		10.8%	-2.37[a]		13.0%	-2.38[a]		10.1%	-5.80[c]
Flock size	<50 heads	x^2=20.217, df=2, P<0.01	67.6%	3.62[c]	n.s			x^2=46.215, df=2, P<0.001	14.4%	-4.72[c]
	51-150 heads		21.6%	n.s					32.7%	n.s
	>151 heads		10.8%	-2.37[a]					52.9%	4.89[c]
Volume of livestock production	<50 heads	x^2=34.526, df=2, P<0.001	78.4%	4.76[c]	n.s			x^2=16.171, df=2, P<0.001	20.2%	-3.28[c]
	51-150 heads		16.2%	n.s					39.9%	n.s
	>151 heads		5.4%	-2.94[b]					39.9%	n.s
Volume of milk production	<2,000 kg	x^2=36.477, df=2, P<0.001	78.4%	4.76[c]	x^2=6.580, df=2, P<0.05	50.0%	1.97[a]	x^2=6.994, df=2, P<0.05	25.5%	-1.96[a]
	2,001-10,000 kg		21.6%	n.s		30.4%	n.s		40.4%	n.s
	>10,0001 kg		0.0%	-3.51[c]		19.6%	n.s		34.1%	n.s
Farm land owned by the farmer	<30%	x^2=21.587, df=3, P<0.001	18.9%	n.s	x^2=19.913, df=3, P<0.001	19.6%	n.s	x^2=51.538, df=3, P<0.001	18.3%	n.s
	31-60%		5.4%	-2.39[a]		4.3%	-2.80[b]		14.4%	-3.05[b]
	>61%		56.8%	3.84[c]		50.0%	3.39[c]		46.2%	6.10[c]
	Do not farm any land		18.9%	n.s		26.1%	n.s		21.2%	n.s
Farm land rent from other farmers	<30%	x^2=14.275, df=3, P<0.01	51.4%	3.18[b]	x^2=16.435, df=3, P<0.001	47.8%	3.10[b]	x^2=43.231, df=3, P<0.001	44.2%	5.55[c]
	31-60%		10.8 %	n.s		6.5 %	-2.51[a]		14.4 %	-3.05[c]
	>61%		18.9%	n.s		19.6%	n.s		20.2%	n.s
	Do not farm any land		18.9%	n.s		26.1%	n.s		21.2%	n.s
Farm land rent to other farmers	<30%	x^2=52.340, df=3, P<0.001	73.0%	5.80[c]	x^2=43.217, df=3, P<0.001	54.3%	3.98[c]	x^2=255.654, df=3, P<0.001	67.8%	12.34[c]
	31-60%		0.0%	-3.05[b]		0.0%	-3.39[c]		0.0%	-7.21[c]
	>61%		0.0%	-3.05[b]		2.2%	-3.10[b]		1.0%	-6.93[c]
	Do not own any land		27.0%	n.s		43.5%	2.51[a]		31.3%	n.s
Farm land allocated to sheep and goat enterprise	<30%	x^2=11.265, df=3, P<0.05	48.6%	2.85[b]	x^2=15.043, df=3, P<0.01	41.3%	2.21[a]	x^2=55.808, df=3, P<0.001	15.9%	-2.63[c]
	31-60%		13.5%	n.s		2.2%	-3.10[b]		15.9%	-2.63[c]
	>61%		18.9%	n.s		30.4%	n.s		47.1%	6.38[c]
	Do not own any land		18.9%	n.s		26.1%	n.s		21.2%	n.s

Table 10.17 Profiling each strategic group regarding farm characteristics

[a]P<0.05, [b]P<0.01 and [c]P<0.001

On the other hand, most of the farmers who followed the differentiation strategy had small flock and were small scale livestock and milk producers while the return focused farmers had big flocks and did not produce low volume of livestock production. They were medium scale milk producers whilst the production orientated farmers were small scale milk producers. Most of the farmers who followed the differentiation or the production orientation strategy preferred to allocate a small part of the land they cultivated to their sheep and goat enterprise, as they used most of their farm land for another kind of agricultural enterprise such as tobacco production. On the other hand, the return focused farmers allocated the largest part of the land they cultivated to their sheep and goat enterprise presumably in order to reduce their feeding cost and increase their farm profitability.

10.6.2.c. Profiling each milk marketing strategy regarding farmers' characteristics.

The chi square analysis indicated that the farmers who adopt each marketing strategy have similar profiles regarding the characteristics of themselves (Table 10.18).

Farmers' Characteristics		Differentiation Strategy			Production Orientation Strategy			Return Focus Strategy		
		x^2	% farmers	Standardized residuals	x^2	% farmers	Standardized residuals	x^2	% farmers	Standardized residuals
Farm related activities	YES	x^2=37.000, df=1, P<0.001	0.0%	-4.30[c]	x^2=46.000 df=1, P<0.001	0.0%	-4.80[c]	x^2=155.769, df=1, P<0.001	6.7%	-8.83[c]
	NO		100.0%	4.30[c]		100.0%	4.80[c]		93.3%	8.83[c]
Off-farm activities	YES	x^2=19.703, df=1, P<0.001	13.5%	-3.14[b]	x^2=28.174, df=1, P<0.001	10.9%	-3.75[c]	x^2=114.019, df=1, P<0.001	13.0%	-7.55[c]
	NO		86.5%	3.14[b]		89.1%	3.75[c]		87.0	7.55[c]
Livestock farming experience	<5 years	x^2=22.819, df=2, P<0.001	16.2%	n.s	x^2=23.181, df=2, P<0.001	8.7%	-2.89[b]	x^2=107.946, df=2, P<0.001	8.7%	-6.16[c]
	6-15 years		13.5%	-2.08[a]		26.1%	n.s		25.5%	-1.96[a]
	>16 years		70.3%	3.91[c]		65.2%	3.76[c]		65.9%	8.13[c]
Experience in farming decision making	<5 years	x^2=17.615, df=2, P<0.001	24.3%	n.s	x^2=16.907, df=2, P<0.001	13.0%	-2.38[a]	x^2=98.855, df=2, P<0.001	9.6%	-5.92[c]
	6-15 years		10.8%	-2.37[a]		26.1%	n.s		26.0%	n.s
	>16 years		64.9%	3.34[c]		60.9%	3.25[b]		64.4%	7.77[c]
Holding of responsible position in an agricultural cooperative	YES	x^2=37.000, df=1 P<0.001	0.0%	-4.30[c]	x^2=46.000, df=1 P<0.001	0.0%	-4.80[c]	x^2=155.769, df=1 P<0.001	6.7%	-8.83[c]
	NO		100.0%	4.30[c]		100.0%	4.80[c]		93.3%	8.83[c]
Holding of responsible position in an agricultural organisation	YES	x^2=37.000, df=1, P<0.001	0.0%	-4.30[c]	x^2=46.000, df=1, P<0.001	0.0%	-4.80[c]	x^2=208.000, df=1, P<0.001	0.0%	-10.20[c]
	NO		100.0%	4.30[c]		100.0%	4.80[c]		100.0%	10.20[c]
Holding of responsible position in a non-farm business the farmer owned	YES	x^2=37.000, df=1, P<0.001	0.0%	-4.30[c]	x^2=38.348, df=1, P<0.001	5.4%	-4.38[c]	x^2=188.481, df=1, P<0.001	2.4%	-9.71[c]
	NO		100.0%	4.30[c]		95.7%	4.38[c]		97.6%	9.71[c]
Holding of responsible position directing or managing a non-farm business the farmer did not own	YES	x^2=37.000, df=1, P<0.001	0.0%	-4.30[c]	x^2=46.000, df=1, P<0.001	0.0%	-4.80[c]	x^2=208.000, df=1, P<0.001	0.0%	-10.20[c]
	NO		100.0%	4.30[c]		100.0%	4.80[c]		100.0%	10.20[c]
Previous non-farm experience	YES	x^2=6.081 df=1, P<0.001	29.7%	n.s	x^2=14.696 df=1, P<0.05	21.7%	-2.71[b]	x^2=38.942 df=1, P<0.001	28.4%	-4.41[c]
	NO		70.3%	n.s		78.3%	2.71[b]		71.6%	4.41[c]
Debt level	<9%	x^2=110.404, df=3, P<0.001	100.0%	9.08[c]	x^2=124.435, df=3, P<0.001	95.7%	9.58[c]	x^2=416.885, df=3, P<0.001	86.1%	17.61[c]
	10-29%		0.0%	-3.05[b]		0.0%	-3.39[c]		9.6%	-4.44[c]
	>30%		0.0%	-3.05[b]		0.0%	-3.39[c]		0.0%	-6.24[c]
	Do not know		0.0%	-3.05[b]		2.2%	-3.10[b]		1.0%	-6.93[c]

Farm income derived by the sheep and goat enterprise	<24%	x^2=10.786, df=2, P<0.01	48.6%	n.s	x^2=16.253, df=2, P<0.01	23.9%	n.s	x^2=211.438, df=2, P<0.01	7.2%	-6.52[c]
	25-49%		8.1%	-2.65[b]		15.2%	-2.12[a]		12.0%	-5.32[c]
	50%>		43.2%	n.s		60.9%	3.25[c]		80.8%	11.86[c]
Financial performance	Below average	x^2=40.054, df=2, P<0.001	81.1%	5.05[c]	x^2=10.763, df=2, P<0.01	47.8%	n.s	x^2=6.128, df=2, P<0.05	41.3%	2.01[a]
	Average		18.9%	n.s		41.3%	n.s		30.3%	n.s
	Above average		0.0%	-3.51[c]		10.9%	n.s		28.4%	n.s
Farmer's age	<40 years	x^2=17.501, df=3, P<0.001	13.5%	n.s	n.s			n.s		
	41-50 years		10.8%	n.s						
	51-60 years		21.6%	n.s						
	61+ years		54.1%	3.51[c]						
Educational level	Primary	x^2=102.662, df=3, P<0.001	97.3%	8.76[c]	x^2=108.783, df=3, P<0.001	91.3%	8.99[c]	x^2=441.192, df=3, P<0.001	88.0%	18.17[c]
	Secondary		2.7%	-2.72[b]		8.7%	-2.21[a]		3.8%	-6.10[c]
	High school or technical education		0.0%	-3.05[b]		0.0%	-3.39[c]		6.7%	-5.27[c]
	Highest education		0.0%	-3.05[b]		0.0%	-3.39[c]		1.4%	-6.80[c]
Obtained milk prices	Below average	x^2=27.697, df=2, P<0.001	70.3%	3.91[c]	x^2=21.473, df=2, P<0.001	41.3%	n.s	x^2=253.660, df=2, P<0.001	15.4%	-4.48[c]
	Average		29.7%	n.s		56.5%	2.74[b]		84.6%	12.82[c]
	Above average		0.0%	-3.51[c]		2.2%	-3.66[c]		0.0%	-8.32[c]
Membership in an agricultural cooperative	No	n.s			x^2=12.522, df=1, P<0.001	76.1%	2.50[a]	n.s		
	Yes					23.9%	-2.50[a]			

Table 10.18 Profile each strategic group regarding farmers' characteristics

[a]P<0.05, [b]P<0.01 and [c]P<0.001

On the other hand, most of the farmers who preferred the differentiation strategy obtained low milk prices in the market in comparison with the other farmers operated in their area while the majority of the production orientated and return focused farmers achieved average prices. Most of the farmers who followed differentiation strategy derived either more than 50% or less than 24% of their farm income from their sheep and goat enterprise while the examined type of livestock enterprise consisted of the main source of farm income for the production orientated and return focused farmers. Most of the farmers who adopted the differenation strategy were quite old while most of the production orientated farmers were not members of any agricultural enterprise. Furtermore, the farmers who preferred the differentiation and return focus strategy had low financial performance compered with the other farmers operated in their region.

10.6.3 The impact of the farm and farmers' characteristics on marketing strategy selection

The influence of the farm and farmers' characteristics on marketing strategy selection by the sheep and goat farmers was explored conducting nominal logistic regression analysis (Minitab 13). The farm and farmers' characteristics that comprise the profiles of the strategic groups were used as predictors in the logistic regression model. Table 10.19 presents the results of the analysis regarding the impact of the farm characteristics on the marketing strategy choice.

Logit	Predictors	Coef	P	Odds Ratio
Logit 1: (Production Orientation Strategy / Return Focus Strategy)	Constant	-1.189	0.238	
	Farm size	0.3582	0.213	1.43
	Flock size	-0.0240	0.945	0.98
	Volume of livestock production	-0.0607	0.864	0.94
	Volume of milk production	-0.4989	0.063	0.61
	Farm land owned by the farmer	0.3587	0.103	1.43
	Farm land rent from other farmers	-0.3092	0.283	0.73
	Farm land rent to other farmers	0.6581	0.008	1.93
	Farm land allocated to the sheep and goat enterprise	-0.5574	0.014	0.57
Logit 2: (Differentiation Strategy / Return Focus Strategy)	Constant	3.836	0.003	
	Farm size	-0.3866	0.332	0.68
	Flock size	-0.5285	0.218	0.59
	Volume of livestock production	-0.8557	0.099	0.42
	Volume of milk production	-1.3560	0.003	0.26
	Farm land owned by the farmer	0.0433	0.878	1.04
	Farm land rent from other farmers	0.4517	0.165	1.57
	Farm land rent to other farmers	-0.2224	0.420	0.80
	Farm land allocated to the sheep and goat enterprise	-0.4806	0.083	0.62
Log-likehood = -186.802		Reference Group= Return Focus Strategy		
G= 88.412, df = 16, P<0.001				
Goodness of Fit				
Deviance x^2 = 200.879, df=274, P= 1.000				

Table 10.19 The impact of farm's characteristics on milk marketing strategy selection by the sheep and goat farmers in EMTh according to Logistic Regression Analysis.

The farmers who preferred the production-orientation strategy instead of return-focus strategy preferred to let to other farmers a small part of their land while the farmers who were more influenced by the land they allocated to their sheep and goat enterprise, mostly adopted the return focus strategy over the production orientation strategy. Furthermore, the volume of milk production mainly affected the sheep and goat farmers to adopt the differentiation strategy over the return-focus strategy. The goodness of fit tests indicates that the model fits to the data (MINITAB 1997).

According to the results of the final logistic regression which are presented in Table 10.20, the farm income that is derived from the sheep and goat enterprise has a significant impact on the selection of the return focus strategy over the production orientation or the differentiation strategy. Moreover, the fact that the farmers are not members in an agricultural cooperative affects them to adopt the return-focus strategy instead of the production-orientation. Milk prices and the farm income derived by the sheep and goat

enterprice have a significant impact on the selection of the return-focus strategy over the differentiation strategy. On the other hand, as the farmers become older mostly prefer to follow the differentiation strategy over the return-focus strategy. Besides, the deviance goodness of tests indicates that the model fits in the data (MINITAB 1997)

Logit	Predictors	Coef	P	Odds Ratio
Logit 1: (Production Orientation Strategy / Return Focus Strategy)	Constant	0.267	0.892	
	Milk prices	-0.3704	0.512	0.69
	Membership in agricultural cooperative	-0.9203	0.021	0.40
	Involvement with off-farm activities	-0.1799	0.789	0.84
	Previous non-farm experience	0.3248	0.516	1.38
	Financial performance	0.1832	0.507	1.20
	Experience in livestock farming	0.6966	0.317	2.01
	Experience in decision making regarding livestock farming	-0.8896	0.177	0.41
	Farm Income	-0.6501	0.007	0.52
	Age	0.2283	0.181	1.26
	Educational level	-0.4564	0.296	0.63
	Marketing Channel Selection	0.2870	0.189	1.33
Logit 2: (Differentiation Strategy / Return Focus Strategy)	Constant	5.209	0.072	
	Milk prices	-2.0588	0.012	0.13
	Membership in agricultural cooperative	-0.1105	0.808	0.90
	Involvement with off-farm activities	-0.0795	0.916	0.92
	Previous non-farm experience	0.1509	0.782	1.16
	Financial performance	-0.5820	0.190	0.56
	Experience in livestock farming	0.7748	0.306	2.17
	Experience in decision making regarding livestock farming	-1.1040	0.116	0.33
	Farm Income	-0.9656	0.001	0.38
	Age	0.5487	0.013	1.73
	Educational level	-0.6874	0.470	0.50
	Marketing Channel Selection	-0.1966	0.549	0.82
Log-likehood = -183.654				
G= 94.707, df = 22, P<0.001				Reference Group= Return Focus Strategy
Goodness of Fit				
Deviance x^2 = 286.340, df=428, P= 1.000				

Table 10.20 The impact of farmers' characteristics on livestock marketing channel selection by the sheep and goat farmers according to Logistic Regression Analysis.

10.6.4 Profiling marketing strategic groups regarding information sources and type of information.

The Kruskal–Wallis non-parametric test was used to determine which of the information sources (v72-v84 of Appendix II) the sheep and goat farmers in Greece used as well as which of the type of information (v85-v91 of Appendix II) that these farmers were interested in, are significant related to the marketing strategy selection.

Table 10.21 illustrates the information sources that are significant related with the selection of each marketing strategy.

Information Sources	Marketing Strategies: Differentiation Strategy	Production Orientation Strategy	Return Focus	P
Farmer's file	103.2[a]	158.3[b]	150.9[c]	<0.001
	2.000	*3.000*	*3.000*	
Cooperative Organizations	108.5[a]	99.2[b]	163.0[c]	<0.001
	3.000	*3.000*	*4.000*	
Governmental Bodies	97.7[a]	143.9[b]	155.1[c]	<0.001
	3.000	*4.000*	*4.000*	
Agricultural Journals	140.4[a]	161.7[b]	143.5[c]	0.005
	1.000	*1.000*	*1.000*	
TV Radio	145.1[a]	186.9[b]	137.1[c]	<0.001
	1.000	*2.000*	*1.000*	
Family	129.1[a]	199.5[b]	137.2[c]	<0.001
	4.000	*5.000*	*4.000*	
Livestock, Meat and Milk Buyers	93.7[a]	106.7[b]	164.0[c]	<0.001
	1.000	*1.000*	*3.000*	
Veterinarians	124.5[a]	136.0[b]	152.0[c]	0.036
	1.000	*1.000*	*1.000*	

Table 10.21 The influence of each type of information sources to the selection of a particular marketing strategy

N.B: Within factors (rows), marketing channels (cells) with different letters differ significantly at $P<0.05$ according to Q test. Average ranks are reported in standard text and medians in *italics*.

Therefore, most of the sheep and goat farmers that were informed by their own files, agricultural journals, TV-radio and their family, adopted the production-orientation strategy. On the other hand, the farmers that were mostly informed by the cooperative organisations to which they belonged, government bodies, livestock, meat and milk buyers as well as veterinarians followed the return-focus strategy.

The statistical test did not identify any significant association (P>0.05) between the following types of information sources and a particular marketing strategy:

(f) Newspapers (v72)

(g) Other farmers (v75)

(h) Livestock dealers (v80)

(i) Representatives of feed companies (v81)

(j) Agricultural banks (v83)

Table 10.22 illustrates the types of information sources that have a significant impact on the selection of each marketing strategy. The analysis showed that most of the farmers who were interested to be informed about the livestock, meat and milk prices followed the return focus strategy, while the farmers who wanted to be informed about production techniques were production orientated. On the other hand, the farmers who were mostly concerned to be informed about animal diseases and finance preferred either the production orientation or the return focus strategy. This study did not identify any significant association between the selection of a particular marketing strategy and consumer preferences and attitudes (v91).

Information Sources	Marketing Strategies: Differentiation Strategy	Production Orientation Strategy	Return Focus	P
Livestock prices	74.9[a]	133.1[b]	161.5[c]	<0.001
	4.000	*5.000*	*5.000*	
Meat prices	75.2[a]	130.5[b]	162.0[c]	<0.001
	4.000	*5.000*	*5.000*	
Milk prices	78.7[a]	118.4[b]	164.1[c]	<0.001
	1.000	*4.500*	*5.000*	
Production techniques	127.4[a]	201.9[b]	136.9[c]	<0.001
	1.000	*3.000*	*1.500*	
Animal diseases	98.1[a]	152.1[b]	153.1[b]	<0.001
	4.000	*5.000*	*5.000*	
Finance	71.2[a]	157.7[b]	156.7[b]	<0.001
	3.000	*3.000*	*3.000*	

Table 10.22 The influence of each type of information to the selection of a particular marketing strategy

N.B: Within factors (rows), marketing channels (cells) with different letters differ significantly at $P<0.05$ according to Q test. Average ranks are reported in standard text and medians in *italics*.

The Friedman one-way non-parametric test was used to identify for each strategic group which are the most important type of information sources and the most important type of information that the farmers are interested in. The results of the test (Figure 10.8) indicated that there was a significant association between the examined information sources and selection of each marketing strategy. The test also identified that there was a significant association among the examined information sources and the selection of each strategic group (Figure 10.8)

As Figure 10.8 illustrates, the sheep and goat farmers who adopted the differentiation strategy as well as the production orientation strategy were mostly informed (in rank order of importance) by their family, other farmers and governmental bodies. Moreover, the farmers who followed the return-focus strategy were mostly informed by their family,

governmental bodies, other farmers and the agricultural cooperatives of which they are members.

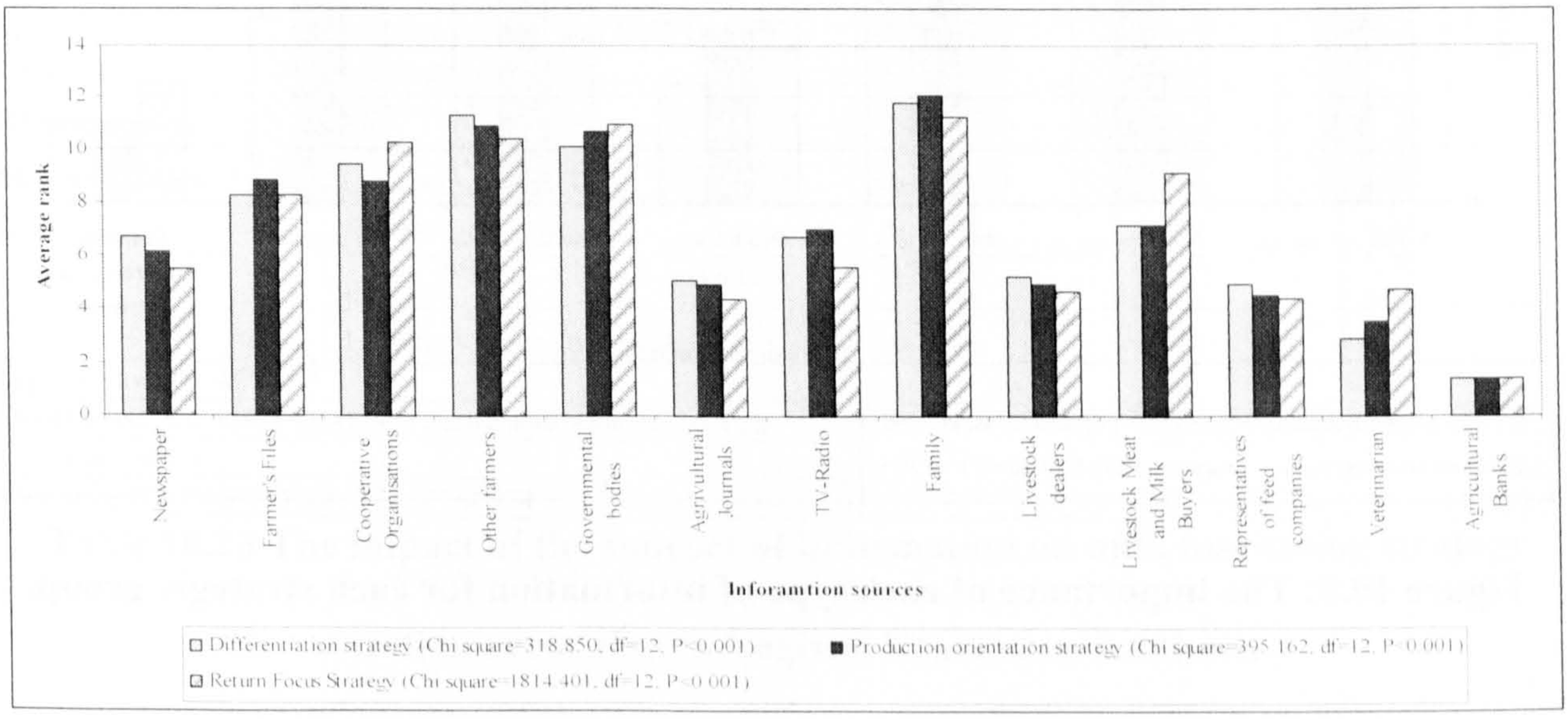


Figure 10.8 The importance of each type of information sources for each strategic group

The farmers who adopted the differentiation strategy (as Figure 10.9 illustrates) were mostly interested to be informed about animal diseases, livestock and meat prices. The production-orientated farmers were mostly interested in being informed about livestock prices, meat prices and animal diseases. On the other hand, the return focused farmers mostly wanted to be informed about livestock and meat prices and to a lower degree about milk prices and animal diseases.

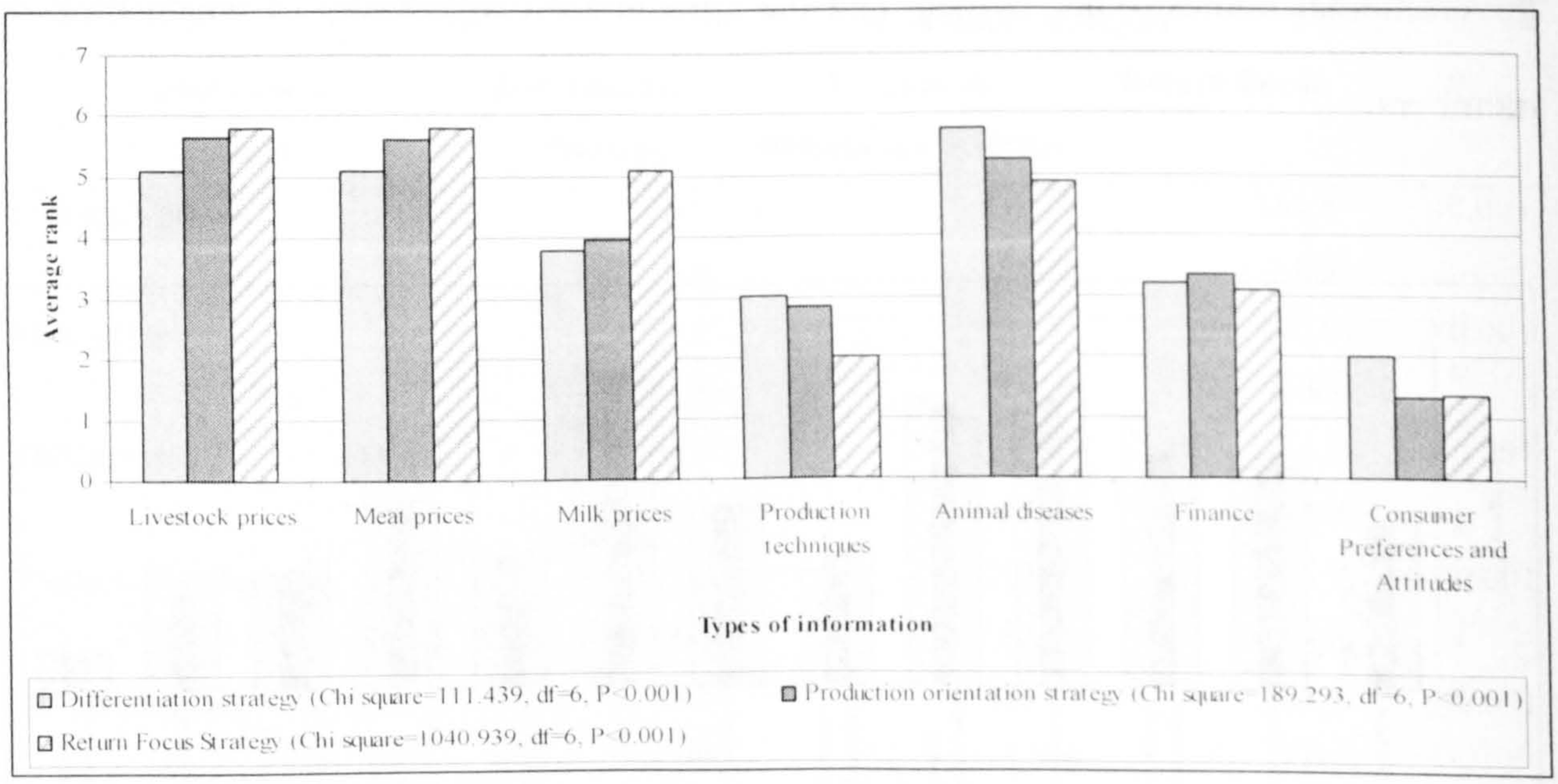


Figure 10.9: The importance of each type of information for each strategiv group.

The influence of the information sources as well as of the types of information on milk marketing strategy selection was explored conducting nominal logistic regression analysis (Minitab 13). The information sources and type of information that significantly affect marketing strategy selection according to Kruskal – Wallis test were used as predictors in the logistic regression models.

According to the results of the analysis that are presented in Table 10.23 the farmers who were keen on being informed from cooperatives organisations as well as from livestock, meat and milk buyers mostly prefer the return-focus strategy instead of the production-orientation strategy. On the other hand, the farmers who preferred to be informed from TV or radio adopted the production-orientation strategy over the return-focus strategy. Furthermore, the farmers who were interested in being informed from their own files, their own family or the livestock, meat and milk buyers mainly followed the return-focus strategy instead of the differentiation strategy. Besides, the deviance goodness of fit tests support that the model fits to the data (MINITAB 1997).

Logit	Predictors	Coef	P	Odds Ratio
Logit 1: (Production Orientation Strategy / Return Focus Strategy)	Constant	-4.368	0.038	
	Farmer's Files	0.1374	0.595	1.15
	Agricultural Cooperative	-0.6108	0.026	0.54
	Governmental Bodies	0.4032	0.158	1.50
	Agricultural Journals	0.2557	0.633	1.29
	TV - Radio	0.6554	0.007	1.93
	Family	0.5809	0.102	1.79
	Livestock, Meat and Milk Buyers	-0.3850	0.048	0.68
Logit 2: (Differentiation Strategy / Return Focus Strategy)	Constant	8.571	0.000	
	Farmer's Files	-0.5831	0.039	0.56
	Agricultural Cooperative	-0.2727	0.379	0.76
	Governmental Bodies	-0.4313	0.170	0.65
	Agricultural Journals	-0.8304	0.327	0.44
	TV - Radio	0.3105	0.254	1.36
	Family	-1.0802	0.001	0.34
	Livestock, Meat and Milk Buyers	-0.7075	0.001	0.49
Log-likehood = -180.065		Reference Group= Return Focus Strategy		
G= 101.885, df = 14, P<0.001				
Goodness of Fit				
Deviance x^2 = 265.481, df=312, P= 0.974				

Table 10.23 The impact of the sources of information on milk marketing strategy selection according to Logistic Regression Analysis.

The impact of the types of information on marketing strategy selection is presented in Table 10.24.

Hence, the farmers who were interested in being informed about meat and milk prices mostly preferred the return-focus strategy over the production-orientation strategy. On the other hand, the farmers who were very interested in being informed about production techniques mainly followed the production-orientation strategy over the return-focus strategy. Besides, the farmers who were keen on being informed about milk prices and financial issues adopted the return-focus strategy over the differentiation strategy. Furthermore, the deviance goodness of fit tests indicates that there is sufficient evidence that the model fits the data (MINITAB 1997).

Logit	Predictors	Coef	P	Odds Ratio
Logit 1: (Production Orientation / Return Focus)	Constant	9.310	0.017	
	Livestock prices	0.939	0.526	2.56
	Meat prices	-3.000	0.031	0.05
	Milk prices	-0.5394	0.001	0.58
	Production techniques	1.2032	0.001	3.33
	Animal diseases	-0.1301	0.732	0.88
	Finance	-0.2772	0.306	0.76
Logit 2: (Cost Focus / Return Focus)	Constant	19.006	0.001	
	Livestock prices	-2.123	0.374	0.12
	Meat prices	-1.031	0.664	0.36
	Milk prices	-0.2967	0.033	0.74
	Production techniques	-0.0530	0.860	0.95
	Animal diseases	-0.5789	0.176	0.56
	Finance	-0.6686	0.015	0.51
Log-likehood = -150.591		Reference Group= Return Focus Strategy		
G= 160.833, df = 12, P<0.001				
Goodness of Fit				
Deviance x^2 = 117.425, df=150, P= 0.977				

Table 10.24 The impact of types of information on milk marketing strategy selection according to Logistic Regression Analysis.

10.7. A Comparison Between Livestock and Milk Marketing Strategy Selection by the Sheep and Goat Farmers in the Region of EMTh.

In the Region of EMTh in Greece, the sheep and goat farmers usually market both their livestock and milk production. Therefore, the association between the identified marketing strategies regarding the distribution of their livestock and milk produce was explored by conducting cross tabulation chi-square analysis.

As was mentioned in section 10.3 of this chapter as well as in section 9.3 of the previous chapter, from the 314 farmers comprising the survey sample only 291 farmers were used for the development of the milk marketing strategic typology (13 cases were removed as outliers) and 289 farmers were used for the development of the livestock marketing strategic typology (25 cases were considered outliers). Hence, the farmers that were used for development of both livestock and milk marketing strategic typologies were identified and were used for the employment of this statistical analysis. More particularly 276 sheep

and goat farmers were used for the cross tabulation chi-square analysis. The results of the test are presented on Table 10.25.

			Milk Marketing Strategies			
			Differentiation	**Production Orientation**	**Return Focus**	**Total**
Livestock Marketing Strategies		% within livestock marketing strategies	5.6%	4.8%	89.6%	100%
	Cost Focus	% within milk marketing strategies	25.9%	13.6%	54.6%	45.3%
		Standardised Residuals	n.s	-3.1[b]	2.0[a]	
		% within livestock marketing strategies	6.3%	75.0%	18.8%	100%
	Production Orientation	% within milk marketing strategies	7.4%	54.5%	2.9%	11.6%
		Standardised Residuals	n.s	8.4[c]	-3.6[c]	
		% within livestock marketing strategies	15.1%	11.8%	73.1%	100%
	Return Focus	% within milk marketing strategies	66.7%	31.8%	42.2%	43.1%
		Standardised Residuals	n.s	n.s	n.s	
		% within livestock marketing strategies	9.8%	15.9%	74.3%	**100.0%**
	Total	% within milk marketing strategies	100.0%	100.0%	100.0%	**100.0%**

Table 10.25 Association between livestock and milk marketing strategies in the sheep and goat sector in the Region of EMTh

x^2=104.421, df=4, P<0.001

[a]P<0.05, [b]P<0.01 and [c]P<0.001.

Therefore, the statistical analysis indicated that there is a significant association between the selection of a particular livestock and milk marketing strategy by the sheep and goat farmers in the Region of EMTh in Greece. More specifically, the farmers who adopt the cost-focus strategy regarding the marketing of their livestock mainly follow the return-focus strategy relative to the marketing of their milk produce and vice versa. Moreover, the farmers who prefer the production-orientation strategy regarding the marketing of their

livestock also follow the production-orientation strategy concerning the marketing of their milk production and vice versa.

10.8. Conclusions.

This study has identified that the sheep and goat farmers in the Region of East Macedonia and Thrace in Greece market their milk through four main distribution channels: (a) local private milk processing plants, (b) cooperative milk processing plants, (c) big national and regional dairy firms and (d) private use of milk.

Furthermore, the analysis presented in this chapter confirmed the hypotheses presented in Chapter 8 and Appendix I regarding the marketing strategies and distribution channel utilisation of the sheep and goat farmers in the Region of EMTh in Greece. In particular:

- The sheep and goat farmers can be classified to three strategic groups regarding their milk marketing activities and business orientations. These strategic groups are: (a) the farmers who follow the differentiation strategy, (b) the farmers who adopt the production orientation strategy and (c) the farmers who follow the return focus strategy.
- This study support the hypothesis that existing generic and agricultural typologies and taxonomies are inadequate to describe the marketing strategies regarding the milk distribution followed by the sheep and goat farmers in Greece and more particular in the Region of EMTh. However, some comparisons can be made. Specifically, the differentiation strategy has many similarities with *the differentiation strategy* of Porter's (1980), Kohls and Uhl's (1990), McLeay's *et al.* (1996), Fearne and Bates's (2000) and Davies's (2001) typology. On the other hand, a production orientation strategy may fell into *prospectors* classification of Miles and Snow's (1978) taxonomy

and has many similarities with *Production / Production Flexibility Strategy* of McLeay's *et al.* (1996) typology, Mitchell's (1976) *production-orientation strategy* and Davies's (2001) *production-strategy* of sheep farmers classification. Furthermore, return focus strategy has some similarities with the *opportunist strategy* of Davies (2001) typology as both are interested in short term price advantages. An examination of the marketing strategies that the sheep and goat farmers follow in the Region of EMTh in Greece regarding the distribution of their livestock and milk produce indicates that there are many similarities between the *production- orientation strategies* as well as between the *return-focus strategies* that these farmers follow regarding the marketing of both products.

- The farm and farmer's characteristics do have significant impact on the selection of a particular milk marketing strategy by the sheep and goat farmers in Greece.
- The factors (e.g. sale price, loyalty, speed of payment) that influence sheep and goat Greek farmers on the selection of a particular milk marketing channel are significantly associated with the selection of a specific milk marketing business strategy.
- The identified milk marketing business strategies are significantly related with the selection of particular milk marketing channel.
- Farm and farmer's characteristics do have significant impact on the selection of a particular milk marketing channel by the sheep and goat farmers in Greece.
- The examined factors (e.g. sale price, loyalty, speed of payment) do have a significant impact on the sheep and goat Greek farmers' selection about a particular milk marketing channel.
- Information sources do have significant influence on the selection of a milk marketing business strategy.
- Sheep and goat farmers in the Region of EMTh follow similar livestock and milk marketing strategies.

CHAPTER 11

METHODOLOGICAL APPROACH: MARKETING SURVEY IN SHEEP AND DAIRY COW FARMERS IN THE COUNTY OF CORNWALL IN UNITED KINGDOM

11.1 Introduction

This chapter aims to describe the way that this research has been designed and conducted. It also provides the conceptual model in which this research is based on and identifies the hypotheses of the research. Furthermore, it operationalises the study in order to develop a suitable and satisfactory methodology which meets the objectives of the research.

11.2 The Conceptual Model

This study is mostly empirical rather than conceptual due to the limited understanding of the dimensions, factors and farm/farmers characteristics that influence the farm business strategy. It aims to examine the existence of a strategic typology regarding the marketing patterns of sheep and dairy cow farmers in Cornwall at farm level as well as the relationship between the strategic groups and the farm/farmers characteristics.

A conceptual model similar to that which was described in Chapter 8 is used in this research, as its objectives have many similarities with those of the parallel survey that was conducted in the sheep and goat farmers in the Region of EMTh in Greece. The model

below (Figure 11.1) tries to investigate the relationships between aspects of the internal and external environment of the farming businesses and the development of strategic dimensions that may influence the farmers in Cornwall to adopt a specific distribution pattern, as well as to examine the association between the farm /farmer characteristics and the adoption of a specific marketing strategy and a particular distribution outlet.

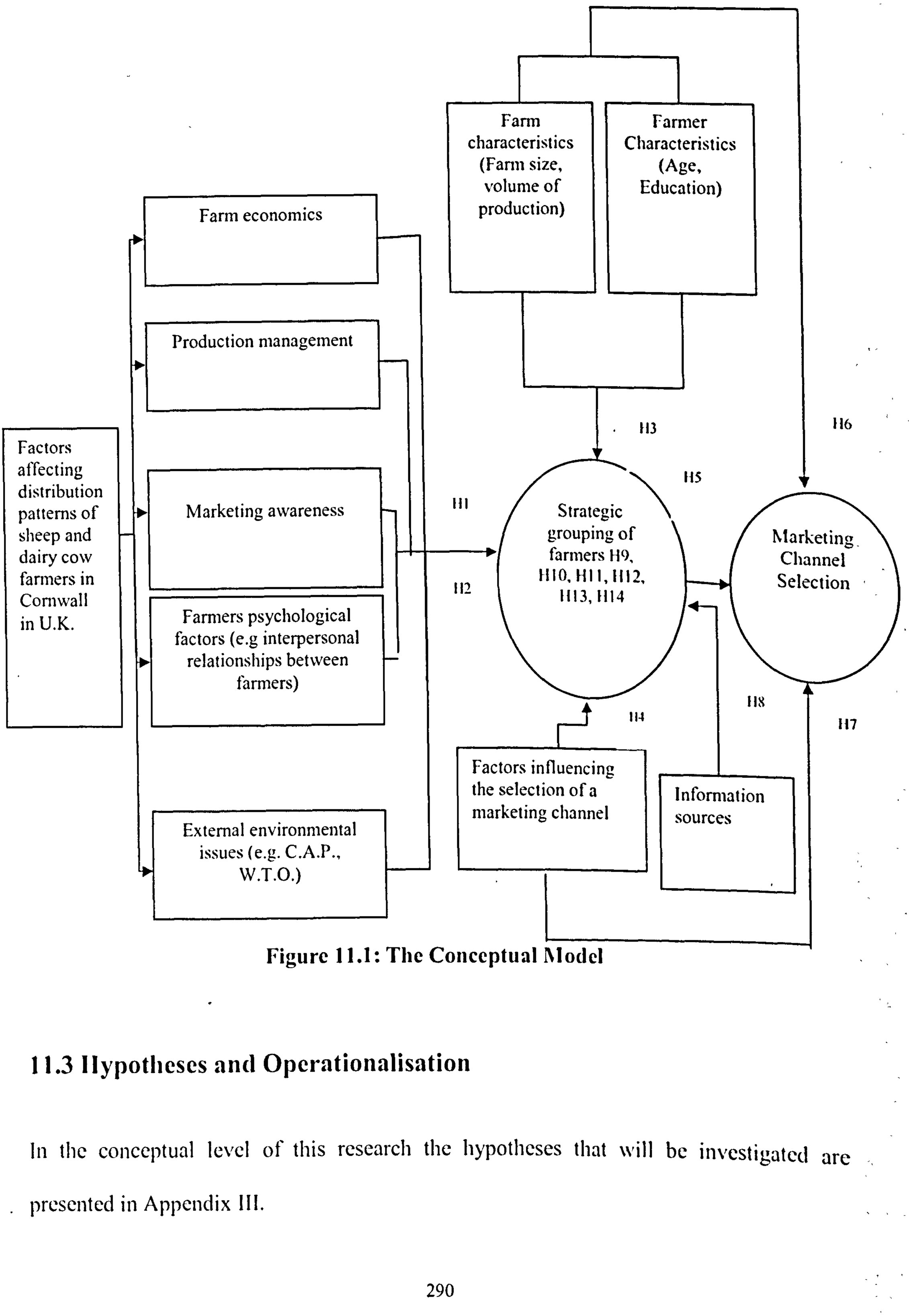


Figure 11.1: The Conceptual Model

11.3 Hypotheses and Operationalisation

In the conceptual level of this research the hypotheses that will be investigated are presented in Appendix III.

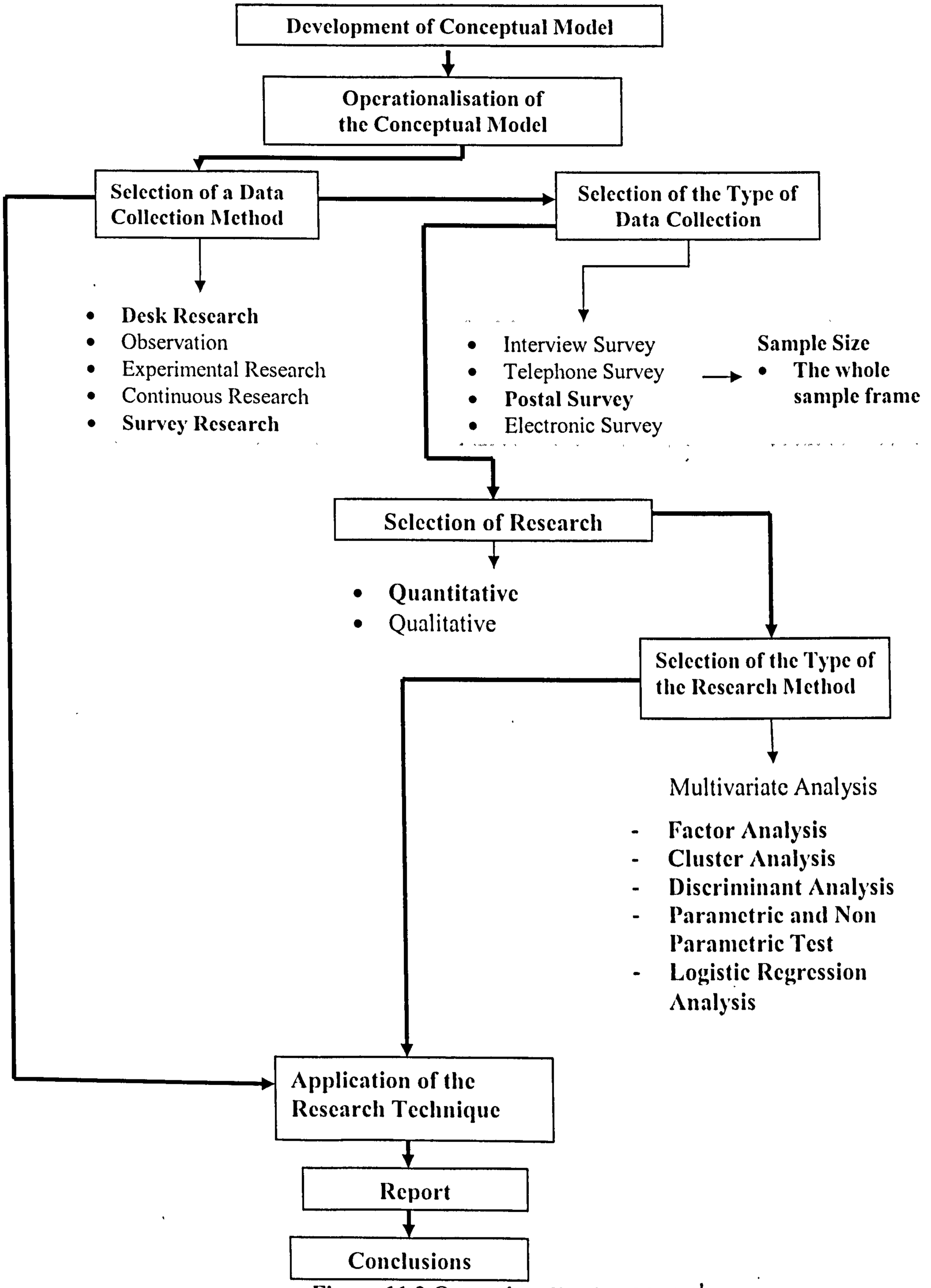


Figure 11.2 Operationalisation Model[1]

1 Typeface in Bold indicates methods used

The operational model of this survey is presented in the Figure 11.2.

Operationalizing the Conceptual Model, the Concepts transformed to variables which are presented in Appendix VI.

11.4 Research Methodology

In this research a survey of sample farms was conducted to gather the necessary data for the identification of the marketing channels that the sheep and dairy cow farmers use in the County of Cornwall as well as for the examination of the relationship between various variables and the marketing orientations of farm businesses. The methodological approach as well as the main choices that were made for data collection will be presented in this chapter.

11.4.1 Postal Survey or Field Interviews?

For the present study it was decided to gather information conducting a postal survey as the livestock farmers in U.K. are familiar with this kind of research and their educational level is suitable for the use of this kind of survey method. Additionally, the cost of conducting large interview survey sample to develop typology was considered prohibitive as the researcher is normally based in Greece. Furthermore, the postal method was more convenient as the researcher should not have access to the personal protected data of the farmers in any of the possible sample frameworks, such as NFU member lists, DEFRA member lists. Besides, the disadvantages of the postal survey could be reduced by ensuring that the questionnaire was wholly appropriate for the methodology used (e.g. adaptation of McLeay *et al.'s* (1996) and Davies (2001) approaches) and rigorous (pre –tested and piloted).

11.4.2 The Area and Unit of Study.

The County of Cornwall has many similarities with the Region of EMTh. Both regions are characterized by the E.U. as Objective One Regions, are isolated compared to the rest of their countries, their population is about half million people and are dominated by ruminant livestock production. The sheep and goat sector (producing meat and milk) consist the most important livestock sector in terms of gross output in the Region of EMTh. On the other hand, the most important livestock sector in terms of gross output in Cornwall is the dairy cow sector followed by beef sector and sheep sector. Hence, both regions appeared to be wholly appropriate area to study the livestock and milk marketing strategies adopted by farmers and compare each other.

11.4.3 The Sampling Frame.

In the case of these marketing surveys there were three possible sources of sampling frame. The first was the DEFRA lists of registered holdings. These lists hold the most comprehensive sampling for British agriculture, but the problem is that these lists are not generally available for researchers not working on DEFRA sponsored projects. Furthermore, these lists were not possible to be provided generally to researchers due to the protection of the personal sensible data information. Yellow Pages of local phone directories can also provide a useful source of lists of local farmers. However, there was much criticism about the use of such lists for random selection. Even Errington (1985a) and Burton and Wilson (1998) argued that some criticism may be misplaced, on the examination of the local Yellow Pages, it was extremely difficult to identify sheep and dairy cow farmers separately. The third possible sampling source was the National Farmers Union database of the South West England. Whilst there is some criticism of this kind of sampling frame, such as not all farmers are members and there may be regional variations, Emerson and MacFarlane's (1995) farm survey study indicated that NFU member lists

would appear to be the most representative of farm businesses by area of farmland. On the other hand, the problem with the protection of the sensible personal data information appeared to exist with these lists also.

However, ultimately the NFU database was used because it was possible to identify the farmers in Cornwall who had interest in sheep and dairy cow production. Moreover, the problem with the protection of the sensible personal data was overcome by sending the questionnaires to the sheep and dairy cow farmers in Cornwall through the NFU South West Office. Although not all farmers would be included in his sample frame, the possibility of identifying sheep and dairy cow farmers was considered more important. Additionally, it also provided the opportunity to obtain a meaningful industry support to increase the response rate.

11.4.4 The Sample.

Discussions were held with the NFU South West Office to determine the type of information that could be identified from the membership database before deciding on a selected sample. Firstly, it was necessary to determine whether to select the whole sample for each category or target a stratified sampling frame. The first was chosen as the whole sample was selected and in the case of Greek survey and this research aims to compare the findings from the two surveys. Furthermore, in the NFU lists were registered 266 sheep farmers and 340 dairy cow farmers operating in Cornwall. Due to the fact that in postal surveys the response rates are normally less than 30% and a multivariate statistical analysis would be employed for the development of a strategic typology, it was not possible to exclude any farmers from the survey sample.

As the 10% of the registered sheep and dairy cow farmers were used as a sample for conducting the pilot survey, the remaining 240 sheep and 306 dairy cow farmers comprised the sample for the main survey.

11.5 Survey Procedure

11.5.1 Pre – tested

The survey was initially pre-tested on farm management and business strategy academics, experts from NFU, Cornwall Dairy Focus Group and Cornwall Enterprises. As a result minor alterations were made to questionnaire prior to the pilot survey.

11.5.2. Pilot Survey

The pilot survey was dispatched in May of 2003 to 26 sheep and 34 dairy cow farmers operating in the County of Cornwall. Farmers were selected by using a systematic sampling method. The 10% of the farmers were sampled for the pilot survey. Hence, the sample consisted of every ten sheep and dairy cow farmers on each list started from the 10^{th} name in both cases (e.g 10^{th}, 20^{th}, …..260^{th} sheep farmers were pilot surveyed).This method was used because it was considered less complicated for the officers of NFU South West Office that send the questionnaires on behalf of the researcher as they wanted to ensure the protection of the sensible personal data information.

In an attempt to increase the response rate, the NFU provided supporting letters (Appendix VI) which were photocopied onto the back of the covering letter. Besides, it gave permission for its logo to accompany the survey.

The pilot survey was conducted in order to test and validate the questionnaire and to assess the response rate for the main survey. The response rate was 17% comprising 15% for the sheep survey and 18% for the dairy cow survey without sending a reminder letter. A reminder letter was not sent because the questionnaire worked quite well and no further changes were required for the main survey.

11.5.3 Main Survey

The main survey was started in July and completed in September of 2003 to 240 sheep and 306 dairy cow farmers. As with the pilot survey, the corporate logo of NFU was included on the survey and supporting letter from the same organization photocopied on the back of the accompanying letter. The response rate achieved pre-reminder was 22% for the sheep and 21% for the dairy cow samples. However, the response rate post reminder increased to 30% for the sheep and 25% for the dairy cow farmers. The productive response rate was 22% for the sheep survey and 18% for the dairy cow survey. The farmers that did not answer the questionnaires were the farmers that sold their flocks/herds the last two years mostly due to the recent Food and Mouth outbreak.

Comparisons were made to recent U.K. postal farm survey study response rates, for example Warren (1989) 45%, Hobbs (1996c) 28%, Davies (1999) 35% and Davies (2001) 31%. Even the usable response rate of this study was lower compared to those of the above cited surveys, it was decided due to cost constraints and the fact that some of the Cornish farmers were possible surveyed by Davies (2001) not to dispatch a second reminder as it was unlikely that the response rate would be significantly increased; and it was felt that the usable response was sufficient to meet research objectives.

Chapter 11: Methodological Approach: Marketing Survey in Sheep and Dairy Cow Farmers in the County of Cornwall in United Kingdom

The representativeness of the sample was checked by comparing the characteristics of the sample with those of the total population following the methodology that Errington (1984b) used in his survey. A comparison between the characteristics of the selected sample and those of the total population of the sheep and dairy cow farmers in the County of Cornwall is presented in Table 11.1. Hence, the samples represent 3% of the total population of sheep farmers and 5% of the total population of the dairy cow farmers operating in Cornwall according to DEFRA (2004a). Both samples are reasonably representative of the total population of sheep and dairy cow farmers operating in Cornwall as all their characteristics (Table 11.1) are consistent with the total population.

	Sample	County of Cornwall	Sample as % of County of Cornwall
Number of sheep farms	240	1,809[1]	13%
Number of sheep farmers answered the questionnaire	52	1,809[1]	3%
Sheep livestock population	17,866	5,250,571[1]	3%
Livestock production (heads)	8,058	244,645[1]	3%
Average livestock production per farm (heads)	155	135	
Number of dairy cow farms	306	1,029[1]	30%
Number of dairy cow farmers answered the questionnaire	54	1,029[1]	5%
Dairy cow population (heads)	7,748	81,460[1]	9%
Cow milk production (litres)	50,792,521	539,265,200[3]	9%
Average yield per dairy cow (litres per annum)	6,556	6,620[2]	

Table 11.1: Evaluation of the sample

[1]DEFRA (2004a)

[2] DEFRA (2004b)

[3] The cow milk production was the product of the average yield per cow with the dairy cow population

11.5.4 Questionnaire Design

Marketing and strategic variables were identified after searching the business and agricultural marketing, farm management, agricultural economics, and strategic management literature. Attention was given to existing conceptual frameworks such as Porter's, (1980) generic strategies; Miles and Snow's (1978), Barker's (1989), Fearne and Bates' (2000) strategic typologies; Mitchell's (1976) and Davies' (2001) livestock as well as McLeay's *et al* (1996) arable typologies; all of which were used as a starting point. Taxonomic classifications of strategy including strategic group studies were also reviewed. This was followed by informal interviews with farmers, business consultants specialized in the agricultural sector, managers of firms processing and trading agricultural products and agricultural economics academics in order to gain a detailed knowledge of the industry prior to selecting the appropriate variables.

An eight-page and a seven-page questionnaire (Appendix VIII) was designed for the sheep and dairy cow marketing survey, respectively, in order to meet the research objectives referred in Chapter 1:

- To identify and quantify the criteria that sheep and dairy cow producers in the County of Cornwall use to select marketing channels regarding livestock and milk produce.
- To examine the links between farmer/farm types in relation to their business and marketing orientations in order to model farm marketing behaviour.
- To determine farm marketing behaviour influences market channel utilisation
- To compare the characteristics and the factors that influence the decision making of the farmers in relation to the marketing strategy selection and distribution channel utilization in the Region of East Macedonia and Thrace in Greece and in the County of Cornwall in U.K., and to identify the similarities and the differences in these characteristics.

The questionnaires were designed in six parts in order to meet the research objectives:

Part 1 – Choice criteria for selecting marketing channels in the livestock sector comprised six questions related to marketing channel used, choice criteria, group marketing scheme membership, distance from the marketing outlet, livestock classification to the Carcass Classification Grid and sale price compared to other farmers. In the dairy cow survey this section of the questionnaire is consisted of five questions regarding the marketing channel used, choice criteria, group marketing scheme membership and milk sale price. This section in both questionnaires would be used to determine the channel utilization, to identify the relation between various factors and the selection of a particular marketing strategy after bivariate statistical analysis and to discover if intergroup differences exist between example carcass / milk attributes and choice criteria by using multivariate analysis.

Part 2 – Management activities and attitudes: comprised 44 and 39 attitudinal statements on a 5-point Likert scale relating to livestock (sheep survey) and milk (dairy cow survey) marketing and business orientations, respectively. These questions covered areas such as non-controllable factors, marketing activities, consumer/buyer orientation as well as production planning and budgetary control. This part of the survey is particular important because the attitude variables would be used as a basis to derive a set of strategic dimensions from which the typologies would be modelled and predicted.

Part 3 – Information sources and types: comprised 20 information sources in both surveys and 11 types of information used as source of marketing intelligence in sheep survey and 10 types of information in dairy cow survey. Responses based on a 5-point Likert scale.

Market information may be relevant to farmer's marketing decision and again would be used to discover if inter-group differences exist.

Part 4 – Marketing or added value questions relating to differentiation. This part is important in respect of whether farmers perceived themselves to be differentiators.

Part 5 – General farm characteristics: comprised nine questions in both surveys related to characteristics such as farm size, flock size, volume of produce and farm area. This section was of particular relevance with regard to profiling the derived typologies after multivariate statistical analysis.

Part 6 – General farmer's characteristics: comprised 22 questions in the sheep survey and 20 questions in the dairy cow survey related to characteristics such as farm and non farm previous working experience, income, debt level, age and education. This part was also of particular relevance with regard to profiling the derived typologies after multivariate statistical analysis.

11.6 Methodology of the statistical analysis

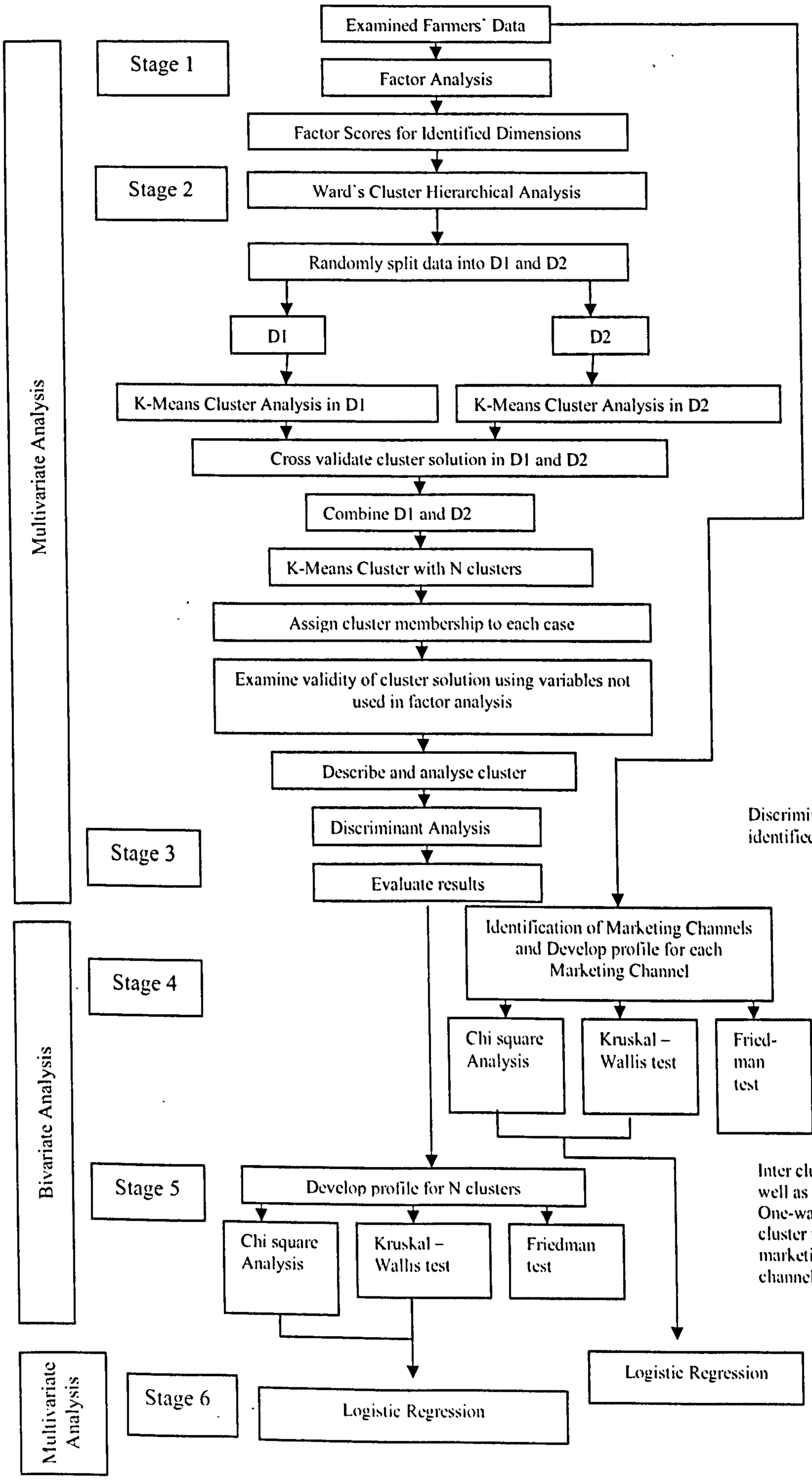
A similar statistical methodology to that used for the survey conducted in Greece was adopted in order to classify the farmers into strategic groups and to profile them regarding their marketing channel utilisation, farm and farmers characteristics.

In particular, factor analysis was conducted in the fist stage in order to reduce the 44 examined variables (V1-V44 of Appendix IV) which refer to the factors that affect the selection of livestock distribution patterns by sheep farmers in the County of Cornwall in

U.K., as well as the 39 variables (V1-V39 of Appendix IV) which are refer to the factors that affect the selection of milk distribution patterns by the dairy cow farmers in the same County (Tabachnick and Fidell 1989; Malhotra 1996; Hair *et al.* 1998). In the second step, factor scores were subjected to hierarchical and non-hierarchical cluster analysis in order to classify the farmers with similar strategic behavioural patterns to strategic groups (Punj and Stewart 1983; Harrigan 1985; Helsen and Green 1991; Hair *et al.* 1998). Discriminant analysis was then employed to predict cluster membership and to assess if reasonable discrimination had been achieved between the identified groups (Tabachnick and Fidell 1989; Malhotra 1996; Hair *et al.* 1998). Descriptive statistics were used to identify the marketing channels the sheep and dairy cow farmers use for the distribution of their livestock and milk produce. Bivariate statistical analysis such as chi-square analysis, Kruskal – Wallis and Friedman non-parametric one-way ANOVA tests were used to develop the profile of the farmers adopt each livestock and milk marketing channel. Besides, logistic regression analysis conducted in order to identify the impact of the examined factors and the farm/farmers' characteristics on marketing channel selection in a multivariate level. The same bivariate techniques were performed in order to develop group profiles and investigate any possible association between each marketing strategy and the examined farm/ farmers characteristics (V45-V75 of Appendix IV for livestock strategic profile and V40-V68 for milk strategic profile) and the factors that influence the farmers to adopt a particular livestock (V76-V96 of Appendix IV) and milk (V69-V84) marketing outlet. Furthermore, the Kruskal – Wallis and Friedman non-parametric one-way ANOVA tests were employed to profile each strategic group regarding the type of information sources (V97-V116 of Appendix IV for livestock strategic profile and V85-V104 for milk strategic profile) and the type of information (V117-V127 of Appendix IV for livestock strategic profile and V105-V114 for milk strategic profile) the sheep and dairy cow farmers use in the County of Cornwall in U.K.. Logistic regression analysis was

also employed to identify which factors, farm's and farmer's characteristics as well as information sources and types of information influence the sheep and dairy cow farmers in Cornwall to adopt a particular marketing strategy.

The strategic group analysis for the development of strategic typologies of farmers is becoming well established in the farm management literature (McLeay *et al.* 1996; Feka *et al.* 1997; Ohlmer *et al.* 1998; Davies 2001). The stages of the statistical approach that was used in this study are illustrated in Figure 11.3.



Comments

Factor Analysis of correlated variables to obtain strategic dimensions

Wards cluster Hierarchical analysis to obtain a range of possible cluster solutions

Assess the range of appropriate numbe of clusters in D1 sample and obtain initial centroids.

K-Means Cluster analysis separately for D1 and D2 using factor scores. D1 to generate the possible cluster solution and D2 to select the optimum solution based on stability and reproducibility.

Number of clusters, N selected to obtain satisfactory cross -validation

External validation of cluster solution by examining if clusters varied significantly on descriptive variables that were not use to generate clusters

Discriminant analysis to assess the contribution of the identified variables and predictive capability

Descriptive statistics for marketing channel identification as well as Chi square analysis, Kruskal-Wallis and Friedman non-parametri One way Anova test to assess the associatio between marketing channel selection, farm and farmers characteristics and factors affec farmers to choose a particular marketing channel

Inter cluster tests using Chi square analysis analysis as well as Kruskal-Wallis and Friedman non-parametric One-way Anova test to assess the association between cluster membership, farm, farmers characteristics, marketing channel selection, factors affect marketing channel utilization and information sources

Logistic regression analysis was used to identify the impact of the factors and farm farm characteristics (that affect the profile of each marketing channel and strategic group) on marketing outlet and marketing strategy selection

Figure 11.3 Methodology of Statistical Analysis for the Development of Typology Regarding the Marketing Strategies that Sheep and Dairy Cow Farmers adopt in U.K. (County of Cornwall)

11.6.1 Factor Analysis: Identification of Key Strategic Dimensions

Due to the limited prior knowledge about the strategic dimensions describing the strategic behaviour of agricultural producers, factor analysis was used in an explanatory manner, aiming to reduce the variables describing the marketing and business attitudes of the farmers (V1-V44 of Appendix IV for livestock marketing and V1-V39 for milk marketing) to a smaller and meaningful set of strategic dimensions suitable for subsequent statistical analysis.

The attitude scores (Likert Scale) of the business and marketing attitudes of the farmers (V1-V44 for livestock marketing and V1-V39 for milk marketing) were used in order the factor analysis to identify a smaller number of key strategic dimensions that characterize farmers' strategic way of thinking and acting.

The first step of the analysis is the evaluation of the suitability of the sample. In cases with samples of fewer than 50 observations factor analysis does not provide a suitable technique. As a general rule, the minimum is to have four or five times more observations than the number of the examined variables (Kline 1994). In the survey regarding the sheep farmers there were 52 observations, while there were 54 observations in the survey about the dairy cow farmers. The correlation and anti-image matrix were examined and only 10 from the 44 variables describing the livestock marketing and business attitudes of the sheep farmers in Conrwall and 9 from the 39 variables describing the milk marketing and business attitudes of the dairy cow farmers in the same county were used for factor analysis. Therefore, the sample was suitable for factor analysis.

The anti-image correlation matrix that SPSS v.9 provided as well as Bartlett test of sphericity and measure of sampling adequacy (MSA) were used in order to check the

appropriateness of the data for factor analysis (Appendix XIII). The variables that had high proportion of large absolute values of anti –image correlations as well as MSA less than 0.5 were removed before the analysis took place. Finally, factor analysis was conducted for only 10 (V1, V10, V13, V14, V24, V25, V29, V30, V36 and V44) of the 44 variables regarding the livestock marketing attitudes and 9 (V5, V14, V18, V22, V25, V26, V28, V32 and V35) of the 39 variables regarding the milk marketing attitudes.

Factor extraction (from the correlation matrix) comprised the next stage of factor analysis. The latent root criterion, the scree plot test and the percentage of variance were used in this research for the determination of the number factors, as there was not any prior knowledge of the identified key strategic dimensions regarding the livestock and milk marketing farmers' attitudes.

The factors that were derived in both livestock and milk marketing strategic attitudes were rotated orthogonally with the varimax method that SPSS v.9 provided. The varimax method attempted to minimize the number of variables that had high loadings on a factor and resulted in a clearer separation of the factors (Malhotra 1996; Hair *et al.* 1998).

Interpretation of the factors took place after their extraction. Interpretation was conducted by identifying the variables that have large loadings on the same factor and taking under consideration the suggestions of Tabachnick and Fidell (1989) and Hair *et al.* (1998).

Thus, in the case of the livestock and milk marketing surveys where the sample size were 52 and 54 farmers, respectively, factor scores more than 0.70 considered significant and acceptable. Moreover, the principal component factor scores of the underlying key strategic dimensions (for livestock and milk marketing strategies), which were obtained

through the use of the varimax rotation method, were interpreted and named. The factor scores (mean 0, standard deviation 1) were then saved for subsequent multivariate analysis (cluster and discriminant).

11.6.2 Cluster Analysis: Classification to Strategic Groups

Cluster analysis was conducted in order to develop a proposed classification of the sheep and dairy cow farmers in the County of Cornwall in U.K. and to identify the relationship of the derived from factor analysis key strategic dimensions to cluster membership.

The variables that were selected for clustering the sheep and dairy cow farmers in Cornwall regarding their strategic and marketing attitudes (for livestock and milk marketing strategies) were the identified orthogonal standardized factor scores (mean 0, standard deviation 1) of the respondents. Before cluster analysis took place, the data were examined for outliers as they are sensitive to this statistical technique. Due to the fact that factor scores were standardized variables, values exceeded ±3.0 were outliers and hence were removed before the analysis was conducted (Tabachnick and Fidell 1989; Hair *et al.* 1998).

In this study, both hierarchical and non-hierarchical methods were employed as Chapter 8 presents and following the recommendations Harrigan (1985), Helsen and Green (1991), Hair *et al* (1998) and Siardos (1999). A hierarchical technique was used to predetermine the number of clusters, profile the cluster centers and identify any obvious outliers while the K-means method was employed to group the farmers with the cluster centroids from the hierarchical results as the initial seed points.

Ward's procedure was the hierarchical clustering method that was employed in a similar way to that which is presented in Chapter 8, in order to determine the initial clustering solution using the squared Euclidean distance measure.

Using the initial centroids estimated from Ward's procedure, K –means cluster analysis was conducted for several different cluster values suggested by agglomeration schedule and dendograms produced from Ward's method in the way that is presented in Chapter 8 and in accordance to the recommendations of Punj and Stewart (1983) and McIntyre and Blashhield (1980).

Interpretation of clusters took place in the next stage of cluster analysis. It involved examination of each cluster in terms of cluster variate to name or assign a label that describes accurately the nature of each cluster (Malhotra 1996; Hair *et al.* 1998). In this study, clusters were interpreted based on cluster centroids regarding the key strategic dimensions.

Validation and profiling of the clusters were conducted in the last stage of cluster analysis. Cluster validation achieved by examining (employing the non-parametric Kruskal – Wallis one-way ANOVA test) if a selection of variables not included in the cluster analysis differs significantly among the determined clusters (Hair *et al.* 1998).

Clusters profiling consist a separate stage of the statistically methodology that is described in a further stage of this chapter.

11.6.3 Discriminant Analysis: Assessment of Identified Key Strategic Dimensions

Discriminant analysis (DA) was conducted to assess how accurately the identified key strategic dimensions regarding livestock and milk marketing strategies could predict cluster membership of the sheep and dairy cow farmers in the County of Cornwall in U.K..

Due to the fact that discriminant analysis is quite sensitive to the ratio of the sample size to the number of predictor variables, as a "rule of thumb" it is suggested a minimum of 5 observations per each independent variable while the smallest group size must exceed the number of the independent variables (Hair *et al.* 1998). In the present study this assumption was met.

The key assumptions for discriminant analysis that are the existence of multivariate normality of independent variables, of homogeneity of variance - covariance matrices and non-multicollinearity among the independent variables (Tabachnick and Fidell 1989; Malhotra 1996; Hair *et al.* 1998) were checked.

The Box's M test statistic was evaluated to test if there was equality of covariance of the independent variables across the identified group. The large probability (Box M=3.346, P<0.387) in the case of livestock marketing and in the case of milk marketing (Box M= 12.935, P<0.507) indicated that the equality of variance – covariance matrices is supported and the linear discriminant analysis is appropriate.

There were three types of linear discriminant analysis that a researcher may employ: (a) standard (direct) discriminant analysis, (b) sequential discriminant analysis and (c) statistical (stepwise) discriminant analysis (Tabachnick and Fidell 1989; Malhotra 1996; Hair *et al.* 1998). According to Tabachnick and Fidell (1989), in direct DA all predictors

enter the equations at once and each predictor is assigned only its unique association with the groups. On the other hand, sequential DA evaluates contributions to prediction of group membership by predictors as the researcher decides in which order they will be entered in the equations. Stepwise DA differs to the sequential to the fact that the researcher has no reasons to assign some predictors higher priority than others and he uses statistical criteria to determine the order of entry in the equations. In this study, stepwise DA was conducted through the SPSS V.9 to evaluate the prediction of group membership by the predictors derived from the factor analysis as there was not any *a priori* knowledge of the predictor variables.

Several criteria were employed to evaluate the disciminating power of the variables (Morrison 1969; Peterson and Mahajan 1976; Crask *et al.* 1977; Daniels and Darcy 1983; Tabachnick and Fidell 1989; Hair *et al.* 1998; Davies 2001):

(a) Wilks' lamda (Λ) that evaluates the overall statistical reliability in DA. It reflects the importance of the variables and functions. The larger the lamda value, the greater the importance of variables. Wilks' lamda is the ratio of between group to within group sum of squares while the significance level is based on the chi-square transformation.

(b) Canonical function which relates the number of important functions through several tests (i) eigenvalues greater than 1 are significant, the greater the value, the greater the discriminant power of the function, (ii) percentage of variance greater than 5% is significant, (iii) a canonical correlation greater than 0.6 is significant and (iv) overal chi-square statistics for the derived functions.

(c) Percentage of variance explained through the use of I^2. As Peterson and Mahajan (1976) argued, "*...I^2 is a measure of the amount of variance in the criterion or dependent variable accounted for by the predictor variables acting together as a set*". Hence, it consists an index of the discriminating power of the independent variables and is analogous to R^2 in multiple regression analysis. Futhermore, I^2 estimates the total explained variance without taking under consideration the form or the nature of the relationship. It is computed as the following formula illustrates :

$$I^2 = 1 - \frac{N}{(N-k)(1+\lambda_1)+ (1+\lambda_2)+.... (1+\lambda_i)+1}$$

Where

N: the number.of observations

K: the number of the groups and

λ_i: the ith eigenvalue

Besides, I^2 was used to assess the contribution of each strategic dimension derived from factor analysis (predictors) to overall criterion prediction. Thus, it was possible to conceptionalize the variance of the dependent variable as being partitioned among the independent variables by using each predictor variable's combination in separate stepwise DA's in order to discover the relative importance of each predictor variable. In other words, the I^2 of each predictor variable, when taken as percentage of the overal criterion, reveals the unique contribution made by that variable.

(d) Percentage correctly classified. Determination of the predictive accuracy of the discriminant functions consists of the final step of assessing the overall model fit. The method of split sample reliability test using random analysis and holdout samples was conducted as cross validation in order to assess the effectiveness and representation of the discriminant model (Morrison 1969; Crask *et al.* 1977; Daniels and Darcy 1983; Hair *et al.* 1998). The hit ratios of the holdout and analysis samples were compared to the maximum chance criterion (Cmax). This criterion measures the predictive accuracy and compares the percentage of the members that were classified correctly to the percentage of the respondents in the largest group. Furthermore, the hit ratios of the two samples were compared to the proportional chance criterion (Cpro) that also measures the predictive accuracy, but it compares the percentage of the members that were classified correctly to the average probability of classification taking into account the group sizes. Acceptability of model is based on the threshold values increased by 25% approximately (Hair *et al.* 1998). Besides, the validation of the discriminant model was conducted on the full sample size. The Press Q statistic was employed to measure the classificatory power of the discriminant function when compared to a chance model. The value of the Press Q statistic was compared to a critical value (the chi-square for 1 degree of freedom at the desired confidence level e.g x^2= 10.83. df=1, P<0.001). If the value of the statistic was greater than the critical value then the classification matrix was deemed statistically better than chance (Hair *et al.* 1998). The Press Q statistic is calculated according to the formula below:

$$\text{Press's Q} = \frac{[N - (n\text{-}K)]^2}{N(K\text{-}1)}$$

Where

N: total sample size

n: number of observations correclty classified and

K: the number of the groups

Finally, the discriminant functions were interpreted and the relative importance of each independent variable in discriminating between groups was determined. The interpretation of the functions was based on the examination of the canonical discriminant coefficients. Coefficients $\pm$ 0.3 or higher were considered to be substantive (Peterson and Mahajan 1976; Daniels and Darcy 1983; Tabachnick and Fidell 1989; Hair *et al.* 1998).

11.6.4 Identitification and Profiling of Marketing Channels.

Descriptive statistical analysis was used in order to identify the marketing channels that sheep and dairy cow farmers used in the County of Cornwall in U.K..

The non-parametric Kruskal-Wallis test was employed to identify the marketing channels that mostly were influenced by each factor (V76-V96 of Appendix IV for livestock marketing and V69-V84 for milk marketing). The Q non-parametric equivalent multiple comparison test was conducted to identify the details of differences among the channels (Eddison 2000).

The non-parametric Friedman test was employed to profile the farmers regarding the factors (V76- V96 and V69-V84) that mostly influence them to adopt a particular livestock and milk marketing outlet.

One sample chi – square analysis for each marketing channel was conducted in order to investigate the association between the identified livestock and milk marketing outlets and the farm and farmers characteristics (V45-V75 of Appendix IV for livestock marketing and V40-V68 for milk marketing).

As the above tests are bivariate statistical techniques, a logistic regression analysis was also conducted in order to explore which of the examined factors as well as the farm and farmer's characteristics mostly affect the distribution pattern selection, to what extent and in which way, taking into consideration the multivariate impact of the examined variables.

11.6.5 Profiling of Strategic Groups

The final stage of the analysis is to develop the profile of each of the livestock and milk marketing strategies identified by the cluster analysis regarding the farm and farmers' characteristics, the marketing outlets and the factors that influence the farmers to select a particular distribution channel.

Therefore, the Kruskall-Wallis non-parametric test was used to assess the relationship between the identified marketing strategies and the factors that influence the farmers to select a particular marketing channel (V76-V96 for sheep farmers and V69-V84 for dairy cow farmers) as these factors were. The Kruskal-Wallis test was employed to identify the strategic groups of farmers that mostly were influenced by each factor. The Q non-parametric equivalent multiple comparison test was conducted to identify the details of differences among the groups (Eddison 2000).

The non-parametric Friedman test was employed to profile each strategic group of farmers regarding the factors (V76-V96 and V69-V84 for livestock and milk marketing respectively) that mostly influence them to adopt a particular marketing outlet.

The Kruskal – Wallis test, Q test and Friedman test were also conducted in order to determine the association between each strategic group, the type of information sources (V97-V116 of Appendix IV for livestock marketing and V85-V104 for milk marketing) and the type of information sources (V117-V127 for livestock marketing and V105-V114 for milk marketing).

One-sample chi – square analysis was used in order to develop the profile of each strategic group regarding the farm, farmers' characteristics (V41-V75 for livestock marketing and V40-V68 for milk marketing) and the preferred marketing outlets.

Furthermore, logistic regression analysis was employed to identify the impact of each factor, farm and farmers' characteristics, information source and type of information that comprise the profile of each strategic group, on marketing strategy selection taking under consideration their multivariate effect.

11.7 Conclusions

The methodological approach that was used for these surveys is similar to that which was used in the parallel survey conducted in the Region of EMTh in Greece regarding the livestock and milk marketing strategies followed by the sheep farmers there (see chapter 8). Similar methodologies were used because the objectives of the surveys in the two study areas are similar and in order to draw comparisons. More particularly, both surveys aim to

develop a typology regarding the marketing strategies that sheep and goat farmers use in the Region of EMTh and sheep and dairy cow farmers follow in the County of Cornwall, to identify the distribution channels for their livestock and milk marketing, to profile each strategic group regarding the preferred marketing channels, farm's and farmers' characteristics as well as the factors that affect distribution channel's selection and to compare the identified livestock and milk marketing strategies between examined livestock farmers of the two regions.

The only difference between the two methodological models is that in the case of the marketing survey conducted in Cornwall, a stepwise linear discriminant analysis was performed instead of the quadratic DA that was employed in the case of the marketing survey in EMTh.

Although this survey conducted a similar methodology to that used by Davies (2001) in his livestock marketing survey in Cornwall; it employed non-parametric bivariate statistical tests contrary to Davies (2001) who performed parametric tests, because the non-parametric are most suitable to categorical data (Kinnear and Gray 2000). Furthermore, this research additionally to Davies (2001) used the Friedman non-parametric test in order to profile each strategic group regarding the factors that affect farmer's marketing channel choice as well as logistic regression in order to identify which factors, farm and farmers' characteristics influence the farmers to choose a particular marketing strategy taking under consideration the multivariate impact of the examined variables. The present study also developed the profile of each identified distribution channel that sheep and dairy cow farmers, use in Cornwall in U.K..

Therefore, this study comprises a more holistic methodological model compared to the other studies that were developed by other researchers in the past, regarding the farm business decision – making and channel utilisation relative to the livestock and milk marketing.

CHAPTER 12

THE MARKETING STRATEGIES THAT SHEEP FARMERS ADOPT IN THE COUNTY OF CORNWALL IN UNITED KINGDOM

12.1 Introduction

The aim of this chapter is to identify the marketing channels that sheep farmers use in the County of Cornwall in U.K. in order to market their produce and to develop a marketing typology. The profiles of the farmers that adopt each marketing strategy regarding their farm and farmers' characteristics as well as their marketing channel utilization are also presented in this chapter. Finally, it profiles the farmers who use each distribution channel in order to market their livestock regarding their farm and farmers characteristics.

12.2 Stage 1: Determining Key Strategic Dimensions Using Principal Components Analysis

In this stage of the statistical analysis forty-four variables (V1-V44 of Appendix IV regarding livestock marketing strategies), which were describing the marketing attitudes of sheep farmers in Cornwall, were subjected to principal components analysis.

The variables that had high proportion of large absolute values of anti –image correlations as well as MSA less than 0.5 were removed before the analysis took place. Finally, factor

analysis conducted for only 10 (V1, V10, V13, V14, V24, V25, V29, V30, V36 and V44) of the 44 variables. The examination of the the anti-image correlation matrix, the Bartlett test of sphericity, the Kaiser – Meyer – Oklin Measure of Adequacy and the measure of sampling adequacy (MSA) for each examined variable, indicated the appropriateness of the data for factor analysis (as Appendix XIII indicates).

In the next stage, a varimax rotation was conducted and the latent root criterion (eigenvalue =1), the scree plot test and the percentage of variance were used to determine the number of factors. All the three criteria determined 3 factors in the first rotation, but several different trial rotations where factor interpretability was compared, were conducted (Figure 12.1 and Table 12.1; Tabachnick and Fidell 1989; Child 1990; Malhotra 1996; Hair *et al.* 1998). The cut off point for interpretation of loading scores was 0.70 according to Hair *et al* (1998) and Tabachnick and Fiddell (1989) suggestions.

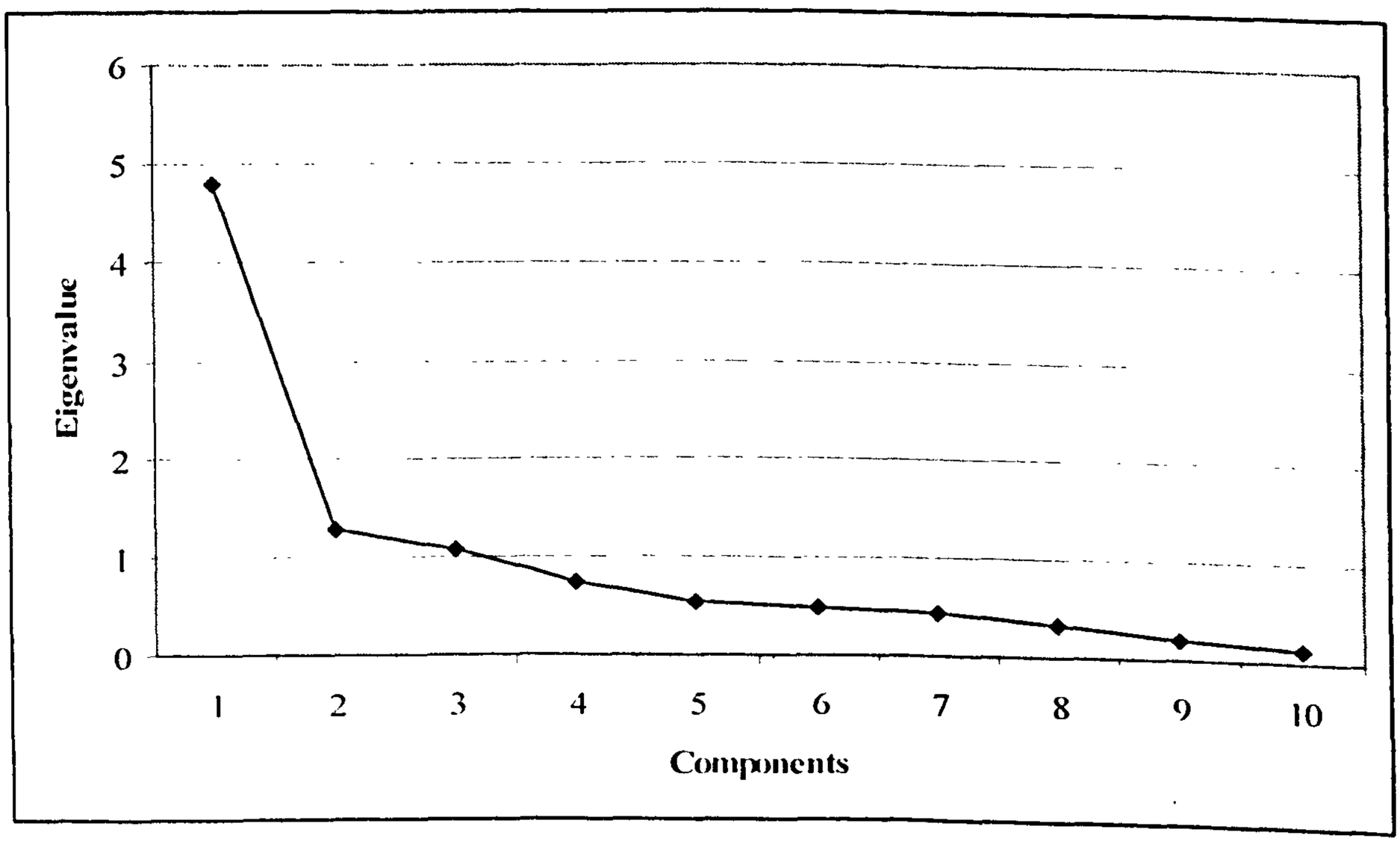


Figure 12.1. Scree plot Test

Components	Eigenvalues	% of Variance	Cumulative Variance %	Variables	Communalities
1	**4.782**	**47.817**	**47.817**	V1	0.840
2	**1.278**	**12.784**	**60.601**	V24	0.722
3	**1.083**	**10.832**	**71.434**	V25	0.758
4	0.737	7.365	78.799	V29	0.828
5	0.538	5.384	84.183	V30	0.703
6	0.483	4.825	89.008	V13	0.660
7	0.429	4.291	93.299	V14	0.686
8	0.341	3.407	96.706	V44	0.707
9	0.203	2.033	98.739	V10	0.486
10	-0.126	1.261	100.000	V36	0.753

Table 12.1 Results of Principal Components Analysis of Strategy Variables.

The three identified factors, which explained the 71.43% of the total variance and appeared to give the best representation of the underlying relationship among the selected variables, are illustrated with their factor loading scores in Table 12.2.

	KEY STRATEGIC DIMENSIONS	Factor Loading
	Production Orientation	
V1	I plan my production decisions by continually monitoring market prices	0.894
V24	I simultaneously plan production and sales decisions	0.810
V10	I continually update the production techniques I use to produce my meat	0.624
V30	I continually monitor market information other than price to plan my sales and production decisions	0.574
	Market Orientation	
V44	The Common Agricultural Policy has the most important influence over my farm profitability	0.829
V29	I understand detailed market requirements for the livestock I produce	0.799
V25	I produce livestock which meet market requirements	0.702
	Differentiation	
V36	I increase my farm profitability by satisfying the buyers of my produce	0.757
V14	I use special techniques to gain the highest quality premium for my livestock	0.727
V13	I maximize carcass quality by using specialist techniques e.g. artificial insemination	0.683

Table 12.2 The identified key strategic dimensions.

Determinant of Correlation Matrix: 0.004750
KMO MSA = 0.80
Bartlett test of Sphericity = 250.543, P <0.001

The key strategic dimensions that the three factors represent are the followings:

Factor 1: Production Orientation

This strategic dimension, accounts for 47.82% of variance. According to this dimension, the farmers made their production decisions by continually monitoring the livestock market prices. They simultaneously planned their livestock production and made their sale decisions. In other words, these farmers planned their production in order to sell specific volume of livestock in predetermined periods when the price was expected to be high. This strategic dimension also indicates (but in significance level more than 5% according to Hair *et al.* (1998) suggestions regarding the interpertetion of loading scores) that these farmers continually updated the production techniques as well as also monitoring market information other than price to plan their sales and production decisions.

Factor 2: Market Orientation

The sheep farmers in Cornwall (U.K.) according to this factor that accounts for 12.78% of the variance, considered that the Common Agricultural Policy significantly influenced their farm profitability. Moreover, they took into consideration detailed market information for the livestock they produced, as well as producing livestock which met the market requirements.

Factor 3: Differentiation

The sheep farmers in the County of Cornwall that scored highly on the third strategic dimension, which accounts for 10.83% of the variance, appeared to consider that their farm profitability would be increased by satisfying their livestock buyers. Furthermore, they used special techniques to gain the highest quality premium for their livestock. This strategic dimension also indicates (but in significance level a little more than 5%) that

these farmers were maximized their carcass quality by employing special production techniques such as artificial insemination (Hair *et al.* 1998).

12.3 Stage 2: Identification of Marketing Strategies using Cluster Analysis

In this study both hierarchical and non hierarchical methods presented in Appendix XIII were used according to recommendations of Harrigan (1985), Helsen and Green (1991), Hair *et al.* (1998) and Siardos (1999) in order to develop a typology of the marketing strategies that sheep farmers adopt in Cornwall. Cluster analysis was conducted to the 52 observations, as there were not outliers. Both Ward's and K-mean clusters analysis suggested between two and three cluster solutions. The two cluster solution appeared to be more acceptable than the three cluster solution as its kappa coefficient is significant for $P<0.05$. However, before accepting this solution all cluster solutions (based on all cases) were examined for interpretability and external validity. The two cluster solution was found to be the most meaningful, it was highly interpretable and also had external validity as Appendix XIII presents.

The two clusters (based on the cluster means for the derived factor scores and the cluster sizes) were named according to the business strategy that the farmers in each group appeared to follow. The mean factor scores, the standard deviations and the results from ANOVA test for farmers in each strategic group with each strategic dimension are presented in the following table (Table 12.3). The high positive mean score of a particular strategic dimension means that this dimension is important to the farmers that follow the specific business strategy.

Key Strategic Dimensions	Strategic Groups		
	Differentiation Strategy	Production Orientation Strategy	P
Production Orientation	-0.5334 *0.8310*	0.6223 *0.8102*	0.0001
Market Orientation	0.1938 *1.1210*	-0.2261 *0.8019*	0.132
Differentiation	0.4770 *0.8188*	-0.5566 *0.9111*	0.0001
Number of Businesses (n=52)	**28**	**24**	

Table 12.3 Characteristics of the Two Clusters from Cluster Analysis

NB: Means are reported in standard text and standard deviations in *italics*.

The two business strategies that the sheep farmers follow are according to the results of cluster analysis: (a) the Differentiation strategy and (b) the Production Orientation Strategy.

The **differentiation strategy** accounts for 28 farmers that comprise 54% of the sample. They scored highly on the strategic dimension associated with differentiation. These farmers were interested in differentiating their farm and moreover increasing their farm profitability by satisfying the buyers of their produce. They also adopted special livestock production techniques in order to achieve the highest quality premium for their livestock. The adoption of this strategy was not significantly associated with the market-orientated strategic dimension that was derived from factor analysis. On the other hand, the farmers who preferred the differentiation strategy were not interest in production orientation strategic issues, presumably because they aimed to improve their farm business competitiveness by differentiating their produce and to increase their profitability by exploiting the added valued of their products instead of targeting to increase their farm's returns by improving the productivity of their enterprise and reducing the production cost.

Figure 12.2 illustrates the association between the key strategic dimensions and the differentiation strategy.

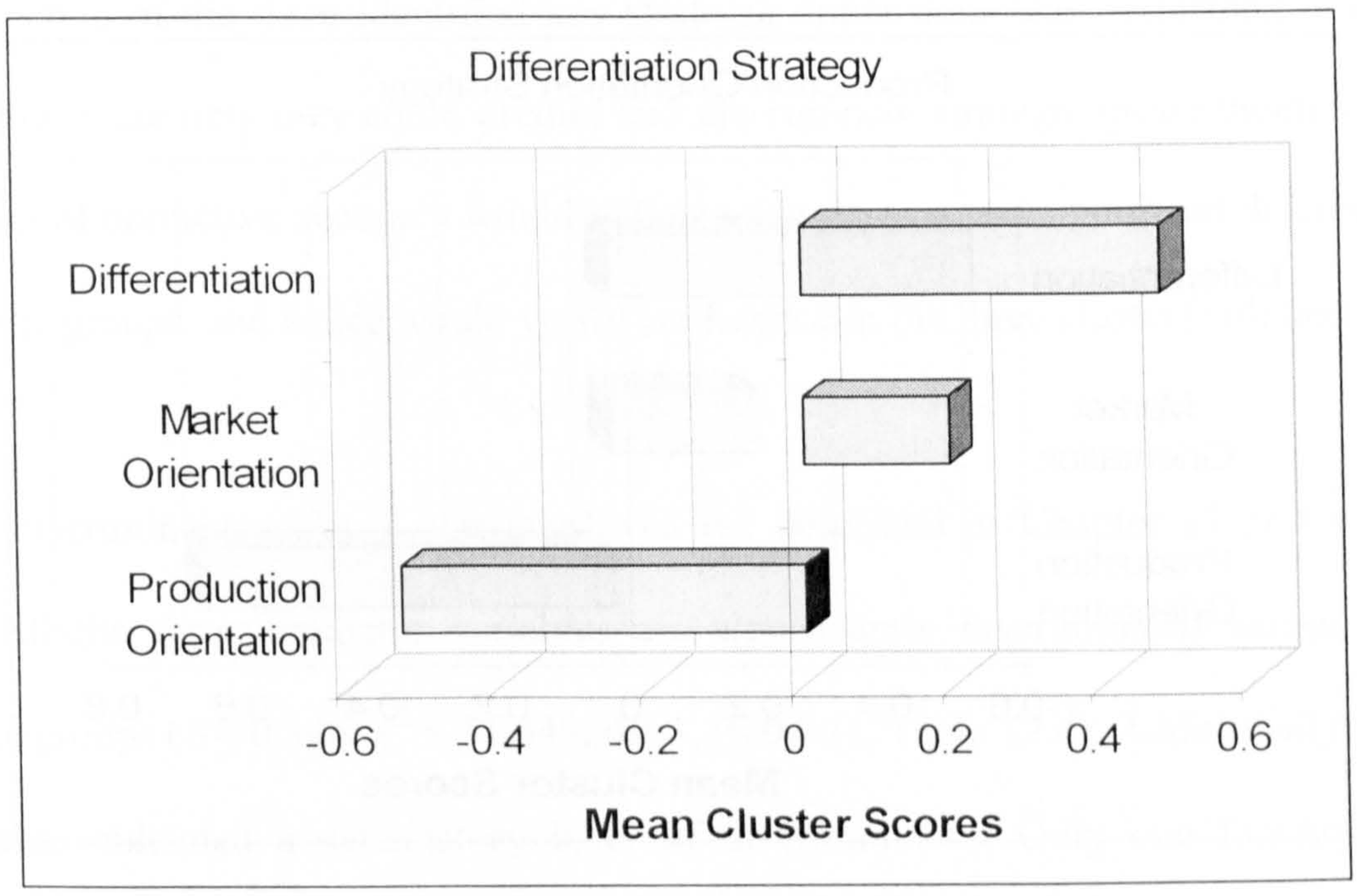


Figure 12.2: Strategic Dimensions associated with Differentiation Strategy.

In contrast, the **production orientation strategy** was preferred by 46% of the examined farmers (24 farmers). These farmers scored highly on the strategic dimension associated with production orientation. They made their decisions about livestock production by continually monitoring the market prices. The production orientated sheep farmers planned their livestock production and made their sales decisions simultaneously. Thus, they planned their production in order to sell specific volumes of livestock in predetermined periods when the price was expected to be high. These farmers were not interested in differentiating their produce and gaining premium sale prices, presumably because they preferred to increase their farm profitability by increasing their productivity and reducing in that way the production cost per animal. On the other hand, cluster analysis indicated that there was no significant association between the selection of the production orientation strategy and the marketing orientated strategic dimension that was derived from factor

analysis. The way the key strategic dimensions are associated with Production Orientation Strategy is represented in Figure 12.3.

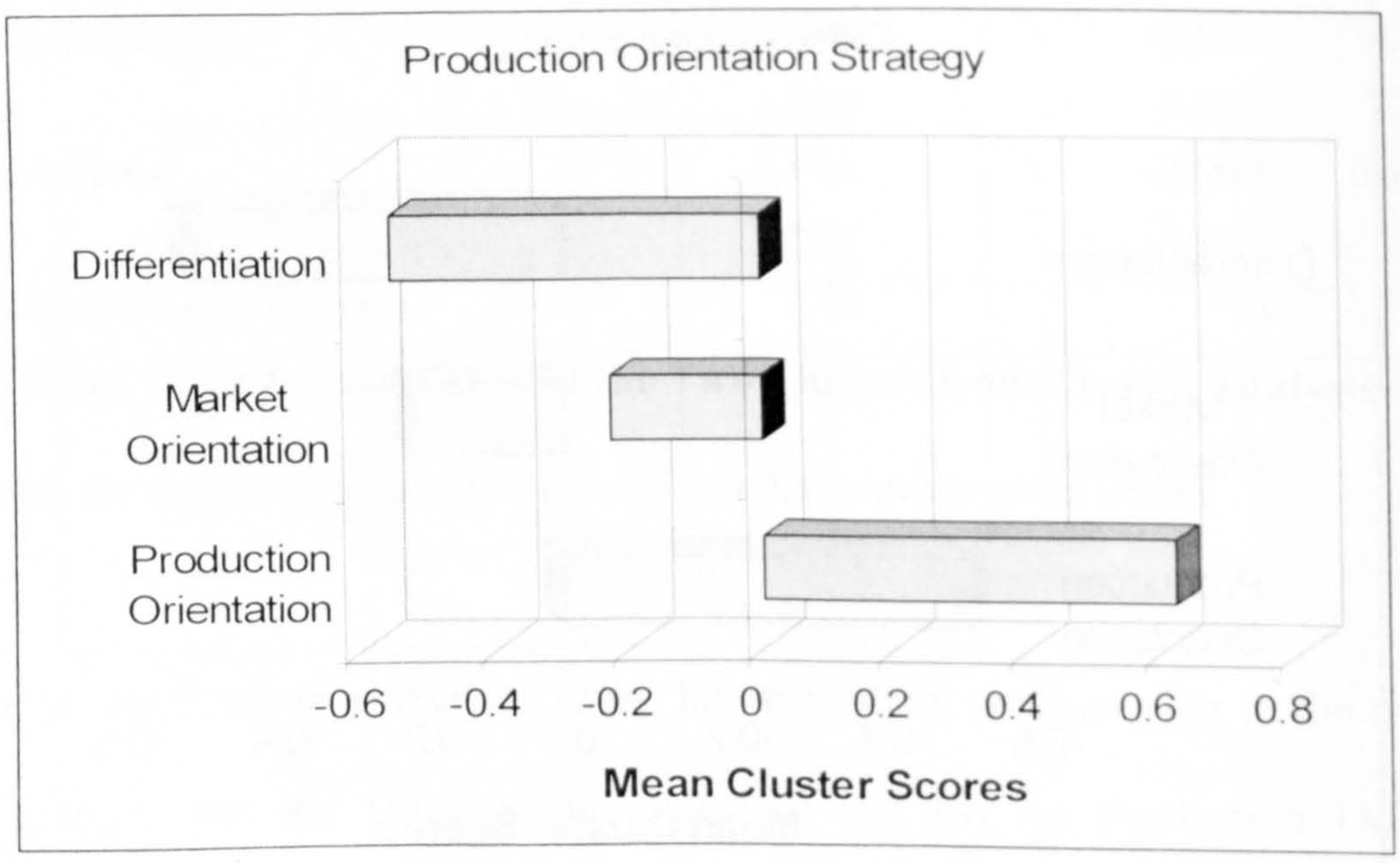


Figure 12.3: Strategic Dimensions associated with Production Orientation Strategy.

The examination of the variables not used in cluster analysis (as Appendix XIII presents) indicated that all the variables appeared to significant related to marketing strategy selection. The differentiation-orientated farmers were more interested in achieving high animal welfare standards, searching for new market outlets for their produce, exploring and understanding the needs and wants of the final consumer as well as they considered that the knowledge they obtained from the other farmers in their region were essential for their farm operation. On the other hand, production-orientated farmers were more interested in intensive livestock production techniques. Furthermore none of the two strategic groups were significantly associated (P=0.055) with reducing the input cost but this variable seems to be more important for the farmers adopted the differentiation strategy.

12.4 Stage 3: Assessing the Cluster Predictability of the Key Strategic Dimensions using Discriminant Analysis

An evaluation of the three identified key strategic dimensions was performed in order to assess how accurately they could predict and discriminate strategic group membership. A high level of predictive accuracy would indicate that there was a significant discrimination among the groups, and hence would verify confidence in the three clusters solution.

Hence, discriminant analysis was employed (as described in Chapter 11 and Appendix XIII). All the three predictor variables are significantly discriminated across the two strategic groups (Λ= 0.346, x^2 = 51.449, df=3, P<0.001; Table 12.4). Additionally, the high eigenvalue indicated a satisfactory level of discrimination. Only one function, which explained the differences between the two strategic groups, was identified by the discriminant analysis that accounts for the 100% of the explained variance.

Function	Eigenvalue	Percentage of variance	Canonical Correlation	Λ	x^2	Signifi-cance
1	1.889	100.00	0.809	0.346	51.449	P<0.0001

Table 12.4 Stepwise discriminant function

Moreover, the I^2 explained 64.25% of the variance in the clusters and suggested that the three strategic dimensions derived from factor analysis possess large discriminating power (adopting the Hair *et al's* (1998) minimum requirements of the R^2 in the multiple regression analysis). Furthermore, an evaluation was conducted in order to assess which of the three strategic dimensions contributed the most discriminatory power in prediction of cluster membership. This was achieved by dividing the variance of the overall I^2

contribution of each predictor to the overall criterion prediction of 64.25%. The contribution of the individual predictor variables and their interactions are presented in the following table (Table 12.5). Within the individual contributions percentages, *production-orientation* was the best discriminator at 60.73% followed by *differentiation* contributing 50.01%, as there were negative contributions by the combinations of the three variables.

Predictor Variables (Strategic Dimensions)	**I^2**	**Contribution[1]**	**% Contribution[2]**
Total set of variables (v1,v2, v3)	0.6425	0.0263	4.09%
Production orientation (v1)	0.3211	0.3902	60.73%
Market orientation (v2)	-0.0196	0.0459	7.14%
Differentiation (v3)	0.2523	0.3213	50.01%
v1, v2	0.3211	-0.0459	-7.14%
v1, v3	0.5966	-0.0494	-7.69%
v2, v3	0.2523	-0.0459	-7.14%
Total		*0.6425*	*100.00%*

Table 12.5 Variance Partitioning of Strategic Variables

[1] For example: the unique contribution of v1 is equal to $I^2_{v1,v2,v3} - I^2_{v2,v3}$.
[2] The percentage of contribution of a variable is the contribution as a percentage of the overall I^2 e.g. 0.0263 / 0.6425 = 4.09%

The interpretation of the overall discriminant model was evaluated by examining the standardized discriminant function coefficients and group centroids of the three predictor variables (Table 12.6). The relative contributions of the predictor variables to discriminant function derived from the discriminant analysis and their ability to classify predicted group membership are presented by these standardized coefficients. Therefore, the discriminant function is dominated by the strategic dimensions of differentiation (0.934) and production-orientation (-0.995). Examination of the group centroids suggests that this function appeared to discriminate between Differentiation Strategy (mean 1.248) and the Production-Orientation Strategy (mean -1.456).

Predictor Variables	**Discriminant Fucntion**
Production Orientation	**-0.995**
Market Orientation	**0.434**
Differentiation	**0.934**
Group Centroids	
Differentiation strategy	1.248
Production orientation strategy	-1.456

Table 12.6 Summary of Standardized Discriminant Function Coefficients and Group Centroids

[1]Coefficients greater than 0.3, in **boldface** are deemed significant (Hair *et al.* 1998).

The random split reliability test was employed to evaluate the predictive accuracy of the discriminant model. The predictive validity of the discriminant function was supported by a number of tests that are summarized in Table 12.7. The analysis and holdout samples were used to compare the hit ratios before the examination of the final overall hit ratio (Morrison 1969; Hair *et al.* 1998; Davies 2001). The score of the analysis sample test was 100.00% and the score of the holdout sample test was 84.62%. Both tests outperformed the Cmax (maximum chance criteria) and Cpro (proportional chance criteria) increased by 25% as Hair *et al.* (1998) suggested (Table 12.7). The overall sample hit ratio of 92.31% also exceeded this criterion. Furthermore, the classification matrix was statistically better than would be expected by chance (Press Q statistic = 52.00, $P<0.001$). Hence, confidence in the predictive validity of the discriminant function is supported.

Actual Strategic Group	Number of Businesses	Predicted Group Membership: Differentiation strategy	Predicted Group Membership: Production orientation strategy
Differentiation strategy	28	28 (100.0%)	0 (0.0%)
Production Orientation Strategy	24	4 (16.7%)	20 (83.3%)

Percentage correctly classified:	
Analysis sample	100.00%
Hold out sample	84.62%
Overall sample	92.31%
Cmax	42.31%
Cpro	32.65%
Press Q	52.00

12.7 Classification Results of Overall Discriminant Model

Conclusively, the results of the discriminant analysis indicated that the three strategic dimensions could accurately predict and discriminate strategic group membership as well as signify the stability of the two cluster solution.

12.5 Stage 4: Identification of Livestock Marketing Channels and Profiling them using Bivariate Statistical Techniques

Twelve marketing channels were identified from the survey. Five of them are direct channels and seven are multiple channels of two or more direct channels as detailed in Table 12.8.

	Description of marketing channel	Farmers used the marketing channel	Sheep and goats were sold through the marketing channel
	Direct Channel Selection		
1	Live Auction Market (LAM)	3 (5.8%)	740 (3.8%)
2	Electronic Auction Market (EAM)	1 (1.9%)	40 (0.2%)
3	Direct to Abattoir	14 (26.9%)	5066 (26.1%)
4	Direct to Abattoir via Group Marketing Schemes (GMS)	10 (19.2%)	3237 (16.7%)
5	To abattoir through LAM	1 (1.9%)	93 (0.5%)
	Multi-channel selection		
6	LAM+EAM+Direct to Abattoir	1 (1.9%)	1050 (5.4%)
7	LAM + Direct to Abattoir	14 (26.9%)	5950 (30.6%)
8	LAM+EAM+Direct to Abattoir + Direct to Abattoir via GMS	1 (1.9%)	1400 (7.2%)
9	LAM + direct to consumers (through abattoir)	1 (1.9%)	97 (0.5%)
10	Direct to Abattoir + Direct to Abattoir via GMS	3 (5.8%)	1680 (8.7%)
11	LAM + Direct to Abattoir + Direct to consumer via butcher shop the farmers own	1 (1.9%)	40 (0.2%)
12	Direct to Abattoir + Direct to consumer via butcher shop the farmers own	2 (3.8%)	20 (0.1%)
	TOTAL	**52 (100%)**	**19,413 (100%)**

Table 12.8: Livestock Marketing Channel Selection and Utilization for Sheep Producers

Initial chi-square tests of associations between channel selection and associated variables proved to be invalid because of low expected values (Brymar and Cramer 1997; Kinnear and Gray 2000). It was therefore necessary to merge channels to achieve valid results. Thus, the following four categories of marketing channels illustrated in Figure 12.4 used for further analysis.

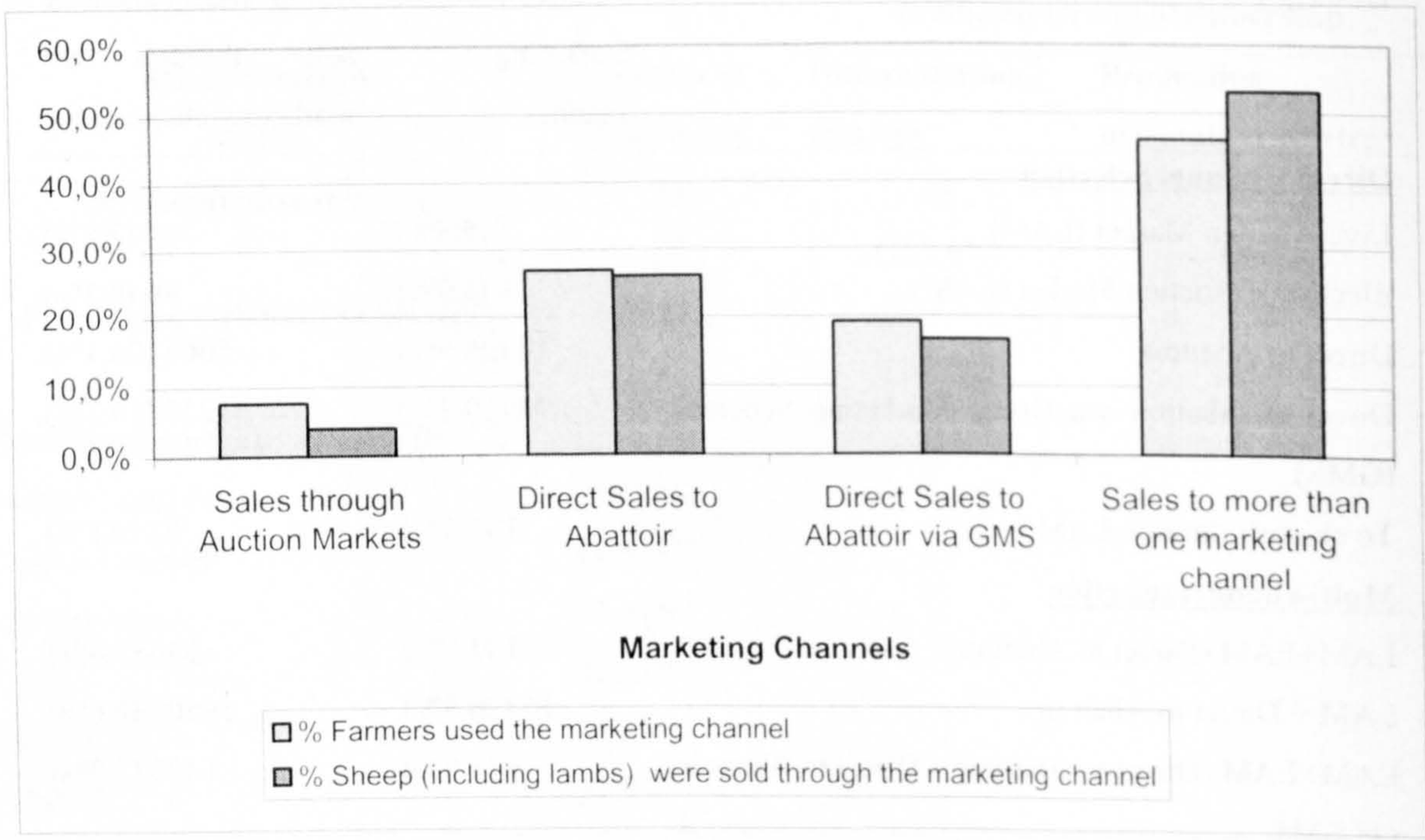


Figure 12.4 Categorization of sheep and goat marketing channels regarding livestock marketing.

Of the farmers surveyed, 7.7% preferred to market their livestock through livestock or electronic auction markets; while only 4.0% of the finished sheep were sold through this marketing outlet. On the other hand, 26.9% of the farmers sold their livestock direct to abattoir. Through this distribution channel was sold 26.1% of the sheep produced. Moreover, 19.2% of the farmers preferred to market their livestock to abattoir via Group Marketing Schemes. The livestock that was sold through this marketing channel comprising 16.7% of the sheep produce. Finally, the vast majority of the farmers (46.2%) sold their animals to more than one marketing channels as well as more than the half (53.2%) of the finished sheep were sold through this marketing outlet.

12.5.1 The association between marketing channel selection and the factors that influence the sheep farmers to adopt a particular marketing outlet.

The Kruskal–Wallis non-parametric test was used to identify the factors that are related to the farmers' selection of a particular marketing channel due to the fact that all the examined variables were ordinal (Kinnear and Gray 2000).

According to the results of the test (presented in Table 12.9), most of the farmers that were influenced in their marketing channel decision-making by the marketing cost preferred to market their lambs direct to abattoir or through auction markets. Farmers that had contractual obligations with specific buyers sold their livestock to abattoir via GMS, but there were some who chose the auction markets. On the other hand, farmers that wanted to have the ability to withdraw their livestock if they did not approve of the prices, preferred the sales through auction markets; there were also some who preferred to market their finished sheep to abattoir via GMS or to more than one marketing channel. Finally, the sheep farmers who were interested in easy parking, unloading and cleaning vehicles used all the identified distribution channels in order to sell their livestock.

Factors	Marketing Channels				
	Sales through Auction Markets	Direct Sales to Abattoir	Sales to Abattoir via GMS	Sales to more than one marketing channels	P
Marketing Cost	$27.75^{a.b.c}$	35.87^{a}	27.56^{b}	20.38^{c}	0.010
	4.000	*5.000*	*4.000*	*4.000*	
Contractual Obligation	$26.63^{a.b}$	20.23^{a}	38.11^{b}	26.04^{a}	0.037
	2.000	*1.000*	*3.000*	*2.000*	
Ability to withdraw livestock	34.88^{a}	16.73^{b}	28.00^{a}	30.65^{a}	0.019
	4.000	*1.000*	*3.000*	*3.000*	
Easy for parking, unloading and cleaning vehicles	32.50^{a}	26.00^{a}	26.00^{a}	26.00^{a}	0.007
	1.000	*1.000*	*1.000*	*1.000*	

Table 12.9. The influence of each factor for the selection of a particular marketing channel.

N.B. Within factors (rows), marketing channels (cells) with similar letters differ significantly at $P<0.05$. Average ranks are reported in standard text and medians in *italics*.

This study did not identify any significant association ($P<0.05$) between the following factors and a marketing channel selection:

ii) Sale price (v76)

iii) Transportation cost (v77)

iii) Information about prices (v79)

iv) Farmer's time (v80)

v) Loyalty (v81)

vi) Convenience (v82)

vii) Competitive offers (v83)

viii) Access to more buyers (v84)

ix) Grading uncertainty (v85)

x) Experimenting with different marketing channels (v86)

xi) Higher expected returns (v87)

xii) Speed of payment (v88)

xiii) Quality of livestock (v89)

xiv) Social aspects (v90)

xv) Proximity to farm (v92)

xvi) Bargaining strength (v94)

12.5.2 Profiling the farmers of each marketing channel

A summary of the profile of the farmers who use each marketing channel regarding the factors that influence them in their marketing channel choice as well as farm and farmers characteristics are presented in Table 12.10.

Sales to Auction Markets	**Direct sales to Abattoirs**	**Sales to Abattoirs via GMS**	**Sales to more than one marketing channel**
Factors			
Sales price *	Sale price	Sale price	Sale price
Quality of livestock *	Marketing cost	Access to more buyers	Speed of payments
Higher expected returns *	Convenience	Time spend in selling process	Animal Welfare
Animal welfare *	Higher expected returns	Convenience	Higher expected returns
Farm Characteristics			
Size of farm: 41-120 ha	Size of farm: 41-120 ha	Chi –square analysis was not valid due to low expected values (<5)	n.s
Farm land rent from other farmers: <50 ha	Farm land rent from other farmers: <50 ha		Farm land rent from other farmers: <50 ha
Farm land rent to other farmers: <50 ha	Farm land rent to other farmers: <50 ha		Farm land rent to other farmers: <50 ha
n.s	n.s		Farm allocation to sheep and goat enterprise: <41-120 ha
Livestock quota leased/ rent from other farmers:NO	Livestock quota leased/ rent from other farmers:NO		Livestock quota leased/ rent from other farmers:NO
Livestock quota leased/ rent to other farmers:NO	Livestock quota leased rent to other farmers NO		Livestock quota leased/ rent to other farmers:NO
Farmer's characteristics			
Obtained Livestock price: Average	Obtained Livestock price: Average	Chi –square analysis was not valid due to low expected values (<5)	Obtained Livestock price: Average
Distance from Marketing outlet: 1-100 miles	Distance from Marketing outlet: 1-100 miles		Distance from Marketing outlet: 1-100 miles
n.s	Do not use adding value activities		Do not use adding value activities
Farm related activities away of the farm: NO	n.s		n.s
Off-farm activities: NO	Off-farm activities: NO		Off-farm activities: NO
n.s	n.s		Previous non-farm working experience: NO
Livestock experience:11-30 years	Livestock experience:>11 years		n.s
Debt: <29%	Debt: >30%		Debt: <29%
Farm Income:< 70%			Farm Income: <70%
Financial performance: Average	n s		Financial performance: Average

Table 12.10 Summary of marketing channel profile

* The association is significant at P=0.055

12.5.2.a Profiling farmers of each marketing channel regarding the factors that influence their marketing outlet choice.

The Friedman one-way non-parametric test was used to profile the farmers who preferred each distribution channel in order to market their production regarding the factors that influence them in their marketing outlet choice.

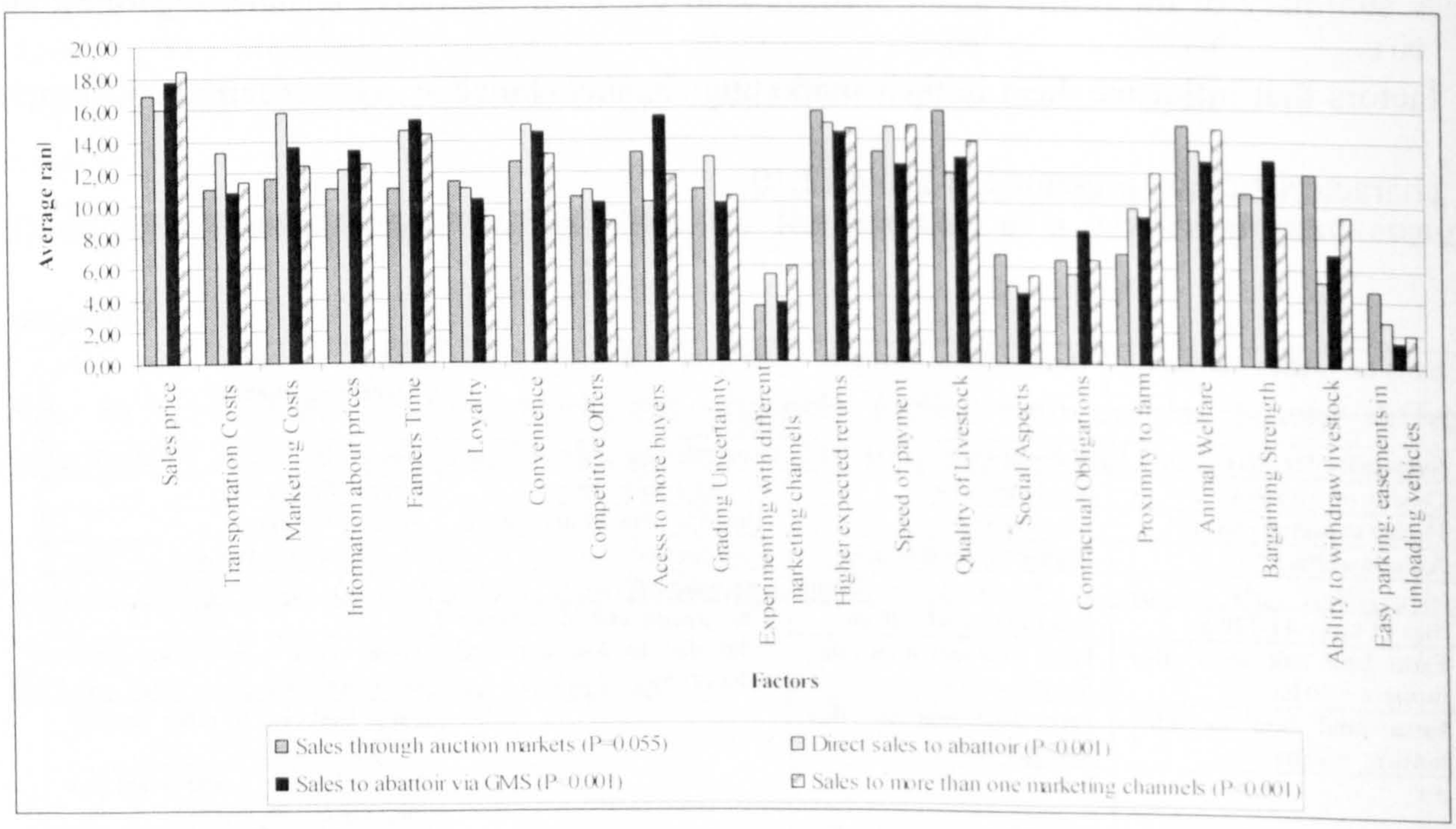


Figure 12.5: The importance of each factor for the farmers who preferred each marketing channel

As the test indicated (Figure 12.5), although the significance of the association between the examined factors and the sales of livestock through auction markets is not strong enough (P=0.055), the sheep farmers who were keen to sell through auction markets were mostly influenced in their choice by sales price, quality of livestock, higher expected returns and animal welfare. On the other hand, the farmers who preferred to sell their livestock direct to abattoir were mostly influenced by sale price, marketing costs, convenience, higher expected returns, speed of payment and their time. The price in which the sheep farmers in Cornwall would sell their lambs, their access to more buyers, the time they will spend in

the selling process, their convenience and the expectation of higher returns were the factors that mostly influenced these farmers to market their livestock to abattoir through Group Marketing Schemes (GMS). The livestock producers who sold their finished sheep to more than one marketing channel considered as the most important factors for their distribution choice the sale price, speed of payment, animal welfare, higher expected returns, their time and the quality of their livestock.

Nominal logistic regression analysis was employed using Minitab 13 to investigate the impact of the factors presented above to the marketing channel selection taking under consideration their multivariate effect. The factors that according to the results of Kruskal – Wallis test were significantly related with farmers' marketing channel selection were used as predictors. The results of the final nominal regression analysis are presented in Table 12.11.

Logit	**Predictors**	**Coef**	**P**	**Odds Ratio**
Logit 1: (Sales to abattoir via Group Marketing Schemes / Sales to more that one marketing channel)	Constant	-5.212	0.041	
	Marketing Cost	0.9787	0.095	2.66
	Contractual Obligations	1.4312	0.019	4.18
	Ability to withdraw the animals	-1.2103	0.031	0.30
Logit 2: (Direct Sales to abattoir / Sales to more that one marketing channel)	Constant	-5.793	0.051	
	Marketing Cost	1.6654	0.009	5.29
	Contractual Obligations	0.8037	0.161	2.23
	Ability to withdraw the animals	-1.3503	0.010	0.26
Logit 3: (Sales through auction markets / Sales to more that one marketing channel)	Constant	-4.388	0.146	
	Marketing Cost	0.4857	0.516	1.63
	Contractual Obligations	0.0079	0.989	1.01
	Ability to withdraw the animals	0.2260	0.670	1.25
Log-likehood = -47.384		Reference Group= Sales to more than one marketing channel		
G= 31.734, df = 9, P<0.001				
Goodness of Fit				
Deviance x^2 = 56.576, df=66, P= 0.789				

Table 12.11 The factors that affect the livestock marketing channel selection by the sheep farmers in Cornwall according to Logistic Regression Analysis.

Therefore, the analysis indicated that the farmers who were influenced by their contractual obligations with livestock buyers mainly preferred to sell their sheep via Group Marketing Schemes instead of selling them to more than one marketing channel. On the other hand, the farmers who wanted to have the ability to withdraw their livestock back if they did not approve the prices preferred the sales to more than one marketing channel over the direct sales to abattoir or over the sales to abattoir via GMS. Furthermore, the marketing cost had a significant impact on the preference of the direct sales to abattoir instead of sales to more than one marketing channel. The goodness of fit test indicates that there is sufficient evidence that the model fits to the data (Kinnear and Gray 2000; Darren and Mallery 2001).

12.5.2.b Profiling each livestock marketing channel regarding the farm characteristics.

The one-sample chi-square analysis was performed for each marketing channel in order to develop the profile of the farmers who prefer each outlet regarding the characteristics of their farms. The test was not possible to be performed in order to identify possible associations between the examined farm characteristics and sales to abattoir via Group Marketing Schemes because all the expected values were less than 5 (MINITAB 1997). The farmers who use the remaining three marketing channels have a similar profile (Table 12.12). More particularly, they did not lease livestock quota from or to other farmers. Most of them rent less than 50 ha from other farmers as well as letting a small part of their land to other farmers, presumably in order to obtain an additional income. The vast majority of the farmers who marketed their finished lambs through auction markets or direct to abattoir have medium sized farms. This study did not identify any significant association ($P>0.05$) between marketing channel selection and the following farm characteristics: (a) flock size (v47), (b) volume of livestock production (v48) and (c) size of farm area owned by the farmer (v49).

Farm Characteristics		Sales to Auction Markets			Direct Sales to Abattoir			Direct Sales to Abattoir via GMS			Sales to more than one marketing channel		
		x^2	% farmers	Standardized residuals	x^2	% farmers	Standardized residuals	x^2	% farmers	Standardized residuals	x^2	% farmers	Standardized residuals
Farm size	<40 ha	x^2=10.825, df=2, P<0.01	10.7%	-2.07[a]	x^2=12.400, df=2, P<0.01	0.0%	-2.24[a]	Chi square analysis was not valid due to low expected values			n.s		
	41 – 120 ha		60.7%	2.52[a]		73.3%	2.68[b]						
	>121 ha		28.6%	n.s		26.7%	n.s						
Farm land rent from other farmers	<50 ha	x^2=34.696, df=2, P<0.001	85.7%	4.82[c]	x^2=19.200, df=2, P<0.001	86.7%	3.58[c]				x^2=15.250, df=2, P<0.001	70.8%	3.18[b]
	51 – 100 ha		7.1%	-2.39[a]		6.7%	n.s					12.5%	n.s
	>101 ha		7.1%	-2.39[a]		6.7%	n.s					16.7%	n.s
Farm land let to other farmers	<50 ha	x^2=56.201, df=2, P<0.001	100.0%	6.13[c]	x^2=30.000, df=2, P<0.001	100.0%	4.47[c]				x^2=48 000, df=2, P<0.001	100.0%	5.66[c]
	51 – 100 ha		0.0%	-3.05[b]		0.0%	-2.24[a]					0.0%	-2.83[b]
	>101 ha		0.0%	-3.05[b]		0.0%	-2.24[a]					0.0%	-2.83[b]
Farm land allocated to sheep enterprise	<40 ha	n.s			n.s						x^2=12.250, df=2, P<0.01	20.8%	n.s
	41 – 120 ha											66.7%	2.83[b]
	>121 ha											12.5%	n.s
Livestock quota leased from other farmers	NO	x^2=28.000, df=1, P<0.001	100.0%	3.74[c]	x^2=15.000, df=2, P<0.001	100.0%	2.74[b]				x^2=24.000, df=2, P<0.001	100.0%	3.46[c]
	YES		0.0%	-3.74[c]		0.0%	-2.74[b]					0.0%	-3.46[c]
Livestock quota leased to other farmers	NO	x^2=17.286, df=1, P<0.001	89.3%	2.94[b]	x^2=15 000, df=2, P<0.001	100.0%	2.74[b]				x^2=13 500, df=2, P<0.01	87.5%	2.60[a]
	YES		10.7%	-2.94[b]		0.0%	-2.74[b]					12.5%	-2.60[a]

Table 12.12: Profile of farmers who prefer each marketing channel regarding their farm characteristics

[a]P<0.05, [b]P<0.01 and [c]P<0.001

12.5.2.c Profiling each livestock marketing channel regarding farmers' characteristics.

The one sample chi-square analysis indicated that the farmers who market their livestock through auction markets, direct to abattoir or to more than one marketing channel have similar profiles regarding the characteristics of themselves (Table 12.13). On the other hand, the test was not possible to be performed in order to identify possible associations between the examined farmers characteristics and sales to abattoir via Group Marketing Schemes because all the expected values were less than 5 (Kinnear and Gray 2000; Darren and Mallery 2001).

Specifically, most of the farmers who used the other three marketing channels were not involved with off farm marketing activities and they did not hold any responsible position in a marketing cooperative group, farming organization, non-farm business they might own or non-farm business they did not own. They preferred to travel less than 100 miles in order to sell their produce, and achieved average livestock prices in comparison with the other farmers operating in their area. The vast majority of the farmers who marketed their produce, either through auction markets or to more than one marketing channel, had less than 31 years experience on the decion making process in their current farm. They derived less than 70% of their farm income from their sheep enterprise, and their financial performance is average in comparison with the other farmers operating in their region. Most of the farmers who sold their livestock direct to abattoir or to more than one marketing channel were not involved with added value activities. On the other hand, the majority of the farmers who sold their animals through auction markets had between 11-30 years experience in decision making process while the farmers who preferred a multi channel had less than 31 years. Furthermore, about 57% of the farmers who use the auction markets as their main marketing outlets had between 11 – 30 years livestock farming experience on their current farm while the farmers who sold their animals direct to abattoir

had more than 11 years. Most of the farmers who preferred to sell their produce through auction markets were not involved with farm related activities away of their farm such as Meetings in the Local Agricultural Cooperatives and were middle aged. On the other hand, most of the farmes who marketed their livestock direct to abattoir attended the secondary school (the final stage of their compulsory education). Most of the farmers who preferred a mutli marketing channel did not have any previous working experience. The majority of the farmers who marketed their produce through auction market or a mutli marketing channel had debt to service less than 29% of their annual gross income. On the other hand the debt of the farmers who preferred the direct sales to abattoirs was more than 30% of their gross annual income.

This study did not identify any significant association ($P>0.05$) between marketing channel selection and membership in an agricultural cooperative (v71).

Farm Characteristics		Sales to Auction Markets			Direct Sales to Abattoir			Direct Sales to Abattoir via GMS			Sales to more than one marketing channel		
		x^2	% farmers	Standardized residuals	x^2	% farmers	Standardized residuals	x^2	% farmers	Standardized residuals	x^2	% farmers	Standardized residuals
Farm related activities	0 days	x^2=7.169, df=2, P<0.05	57.1%	2.20[a]	x^2=6.400, df=2, P<0.05	60.0%	n.s				n.s		
	1-3 days		21.4%	n.s		33.3%	n.s						
	>4 days		21.4%	n.s		6.7%	n.s						
Off-farm activities	0 days	x^2=17.706 df=2, P<0.001	67.9%	3.18[b]	x^2=15.600 df=2, P<0.001	80.0%	3.13[b]				x^2=27.250, df=2, P<0.001	83.3%	4.24[c]
	1-3 days		3.6%	-2.72[b]		0.0%	-2.24[a]					4.2%	-2.47[c]
	>4 days		28 6%	n.s		20.0%	n.s					12.5%	n.s
Decision making experience	<10 years	x^2=14.051, df=2, P<0.001	28.6%	n.s	n.s						x^2=6.750, df=2, P<0.05	45.8%	n.s
	11-30 years		64.3%	2.85[b]								45.8%	n s
	>31 years		7.1%	-2.39[a]								8.4	-2.12[a]
Livestock farming experience on current farm	<10 years	x^2=7.169, df=2, P<0.05	21.4%	n s	x^2=7.600, df=3, P<0 05	0.0%	-2.24[a]				n.s		
	11-30 years		57.1%	2.20[a]		46.7%	n.s						
	>31 yeats		21.4%	n.s		53.3%	n.s						
Decision making experience on his farm	<10 years	x^2=6.094, df=2, P<0.05	28.6%	n s	n.s						x^2=6.750, df=2, P<0.05	45.8%	n.s
	11-30 years		28.6%	n.s								45.8%	n.s
	>31 years		7 1%	-2.39[a]								8.4%	-2.12[a]
Holding of responsible position in a marketing cooperative group	NO	x^2=20 571, df= 1 P<0.001	92.9%	3.21[b]	x^2=11.267,. df= 1 P<0.001	93.3%	2.37[a]	Chi square analysis was not valid due to low expected values			x^2=24.000,. df = 1 P<0.001	100.0%	3.46[c]
	YES		7.1%	-3.21[b]		6.7%	-2.37[a]					0.0%	-3.46[c]
Holding of responsible position in an agricultural organization	NO	x^2=17.286,. df= 1 P<0.001	89.3%	2.94[b]	x^2=11.267,. df= 1 P<0.001	93.3%	2.37[a]				x^2=13.500,. df = 1 P<0.01	87.5%	2.60[b]
	YES		10.7%	-2.94[b]		6.7%	-2.37[a]					12.5%	-2.60[b]
Holding of responsible position in a non-farm business owned by the farmer	NO	x^2=24 143, df=1, P<0.001	96.4%	3.47[c]	x^2=15.000, df=1, P<0.001	100.0%	2.74[b]				x^2=20.167, df=1, P<0.001	95.8%	3.18[b]
	YES		3.6%	-3.47[c]		0.0%	-2.74[b]					4.2%	-3.18[b]
Holding of responsible position in a non-farm business the farmer does not own	NO	x^2=24.143, df=1, P<0.001	96.4%	3.47[c]	x^2=15.000, df=1, P<0.001	100.0%	2.74[b]				x^2=24.000,. df = 1 P<0.001	100.0%	3.46[c]
	YES		3.6%	-3.47[c]		0.0%	-2.74[b]					0.0%	-3.46[c]

Previous non-farm experience	NO	x^2=13.094, df=1, P<0.001	75.0%	n.s	x^2=10.600 df=1, P<0.001	80.05	n.s	x^2=17.417 df=1, P<0.001	83.3%	2.31[a]
	YES		25.0%	n.s		20.0%	n.s		16.7%	-2.31[a]
Debt level	<29%	x^2=12.975, df=2, P<0.01	64.3%	2.85[b]	x^2=27.400, df=3, P<0.001	26.7%	n.s	x^2=14.250, df=2, P<0.001	62.5%	2.47[a]
	>30%		10.7%	-2.07[a]		73.3%	2.68[b]		37.5%	n.s
	Do not know		25.0%	n.s		0.0%	-2.24[a]		0.0%	-2.83[b]
Farm income	<24%	x^2=8.889, df=2, P<0.05	50.0%	n.s	n.s			x^2=12.250, df=2, P<0.01	45.8%	n.s
	25%-69%		42.9%	n.s					54.2%	n.s
	>70%		7.1%	-2.39[a]					0.0%	-2.83[b]
Financial performance	Below average	x^2=12.330, df=2, P<0.01	21.4%	n.s	x^2=11.200, df=2, P<0.	20.0%	n.s	x^2=15.250, df=2, P<0.001	16.7%	n.s
	Average		64.3%	2.85[b]		73.3%	n.s		70.8%	3.18[b]
	Above average		14.3%	n.s		6.7%	n.s		12.5%	n.s
Farmer's age	<40 years old	x^2=10.825, df=2, P<0.01	28.6%	n.s	n.s			n.s		
	41-60 years old		60.7%	2.52[a]						
	> 61 years old		10.7%	-2.07[a]						
Distance from marketing channels	1-100 miles	x^2=50.395, df=2, P<0.001	96.4%	5.80[c]	x^2=30.000, df=2, P<0.001	100.0%	4.47[c]	x^2=48.000, df=2, P<0.001	100.0%	5.66[c]
	>101 miles		3.6%	-2.72[b]		0.0%	-2.24[a]		0.0%	-2.83[b]
	Don't know		0.0%	-3.05b[a]		0.0%	-2.24[a]		0.0%	-2.83[b]
Obtained livestock prices	Below average	x^2=18.567, df=2, P<0.001	10.7%	-2.07[a]	x^2=7.600, df=2, P<0.05	13.3%	n.s	x^2=16.750, df=2, P<0.001	4.2%	-2.47[a]
	Average		71.4%	3.51[c]		73.3%	2.24[a]		70.8%	3.18[b]
	Above average		17.9%	n.s		26.7%	n.s		25.0%	n.s
Educational level	Secondary	n.s			x^2=7.600, df=2, P<0.05	66.7%	2.24[a]	n.s		
	A levels / National Diploma					13.3%	n.s			
	Higher education					20.0%	n.s			
Use of added value activities	NO	n.s			x^2=11.267, df=1, P<0.001	93.3%	2.37[a]	x^2=8.167, df=1, P<0.01	79.2%	2.02[a]
	YES					6.7%	-2.37[a]		20.8%	-2.02[a]

Table 12.13: Profile of farmers who prefer each marketing channel regarding the characteristics of themeselves

[a]P<0.05, [b]P<0.01 and [c]P<0.001

12.5.3 The impact of the farm and farmers' characteristics on marketing channel selection

The influence of the farm and farmers' characteristics on livestock marketing channel selection was explored through nominal logistic regression analysis. The farm and farmers' characteristics that comprise the profiles of the livestock marketing channels were used as predictors in the logistic regression model.

Logit	Predictors	Coef	P	Odds Ratio
Logit 1: (Sales through Auction Markets / Sales to more that one marketing channel)	Constant	-0.769	0.758	
	Farm size	0.198	0.849	1.22
	Flock size	-2.409	0.054	0.09
	Volume of livestock production	1.643	0.113	5.17
	Farm land allocated to the sheep enterprise	0.3524	0.667	1.42
Logit 2: (Direct Sales to Abattoir / Sales to more that one marketing channel)	Constant	-1.192	0.601	
	Farm size	1.0424	0.284	2.84
	Flock size	-3.129	0.011	0.04
	Volume of livestock production	1.7862	0.071	5.97
	Farm land allocated to the sheep enterprise	0.3769	0.605	1.46
Logit 3: (Sales to Abattoir via GMS / Sales to more that one marketing channel)	Constant	1.267	0.707	
	Farm size	-1.436	0.325	0.24
	Flock size	-0.838	0.523	0.43
	Volume of livestock production	-0.039	0.976	0.96
	Farm land allocated to the sheep enterprise	0.617	0.596	1.85
Log-likehood = -53.692		Reference Group= Sales to more than one marketing channel		
G= 19.117, df = 12, P=0.086				
Goodness of Fit				
Deviance x^2 = 46.905, df=48, P= 0.518				

Table 12.14 The impact of farm's characteristics on livestock marketing channel selection by the sheep farmers in Cornwall according to Logistic Regression Analysis.

The table above (Table 12.14) presents the results of the analysis regarding the impact of farm characteristics on the marketing channel selection. The analysis indicated that only the size of the flock influences the farmers to prefer the sales to more than one marketing channel instead of the direct sales to abattoir (the goodness of fit test indicates that the model fits to the data; MINITAB 1997).

The results of the final logistic regression analysis regarding the impact of the farmers' characteristics on the marketing channel selection are presented in Table 12.15. More particularly, the time spent in off-farm activities mostly influences the farmers to use the auction markets in order to sell their livestock instead of a multi-marketing channel. On the other hand, an increase on the time spent on farm related activities away of their farm mostly influence the farmers to sell their livestock to more than one marketing channels instead of direct to abattoirs (the goodness of fit test indicates that the model fits to the data; MINITAB 1997).

Logit	Predictors	Coef	P	Odds Ratio
Logit 1: (Sales through Auction Markets / Sales to more that one marketing channel)	Constant	-13.140	0.021	
	Financial performance	1.963	0.090	7.12
	Time spend in farm related activities	0.2998	0.738	1.35
	Time spend in off-farm activities	2.1603	0.007	8.67
	Farm Income	1.735	0.142	5.67
	Age	-1.179	0.251	0.31
	Education	1.318	0.367	3.73
Logit 2: (Direct Sales to Abattoir / Sales to more that one marketing channel)	Constant	2.276	0.466	
	Financial performance	-0.5676	0.435	0.57
	Time spend in farm related activities	-1.2142	0.029	0.30
	Time spend in off-farm activities	0.1887	0.731	1.21
	Farm Income	0.6396	0.375	1.90
	Age	0.0910	0.876	1.10
	Education	-0.6794	0.405	0.51
Logit 3: (Sales to Abattoir via GMS / Sales to more that one marketing channel)	Constant	-5.987	0.303	
	Financial performance	1.186	0.311	3.27
	Time spend in farm related activities	0.1258	0.885	1.13
	Time spend in off-farm activities	0.6559	0.412	1.93
	Farm Income	0.953	0.437	2.59
	Age	-0.3319	0.724	0.72
	Education	-0.294	0.827	0.75
Log-likehood = -46.264				
G= 33.973, df = 18, P=0.013				
Goodness of Fit				
Deviance x^2 = 74.166, df=81, P= 0.691				

Reference Group= Sales to more than one marketing channel

Table 12.15 The impact of farmers' characteristics on livestock marketing channel selection by the sheep and goat farmers in EMTh according to Logistic Regression Analysis.

12.6 Stage 5: Profiling of Strategic Groups using Bivariate Statistical Techniques

12.6.1 The association between marketing strategy selection and the factors that influence the sheep farmers to adopt a particular marketing outlet.

The Kruskal–Wallis non-parametric test was used to identify which of the factors that are related to farmers' marketing channel choice affected their marketing strategy selection.

The test indicated that most of the farmers that were influenced in their marketing channel choice by any information they obtained about prices, grading uncertainty of their livestock and animal welfare adopted the differentiation strategy (Table 12.16).

Factors	Marketing Strategies		P
	Differentiation Strategy	Production Orientation Strategy	
Information about prices	30.5 [a]	21.8 [b]	0.032
	4.000	*3.500*	
Grading Uncertainty	31.1 [a]	21.1 [b]	0.018
	4.000	*3.000*	
Animal Welfare	30.7 [a]	21.6 [b]	0.022
	4.000	*3.000*	

Table: 12.16 The influence of each factor for the selection of a particular marketing strategy

N.B. Within factors (rows), strategic groups (cells) with different letters differ significantly at $P<0.05$. Average ranks are reported in standard text and medians in *italics*.

The statistical test did not identify any significant association ($P>0.05$) between the following factors and a marketing strategy selection:

i) Sale price (v76).

ii) Transportation cost (v77)

iii) Marketing cost (v78)

iv) Farmers' time (v80)

v) Loyalty (v81)

vi) Convenience (v82)

vii) Competitive offers (v83)

viii) Access to more buyers (v84)

ix) Experimenting with different marketing channels (v86)

x) Higher expected returns (v87)

xi) Speed of payment (v88)

xii) Quality of livestock (v89)

xiii) Social aspects (v90)

xiv) Contractual obligations (v91)

xv) Proximity to farm (v92)

xvi) Bargaining strength (v94)

xvii) Ability to withdraw livestock (v95)

xviii) Easy parking, unloading vehicles (v96)

12.6.2 Profiling marketing strategic groups

The one sample chi-square analysis indicated that the farmers who follow each marketing strategy have similar profiles regarding the factors that influence them in their marketing outlet selection, their farm and farmers' characteristics. More particularly, most of the farmers who follow each marketing strategy rent from other landowners less than 50ha of the land they farmed as well as they let to other farmers less than 50ha from the land they owned, presumably in order to have an additional source of income. The vast majority of these farmers did not lease any livestock quota from other farmers or to other farmers. Moreover, most of the farmers who follow each marketing strategy were not involved with off-farm activities. They did not hold any responsible position in any marketing cooperative group, farming organization, non-farm business they might own, or in any

non-farm business they did not own. Besides, this study indicated that the financial performance of the examined farmers, as well as the livestock prices they achieved in the market, were about average compared to those of others' sheep farmers operated in their region. The statistical analysis also identified that these farmers preferred to travel small distances (less than 50 miles) in order to sell their livestock, did not engage in adding value activities. On the other hand, there are some differences between the profiles of the two strategic groups as Table 12.17 presents.

Differentiation Strategy	**Production Orientation Strategy**
Marketing Channel Selection	
Sales to more than one marketing channels	Sales to more than one marketing channels
Factors	
Sale price	Sale price
Animal welfare	Higher expected returns
Time spend in selling process	Convenience
Speed of payment	Speed of payment
Higher expected returns	Time spend in selling process
Farm Characteristics	
Size of farm: 41-80 ha	n.s
Farmer's characteristics	
n.s	Previous non-farm working experience: NO
Farm Income:<24%	Farm Income:25%-49%
Educational level: Higher	Educational level: National Diploma or Higher
Information sources	
Own files	Agricultural journals
Other farmers	Own files
Types of information	
Management practices	Animal welfare

Table 12.17 Summary of strategic group profile

12.6.2.a Profiling marketing strategic group regarding marketing channel selection

The one sample chi-square analysis employed to identify which marketing channel is mostly preferred by the farmers who adopt each marketing strategy. More particular, the majority of the farmers who followed each marketing strategy preferred to market their produce to more than one marketing channel (Table 12.18).

Marketing Channel Selection		% of farmers	Standardized residuals
Differentiation strategy x^2=15.457, df=3,P<0.01	Sales through auction markets	7.1%	n.s
	Direct sales to abattoir	39.3%	n.s
	Sales to abattoir via GMS	10.7%	n.s
	Sales to more than one marketing channel	42.9%	2.70[a]
Production orientation strategy x^2=9.333, df=3, P<0.01	Sales through auction markets	8.3%	n.s
	Direct sales to abattoir	16.7%	n.s
	Sales to abattoir via GMS	25.0%	n.s
	Sales to more than one marketing channel	50.0%	2.45[a]

Table 12.18: The livestock marketing channel utilization by the farmers who each marketing strategy.

The reasons that explain this marketing channel preference by the farmers of each strategic group were investigated through the Friedman one-way non-parametric test. As Figure 12.6 presents, the farmers who adopted the differentiation strategy were mostly influenced in their marketing channel choice by the sale price, animal welfare, time spent, speed of payment and higher expected returns. On the other hand, the farmers who preferred the production orientation strategy were mostly influenced in their marketing channel selection by sale price, higher expected returns, their convenience, speed of payment, their time and marketing cost.

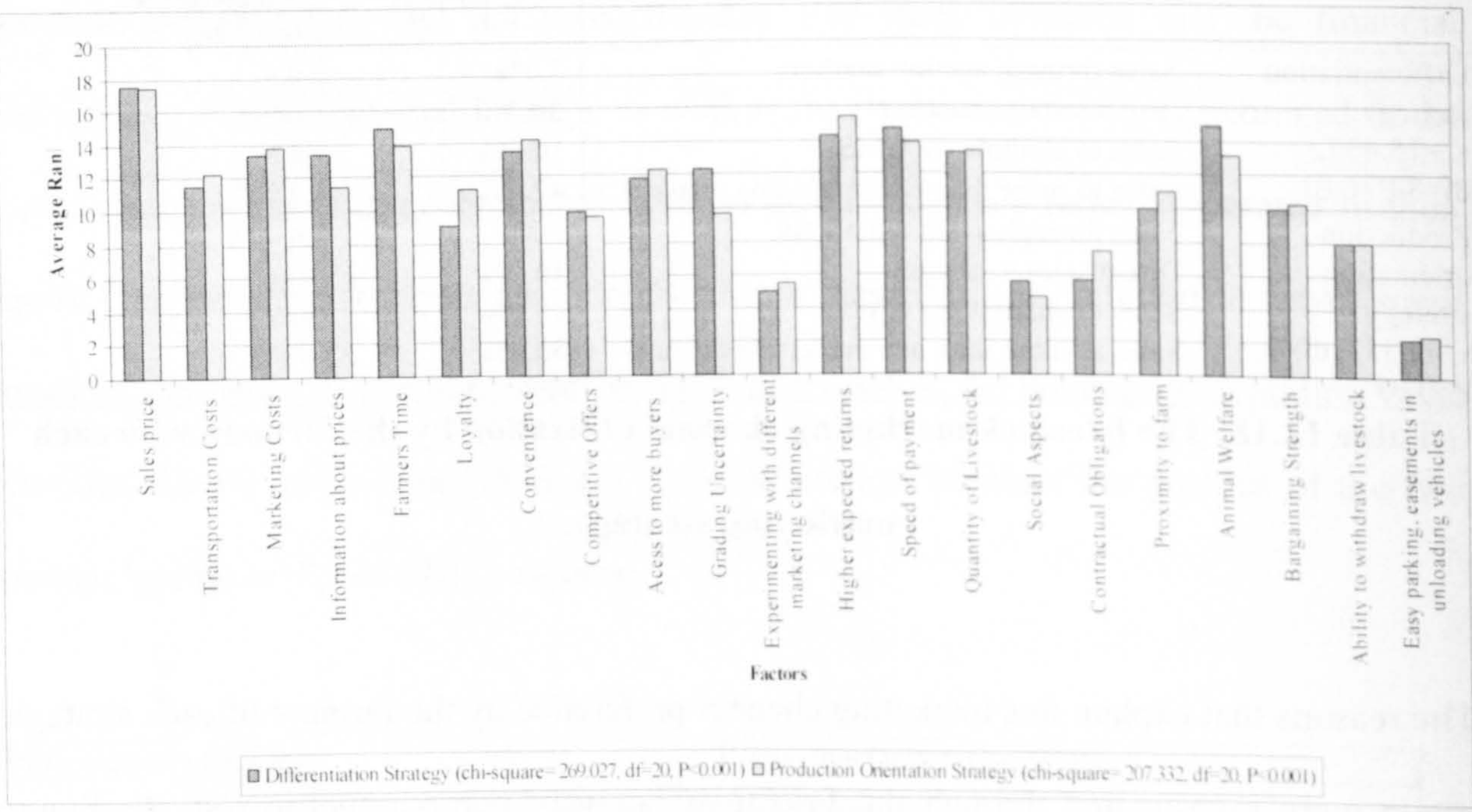


Figure 12.6: The importance of each factor that affects marketing channel selection for each strategic group.

The influence of the factors that affect farmers' marketing channel choice on their marketing strategy selection was explored using logistic regression analysis. The binary logistic regression was employed as the response variable that is consisted of the marketing strategy selection is a binary variable. The factors that comprise the profiles of the identified strategic groups were used as predictors in the logistic regression models. The results of the analysis as they are presented in Table 12.19 are not statistically significant. Thus, no conclusion can be made regarding which factors affect marketing channel selection.

Predictors	**Coef**	**P**		**Odds Ratio**	
Constant	3.383	0.026			
Information about prices	-0.1823	0.532		0.83	
Grading Uncertainty	-0.3560	0.202		0.70	
Animal Welfare	-0.4204	0.334		0.66	
Log-likehood = -32.277	Pairs	Number	Percent	Summary Measures	
G= 7.226, df = 3, P=0.065	Concordant	478	71.1%	Somer's D	0.44
Goodness of Fit	Discordant	179	26.6%	Goodman – Kruskal Gamma	0.46
Pearson x^2 = 36.786, df=24 P=0.045	Ties	15	2.2%	Kendall's Tau-a	0.23
Deviance x^2 = 47.860, df=24, P= 0.003	Total	672	100.0%		
Hosmer – Lemershow x^2 = 7.431, df=8, P= 0.491	Event marketing strategy : Production orientation strategy				

Table 12.19 The impact of the factors that affect the marketing channel choice on marketing strategy selection according to Logistic Regression Analysis.

12.6.2.b Profiling marketing strategic group regarding farm characteristics.

The one-sample chi-square analysis indicated (Table 12.20) that both strategic groups have similar profiles regarding their farm characteristics. Most of the farmers who adopted the differentiation strategy farmed between 41 – 80 ha while the production orientated farmers own less than 50 ha of their farm land. The statistical analysis did not identify any significant association (P>0.05) between the adoption of a particular marketing strategy and the following farm characteristics: (a) flock size (v47) and (b) volume of livestock production (v48).

Farmers Characteristics		Differentiation strategy			Production Orientation Strategy		
		x^2	% farmers	Standardized residuals	x^2	% farmers	Standardized residuals
Farm size	<40 ha	x^2=8 857, df=3, P<0.05	10.7%	n.s	n.s		
	41-80 ha		46.4%	2.27[a]			
	81-120 ha		14.3%	n s			
	121+ha		28 6%	n s			
Farm land owned by the farmer	<50 ha	n.s			x^2=7.000, df=2, P<0.05	58.3%	2.12[a]
	51-100 ha					25.0%	n s
	>101 ha					16.7%	n s
Farm land rent from other farmers	<50 ha	x^2=34 696, df=2, P<0 001	85.7%	4.82[c]	x^2=6 750, df=2, P<0.001	58.3%	2.12[a]
	51-100 ha		7.1%	-2 39[a]		20.8%	n.s
	>101 ha		7.1%	-2.39[a]		20.8%	n s
Farm land rent to other farmers	<50 ha	x^2=56.201, df=2, P<0 001	100.0%	6 13[c]	x^2=48 000, df=2, P<0.001	100.0%	5 66[c]
	51-100 ha		0 0%	-3.05[b]		0.0%	-2.83[b]
	>101 ha		0 0%	-3 05[b]		0 0%	-2.83[b]
Livestock quota leased from other farmers	NO	x^2=28 000, df=1, P<0.001	100.0%	3.74[c]	x^2=24 000, df=1, P<0.001	100.0%	3.46[c]
	YES		0 0%	-3.74[c]		0.0%	-3.46[c]
Livestock quota leased to other farmers	NO	x^2=17 286, df=1, P<0 001	89 3%	2.94[b]	x^2=24 000, df=1, P<0 001	100.0%	3.46[c]
	YES		10.7%	-2.94[b]		0 0%	-3.46[c]

Table 12.20: Profile of each strategic group regarding farm characteristics

[a]P<0.05, [b]P<0.01 and [c]P<0.001

12.6.2.c Profiling marketing strategic groups regarding d farmer's characteristics

The chi-square analysis indicated that both strategic groups have similar profiles regarding farmers' characteristics (Table 12.21). On the other hand, the farmers who adopted the differentiation strategy tried to differentiate their farm by satisfying the buyers of their produce and adopting special livestock production techniques (as cluster and factor analysis indicate). Most of these farmers were not involved with farm-related activities away from their farms and derived less than one quarter of their farm income from their sheep enterprise. The production-orientated farmers had long experience in livestock farming, but not any previous non-farm working experience. Moreover, they derived between 25% - 49% of their farm income from their sheep enterprise. As much as it concerned farmers' educational level, the majority of the farmers were highly educated (Higher National Diploma, Bachelor's degree, postgraduate degree).

This study did not identify any significant association ($P>0.05$) between the adoption of a particular marketing strategy and the following farmers' characteristics: (i) experience in decision making regarding livestock farming (v57), (iii) livestock farming experience in the current farm (v58), (iv) experience in decision making regarding livestock farming in the current farm (v59), (v) debt level (v65), (vi) membership in a marketing cooperative group (v71) and (vii) age of the farmer (v68).

Farmers Characteristics		Differentiation strategy			Production Orientation Strategy		
		x^2	% farmers	Standardized residuals	x^2	% farmers	Standardized residuals
Farm related activities	0 days	x^2=16.571, df=3, P<0.001	57.1%	3.40[c]			
	1 days		14.3%	n.s			
	2-3 days		7.1%	n.s			
	4+ days		21.4%	n.s			
Off-farm activities	0 days	x^2=32.857, df=3, P<0.001	67.9%	4.24[c]	x^2=23.000, df=3, P<0.001	66.7%	4.08[c]
	1 days		0.0%	-2.65[b]		16.7%	n.s
	2-3 days		3.6%	2.27[a]		4.2%	-2.04[a]
	4+ days		28.6%	n.s		12.5%	n.s
Livestock farming experience	<10 years				x^2=9.000, df=3, P<0.05	12.5%	n.s
	11-20 years					12.5%	n.s
	21-30 years					25.0%	n.s
	31+ years					50.0%	2.45[a]
Holding of responsible position in a marketing cooperative group	NO	x^2=20.571 df= 1 P<0.001	92.9%	3.21[b]	x^2=13.500 df= 1 P<0.001	87.5%	2.60[b]
	YES		7.1%	-3.21[b]		12.5%	-2.60[b]
Holding of responsible position in an agricultural organization	NO	x^2=17.286, df= 1 P<0.01	89.3%	2.94[b]	x^2=10.667, df= 1 P<0.01	83.3%	2.31[a]
	YES		10.7%	-2.94[b]		16.7%	-2.31[a]
Holding of responsible position in a non-farm business owned by the farmer	NO	x^2=24.143, df=1, P<0.001	96.4%	3.47[c]	x^2=20.167, df=1, P<0.001	95.8%	3.18[b]
	YES		3.6%	-3.47[c]		4.2%	-3.18[b]
Holding of responsible position in a non-farm business owned by the farmer	NO	x^2=24.143, df=1, P<0.001	96.4%	3.47[c]	x^2=24.000, df=1, P<0.001	100.0%	3.46[c]
	YES		3.6%	-3.47[c]		0.0%	-3.46[c]
Previous non-farm experience	NO	x^2=14.429 df=1, P<0.001	75.0%	n.s	x^2=22.833 df=1, P<0.001	95.8%	3.18[a]
	YES		25.0%	n.s		4.2%	-3.18[a]
Farm income derived from sheep enterprise	<24%	x^2=12.000, df=3, P<0.01	50.0%	2.65[b]	x^2=25.333, df=3, P<0.001	25.0%	n.s
	25%-49%		28.6%	n.s		66.7%	4.08[c]
	50%-69%		14.3%	n.s		8.3%	n.s
	>70%		7.1%	n.s		0.0%	-2.45[a]
Financial performance	Below average	x^2=12.330, df=2, P<0.001	21.4%	n.s	x^2=15.750, df=2, P<0.001	8.3%	-2.12[a]
	Average		64.3%	2.85[b]		70.8%	3.18[b]
	Above average		14.3%	n.s		20.8%	n.s
Educational level	Secondary	x^2=15.714, df=3, P<0.01	35.7%	n.s	x^2=24 333, df=3, P<0.001	0.0%	-2.45[a]
	A levels		3.6%	-2 27[a]		0 0%	-2.45[a]
	National Diploma		10.7%	n s		54.2%	2.86[b]
	Higher education		50.0%	2.65[b]		45.85	2 04[a]
Distance from marketing channels	1-50 miles	x^2=62.000, df=2, P<0.001	89.3%	6 80[c]	x^2=72.000, df=3, P<0.001	100.0%	7.35[c]
	51-100 miles		7.1%	n s		0 0%	-2.45[a]
	>101 miles		3.6%	-2.27[a]		0.0%	-2.45[a]
	Don't know		0.0%	-2.65[b]		0 0%	-2.45[a]
Obtained livestock prices	Below average	x^2=18.567, df=2, P<0.001	10.7%	-2.07[a]	x^2=13 000, df=2, P<0.001	0.0%	-2.83[b]
	Average		71.4%	3 51[c]		58.3%	2.12[a]
	Above average		17.9%	n.s		41.7%	n.s
Carcass classification	Unknown	x^2=10.214, df=4, P<0.05	14.3%	n s			
	U-3L		14.3%	n s			
	R-2, R-3L, R-3H		32.1%	n s			
	O-3L		3.6%	n.s			
	Multi-classification		35.7%	n s			
Use of added value activities	NO	x^2=14.286, df=1, P<0 001	85.7%	2 02[a]	x^2=13.500 df=1, P<0.001	87.5%	2.60[b]
	YES		14.3%	-2 02[a]		12.5%	-2.60[b]

Table 12.21: Profile of each strategic group regarding farmers' characteristics

[a]P<0.05, [b]P<0.01 and [c]P<0.001

12.6.3 The impact of the farm and farmers' characteristics on marketing strategy selection

The influence of the farm and farmers' characteristics on farmers' marketing strategy selection was explored conducting binary logistic regression analysis. The farm and farmers' characteristics that comprise the profiles of the strategic groups were used as predictors in the logistic regression model. Table 12.22 presents the results of the final stage of the analysis regarding the impact of the farm characteristics on the marketing strategy choice.

Predictors	Coef	P		Odds Ratio	
Constant	-0.639	0.551			
Farm size	0.3541	0.409		1.42	
Flock size	0.9018	0.063		2.46	
Volume pf livestock production	-0.4527	0.520		0.64	
Farm land owned by the farmer	-1.0095	0.031		0.031	
Log-likehood = -30.089	Pairs	Number	Percent	Summary Measures	
G=11.602, df = 4, P=0.021	Concordant	508	75.6%	Somer's D	0.53
Goodness of Fit	Discordant	151	25.5%	Goodman – Kruskal Gamma	0.54
Pearson x^2 = 30.968, df=22 P=0.097	Ties	13	1.9%	Kendall's Tau-a	0.27
Deviance x^2 = 36.950, df=22, P= 0.024	Total	672	100.0%		
Hosmer – Lemershow x^2 = 7.809, df=7, P= 0.350	Event marketing strategy: Production Orientation Strategy				

Table 12.22 The impact of farm's characteristics on marketing strategy selection by the sheep farmers in Cornwall according to Logistic Regression Analysis.

The farmers who preferred the production orientation strategy were more influenced by the size of the farm land that these farmers own than the farmers who adopted the differentiation strategy. No other significant association was found between the examined farm characteristics and marketing strategy selection (the goodness of fit test indicates that the model fits to the data; MINITAB 1997).

Predictors	Coef	P	Odds Ratio
Constant	-4.813	0.224	
Time spend in farm related activities	0.2463	0.362	1.28
Time spend in off-farm activities	0.2122	0.541	1.24
Livestock farming experience	-0.794	0.572	0.45
Experience in decision making regarding livestock farming	0.467	0.705	1.59
Livestock farming experience in the current farm	1.986	0.121	7.28
Experience in decision making regarding livestock farming in the current farm	-1.416	0.298	0.24
Previous non-farm experience	-2.211	0.309	0.11
Education level	-0.8183	0.289	0.44
Marketing channel selection	0.5676	0.186	1.76
Membership in a cooperative group	-1.2630	0.187	0.28
Financial performance	2.2400	0.010	9.39

Log-likehood = -24.768	Pairs	Number	Percent	Summary Measures	
G=22.243, df = 11, P=0.023	Concordant	560	83.3%	Somer's D	0.67
Goodness of Fit	Discordant	107	15.9%	Goodman – Kruskal Gamma	0.68
Pearson x^2 = 38.277, df=33 P=0.242	Ties	5	0.7%	Kendall's Tau-a	0.34
Deviance x^2 = 45.717, df=33, P= 0.069	Total	672	100.0%		
Hosmer – Lemershow x^2 = 3.217, df=8, P= 0.920	Event marketing strategy: Production Orientation Strategy				

Table 12.23 The impact of farmers' characteristics on marketing strategy selection by the sheep farmers in Cornwall according to Logistic Regression Analysis.

The final logistic regression indicates that the financial performance of the farmers had a significant impact on the selection of the differentiation strategy over the production orientation strategy (Table 12.23). On the other hand, the analysis did not identify any significant association between the other examined farmers' characteristics and marketing strategy selection (the goodness of fit test indicates that the model fits to the data; MINITAB 1997).

12.6.4 Profiling marketing strategic groups regarding information sources and type of information.

The Kruskal–Wallis non-parametric test was used to determine which of the information sources (v97-v116 of Appendix IV) that the farmers used as well as which type of information (v117-v127of Appendix IV) that these farmers were interested in, are significant related to the marketing strategy selection.

Table 12.24 illustrates the influence of each type of information sources to the selection of each marketing strategy.

Factors	Marketing Strategies: Differentiation Strategy	Production Orientation Strategy	P
Other farmers	30.8[a]	21.5[b]	0.021
	4.000	*3.000*	
Trade literature	31.5[a]	20.7[b]	0.007
	3.000	*3.000*	
Radio TV	23.2[a]	30.3[b]	0.076
	1.000	*2.000*	
Bank Manager	29.9[a]	22.5[b]	0.060
	2.500	*1.000*	

Table 12.24 The influence of each type of information sources to the selection of a particular marketing strategy

N.B Within factors (rows), strategic groups (cells) with different letters differ significantly at $P<0.05$. Average ranks are reported in standard text and medians in *italics*.

Most of the sheep farmers that were informed by other farmers and trade literature adopted the differentiation strategy. Moreover, the farmers that were informed by their bank manager seemed numerically to prefer the differentiation strategy, while the farmers that were mostly used the radio/TV as information source found to be production orientated.

No significant association ($P>0.08$) between the following types of information sources and a marketing strategy:

(a) Land agents/auctioneers (v97)

(b) Agricultural journals (v98)

(c) Family members (v102)

(d) Livestock dealers (v103)

(e) Feed company representatives (v104)

(f) Business consultants (v105)

(g) Newspapers (v106)

(h) The farmers files (v107)

(i) Meat and Livestock Commission (v109)

(j) Other governmental bodies (v110)

(k) Farmer's accountant (v111)

(l) National Farmer's Union (v112)

(m)Producer Group (v113)

(n) Abattoir Agents (v114)

(o) Internet (v115)

(p) Marketing Groups (v116)

A significant association was identified between the marketing strategy selection and the following type of information that sheep farmers use in U.K. (County of Cornwall):

(a) Management practices (v122).

The majority of sheep farmers in Cornwall who were interested to be informed about management practices followed the differentiation strategy (Table 12.25).

Factors	Marketing Strategies		P
	Differentiation Strategy	Production Orientation Strategy	
Management Practices	30.5[a]	21.9[b]	0.035
	4.000	*3.000*	

Table 12.25 The influence of management practices as tye of information to the selection of a particular marketing strategy

N.B Within factors (rows), strategic groups (cells) with different letters differ significantly at $P<0.05$.

On the other hand, the test did not identify any significant association between the selection of a particular marketing strategy and type of information such as:

(i) National livestock prices (v117)

(ii) Local livestock prices (v118)

(iii) Overseas livestock prices (v119)

(iv) Quality premia/penalties (v120)

(v) Production techniques (v121)

(vi) Animal diseases (v123)

(vii) Consumer information (v124)

(viii) Financial (v125)

(ix) Producer group information (v126)

(x) Classification (v127)

The Friedman one-way non-parametric test was used to profile each strategic group regarding the importance of each type of information sources and each type of information. The test indicated (Figure 12.7) that the farmers who adopted the differentiation strategy were mostly informed from their own files, other farmers, agricultural journals and the trade literature. On the other hand, the farmers who preferred the production-orientation strategy were mostly by agricultural journals, their own records, other farmers and their family.

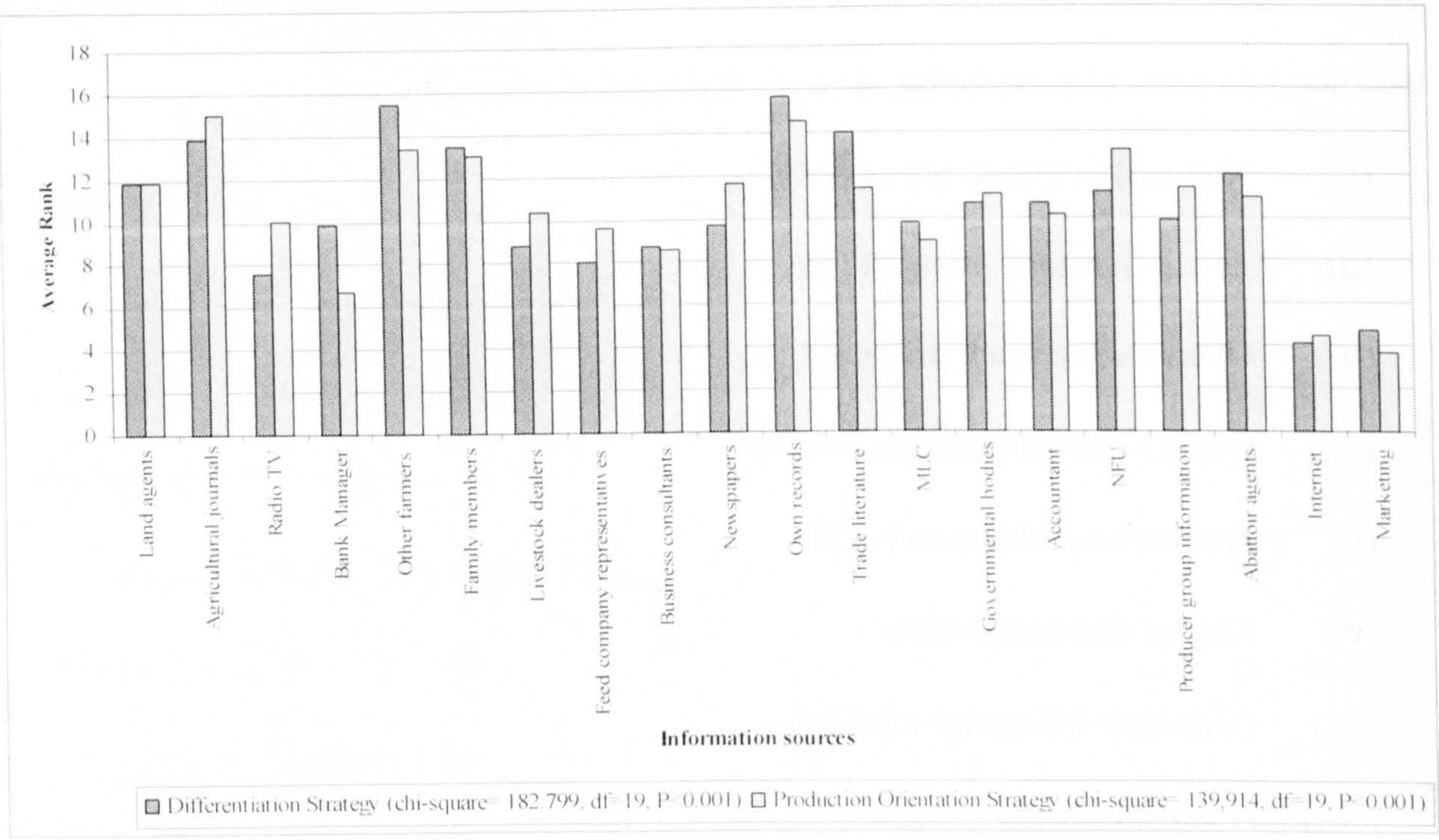


Figure 12.7: The importance of each type of information sources for the farmers who adopted each marketing strategy.

Furthermore, the statistical analysis showed (Figure 12.8) that the farmers who adopted the differentiation strategy were mostly interested to be informed about local livestock prices, national livestock prices and management practices. Production-orientated farmers were also interested in being informed about local livestock prices, national livestock prices and animal diseases.

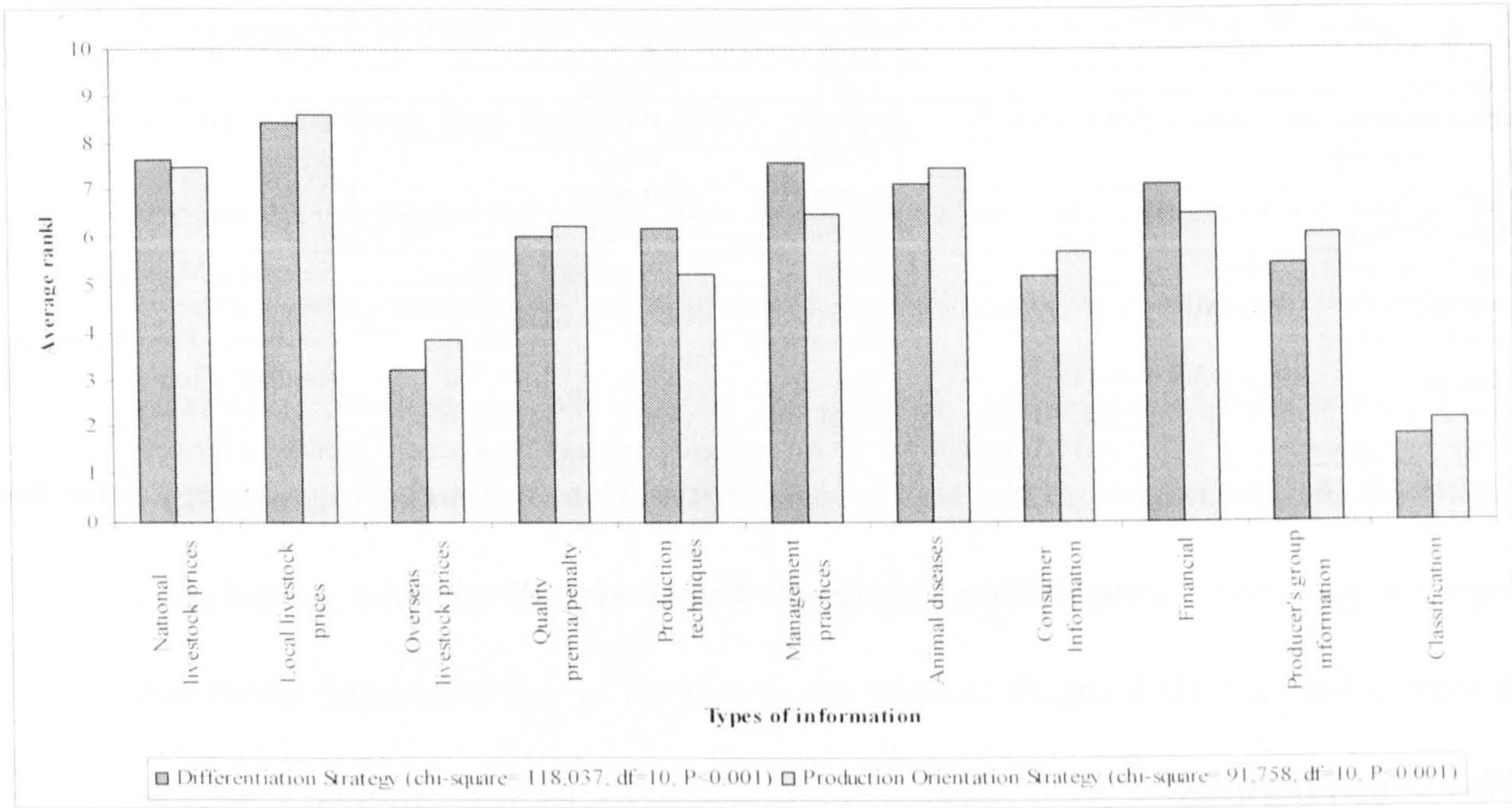


Figure 12.8: The importance of each type of information for the farmers who adopted each marketing strategy

The influence of the information sources on the adoption of a particular marketing strategy was explored conducting binary logistic regression analysis. The information sources that affect marketing strategy selection (according to Kruskal – Wallis test) were used as predictors in the logistic regression models. Logistic regression was not conducted to explore the impact of the types of information to marketing strategy selection due to the fact that the Kruskal-Wallis test indicated that only one type of information (management practices) is significantly associated with marketing strategy selection and therefore the use of a multivariate statistical test is not necessary.

According to the results of the analysis that are presented in Table 12.26, the farmers who preferred to be informed from trade literature, other farmers and bank managers followed the production orientations strategy instead of the differentiation strategy; while the farmers who were informed from radio –TV preferred the latter strategy (the goodness of fit tests support that the model fits to the data; MINITAB 1997).

Predictors	Coef	P		Odds Ratio	
Constant	6.873	0.008			
Other farmers	-1.2779	0.022		0.28	
Trade literature	-1.4296	0.012		0.24	
Radio TV	1.9949	0.002		7.35	
Bank Manager	-1.2969	0.005		0.27	
Log-likehood = -20.446	Pairs	Number	Percent	Summary Measures	
G=30.887, df = 4, P<0.001	Concordant	596	88.7%	Somer's D	0.78
Goodness of Fit	Discordant	71	10.6%	Goodman – Kruskal Gamma	0.79
Pearson x^2 = 30.386, df=30 P=0.446	Ties	5	0.7%	Kendall's Tau-a	0.40
Deviance x^2 = 32.574, df=30, P= 0.341	Total	672	100.0%		
Hosmer – Lemershow x^2 = 5.211, df=7, P= 0.634	Event marketing strategy: Production Orientation Strategy				

Table 12.26: The impact of the sources of information on marketing strategy selection according to Logistic Regression Analysis.

12.7 Conclusions

This study identified that the sheep farmers in the County of Cornwall in U.K. marketed their livestock through four main distribution channels: (a) sales through auction markets, (b) direct sales to abattoir, (c) sales to abattoir via Group Marketing Schemes and (d) sales to more than one marketing channel.

Furthermore, the analysis presented in this chapter verified some of the hypotheses presented in Chapter 11 and Appendix III regarding the marketing strategy and distribution channel utilisation of the sheep farmers in the County of Cornwall in U.K.. More particularly:

- The sheep farmers in the County of Cornwall can be classified into two strategic groups regarding their livestock marketing activities and business orientation. These strategic groups are: (a) the differentiation-orientated farmers and (b) the production-orientated farmers.
- Findings of this study support the hypothesis that the existing generic business or agricultural typologies are inadequate to describe the marketing strategies of the sheep farmers in Cornwall. However, some comparisons can take place. More particularly, the differentiation strategy has many similarities with *the*

differentiation strategy of Porter's (1980), Kohls and Uhl's (1990), McLeay's *et al.* (1996) and Fearne and Bates's (2000) typology. On the other hand, the production-orientation strategy may fall into the *prospectors* classification of Miles and Snow's (1978) taxonomy, and has many similarities with *Production / Production Flexibility Strategy* of McLeay *et al.* (1996) typology and Mitchell's (1976) *production orientation strategy* of sheep farmers classification. Additionally, an examination between Davies (2001) typology, regarding the marketing strategies that sheep farmers follow in the Far South West of England (Devon and Cornwall) and the typology derived from the present study, indicates that there are some similarities between the marketing attitudes of the sheep farmers. Davies (2001) identified three marketing strategies that sheep farmers follow in Devon and Cornwall which were: Opportunist Strategy, Production Orientation Strategy and Differentiation Strategy. On the other hand, this study identified that after the FMD sheep farmers in Cornwall follow either the Differentiation Strategy or the Production-Orientation Strategy. The differentiation-orientated and the production-orientated farmers of Davies (2001) typology have different marketing orientation than the differentiation-orientated and production orientated farmers of this study.

- The farm and farmer characteristics do have significant impact on the selection of a particular livestock marketing strategy by the sheep farmers in Cornwall.
- The factors (e.g. sale price, loyalty, speed of payment) that influence sheep Cornish farmers in selecting of a particular livestock marketing channel are significantly associated with the selection of a specific livestock marketing strategy.
- The identified livestock marketing strategies are significantly related with the selection of particular livestock marketing channels.

Chapter 12: The Marketing Strategies that Sheep Farmers Adopt in the County of Cornwall in United Kingdom

- Farm and farmer's characteristics that have a significant impact on the selection of a particular livestock marketing channel by the sheep farmers in Cornwall have been identified.
- The examined factors (e.g. sale price, loyalty, speed of payment) do have a significant impact on the selection of a particular livestock marketing channel by the sheep farmers in Cornwall.
- Information sources do have significant influence on the selection of a livestock marketing strategy.

CHAPTER 13

THE MARKETING STRATEGIES THAT DAIRY COW FARMERS ADOPT IN THE COUNTY OF CORNWALL IN UNITED KINGDOM

13.1 Introduction

This chapter aims to identify the marketing channels that dairy cow farmers use in the County of Cornwall in U.K. in order to market their milk and to develop a typology regarding the marketing strategies that these farmers follow. The profiles of the farmers that follow each marketing strategy regarding their farm characteristics, the characteristics of themeselves and their marketing channel utilization are also presented in this chapter. Finally, it profiles the farmers who use each distribution channel in order to market the milk regarding their farm and farmers characteristics.

13.2 Stage 1: Determining Key Strategic Dimensions Using Principle Components Analysis

In this stage of the statistical analysis thirty-nine variables (V1-V39 of Appendix IV regarding milk marketing strategies), which describe the marketing attitudes of dairy cow farmers in Cornwall, were subjected to principal components analysis.

Chapter 13: The Marketing Strategies that Dairy Cow Farmers Adopt in the County of Cornwall in United Kingdom

The variables that had high proportion of large absolute values of anti –image correlations as well as MSA less than 0.5 were removed before the analysis took place. Finally, factor analysis conducted for only 9 (V5, V14, V18, V22, V25, V26, V28, V32 and V38) of the 39 variables.

The examination of the final anti-image correlation matrix, the Bartlett test of sphericity, the Kaiser – Meyer – Oklin Measure of Adequacy and the MSA for each examined variable, as presented in Appendix XIII, indicated that the data were appropriate for factor analysis (Malhotra 1996; Hair *et al.* 1998; Darren and Mallery 2001).

In the next stage a varimax rotation was conducted and the latent root criterion (eigenvalue =1), the scree plot test and the percentage of variance were used to determine the number of factors. All the three criteria determined 3 factors in the first rotation but several different trial rotations were conducted in order to compare factor interpretability (Tabachnick and Fidell 1989; Child 1990; Malhotra 1996; Hair *et al.* 1998); Figure 13.1 and Table 13.1). The cut-off point for interpretation of loading scores was 0.70 according to Hair *et al.* (1998) and Tabachnick and Fiddell (1989) suggestions.

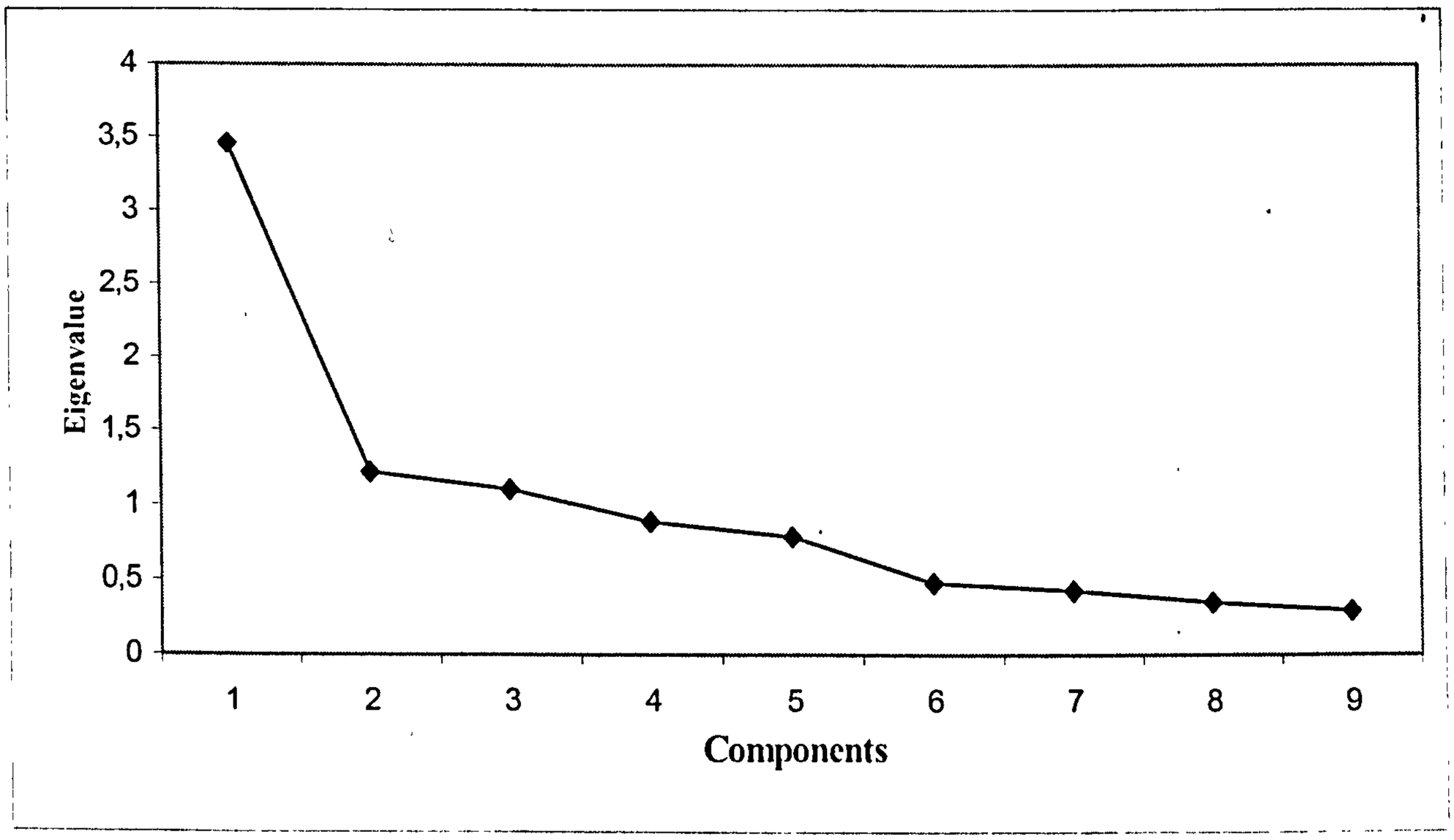


Figure 13.1. Scree plot Test

Components	Eigenvalues	% of Variance	Cumulative Variance %	Variables	Communalities
1	**3.454**	**38.378**	**38.378**	V22	0.748
2	**1.217**	**13.522**	**51.900**	V25	0.678
3	**1.102**	**12.247**	**64.148**	V26	0.721
4	0.888	9.867	74.015	V14	0.724
5	0.789	8.766	82.780	V35	0.750
6	0.480	5.330	88.110	V32	0.517
7	0.427	4.742	92.852	V28	0.537
8	0.349	3.876	96.728	V5	0.546
9	0.294	3.272	100.00	V18	0.553

Table 13.1 Results of Principle Components Analysis of Strategy Variables.

The three identified factors, which explained the 64.15% of the total variance and appeared to give the best representation of the underlying relationship among the selected variables, are illustrated with their factor loading scores in Table 13.2.

	KEY STRATEGIC DIMENSIONS	Factor Loading
	Market Orientation	
V22	I meet market requirements by adapting my production methods	0.84
V26	I continually monitor market information other than price to plan sales and production decisions	0.73
V14	I use special techniques to gain the highest quality premium milk	0.72
V32	I increase my farm business success by understanding the needs and wants of the final consumer	0.64
V25	I understand detailed market requirements for the milk I produce	0.63
	Profit Orientation	
V28	I deal with a minimum number of marketing outlets so that I can maintain a good relationship with these channel members e.g. milk marketing cooperative group	0.70
V5	Maximizing profit is my most important farming goal	0.70
	Interpersonal Relationships	
V35	Cornish farmers are my main competitors	0.84
V18	My most important production activity is continually monitoring the quality of my milk	0.63

Table 13.2 The identified key strategic dimensions..

Determinant of Correlation Matrix: 0.006826
KMO MSA = 0.75
Bartlett test of Sphericity = 131.984, P <0.001

Therefore, the key strategic dimensions that the three factors represent are the following:

Factor 1: Market Orientation

The dairy cow farmers who were influenced in their marketing orientation by this factor adapted their production methods in order to meet the market requirements and to satisfy their clients. They continually monitored market information (other than price) in order to make their decisions relative to sales and production planning. Furthermore, they used special techniques aiming to gain the highest quality premium milk. This strategic dimension also indicates but in significance level more than 5% (according to the suggestions of Hair *et al.* (1998) regarding the interpretation of loading scores) that these

farmers increased their farm business success by understanding the needs and wants of the final consumer as well as the detailed market requirements for their milk produce.

Factor 2: Profit Orientation

The dairy cow farmers, according to this factor, considered profit maximization as their most important farming goal. They also preferred to deal with a small number of marketing outlets because they wanted to maintain good relationships with them, e.g. milk marketing cooperative groups and to achieve better conditions for selling their produce.

Factor 3: Interpersonal Relationships

The farmers that scored highly on the third strategic dimension appeared to consider the other dairy cow farmers operating in their area as their main competitors. This strategic dimension also indicated (but in significance level a little more than 5%) that these farmers were aiming to become more competitive than their main competitors by continually monitoring the quality of their produce as this process was considered highly important for their production activity (Hair *et al.* 1998).

13.3 Stage 2: Identification of Marketing Strategies using Cluster Analysis

In this study both hierarchical and non-hierarchical cluster methods were used according to the recommendations of Harrigan (1985), Helsen and Green (1991), Hair *et al.* (1998) and Siardos (1999) that are presented in Chapter 8, in order to develop a typology of the marketing strategies that dairy cow farmers follow in Cornwall. Cluster analysis was conducted on the 54 observations, as there were no outliers.

Ward's and k-mean cluster analysis were conducted (Appendix XIII). These procedures suggested between a two and three cluster solution.

Since the choice criterion is based on kappa maximization at a significant level of $P<0.05$, the two cluster solution appeared to be the most appropriate model (Appendix XIII). On the other hand, the three clusters solution was found to be more interpretable than the two clusters solution (Appendix XIII). Furthemore, inter-cluster differences at $P<0.05$ were observed in the four of the five variables for the three clusters solution (Table 4 in Appendix XIII). On the other hand, inter-cluster differences were identified in only one of the five examined variables regarding the two clusters solution (Table 5 in Appendix XIII). Therefore, on balance the three cluster solution seems to have greater validity than the two cluster solution.

Therefore, the three business strategies that the dairy cow farmers follow are according to the results of cluster analysis: (a) the Opportunist strategy, (b) the Return-Focus Strategy and (c) Market-Orientation Strategy.

The farmers who follow the **opportunist strategy** comprise 27.8% of the sample. These farmers did not score highly on any of the identified strategic dimensions. This means that these farmers were not interested in meeting market requirements by adapting their production methods, or in monitoring market information different than price in order to plan their sales and programme their production. They did not use special techniques to gain the highest quality premium milk. Furthermore, the were not interested in understanding the needs and wants of the final consumer in order to improve their farm business success or understanding detailed market requirements for the milk they produce. They did not deal with a minimum number of marketing outlets as presumably they were

not interested in personal relationships with their buyers, nor they were aiming to maximize their farm profits. In addition, they did not consider the other farmers operated in their region as their main competitors. Also, the continuous monitoring of the quality of their milk was not one of their most important production activities. In other words, these farmers act opportunistically which means that they do operate strategically regarding the marketing of their milk produce (Figure 13.2)

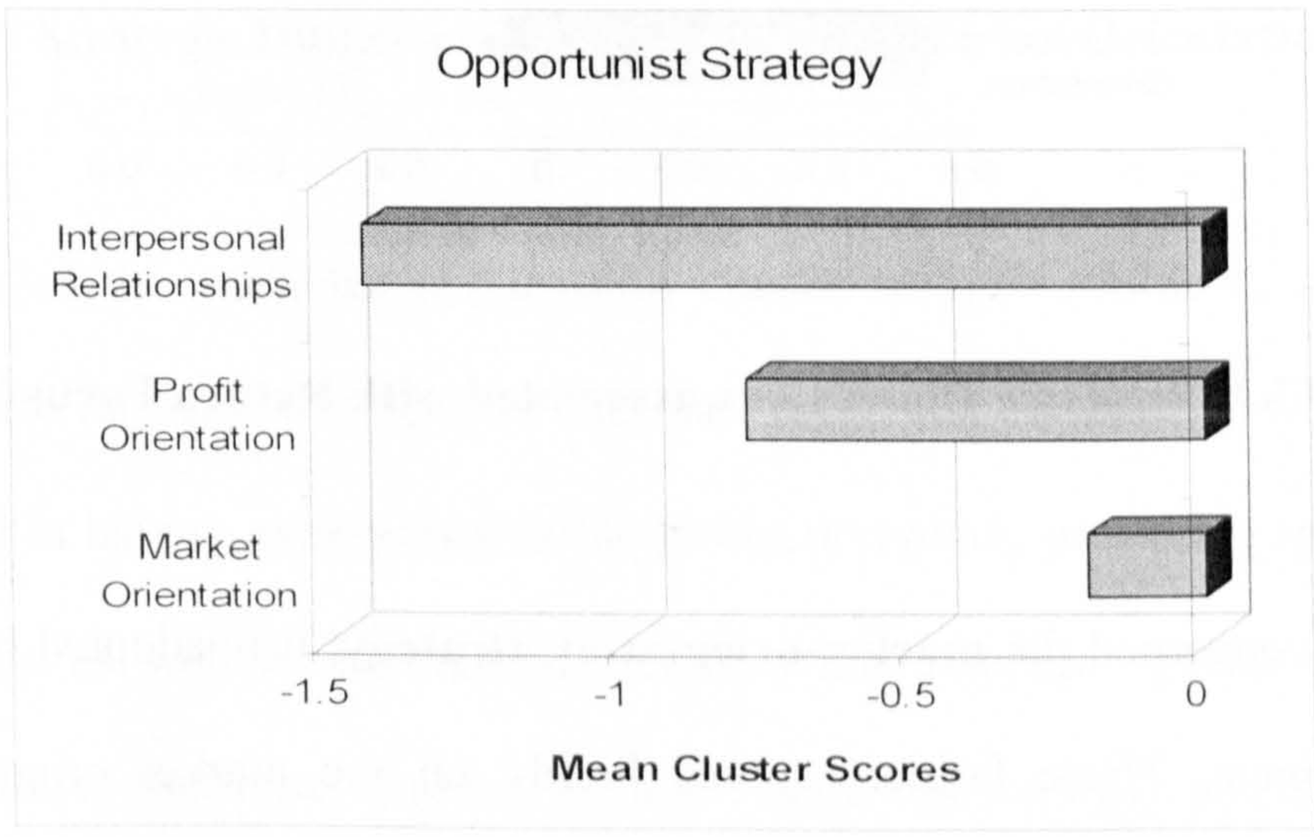


Figure 13.2: Strategic Dimensions associated with Opportunist Strategy.

By contrast, the **return-focus strategy** was preferred by 42.8% of the examined farmers. These farmers scored highly on the strategic dimension associated with profit orientation (Figure 13.3). They considered that their most important farming goal was the maximization of their enterprise profit. They preferred to deal with a minimum number of marketing outlets in order to maintain good relationships with their buyers such as milk marketing cooperative groups. Moreover, they scored positively on the strategic dimension regarding interpersonal relationships, which means that the return-focused farmers had the impression that the other dairy cow farmers operated in their region were their main competitors. Furthermore, they considered that the continuous examination of the quality

of their milk produce was one of their most important farming goals. Besides, they scored negatively on the market orientation strategic dimension.

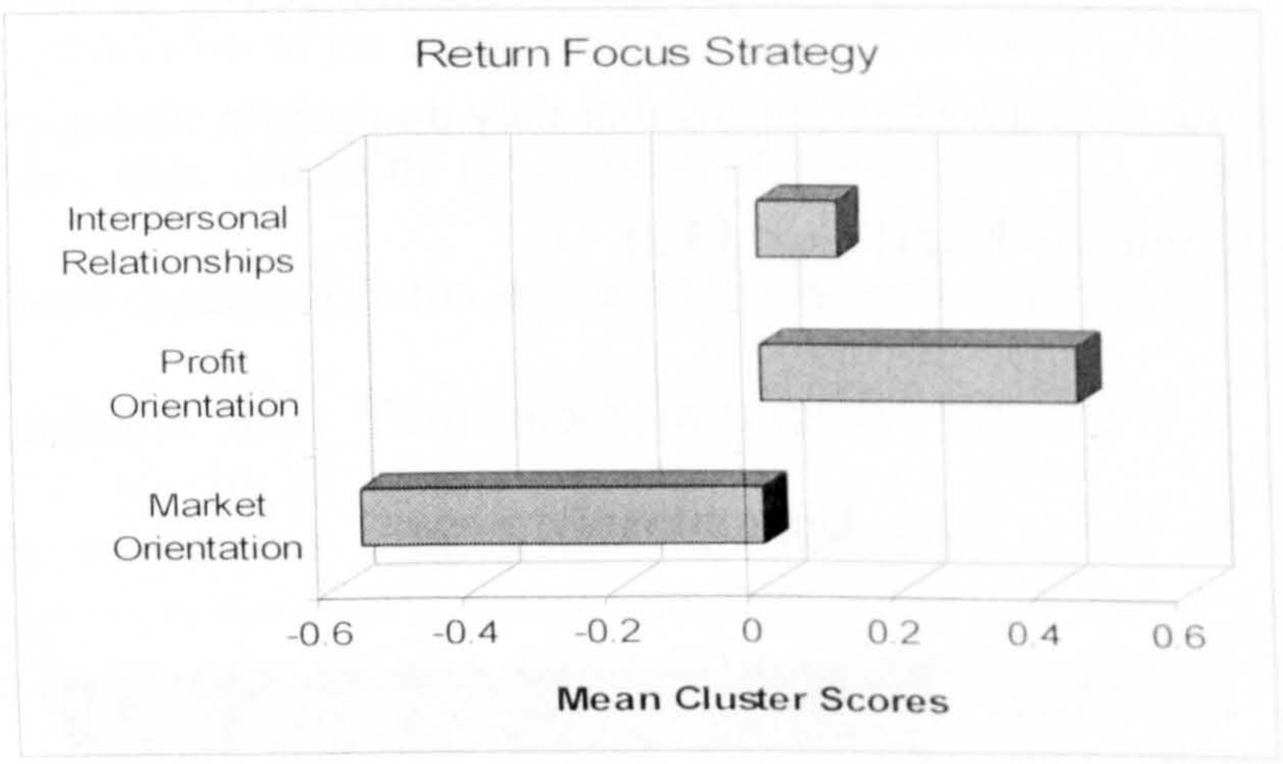


Figure 13.3: Strategic Dimensions associated with Return Focus Strategy.

As much as it concerned the **market-orientation strategy,** it is adopted by 29.6% of the dairy cow farmers. These farmers scored highly on the market orientation strategic dimension as well as on the interpersonal relationships (Figure 13.4). These farmers met market requirements by adapting their production methods and continually monitored market information other than price in order to plan their sales and to programme their production. They used special production techniques in order to gain the highest quality premium milk as well as being very interested in understanding the needs and wants of the final consumer in order to increase their farm business success. They were also interested in examining the detailed market requirements for their milk produce. Furthermore, they had the impression that the other dairy cow farmers operating in their area were their main competitors. They also considered the continuous examination of the quality of their milk produce as one of their most important farming goals. On the other hand, they were not interested in profit orientation strategic dimension.

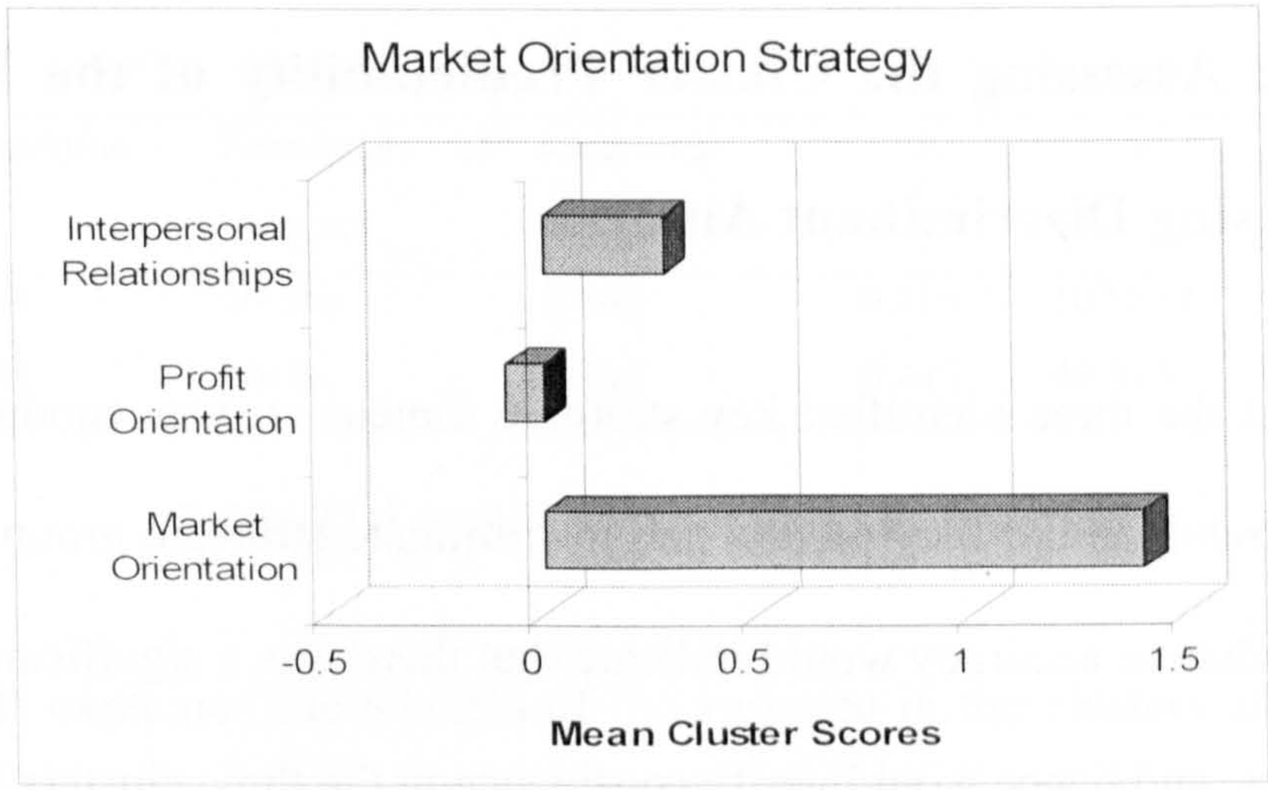


Figure 13.4: Strategic Dimensions associated with Market Orientation Strategy.

The evaluation of the variables not used in cluster analysis (Table 4, Appendix XIII) indicates that the farmers who adopted the market-orientation strategy were found to be more interested in having extremely flexible production plans, producing special and niche market products as well as in breeding animals that required special knowledge and equipment facilities that other farmers in their region did not have and being personally involved with off – farm marketing activities than the farmers who followed the other two strategies. Besides, the farmers who followed the opportunist strategy were more interested in producing special and niche market products in contrast to the farmers who adopted the return-focus strategy. On the other hand, the return-focused farmers paid more attention to breed dairy cows which required special knowledge and equipment facilities that other farmers in their region did not have, and were personally involved with the farmers that preferred the opportunist strategy.

13.4 Stage 3: Assessing the Cluster Predictability of the Key Strategic Dimensions using Discriminant Analysis

An evaluation of the three identified key strategic dimension was conducted in order to assess how accurately could they predict and discriminate strategic group membership. A high level of predictive accuracy would indicate that there was a significant discrimination among the groups, and hence would verify confidence in the three clusters solution.

Discriminant analysis was employed as it was described in Chapter 11. The Box's M test statistic (Appendix XIII) indicated that the variance – covariance matrices were violated. The Bartlett Box F statistic and the Levene's Test indicate that the equality of variance for each strategic dimension was not violated (see Appendix XIII).

Therefore, a stepwise discriminant analysis was conducted (see Chapter 11 and Appendix XIII for detail) to evaluate the prediction of group membership by the predictors derived from the factor analysis.

All the three predictor variables were significantly discriminated across the three strategic groups (Λ= 0116; x^2 = 107.859; df=6; P<0.001; Table 13.3). Additionally, the high eigenvalues indicated a satisfactory level of discrimination. Two functions that explained the differences between the three strategic groups were identified by the discriminant analysis. The first function accounts the 69.3% of the explained variance and the second function explained the 30.7% of the variance.

Function	Eigenvalue	Percentage of variance	Canonical Correlation	Λ	x^2	Signifi-cance
1	2.834	69.3%	0.860	0.116	107.859	P<0.0001
2	1.255	30.7%	0.746	0.443	40.665	P<0.0001

Table 13.3 Stepwise discriminant function

Moreover, the I^2 explained the 87.62% of the variance in the clusters and suggested that the three strategic dimensions derived from factor analysis (acting as a set) possess large discriminating power according to the suggestions of Hair *et al.* (1998). The contribution of the individual predictor variables and their interactions are presented in Table 13.4. Within the individual contributions percentages, *market-orientation* was the best discriminator at 32.70%, followed by *interpersonal relationships* contributing 14.07%.

Predictor Variables (Strategic Dimensions)	**I^2**	**Contribution[1]**	**% Contribution[2]**
Total set of variables (v1,v2, v3)	0.8762	0.3118	35.59%
Market orientation (v1)	0.9995	0.2865	32.70%
Profit orientation (v2)	0.2218	-0.0083	-0.94%
Interpersonal relationships (v3)	0.4414	0.1233	14.07%
v1, v2	0.7273	0.1196	13.80%
v1, v3	0.8844	0.2446	27.92%
v2. v3	0.5897	-0.2383	-27.20
Total		*0.8762*	*100.00%*

Table 13.4 Variance Partitioning of Strategic Variables

[1] For example: the unique contribution of v1 is equal to $I^2_{v1,v2,v3} - I^2_{v2,v3}$.
[2] The percentage of contribution of a variable is the contribution as a percentage of the overall I^2 e.g. -0.2865 / 0.8672 = 32.70%

The interpretation of the overall discriminant model was evaluated by examining the standardized discriminant function coefficients and group centroids of the three predictor variables (Table 13.5). The relative contributions of the predictor variables to the discriminant functions derived from the discriminant analysis, and their ability to classify predicted group membership, are presented by these standardized coefficients.

Predictor Variables	Discriminant Function	
	1	2
Market orientation	**0.989**	-0.329
Profit orientation	0.046	**0.739**
Interpersonal relationships	**0.601**	**0.732**
Group Centroids		
Opportunist strategy	-1.367	-1.502
Return focus strategy	-0.848	1.131
Market orientation strategy	2.500	-0.218

Table 13.5 Summary of Standardized Discriminant Function Coefficients and Group Centroids

[1]Coefficients greater than 0.3, in **boldface** are deemed significant (Hair *et al.* 1998).

The first discriminant function is dominated by the market orientation (0.989) and the second discriminant function is dominated by the other two strategic dimensions: profit orientation (0.739) and interpersonal relationships (0.732; Table 13.5). Examination of the group centroids suggests that the first function appeared to discriminate between Market-Orientation Strategy (mean 2.500) and the other two strategies (means -1.367 and -0.848); and the second function discriminated between Return-Focus Strategy (1.131) and Opportunist Strategy (-1.502).

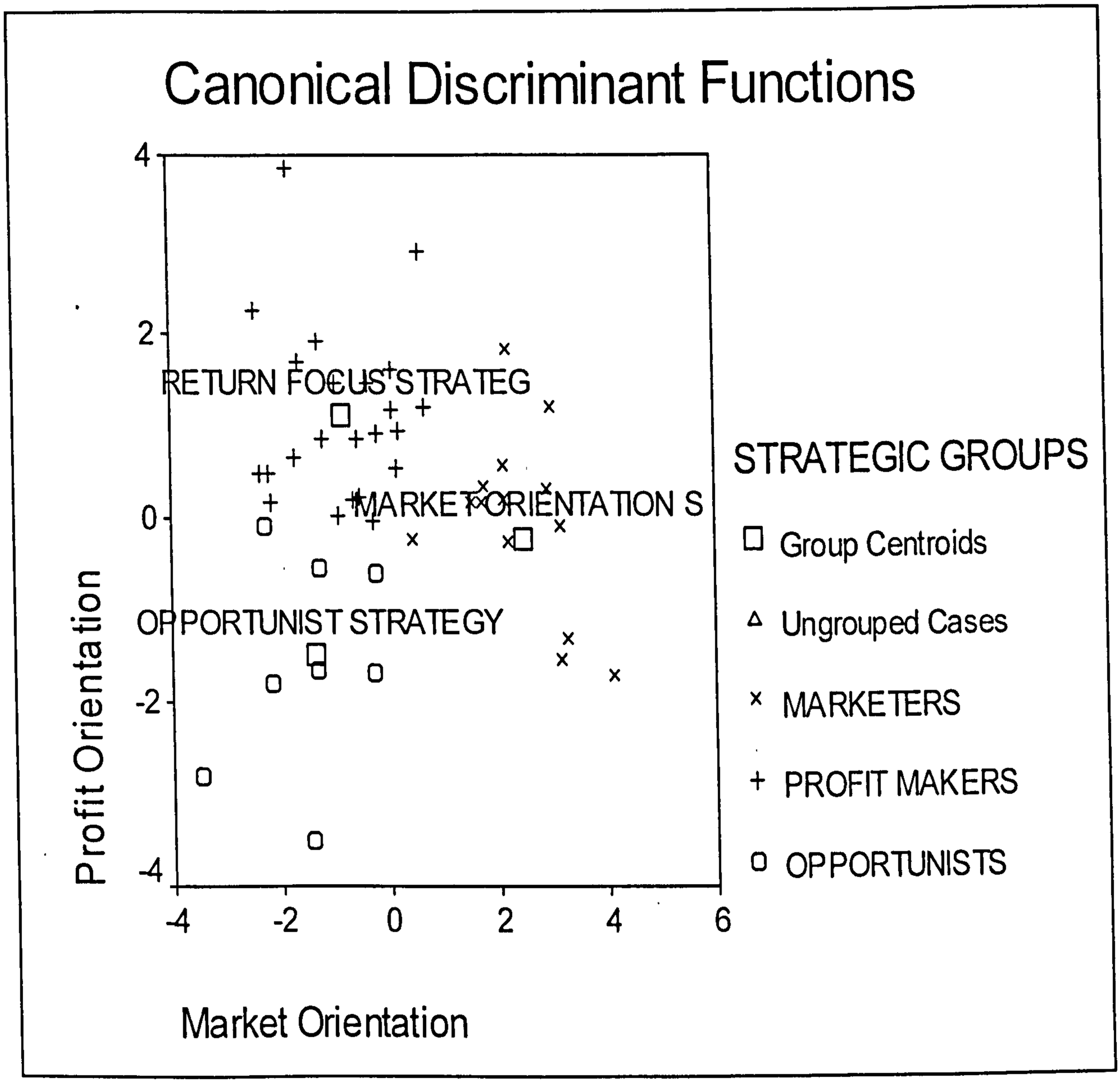


Figure 13.5 Group Centroids in Attribute Discriminant Space with Territorial Map Overlay.

To aid interpretation, the group centroids and discriminant functions are displayed graphically in Figure 13.5. More particular, Figure 13.5 indicates that discrimination has been achieved. Interpretation of the standardized coefficients suggests that the first function might represent a Market-Orientation dimension while the second function might represent a Profit-Orientation dimension.

The random split reliability test was employed to evaluate the predictive accuracy of the discriminant model. The predictive validity of the discriminant function was supported by a number of tests that are summarized in Table 13.6. The analysis and holdout samples were used to compare the hit ratios before the examination of the final overall hit ratio (Morrison 1969; Hair *et al.* 1998; Davies 2001). The score of the analysis sample test was 92.59%, and the score of the holdout sample test was 92.59%. Both tests outperformed the Cmax (maximum chance criteria) and Cpro (proportional chance criteria) increased by 25% as Hair *et al.* (1998) suggested. The overall sample hit ratio of 85.19% also exceeded this criterion. Furthermore, the classification matrix was statistically better than would be expected by chance (Press Q statistic = 42.66, $P<0.001$). Hence, confidence in the predictive validity of the discriminant function is supported.

Actual Strategic Group	Number of Businesses	Predicted Group Membeship		
		Opportunist strategy	Return focus strategy	Market orientation strategy
Opportunist strategy	15	14	1	0
		(93.3%)	(6.7%)	(0.0%)
Return focus strategy	23	0	23	0
		(0.0%)	(100.0%)	(0.0%)
Market orientation strategy	16	0	1	15
		(0.0%)	(6.3%)	(93.8%)
Percentage correctly classified:				
Analysis sample	92.59%			
Hold out sample	92.59%			
Overall sample	96.30%			
Cmax	51.85%			
Cpro	34.64%			
Press Q	42.66			

13.6 Classification Results of Overall Discriminant Model

In conclusion, the results of the discriminant analysis indicated that the three strategic dimensions could accurately predict and discriminate strategic group membership as well as signify the stability of the three cluster solution.

13.5 Stage 4: Identification of Milk Marketing Channels and Profiling them using Bivariate Statistical Techniques

Five marketing channels were identified from the survey. Four of them are direct channels and one is multiple channel of two or more direct channels as detailed in Table 13.7.

	Description of marketing channel	Farmers used the marketing channel	Quantities of milk that were sold through the marketing channel -kg
1	Direct sales to milk marketing cooperative groups	33 (61.1%)	23,835,515 (46.93%)
2	Direct sales to local milk processing plants	5 (9.2%)	5,264,200 (10.36%)
3	Direct sales to big national dairy firms	13 (24.1%)	19,242,806 (37.89%)
4	Use in milk processing plants owned by the farmer	1 (1.9%)	350,000 (0.69%)
5	Direct sales to local milk processing plants + Use in milk processing plants owned by the farmer	2 (3.7%)	2,100,000 (4.13%)
	TOTAL	**54 (100%)**	**50,792,521 (100%)**

Table 13.7: Milk Marketing Channel Selection and Utilization for Dairy Cow Producers

Initial chi-square tests of associations between channel selection and associated variables proved to be invalid because of low expected values (Brymar and Cramer 1997; Kinnear and Gray 2000). It was therefore necessary to merge channels to achieve valid results. Thus, the following three categories of marketing channels illustrated in Figure 13.6 were used for further analysis.

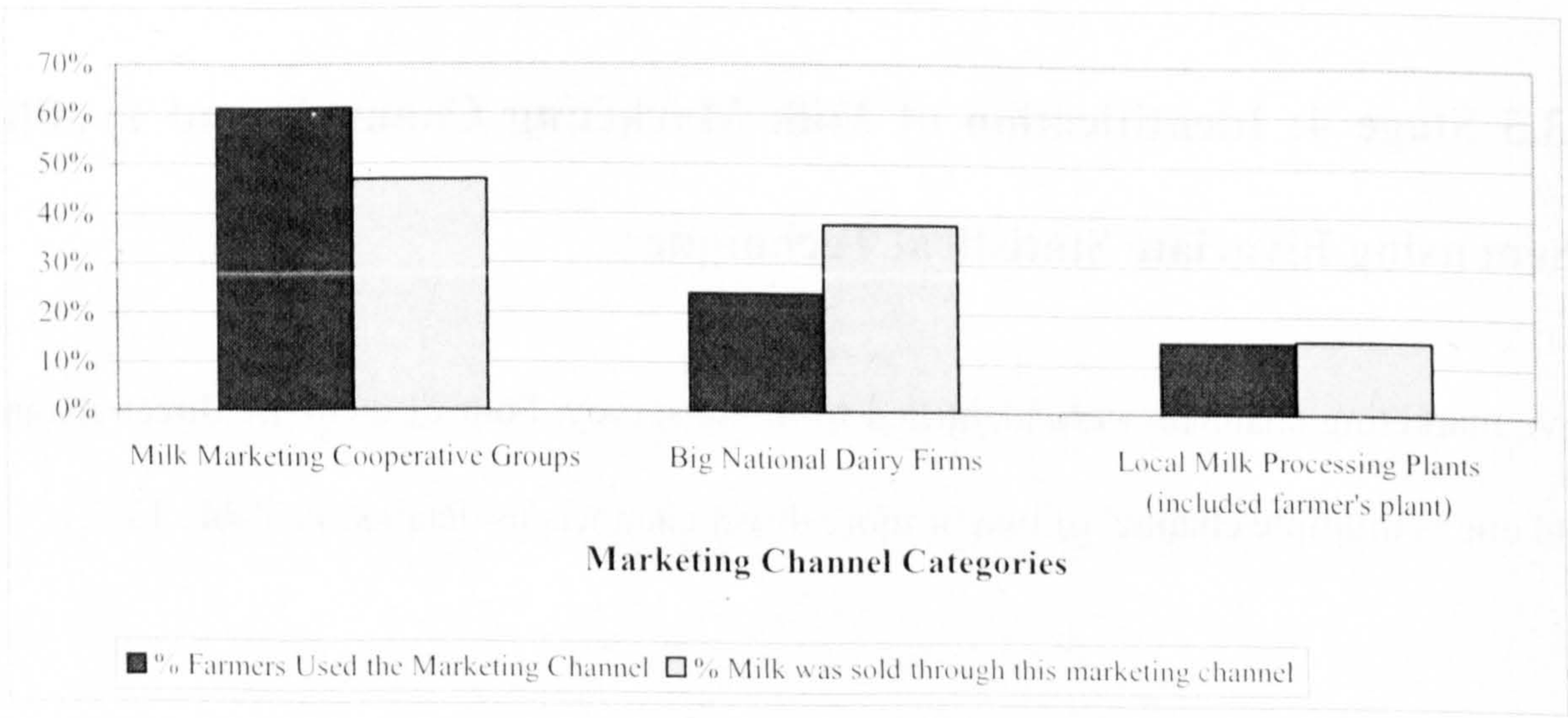


Figure 13.6 Categorization of milk marketing channels in dairy cow sector

The 61.1% of the dairy cow farmers preferred to market their milk to marketing cooperative groups while the 46.9% of the milk produced milk was sold through this marketing outlet. On the other hand the 24.1% of the farmers sold their milk to the big national dairy firms. Through this distribution channel was sold 37.9% of the milk produced. Finally, the 14.8% of the farmers preferred to market their milk to the local milk processing plants or to process it to their own milk processing plants. The milk that was sold through this marketing channel category reached 15.2% of the total produce.

13.5.1 The association between marketing channel selection and the factors that influence the sheep farmers to adopt a particular marketing outlet.

The Kruskal–Wallis non-parametric test was used to identify the factors that are related to the farmers' selection of a particular marketing channel due to the fact that all the examined variables were ordinal (Kinnear and Gray 2000). The Q test that is the equivalent non-parametric post-hoc Tukey's test was employed to explore the significance of the difference among the marketing channels regarding each factor (Eddison 2000).

Most of the farmers that were influenced in their marketing channel selection by the price in which they would sell their produce as well as by their contractual obligations, preferred to market their milk to the big national dairy firms (Table 13.8).

Factors	Marketing Channels			
	Milk Marketing Cooperative Groups	Big National Dairy Firms	Local Processing Plants (included farmers' plants)	P
Sale price	24.9[a]	37.8[b]	21.4[a]	0.009
	4.000	*5.000*	*4.000*	
Contractual Obligation	25.4[a]	37.0[b]	20.6[a]	0.017
	4.000	*4.000*	*3.500*	

Table 13.8 The influence of each factor for the selection of a particular marketing channel.

N.B. Within factors (rows), marketing channels (cells) with different letters differ significantly at $P<0.05$ according to Q non parametric test. Average ranks are reported in standard text and medians in *italics*.

The statistical analysis did not identify any significant association ($P<0.05$) between the following factors and a marketing channel selection:

i) Transportation cost (v70)

ii) Marketing cost (v71)

iii) Information about prices (v72)

iv) Farmer's time (v73)

v) Loyalty (v74)

vi) Convenience (v75)

vii) Competitive offers (v76)

viii) Grading uncertainty (v77)

ix) Experimenting with different marketing channels (v78)

x) Higher expected returns (v79)

xi) Speed of payment (v80)

xii) Quality of livestock (v81)

xiii) Social aspects (v82)

xiv) Bargaining strength (v84)

13.5.2 Profiling the farmers of each marketing channel

A summary of the profile of the farmers who use each marketing channel regarding the factors that influence them in their marketing outlet selection, as well as farm and farmers' characteristics are presented, in Table 13.9.

Milk Marketing Cooperative Groups	**Big National Dairy Firms**	**Local Milk Processing Plants**
Factors		
Social relationships	Sale price	Loyalty
Sale price	Contractual Obligations	Social relationships
Speed of payment	Social relationships	Sales price
Farm Characteristics		
Farm size: 4-120 ha	Chi –square analysis was not valid due to low expected values (<5)	Chi –square analysis was not valid due to low expected values (<5)
Volume of milk production: 500,001 – 1,000,001 kg		
Farm allocation to the dairy cow enterprise: >101 ha		
Farm land rent from other farmers: <50 ha		
Farm land rent to other farmers: <50 ha		
Milk quota leased/ rent from other farmers NO	Milk quota leased/ rent from other farmers NO	
Milk quota leased/ rent to other farmers: NO	n.s	
Farmers' Characteristics		
Farm related activities away of the farm: 1-3 days	Chi –square analysis was not valid due to low expected values (<5)	Chi –square analysis was not valid due to low expected values (<5)
Off-farm activities: NO		
Dairy farming experience: >11 years		
Experience in decision making: 11-30 years		
Dairy farming experience in current farm: >11 years		
Experience in decision making in current farm : 11-30 years		
Previous non-farm working experience:: NO	Previous non-farm working experience: NO	
Debt: 10-29%	Chi –square analysis was not valid due to low expected values (<5)	
Farm Income:70 %		
Financial performance: Not average		
Education: Not higher		
Age: 41-60 years		
Milk prices: Average		
Membership in an agricultural organisation: NO	n.s	
Use of added value activities: NO	Use of added value activities: NO	

Table 13.9. Summary of marketing channel profile

13.5.2.a Profiling the farmers of each marketing channel regarding the factors that influence their marketing outlet choice

The Friedman one-way non-parametric test was used to profile the farmers who use each marketing channel regarding the factors that influence them in their distribution channel choice.

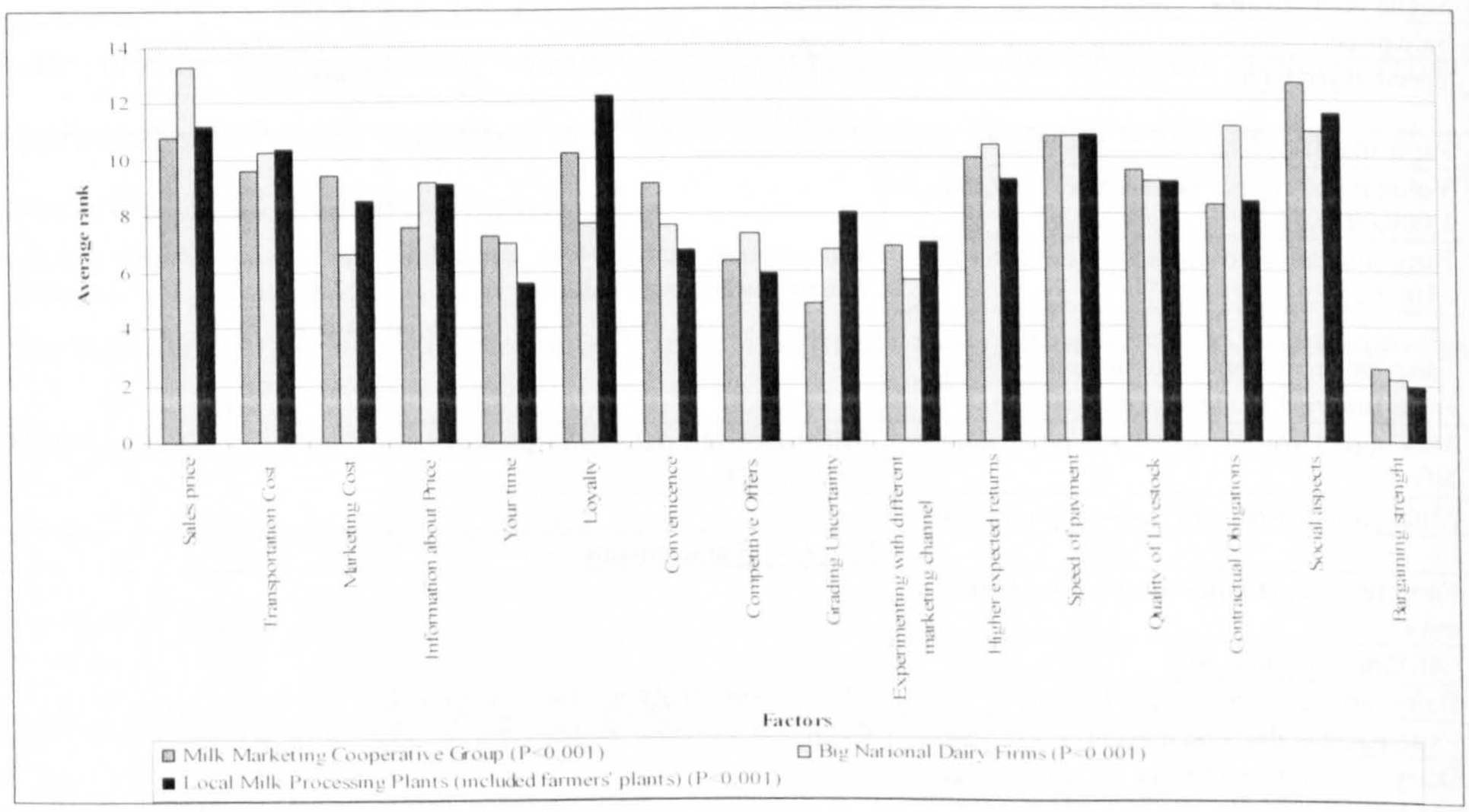


Figure 13.7: The importance of each factor for the farmers who preferred each marketing channel

As Figure 13.7 illustrates, the farmers who sold their milk to the milk marketing cooperative groups were mostly influenced by their social relationships with the cooperative group, sale price and speed of payment. The farmers who preferred to sell their milk to big national dairy firms were mostly influenced by sale price, contractual obligations, social aspects, speed of payment, higher expected returns and transportation costs. Moreover, the loyalty of the local milk processing plants, social relationships between the farmer and the local milk processing plants, the price in which the dairy cow farmers in Cornwall would sell their milk as well as the speed of payment and

transportation cost were the factors that mostly influenced these farmers to market their milk to the local milk processing plants.

Nominal logistic regression analysis was employed to investigate the impact of the factors presented above to the marketing channel selection taking into consideration their multivatriate effect. The factors that (according to the results of Kruskal – Wallis test) were significantly related with farmers' marketing channel selection were used as predictors in the logistic regression models. The results of the final nominal regression analysis are presented in Table 13.10.

Logit	**Predictors**	**Coef**	**P**	**Odds Ratio**
Logit 1: (Sales to Milk Cooperative Groups / Sales to local milk processing plants)	Constant	-11.976	0.007	
	Sale price	1.8202	0.052	6.17
	Contractual Obligations	1.0770	0.105	2.94
Logit 2: (Sales to big national dairy firms / Sales to local milk processing plants l)	Constant	-0.627	0.733	
	Sale price	0.2649	0.570	1.30
	Contractual Obligations	0.2790	0.493	1.32
Log-likehood = -42.680		Reference Group= Sales to local milk processing plants		
G= 14.720, df = 4, P=0.005				
Goodness of Fit				
Deviance x^2 = 18.982, df=20, P= 0.523				

Table 13.10 The factors that affect the milk marketing channel selection by the dairy cow farmers in Cornwall according to Logistic Regression Analysis.

The analysis did not identify any significant association between the examined factors and marketing channel selection. However, sale price has an impact on the selection of the milk cooperative groups rather than the local milk processing plants at level of significance of P=0.052 (the goodness of fit test indicates that there is sufficient evidence that the model fits to the data; MINITAB 1997).

13.5.2.b Profiling the farmers of each marketing channel regarding farm characteristics.

The one-sample chi-square analysis was performed for each marketing channel in order to develop the profile of the farmers who prefer each outlet regarding their farm characteristics. The chi-square analysis was not possible to be conducted in order to profile the farmers who marketed their milk to the local milk processing plants regarding their farm characteristics beacause of the low expected values. On the other hand, the chi-square analysis identified (Table 13.11) significant associations between farm characteristics and sales to marketing cooperative groups as well as to big national dairy firms.

More particularly, the farmers who preferred to market their milk to the big national dairy firms did not lease milk quota from other farmers; and no significant association (P>0.05) was found between sales to big national dairy firms and milk quota leased to other farmers (v47). The chi-square analysis to profile the farmers who use this particular marketing channel regarding their remaining farm characteristics was not possible to be conducted due to low expected values. On the other hand, most of the farmers who marketed their milk to milk marketing co-operative groups had medium sized farms and produced between 500 – 1000 thousands litres of milk. They allocated more than 101ha of their farm land to their dairy cow enterprise presumably in order to reduce the feeding cost. Most of these farmers rent from other land owners less than 50 ha of the land they cultivated as well as they let to other farmers a small part of the land they owned (less than 50 ha), in order to have an additional income. Additionally, they did not lease from other farmers or to other farmers any milk quota. Furthermore, no significant association (P>0.05) was identified between sales to milk marketing channels and the following farm characteristics: (a) herd size (v42), (b) farm land owned by the farmer (v44)

Farm Characteristics		Sales to Marketing Cooperative Groups			Sales to Big National Dairy Firms			Sales to Local Milk Processing plants		
		x^2	% farmers	Standardized residuals	x^2	% farmers	Standardized residuals	x^2	% farmers	Standardized residuals
Farm size	<40 ha	x^2=14.727, df=2, P<0.01	6.1%	-2.71[b]	Chi –square analysis was not valid due to low expected values (<5)			Chi –square analysis was not valid due to low expected values (<5)		
	41 - 120 ha		60.6%	2.71[b]						
	>121 ha		33.3%	n.s						
Volume of milk production	<500,000 lt	x^2=7.091, df=2, P<0.05	27.3%	n.s						
	500,001 – 1,000,000 lt		54.5%	2.11[a]						
	> 1,000,001 lt		18.2%	n.s						
Farm land allocated to the dairy cow enterprise	<50 ha	x^2=18.182, df=2, P<0.001	3.0%	-3.02[b]						
	51 – 100 ha		33.3%	n.s						
	>101 ha		63.6%	3.02[b]						
Farm land rent from other farmers	<50 ha	x^2=19.818, df=2, P<0.001	69.7%	3.62[c]						
	51 – 100 ha		18.2%	n.s						
	>101 ha		12.1%	-2.11[a]						
Farm land rent to other farmers	<50 ha	x^2=66.000, df=2, P<0.001	100.0%	6.63[c]						
	51 – 100 ha		0.0%	-3.32[c]						
	>101 ha		0.0%	-3.32[c]						
Livestock quota leased from other farmers	NO	x^2=33.000, df=1, P<0.001	100.0%	4.06[c]	x^2=13.000, df=2, P<0.001	100.0%	2.55[b]			
	YES		0.0%	-4.06[c]		0.0%	-2.55[b]			
Livestock quota leased to other farmers	NO	x^2=13.364, df=1, P<0.001	81.8%	2.58[b]	n.s					
	YES		18.2%	-2.58[b]						

Table 13.11 Profile of farmers who use each marketing channel regarding their farm characteristics

[a]P<0.05, [b]P<0.01 and [c]P<0.001

13.5.2.c Profiling the farmers of each marketing channel regarding the characteristics of themeselves.

The one-sample chi-square analysis was employed for each marketing channel in order to develop the profile of the farmers who prefer each outlet regarding the characteristics of themeselves. The chi-square analysis to profile the farmers who marketed their milk to the local milk processing plants was not possible to be conducted because of the low expected values. On the other hand, as Table 13.12 indicates, the farmers who use the other two marketing channels have similar profiles.

More particularly, most of the farmers who marketed their milk either to marketing cooperative groups or to big national dairy firms had no previous non-farm working experience; they did not hold any responsible position in a farming organization, non- farm business they might own or non-farm business they do not own; and they did not add value in their products, such as producing cheese, organic milk or ice cream. This study did not identify any significant association ($P>0.05$) between the dairy cow farmers who preferred to sell their milk to the big national dairy firms and membership in an agricultural cooperative (v66). Besides, the chi-square analysis was not possible to be performed for the rest of the examined farmers characteristics due to low expected values. On the other hand, the farmers who marketed their milk to marketing cooperative groups were involved with farm related activities away of their farm such as Meetings in the Local Agricultural Cooperatives spending 1-3 days per month while they were not involved with off-farm activities. Most of these farmers had more than 11 years dairy farming experience and between 11 and 30 years experience in decision making process in the dairy farming sector and the current farm. Furthermore, these farmers were medium indebted and derived more than 70% of their farm income from their dairy cow enterprise. The financial performance of these farmers was not average but the milk prices they achieved were about average

compared to those of other farmers in their region. As much as it concerned their education and age, this study identified that most of them did not have a higher education and were middle aged. The vast majority of the farmers who marketed their milk to the marketing cooperative groups, were members of these groups but did not hold any responsible position on them.

Farm Characteristics		Sales to Marketing Cooperative Groups			Sales to Big National Dairy Firms			Sales to Local Milk Processing plants		
		x^2	% farmers	Standardized residuals	x^2	% farmers	Standardized residuals	x^2	% farmers	Standardized residuals
Farm related activities	0 days	x^2=17.636, df=2, P<0.001	24.2%	n.s				Chi –square analysis was not valid due to low expected values (<5)		
	1-3 days		66.7%	3.32[c]						
	>4 days		9.1%	-2.41[a]						
Off-farm activities	0 days	x^2=44.182 df=2, P<0.001	87.9%	5.43[c]						
	1-3 days		6.1%	-2.71[b]						
	>4 days		6.1%	-2.71[b]						
Dairy farming experience	<10 years	x^2=13.818, df=2, P<0.001	3.0%	-3.02[b]						
	11-30 years		45.5%	n.s						
	>31 years		51.5%	n s						
Experience in decision making	<10 years	x^2=14.364, df=2, P<0.001	24.2%	n.s	Chi –square analysis was not valid due to low expected values (<5)					
	11-30 years		63.6%	3.02[b]						
	>31 years		12.1%	-2.11[a]						
Dairy farming experience in current farm	<10 years	x^2=11.455 df=2, P<0.01	6.1%	-2.71[b]						
	11-30 years		51.5%	n.s						
	>31 years		42.2%	n.s						
Experience in decision making in the current farm	<10 years	x^2=15.273, df=2, P<0.001	27.3%	n.s						
	11-30 years		63.6%	3.02[b]						
	>31 years		9.1%	-2.41[a]						
Holding of responsible position in a marketing cooperative group	NO	x^2=22.091,. df= 1 P<0.001	93.9%	3.57[c]	x^2=6.231 x^2= 1 P<0.05	84.6%	n.s			
	YES		6.1%	-3.57[c]		15.4%	n.s			
Holding of responsible position in an agricultural organization	NO	x^2=18.939,. df= 1 P<0.001	87.9%	3.08[b]	x^2=13.000,. x^2= 1 P<0.001	100.0%	2.55[a]			
	YES		12.1%	-3.08[b]		0.0%	-2.55[a]			
Holding of responsible position in a non-farm business owned by the farmer	NO	x^2=29.121, df=1, P<0.001	97.0%	3.82[c]	x^2=9 308, df=1, P<0.01	92.3%	2.16[a]			
	YES		3.0%	-3.82[c]		7.7%	-2.16[a]			
Holding of responsible position in a non-farm business the farmer does not own	NO	x^2=33.000, df=1, P<0.001	100.0%	4.06[c]	x^2=13.000,. x^2= 1 P<0.001	100.0%	2.55[a]			
	YES		0.0%	-4.06[c]		0.0%	-2.55[a]			
Previous non-farm experience	NO	x^2=40.758 df=1, P<0.001	93.9%	3.57[c]	x^2=21.063 df=1, P<0.001	100.0%	2.55[a]			
	YES		6.1%	-3.57[c]		0.0%	-2.55[a]			

Debt level	<9%	x^2=7.091, df=2, P<0.05	27.3%	n.s	Chi –square analysis was not valid due to low expected values (<5)		
	10-29%		54.5%	2.11[a]			
	>30%		18.2%	n.s			
Farm Income	<24%	x^2=29.636, df=2, P<0.001	0.0%	-3.32[c]			
	25-69%		24.2%	n.s			
	>70%		75.8%	4.22[c]			
Financial performance x^2=15.091, df=2, P<0.001	Below average	x^2=15.091, df=2, P<0.001	6.1%	-2.71[b]			
	Average		51.5%	n.s			
	Above average		12.1%	-2.11[a]			
Farmer's Age	<40 years old	x^2=30.727, df=2, P<0.001	9.1%	-2.41[a]			
	41-60 years old		78.8%	4.52[c]			
	>61 years old		12.1%	-2.11[a]			
Educational level	Secondary	x^2=9.455, df=2, P<0.01	51.5%	n.s			
	A levels / National Diploma		39.4%	n.s			
	Higher education		9.1%	-2.41[a]			
Membership in Milk Marketing Cooperative Group.	NO	x^2=29.121, df=2, P<0.001	97.0%	3.82[c]	n.s		
	YES		3.0%	-3.82[c]			
Obtained milk prices	Below average	x^2=12.182, df=2, P<0.01	39.4%	n.s	Chi –square analysis was not valid due to low expected values (<5)		
	Average		54.5%	2.11[a]			
	Above average		6.1%	-2.71[b]			
Use of added value activities	NO	x^2=25.485, df=1, P<0.001	93.9%	3.57[c]	x^2=9.308, df=1, P<0.01	92.3%	2.16[a]
	YES		6.1%	-3.57[c]		7.7%	-2.16[a]

Table 13.12 Profile of farmers who use each marketing channel regarding the characteristics of themselves

[a]P<0.05, [b]P<0.01 and [c]P<0.001

13.5.3 The impact of the farm and farmers' characteristics on marketing channel selection

The influence of the farm and farmers' characteristics on farmers' marketing channel selection was explored conducting nominal logistic regression analysis. The farm and farmers' characteristics that comprise the profiles of the livestock marketing channels were used as predictors.

Logit	Predictors	Coef	P	Odds Ratio
Logit 1: (Sales to Milk Cooperative Groups / Sales to local milk processing plants)	Constant	0.287	0.898	
	Farm land owned by the farmer	0.3064	0.706	1.36
	Farm land rent from other land owners	-0.5774	0.450	0.56
	Milk quota leased from other farmers	0.337	0.760	1.40
	Farm size	0.188	0.881	1.21
Logit 2: (Sales to big national dairy firms / Sales to local milk processing plants)	Constant	2.422	0.218	
	Farm land owned by the farmer	-0.1212	0.862	0.23
	Farm land rent from other land owners	-0.6576	0.320	0.52
	Milk quota leased from other farmers	-0.577	0.566	0.56
	Farm size	0.156	0.888	1.17
Log-likehood = -48.460		Reference Group= Sales to local milk processing plants		
G= 3.160, df = 8, P=0.924				
Goodness of Fit				
Deviance x^2 = 37.427, df=32, P= 0.234				

Table 13.13 The impact of farm's characteristics on livestock marketing channel selection by the sheep farmers in Cornwall according to Logistic Regression Analysis.

The G test indicates that there is not sufficient evidence for at least one coefficient being different from 0, and therefore the results presented in Table 13.13 might not be reliable (MINITAB 1997).

The results of the final logistic regression analysis regarding the impact of the farmers' characteristics on the marketing channel selection are presented in Table 13.14. In particular, the time spend in off-farm activities, the milk prices and farmers' level of

education have a positive impact on the selection of sales to local milk processing plants by the dairy cow farmers in Cornwall over the sales to big national dairy firms (the goodness of fit test indicates that the model fits to the data; MINITAB 1997).

Logit	Predictors	Coef	P	Odds Ratio
Logit 1: (Sales to Milk Cooperative Groups / Sales to local milk processing plants)	Constant	10.773	0.074	
	Time spend in farm related activities	-0.5078	0.570	0.60
	Time spend in off farm activities	-1.4093	0.080	0.24
	Debt	-1.799	0.094	0.17
	Milk prices	0.0211	0.981	1.02
	Education	-1.2515	0.160	0.29
	Experience in dairy farming in current farm	-0.4953	0.595	0.61
Logit 2: (Sales to big national dairy firms / Sales to local milk processing plants)	Constant	22.047	0.002	
	Time spend in farm related activities	0.1386	0.881	1.15
	Time spend in off farm activities	-3.020	0.006	0.05
	Debt	-2.000	0.058	0.14
	Milk prices	-2.515	0.019	0.08
	Education	-2.0978	0.018	0.12
	Experience in dairy farming in current farm	-1.669	0.119	0.19
Log-likehood = -35.092		Reference Group= Sales to local milk processing plants		
G= 29.897, df = 12, P=0.003				
Goodness of Fit				
Deviance x^2 = 56.322, df=78, P= 0.970				

Table 13.14 The impact of farmers' characteristics on milk marketing channel selection by the dairy cow farmers in Cornwall according to Logistic Regression Analysis.

13.6 Stage 5: Profiling of Strategic Groups using Bivariate Statistical Techniques

13.6.1 The association between marketing strategy selection and the factors that influence the dairy cow farmers to adopt a particular marketing outlet.

The Kruskal–Wallis non-parametric test was used to identify which, if any of the factors that are related to farmers' marketing channel choice affected their marketing strategy selection. This study did not identify a significant relationship (P>0.05) between any of the

factors presented in Appendix IV (v69-v84) that influence the dairy cow farmers in Cornwall to choose a particular marketing channel and the selection of a particular marketing strategy.

13.6.2 Profiling marketing strategic groups

The three strategic groups have similar profiles regarding the farm characteristics. More particularly, they rent from other land owners less than 50ha of the land they cultivated as well as they let a small part of their own land to other farmers in order to have an additional income. Furthermore, the farmers who followed each marketing strategy have similar profiles regarding the characteristics of themselves. Specifically, most of them were not involved with off-farm activities. They did not have any previous non-farm working experience as well as they did not hold any responsible position in a marketing cooperative group or in a non farm business they did not own. Moreover, they derived more than 70% of their farm income from their dairy cow enterprise and were middle-aged farmers. On the other hand, there are some differences in the profile of each strategic group regarding the farm and farmers' characteristics (Table 13.15).

Opportunist Strategy	**Return Focus Strategy**	**Market Orientation Strategy**
	Marketing Channel Selection	
n.s	Milk Marketing Cooperative Groups	n.s
	Factors	
Sales price	Bargaining strength	Sales price
Bargaining strength	Sales price	Bargaining strength
Speed of payment	Transportation cost	Higher expected returns
	Farm Characteristics	
Farm allocation to the dairy cow enterprise: >61%	Farm allocation to the dairy cow enterprise: >31%	Farm allocation to the dairy cow enterprise: >61%
Farm land owned by the farmers: <50 ha	n.s	n.s
Milk quota rent from other farmers NO	n.s	Milk quota rent from other farmers:NO
Milk quota leased to other farmers NO	Milk quota leased to other farmers NO	n.s
	Farmers' Characteristics	
n.s	Farm related activities away of the farm: 1-3 days	Farm related activities away of the farm: 1-3 days
n.s	Dairy farming experience: 11-30 years	n.s
n.s	Experience in decision making: 11-30 years	Experience in decision making: 11-30 years
n.s	Dairy farming experience in current farm: >11 years	n.s
n.s	Experience in decision making in current farm: 11-30 years	n.s
Debt: 10-29%	n.s	n.s
n.s	Financial performance: Not below average	Financial performance: Average
Education: Not higher	n.s	n.s
n.s	Milk prices: Average	n.s
n.s	Membership in an agricultural organisation: NO	Membership in an agricultural organisation: NO
Use of added value activities: NO	Use of added value activities: NO	n.s

Table 13.15 Summary of strategic group profile

13.6.2.a. Profiling marketing strategic groups regarding marketing channel selection.

The one sample chi-square analysis employed to identify which marketing channel is preferred by the farmers who adopt each marketing strategy. The analysis identified a significant association only between the adoption of the return focus strategy and marketing channel selection (Table 13.16). More particular, the vast majority of the return focused farmers sold their milk to marketing cooperative groups.

Marketing Channel Selection		% of farmers	Standardized residuals
Opportunist strategy x^2=2.800, df=2, P=0.247	Sales to Milk Marketing Cooperative Groups	53.3%	n.s
	Sales to big national dairy firms	20.0%	n.s
	Sales to local milk processing plant included use in milk processing plants owned by the farmer	26.7%	n.s
Return focus strategy x^2=14.113, df=2, P=0.001	Sales to Milk Marketing Cooperative Groups	69.6%	2.99[b]
	Sales to big national dairy firms	21.7%	n.s
	Sales to local milk processing plant included use in milk processing plants owned by the farmer	8.7%	-2.05[a]
Market orientation strategy x^2=4.655, df=2, P=0.099	Sales to Milk Marketing Cooperative Groups	56.3%	n.s
	Sales to big national dairy firms	31.3%	n.s
	Sales to local milk processing plant included use in milk processing plants owned by the farmer	12.5%	n.s

Table 13.16 The marketing channel utilisation by the farmers who adopt each marketing strategy

[a]P<0.05, [b]P<0.01 and [c]P<0.001

The Friedman one-way non-parametric test was employed to identify the factors that influence the farmers of each strategic group in their marketing channel choice. As Figure 13.8 illustrates, the farmers who adopted the opportunist strategy were mostly influenced in their marketing channel choice by the sale price, their bargaining strength and speed of payment. The farmers who preferred the return focus strategy were mostly influenced in their marketing channel selection by their bargaining strength towards their buyers, sale price, transportation cost, speed of payment and loyalty of the buyer. Furthermore, the farmers who adopted the market orientation strategy were mostly influenced in their marketing channel selection by the sale price, their bargaining strength towards their buyers, higher expected returns and speed of payment.

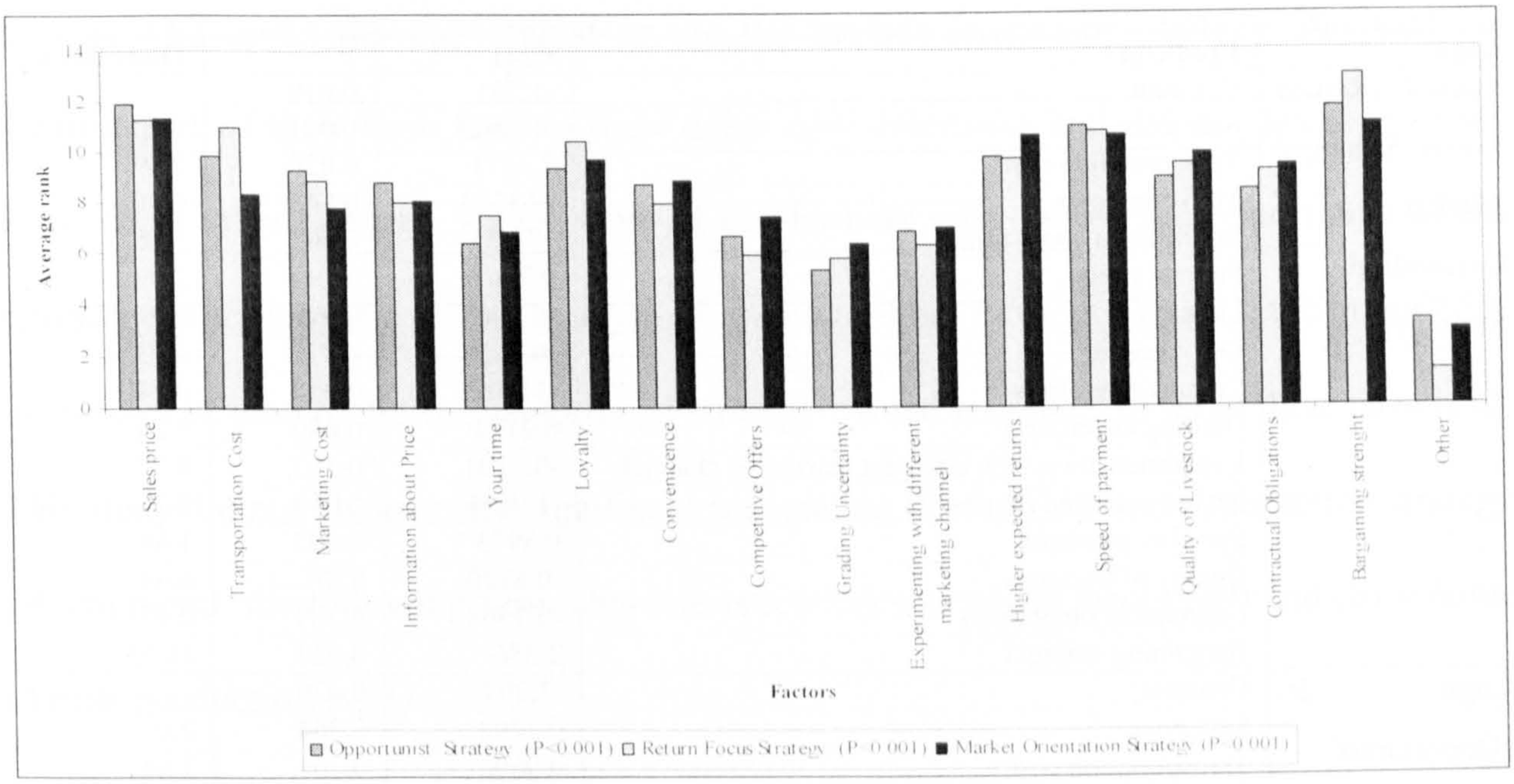


Figure 13.8 The importance of each factor for the farmers who adopted each marketing strategy

Although the Kruskal – Wallis test did not identify any significant association between the marketing strategy selection and the factors that affect the farmers to choose a particular distribution channel, a nominal regression analysis was conducted for all the identified factors (v69-v84) in order to explore any possible influence of them on marketing strategy selection taking under consideration their multivariate impacts. The G test indicated that there is not sufficient evidence for at least one coefficient being different from 0 and therefore the results presented in Table 13.17 might not be reliable (MINITAB 1997).

Logit	Predictors	Coef	P	Odds Ratio
Logit 1: (Return Focus Strategy/ Market Orientation Strategy)	Constant	-1.731	0.619	
	Sale price	-1.6342	0.061	0.20
	Transportation cost	2.1271	0.020	8.39
	Marketing cost	-0.1333	0.848	0.88
	Information about prices	1.7335	0.062	5.66
	Farmer's time	0.7362	0.199	2.09
	Loyalty	-0.0065	0.990	0.99
	Convenience	-0.0728	0.873	0.93
	Competitive offers	-1.4163	0.054	0.24
	Grading uncertainty	0.2174	0.680	1.24
	Experimentation with different marketing channels	-0.3304	0.382	0.72
	Higher expected returns	-1.9845	0.044	0.14
	Speed of payment	0.3973	0.603	1.49
	Quality of livestock	-0.8140	0307	0.44
	Contractual obligations	-0.7508	0.389	0.47
	Bargaining strenght	2.356	0.024	10.55
Logit 2: (Opportunist strategy / Market Orientation Strategy)	Constant	-3.207	0.470	
	Sale price	0.7292	0.364	2.07
	Transportation cost	0.9690	0.204	2.64
	Marketing cost	0.5525	0.454	1.74
	Information about prices	1.933	0.056	6.91
	Farmer's time	-0.0687	0.909	0.93
	Loyalty	-0.6251	0.353	0.54
	Convenience	0.5246	0.431	1.69
	Competitive offers	-1.2616	0.099	0.28
	Grading uncertainty	-0.2095	0.712	0.81
	Experimentation with different marketing channels	0.1784	0.648	1.20
	Higher expected returns	-2.2255	0.026	0.11
	Speed of payment	1.3103	0.078	3.71
	Quality of livestock	-0.9431	0.237	0.39
	Contractual obligations	-1.3904	0.103	0.25
	Bargaining strenght	1.0691	0.184	2.91
Log-likehood = -40.941		Reference Group= Market orientation strategy		
G= 34.732, df = 30, P=0.253				
Goodness of Fit				
Deviance x^2 = 81.881, df=76, P= 0.302				

Table 13.17 The impact of the factors that affect the marketing channel choice on marketing strategy selection according to Logistic Regression Analysis.

13.6.2.b Profiling each staregic group regarding the farm characteristics

The one-sample chi-square analysis was performed for each strategic group in order to develop the profile of the farmers who followed each marketing strategy regarding their farm characteristics. As Table 13.18 presents. the three strategic groups have similar profiles regarding the farm characteristics. On the other hand, the vast majority of the

farmers who apopt the opportunist or the the market orientation strategy allocated the greatest part of their farm land to their dairy cow enterprise and did not lease any milk quota from other farmers, whilst most of the farmers who follow the opportunist or the return focus strategy did not lease any milk quota to other farmers. Besides, the majority of the farmes of who prefer the opportunist strategy owned less than 50 ha of their farm land. This study did not identify any significant association ($P>0.05$) between marketing strategy selection and the following farm characteristics: (a) size of the farm (v40) and (b) volume of milk production (v43).

Farmers Characteristics		Opportunist Strategy			Return Focus Strategy			Market Orientation Strategy		
		x^2	% farmers	Standardized residuals	x^2	% farmers	Standardized residuals	x^2	% farmers	Standardized residuals
Herd size	<80 heads	n.s			n.s			x^2=6.164, df=2, P<0.05	6.3%	n.s
	81-150 heads								56.3%	n.s
	>151 heads								37.5%	n.s
Farm Allocation	<30%	x^2=12.400, df=2, P<0.001	0.0%	-2.24[a]	x^2=9.697, df=2, P<0.01	4.3%	-2.41[b]	x^2=17.485, df=2, P<0.001	0.0%	-2.30[a]
	31%-60%		26.7%	n.s		39.1%	n.s		18.8%	n.s
	>61%		73.3%	2.68[b]		56.5%	n.s		81.3%	3.34[c]
Farm land owned by the farmer	<50 ha	x^2=10.800, df=2, P<0.01	73.3%	2.68[b]	x^2=6.581, df=2, P<0.05	30.4%	n.s	n.s		
	51-100 ha		13.3%	n.s		56.5%	n.s			
	>101 ha		13.3%	n.s		13.0%	n.s			
Farm land rent from other farmers	<50 ha	x^2=10.800, df=2, P<0.01	73.3%	2.68[a]	x^2=14.113, df=2, P<0.001	69.6%	2.99[a]	x^2=6 542, df=2, P<0.05	62.5%	2.04[a]
	51-100 ha		13.3%	n.s		21.7%	n.s		12.5%	n.s
	>101 ha		13.3%	n.s		8.7%	-2.05[a]		25.0%	n.s
Farm land rent to other farmers	<50 ha	x^2=30.000, df=2, P<0.001	100.0%	4.47[c]	x^2=45.801, df=2, P<0.001	100.0%	5 51[c]	x^2=32.202, df=2, P<0.001	100.0%	4.65[c]
	51-100 ha		0.0%	-2.24[a]		0.0%	-2.77[b]		0.0%	-2 30[a]
	>101 ha		0.0%	-2.24[a]		0.0%	-2.77[b]		0.0%	-2.30[a]
Milk quota leased from other farmers	NO	x^2=15.000, df=1, P<0 001	100.0%	2.74[b]	n.s			x^2=12.250, df=1, P<0.001	93.8%	2.47[a]
	YES		0.0%	-2.74[b]					6.3%	-2.47[a]
Milk quota leased to other farmers	NO	x^2=11.267, df=1, P<0.001	93.3%	2.37[a]	x^2=23.000, df=1, P<0.001	100.0%	3.39[c]	x^2=6.250, df=1, P<0.001	81.3%	n.s
	YES		6.7%	-2.37[a]		0.0%	-3.39[c]		18.8%	n.s

Table 13.18 Profiling of each strategic group regarding farm characteristics

[a]P<0.05, [b]P<0.01 and [c]P<0.001

13.6.2.c Profiling each staregic group regarding the farmers' characteristics

As the one-sample chi-square analysis indicates (Table 13.19), the farmers who followed each marketing strategy have similar profiles regarding the characteristics of themselves. Furthermore, the farmers who followed the opportunistic and the return focus strategy did not hold a responsible position in a farming organization or in a non-farm business they might own nor they did not add value to their products by producing cheese, organic milk or ice cream. On the other hand, the return focused and market orientated farmers spent between 1-3 days per month in farm related activities away of their farm e.g meetings in NFU, agricultural cooperative. Furthermore, these farmers had between 11-30 years decision making experience relative to dairy farming. Most of them were not members in marketing cooperative groups. The market orientated farmers had average financial performance compared to the other dairy farmers operated in their region while the financial performance of the return focused farmers was not below average. Besides the return focused farmers achieved average milk prices compared to the other dairy farmers in their area. They also had between 11-30 years dairy farming experience in general but less than 10 years in their current farm. On the other hand, the farmers who followed the opportunist strategy had medium debt service and did not attend a higher education course.

Farmers Characteristics		Opportunist Strategy			Return Focus Strategy			Market Orientation Strategy		
		x^2	% farmers	Standardized residuals	x^2	% farmers	Standardized residuals	x^2	% farmers	Standardized residuals
Farm related activities	0 days	n s			x^2=10.996, df=2, P<0.01	34.8%	n.s	x^2=9.938, df=2, P<0.01	6.3%	n.s
	1-3 days					60.9%	2.27[a]		68.8%	2.27[a]
	>4 days					4.3%	-2.41[a]		25.0%	-2.41[a]
Off-farm activities	0 days	x^2=19.600, df=2, P<0 001	86.7%	3.58[c]	x^2=25.282, df=2, P<0.001	82.6%	4.07[c]	x^2=12.957, df=2, P<0.001	75.0%	2.91[b]
	1-3 days		0 0%	-2.24[a]		13.0%	n.s		6.3%	n.s
	>4 days		13.3%	n.s		4 3%	-2.41[a]		18.8%	n.s
Dairy farming experience	<10 years	x^2=6.400, df=2, P<0 05	6.7%	n.s	x^2=8.658, df=2, P<0.05	17.4%	n.s	x^2=6.164, df=2, P<0.05	6.3%	n.s
	11-30 years		33.3%	n.s		69.6%	2.99[b]		37.5%	n.s
	>31 years		60.0%	n.s		13.0%	n.s		56.3%	n.s
Decision making experience	<10 years	n.s			x^2=13.594, df=2, P<0.01	17.4%	n.s	x^2=6.164, df=2, P<0.05	18.8%	n.s
	11-30 years					69 6%	2.99[b]		62.5%	2.04[a]
	>31 years					13 0%	n.s		18.8%	n.s
Dairy farming experience in the current farm	<10 years	x^2=6.400, df=2, P<0.05	6.7%	n.s	x^2=9.697, df=2, P<0 01	4.3%	-2.41[a]	n.s		
	11-30 years		33.3%	n.s		56.5%	n.s			
	>31 years		60.0%	n.s		39.1%	n.s			
Decision making experience in the current farm	<10 years	n.s			x^2=14.113, df=2, P<0.001	21.7%	n.s	n.s		
	11-30 years					69.6%	2.99[b]			
	>31 years					8.7%	-2.05[a]			
Holding of responsible position in a marketing cooperative group	NO	x^2=15.000, df= 1 P<0.001	100.0%	2.74[b]	x^2=12.565, df= 1 P<0.001	87.0%	2.51[a]	x^2=9.000, df= 1 P<0.01	87.5%	2.12[a]
	YES		0.0%	-2.74[b]		13.0%	-2.51[a]		12.5%	-2.12[a]
Holding of responsible position in an agricultural organization	NO	x^2=15.000, df= 1 P<0.001	100.0%	2.74[b]	x^2=15.696, df= 1 P<0.001	91.3%	2.80[b]	x^2=6.250, df= 1 P<0.05	81.3%	n.s
	YES		0.0%	-2.74[b]		8.7%	-2.80[b]		18.8%	n.s
Holding of responsible position in a non-farm business owned by the farmer	NO	x^2=9.667, df=1, P<0.01	86.7%	2.01[a]	x^2=19.174, df=1, P<0.001	95.7%	3.10[b]	x^2=6.250, df= 1 P<0.05	81.3%	n.s
	YES		6.7%	-2.01[a]		4.3%	-3.10[b]		18.8%	n.s

Holding of responsible position in a non-farm business the farmer does not own	NO	x^2=15.000, df=1 P<0.001	100.0%	2.74[b]	x^2=23.000, df=1 P<0.001	100.0%	3.39[c]	x^2=12.250, df=1 P<0.001	93.8%	2.47[a]
	YES		0.0%	-2.74[b]		0.0%	-3.39		6.3%	-2.47[a]
Previous non-farm experience	NO	x^2=14.067 df=1, P<0.001	93.3%	2.37[a]	x^2=33.287 df=1, P<0.001	95.7%	3.10[b]	x^2=12.250, df=1 P<0.001	93.8%	2.47[a]
	YES		6.7%	-2.37[a]		4.3%	-3.10[b]		6.3%	-2.47[a]
Farm Income	<24%	x^2=14.800, df=2, P<0.001	6.7%	n.s	x^2=17.230, df=2, P<0.001	8.7%	-2.05[a]	x^2=16.730, df=2, P<0.001	6.3%	n.s
	25-69%		13.3%	n.s		17.4%	n.s		12.5%	n.s
	>70%		80.0%	3.13[c]		73.9%	3.35[c]		81.3%	3.34[c]
Financial Performance	Below Average	n.s			x^2=8.918, df=2, P<0.01	4.3%	-2.41[a]	x^2=9.560, df=2, P<0.01	0.0%	-2.30[a]
	Average					52.2%	n.s		62.5%	2.04[a]
	Above Average					43.5%	n.s		37.5%	n.s
Farmer's Age	<40 years old	x^2=11.200, df=2, P<0.01	20.0%	n.s	x^2=16.970, df=2, P<0.001	13.0%	n.s	x^2=6.542, df=2, P<0.05	12.5%	n.s
	41-60 years old		73.3%	2.68[c]		73.9%	3.35[c]		62.5%	2.04[a]
	>61 years old		6.7%	n.s		13.0%	n.s		25.0%	n.s
Membership in Marketing Group	NO	n.s			x^2=15.696, df=1, P<0.001	91.3%	2.80[b]	x^2=9.000, df=1, P<0.01	87.5%	2.12[a]
	YES					8.7%	-2.80[b]		12.5%	-2.12[a]
Milk Price	Below Average	n.s			x^2=9.438 df=2, P<0.01	30.4%	n.s	n.s		
	Average					60.9%	2.27[b]			
	Above Average					8.7%	-2.05[a]			
Use of added value activities	NO	x^2=11.267, df=1, P<0.001	93.3%	2.37[a]	x^2=19.174, df=1, P<0.001	95.7%	3.10[b]	x^2=4.000, df=1, P<0.05	75.0%	n.s
	YES		6.7%	-2.37[a]		4.3%	-3.10[b]		25.0%	n.s
Debt level	<9%	x^2=8.400, df=2, P<0.05	26.7%	n.s	n.s			n.s		
	10-29%		66.7%	2.24[a]						
	>30%		6.7%	n.s						
Educational level	Secondary	x^2=7.600 df=2, P<0.05	53.3%	n.s	n.s			n.s		
	A levels National Diploma		46.7%	n.s						
	Higher education		0.0%	-2.24[a]						

Table 13.19 Profiling of each strategic group regarding the characteristics of themselves

[a]P<0.05, [b]P<0.01 and [c]P<0.001

13.6.3 The impact of the farm and farmers' characteristics on marketing strategy selection

The influence of the farm and farmers' characteristics on farmers' marketing strategy selection was explored conducting nominal logistic regression analysis. The farm and farmers' characteristics that comprise the profiles of the strategic groups were used as predictors in the logistic regression model.

Regarding the association between the farmers' characteristics and marketing strategy selection, the G statistic indicated that there is insufficient evidence for at least one coefficient being different from 0 and therefore the results might not be reliable (Table 13.21).

Logit	Predictors	Coef	P	Odds Ratio
Logit 1: (Return Focus Strategy/ Market Orientation Strategy)	Constant	5.422	0.030	
	Farm land allocated to the sheep and goat enterprise	-1.1939	0.128	0.30
	Herd size	-0.9870	0.059	0.37
	Milk quota leased from other farmers	0.6686	0.421	1.95
Logit 2: (Opportunist Strategy/ Market Orientation Strategy)	Constant	2.008	0.458	
	Farm land allocated to the sheep and goat enterprise	-0.4370	0.610	0.65
	Herd size	-0.3138	0.564	0.73
	Milk quota leased from other farmers	-1.263	0.305	0.28
Log-likehood = -52.026		Reference Group= Market Orientation Strategy		
G= 12.560, df = 6, P=0.051				
Goodness of Fit				
Deviance x^2 = 13.953, df=18, P= 0.732				

Table 13.20 The impact of farm characteristics on marketing strategy selection by the dairy cow farmers in Cornwall according to Logistic Regression Analysis.

Logit	Predictors	Coef	P	Odds Ratio
Logit 1: (Return Focus Strategy/ Market Orientation Strategy)	Constant	5.807	0.288	
	Time spend in farm related activities	-1.3487	0.072	0.26
	Time spend in off-farm activities	-0.1483	0.854	0.86
	Debt	1.0955	0.139	2.99
	Added value	-2.172	0.174	0.11
	Membership in Marketing Group	-0.918	0.525	0.40
	Milk prices	-0.3492	0.621	0.71
	Educational level	0.3393	0.602	1.40
	Previous non-farm working experience	1.191	0.561	3.29
	Marketing Channel Selection	-0.0864	0.909	0.92
	Age	-0.7654	0.438	0.47
	Farm income	-0.5159	0.545	0.60
	Experience in dairy farming	-0.208	0.851	0.81
Logit 2: (Opportunist Strategy/ Market Orientation Strategy)	Constant	5.149	0.374	
	Time spend in farm related activities	-1.3608	0.086	0.26
	Time spend in off-farm activities	-0.1278	0.872	0.88
	Debt	-0.2995	0.711	0.74
	Added value	-1.263	0.479	0.28
	Membership in Marketing Group	0.258	0.854	1.29
	Milk prices	0.5999	0.459	1.82
	Educational level	-0.4253	0.554	0.65
	Previous non-farm working experience	0.405	0.853	1.50
	Marketing Channel Selection	0.3422	0.676	1.41
	Age	-0.869	0.453	0.42
	Farm income	-0.8638	0.365	0.42
	Experience in dairy farming	0.373	0.770	1.45
Log-likehood = -45.937		Reference Group= Market Orientation Strategy		
G= 24.740, DF = 24, P=0.420				
Goodness of Fit				
Deviance x^2 = 91.873, df=80, P= 0.172				

Table 13.21 The impact of farmers' characteristics on marketing channel selection the dairy cow farmers in Cornwall according to Logistic Regression Analysis.

13.6.4 Profiling marketing strategic groups regarding information sources and type of information.

The Kruskal–Wallis non-parametric test was used to determine which, if any, of the information sources (v85-v104 of Appendix IV) that farmers used and which type of information (v105-v114 of Appendix IV) that these farmers were interested in are significantly related to the marketing strategy selection. The analysis did not identify any significant association (P>0.05) between marketing strategy selection and the examined information sources.

On the other hand, the statistical analysis indicated (Table 13.26) that most of the farmers who were interested to be informed about production techniques followed the opportunist strategy and the market orientation strategy. Besides, most of the dairy cow farmers that were interested about consumer information followed the market orientation strategy.

Factors	Marketing Strategies			P
	Opportunist Strategy	Return Focus Strategy	Market Orientation Strategy	
Production techniques	31.0[a]	21.5[b]	32.9[a]	
	4.000	*4.000*	*4.000*	0.023
Consumer information	25.3[a]	22.8[a]	36.4[b]	
	3.000	*3.000*	*4.000*	0.013

Table 13.22 The influence of management practices as type of information to the selection of a particular marketing strategy

N.B Within factors (rows), strategic groups (cells) with different letters differ significantly at P<0.05 according to Q non-parametric test. Average ranks are reported in standard text and medians in *italics*.

This study did not identify any significant association between the selection of a particular marketing strategy and type of information such as:

(i) National milk prices (v105)

(ii) Local milk prices (v106)

(iii) Overseas milk prices (v107)

(iv) Quality premia/penalties (v108)

(v) Management practices (v110)

(vi) Animal diseases (v111)

(vii) Financial (v113)

(viii) Milk Marketing Group Information (v114)

The Friedman one-way non-parametric test was used to profile each strategic group regarding the importance of each type of information sources and each type of information.

As Figure 13.9 illustrates, the dairy cow farmers in Cornwall who adopted the opportunist strategy were mostly informed from their own records, their accountant, agricultural journals and other farmers, while the farmers who preferred the return-focus strategy were mostly informed from their own records, their accountant, other farmers and milk marketing groups. Moreover, the farmers followed the market-orientation strategy were mostly interested to be informed from their own records, milk marketing group, their accountant and other farmers.

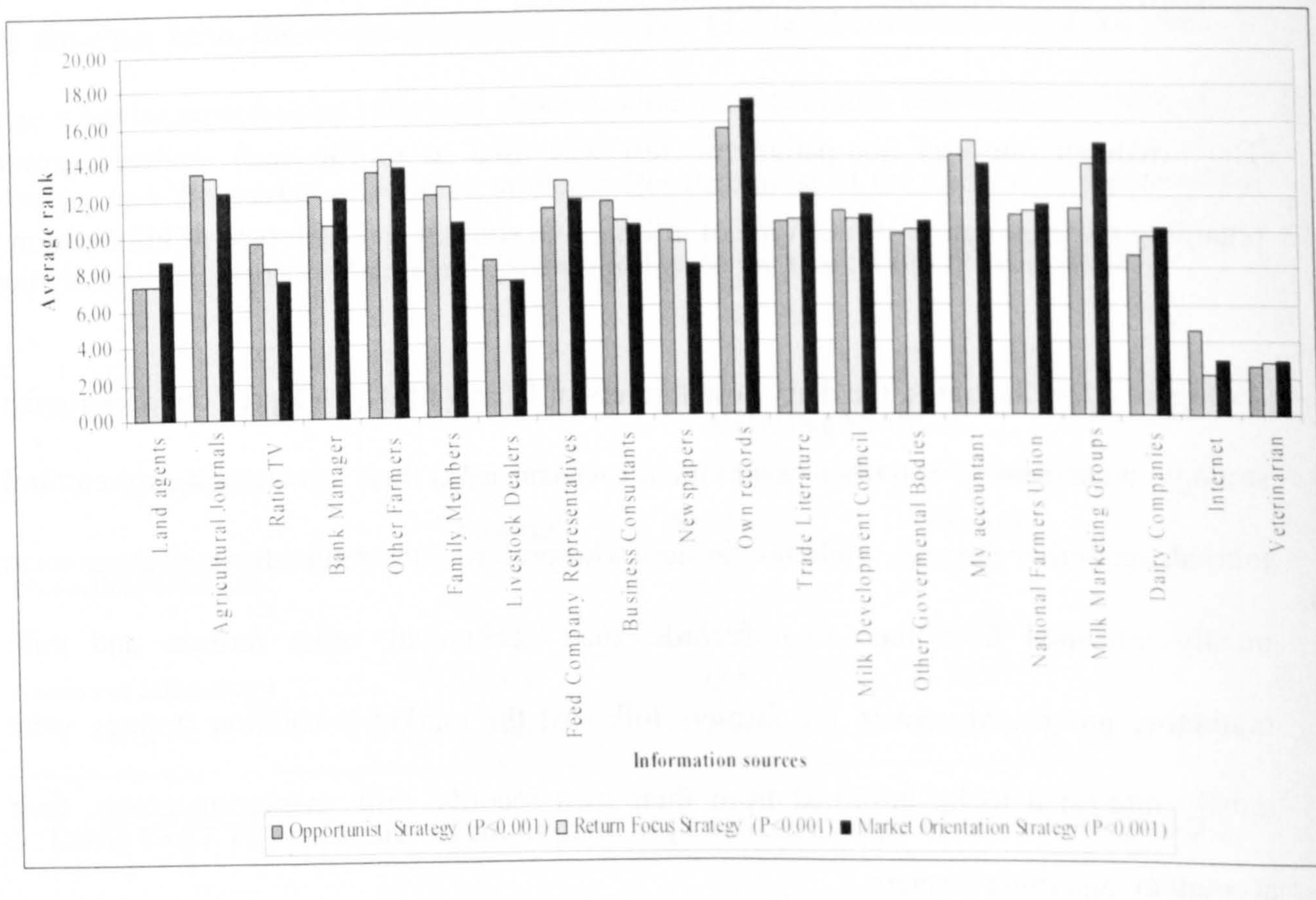


Figure 13.9: The importance of each type of information sources for each strategic group.

The test also indicated (Figure 13.10) that the majority of the farmers who followed the opportunistic strategy were mostly interested to be informed about financial subjects, animal diseases, production techniques and management practices. The return-focused farmers were more interested in being informed about management practices, animal diseases and financial subjects while the market-orientated farmers were more interested in being informed about financial subjects, management practices and production techniques.

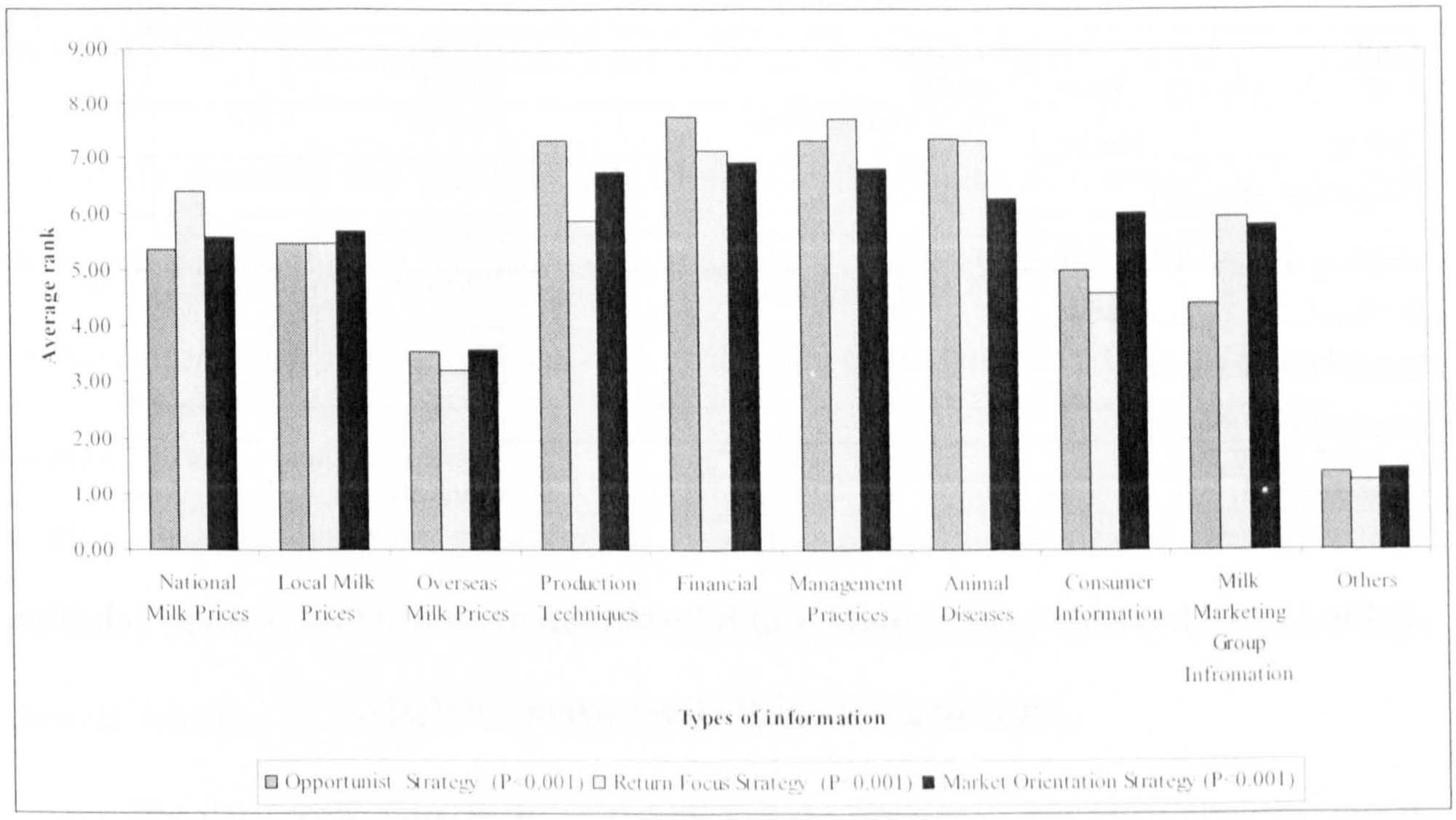


Figure 13.10: The importance of each type of information sources for each strategic group.

The information sources that according to Kruskal – Wallis test appeared to influence that marketing strategy choice (at level of significance a little more than 5%) were used as predictors in the logistic regression analysis which aimed explore their influence on marketing strategy selection. Moreover, the type of information that significantly affect marketing strategy selection according to Kruskal – Wallis test were used as predictors in the logistic regression model which aimed to identify their impact on marketing strategy adoption. The G statistic indicated that there is insufficient evidence for at least one coefficient being different from 0 and therefore the results presented in Table 13.23 might not be reliable.

Logit	Predictors	Coef	P	Odds Ratio
Logit 1: (Return Focus Strategy/ Market Orientation Strategy)	Constant Milk Marketing Group	1.769 -0.3827	0.231 0.324	 0.68
Logit 2: (Opportunist Strategy/ Market Orientation Strategy)	Constant Milk Marketing Group	2.782 -0.8182	0.069 0.051	 0.44
Log-likehood = -56.040		Reference Group= Market Orientation Strategy		
G= 4.534, df = 2, P=0.104				
Goodness of Fit				
Deviance x^2 = 9.452, df=6, P= 0.150				

Table 13.23 The impact of the sources of information on marketing strategy selection according to Logistic Regression Analysis.

The impact of the types of information on marketing strategy selection is presented in Table 13.24. The analysis indicated that, the farmers who preferred to be informed about consumer attitudes preferred the market orientation strategy instead of the opportunist strategy (the goodness of fit tests indicates that the model fits to the data; MINITAB 1997).

Logit	Predictors	Coef	P	Odds Ratio
Logit 1: (Return Focus Strategy/ Market Orientation Strategy)	Constant Production techniques Consumer information	4.764 -0.3162 -0.9266	0.12 0.481 0.064	 0.73 0.40
Logit 2: (Opportunist Strategy/ Market Orientation Strategy)	Constant Production techniques Consumer information	2.193 0.4141 -1.1326	0.294 0.406 0.031	 1.51 0.32
Log-likehood = -52.775		Reference Group= Market Orientation Strategy		
G=11.064, df = 4, P=0.026				
Goodness of Fit				
Deviance x^2 = 24.308, df=22, P= 0.331				

Table 13.24 The impact of types of information on marketing strategy selection according to Logistic Regression Analysis.

13.7 Conclusions

This study identified that the dairy cow farmers in the County of Cornwall in U.K. sold their milk through three main distribution channels: (a) milk marketing cooperative groups, (b) big national dairy firms, (c) local milk processing plants (included their own plants).

Furthermore, the analysis presented in this chapter verified some of the hypotheses presented in Chapter 11and Appendix III regarding the marketing strategy and distribution channel selection of the dairy cow farmers in Cornwall. Specifically:

- The dairy cow farmers in Cornwall can be classified into three strategic groups regarding their milk marketing activities and business orientation. These strategic groups are: (a) the farmers who adopted the opportunistic strategy, (b) the return focused farmers and (c) the market orientated farmes.
- Findings of this study support the hypothesis that existing generic and agricultural typologies and taxonomies are inadequate to describe the marketing strategies followed by the dairy cow farmers in U.K. and more particular in Cornwall. However, some similarities exist: the market orientation strategy has many similarities with *the differentiation strategy* of Porter's (1980), Kohls and Uhl's (1990), and Fearne and Bates's (2000) typology. It also has some similarities with both *market outlet focus* and *differentiation strategy* of McLeay *et al.* (1996) typology as well as Mitchell's (1976) *market orientation strategy*. Furthermore, the identified market orientation strategy may fell into *prospectors* classification of Miles and Snow's (1978) taxonomy and has some similarities with the

differentiation strategy that sheep and beef livestock producers followed according to Davies (2001) marketing strategic typologies. On the other hand, the return focus strategy has some similarities with the buyer orientation strategy that beef farmers followed in South West England according to Davies (2001).

- The farm and farmer's characteristics have a significant impact on the selection of a particular milk marketing strategy by the dairy cow farmers in Cornwall.
- The factors (e.g. sale price, loyalty, speed of payment) that influence the dairy cow Cornish farmers to the selection of a particular marketing channel are significantly associated with the selection of a specific marketing strategy.
- The identified marketing strategies are significantly related with the selection of particular marketing channels.
- The farm and farmer's characteristics have a significant impact on the selection of a particular marketing channel by the dairy cow farmers in Cornwall.
- The examined factors (e.g. sale price, loyalty, speed of payment) do have a significant impact on the selection of a particular marketing channel by the dairy cow farmers in Cornwall.
- Information sources do have a significant influence to the selection of a marketing strategy.
- The dairy cow farmers in Cornwall do not follow similar marketing strategies compared with the sheep farmers of the same region: sheep farmers follow either the differentiation strategy or the production orientation strategy. The only common element is that the sheep farmers who follow the differentiation strategy adopt special livestock production techniques in order to achieve the highest premium

quality and understand the detailed market requirements for their produce as market orientated dairy cow farmers also do.

- The sheep and dairy cow farmers in Cornwall are not influenced by the same factors regarding the selection of a particular marketing strategy. More particular, the factors that affect the marketing attitudes of the sheep farmers in Cornwall included the production orientation, market orientation and differentiation are quite different than those influence the dairy cow farmers in this area which were: market orientation, profit orientation and interpersonal relationships.

CHAPTER 14

DISCUSSION

14.1 Introduction

The rapid changes that have occurred in the economy worldwide, the internationalisation of the market and the vertical integration of the human food supply chain, have forced agricultural producers to become more market orientated. Although most farmers within E.U. are capable of responding to this change to some extent, farmers in geographical areas that are traditionally regarded as poor (e.g. Objective One Regions) usually face many difficulties in responding appropriately as they have small farms and operate in regions which in most cases are isolated from the main urban centres. Hence, it is very important to have a clear understanding of the marketing behaviour of the farmers regarding the distribution channel selection of their produce and their response to the changes that occur across the supply chain. This study has investigated how livestock producers make their marketing decisions in two areas that are characterized as Objective One regions, and provides insights into the reasons behind such decisions with a particular focus on meat and milk products. These insights will inform the development of strategic programmes and business plans to maintain farm incomes in those regions.

14.2. Description of Marketing Channel Utilisation

Robust predictive statistical techniques were conducted (both bivariate and multivariate), based on the suggestions of other researchers in order to identify the marketing channels that the examined livestock farmers use in EMTh and Cornwall in order to market their livestock and milk production as well as to investigate the factors that influence them in their distribution outlet choice (Hair *et al.* 1998; Kinnear and Gray 2000; Darren and Mallery 2001; Davies 2001). In particular Davies (2001) identified the marketing channels beef and sheep farmers utilise in South West of England and which channels were preferred by the farmers who adopt a particular livestock marketing strategy; but he did not examine the factors behind farmers' marketing channel selection. Considering that marketing channel selection is a very important decision making function for farmers, the current study examined the factors and farm/farmers' characteristics that affect farmers in their distribution channel selection. By using bivariate non-parametric tests including Kruskal–Wallis test, Friedman test, one sample chi-square; and logistic regression analysis this study extended the methodology used by Davies (2001).

Many studies presented in Chapter 4 examined farmers' decision making process regarding livestock and milk marketing channel utilization and more particularly the importance of some factors such as risk, transaction cost, legislative restrictions, economic pressures, acquisition of information, farmers' available time, price, speed of payment, farmers' convenience; in marketing channel selection (Mitchell 1976; MLC 1980; Bullen 1984; Henderson 1984; Sporleder 1984; Kohls and Uhl 1990; Grega and Ray 1992; Jones and Steele 1995; Royer 1995; McLeay *et al.* 1996; Murray *et al.* 1996; Hobbs 1996a; Hobbs 1996b; Hobbs 1996c; Graham 1997; Hobbs 1997; Loader 1997; Davies 1999; Fearne and Bates 2000; Davies 2001). On the other hand, no research except the current study, has tried to investigate farmers' decision making process regarding marketing channel

selection, in E.U. Objective 1 Regions. Due to the fact that farmers in E.U. Objective 1 regions, usually have small farms, and operate in regions which in most cases are isolated from the main urban centre, marketing channel utilization is a very important element for their successful operation during the rapid changes occurring in European and global economy (W.T.O. pressures for subsidy limitation, internationalization of the market, vertical integration of the human food supply, rapid development of the supermarket chains). Therefore, this study examined the marketing channel utilization in two Objective 1 regions, one in Greece and one in the United Kingdom, (which have many similarities as presented in Chapter 5) in order to help policy makers and advisors have a clear understanding of the way that farmers make business decisions (and the factors that influence such decisions) so that they can work in order to make the farming sector (especially in poor regions) competitive, effective and profitable. Livestock production and, more particularly the ruminant livestock production comprise (as presented in Chapter 5) very important component for the agricultural economy of both Regions. Therefore, it examined the marketing channels that sheep and goat farmers use in EMTh in order to market their livestock and milk produce, as well as the marketing channels that sheep and dairy cow farmers use in Cornwall in order to place their livestock and milk produce respectively. It also highlighted that factors identified by previous studies including sale price, speed of payment, marketing cost and farmers convenience affect the livestock and milk marketing channel selection in the two examined Objective 1 regions (Mitchell 1976; MLC 1980; Bullen 1984; Henderson 1984; Sporleder 1984; Kohls and Uhl 1990; Grega and Ray 1992; Jones and Steele 1995; Royer 1995; McLeay *et al.* 1996; Murray *et al.* 1996; Hobbs 1996a; Hobbs 1996b; Hobbs 1996c; Graham 1997; Hobbs 1997; Loader 1997; Davies 1999; Fearne and Bates 2000; Davies 2001). In addition to the previous studies, this study identified that buyer's loyalty, social relationships between farmers and their buyers, farm size, volume of livestock and milk production, farmer's age, farmer's

education and the isolation of the farm represent other factors that affect farmers in their distribution channel choice.

14.2.1 The livestock and milk marketing channel utilization in EMTh

In EMTh most of the sheep and goat farmers produce both livestock and milk. In Greece there is a very high consumption of lamb and kid meat during the Easter period as well as during the 15th of August due to religious tradition. Therefore, most of the sheep and goat farmers programme their livestock production in order to meet the demand of these two periods. In particular, most of them sell their lambs and kids (at the age of two-three months) every April and August. Hence, they sell or process their milk during the remaining milking period. Although the sheep and goat meat and milk production are so interlinked in Greece, the current research is the only study that examined farmers' decision making processes regarding the marketing of both products and the factors that affect it. As this study indicates, the sheep and goat farmers market their livestock to the following distribution channels: (a) direct to retailers, (b) direct to wholesalers, (c) private use of livestock and (d) to more than one marketing channels; while they sell their milk to: (a) local private milk processing plants, (b) cooperative milk processing plants, (c) big national and regional dairy firms and (d) make private use of their milk. Most of the large scale livestock farmers with a high volume of livestock and milk production prefer to market their livestock direct to wholesalers because only this outlet can absorb large quantities of animals and pay when they buy the livestock. They also sell their milk to the big national and regional dairy firms due to the loyalty of these firms and the speed of their payment. On the other hand, most of the small farmers prefer the private use of their milk and livestock production because of the small volume of their production and the isolation of their farm from their main buyers.

14.2.2 The livestock marketing channel utilization in EMTh and Cornwall

The sampled sheep farmers in Cornwall marketed their livestock: (a) through auction markets, (b) direct to abattoir, (c) to abattoir via Group Marketing Schemes and (d) to more than one marketing channel. Therefore, the livestock marketing systems in the two study areas are completely different mainly because the size of the farms is different in those regions (Cornish farms are much bigger than the farms operated in EMTh), the tradition in livestock production and livestock marketing is different (in Greece there are no auction markets) as well as the food retail market being dominated (from the abattoir to the final consumer) by the supermarket chains in a greater extent in United Kingdom than in Greece. Sheep farmers in both areas are affected by similar factors in their marketing channel choice. In particular, sale price and speed of payment affect farmers in both regions in choosing a distribution outlet. On the other hand, buyers' capability to purchase large quantities of livestock influences only the Greek farmers in their marketing outlet decision because of the seasonality of the sheep and goat meat demand in Greece. Animal welfare issues, marketing cost and farmer's convenience are some factors that affect only the Cornish farmers in their distribution channel selection due to the fact they have to travel longer distances in order to sell their livestock, have bigger farms, are more educated and operate in a more businesslike way in comparison with the farmers in EMTh. Furthermore, structural changes occurring within abattoir and livestock auction market, such as the reduction of both marketing outlets during the last decade mainly due to the Foot and Mouth Disease outbreak in 2001 and E.U. legislation have had an impact on the livestock distribution channel utilisation by sheep farmers in Cornwall. The implication of the E.U. legislation regarding the operation the abattoirs also resulted in structural changes within the marketing system in Greece (many traditional abattoirs closed and some big meat processors proceeded to vertical integration of their enterprises by establishing abattoirs) that affected the utilisation of livestock marketing channels by the Greek farmers.

14.2.3 The milk marketing channel utilization in EMTh and Cornwall

Regarding milk marketing, dairy cow farmers in Cornwall may sell their milk to: (a) Milk Marketing Cooperative Groups, (b) Big National Dairy Firms and (c) Local Milk Processing Plants. Hence, the milk marketing systems in EMTh and Cornwall are quite similar, mainly because the main retail outlet of dairy products in both countries is the supermarket chains. The only difference is that in Greece some small farmers, who operate their farms in quite isolated places, prefer the private use of their milk. In U.K. the high consumption of the "fresh" cow milk makes the private use of it difficult as a marketing outlet. The farmers who prefer to sell their milk to the milk marketing cooperative groups in Cornwall and to cooperative milk processing plants in EMTh are influenced by loyalty, sales price and speed of payment in their marketing outlet selection. Sale price and speed of payment are the main factors that also affect the farmers in both Objective 1 regions to sell their milk to the local milk processing plants. Furthermore, the social relationships between farmers and their buyers in Cornwall affect them to market their milk to the local private milk processing plants. The farmers in EMTh prefer to sell their milk to the big national dairy firms because of the loyalty of the buyer, price and speed of payment. On the other hand, the Cornish farmers prefer this outlet due to sale price and contractual obligations. The differences among the factors that affect the farmers in the two regions to choose a particular marketing channel exist because the consumption patterns of the cow milk in U.K. and the sheep and goat milk in Greece are different; cow farmers in Cornwall have bigger farmers and are better educated. Furthermore, the cooperative marketing system in U.K. operates completely differently and more effectively than in Greece (e.g. the marketing cooperative groups in U.K. buy milk only from their members while in Greece the cooperative milk processing plants buy milk from any farmer in the same price).

14.3. Description of Derived Typologies

This study identified the marketing strategies that sheep and goat farmers adopt in EMTh regarding their livestock and milk produce as well as the marketing strategies that sheep and dairy cow farmers follow in Cornwall.

In particular, this study used robust predictive models conducting bivariate and multivariate statistical techniques in order to develop marketing typologies regarding the livestock and milk marketing strategies the sheep and goat farmers follow in EMTh and the sheep and dairy cow farmers adopt in Cornwall. These models have been based in previous studies (Mitchell 1976; Miles and Snow 1978; Porter 1980; Kohls and Uhl 1990; McLeay *et al.* 1996; Fearne and Bates 2000; Davies 2001), methodologies (Peterson and Mahajan 1976; McIntyre and Blashfield 1980; Punj and Stewart 1983; McLeay *et al.* 1996; Davies 2001) and statistical suggestions (Harrigan 1985; Steven 1986; Tabachnick and Fidell 1989; Helsen and Green 1991; Malhotra 1996; Hair *et al.* 1998; Siardos 1999).

In particular, the studies of Mitchell (1976), Miles and Snow (1978), Porter (1980), Kohls and Uhl (1990), McLeay *et.al.* (1996) and Fearne and Bates (2000) identified that the marketing orientation of business organisations including farm enterprises are affected by factors related to cost reduction, production effectiveness, market awareness, product or market differentiation, profit focus. All these factors were examined and taken into consideration in the development of the conceptual model of this study.

Furthermore, McLeay (1996) and Davies (2001) used multivariate statistical approaches to identify marketing strategies of, respectively, New Zealand intensive crop producers beef and sheep farmers in South West England. In particular, McLeay (1996) used factor and cluster analysis along with bivariate tests, ANOVA and chi-square tests in order to create

the profiles of farms and farmers characteristics. Davies (2001) extended that methodology by applying discriminant analysis to assess predictive capability of the clusters to discriminate between strategic groups. The current study extended those methods even further. In addition to the methods used in the previous work, this study utilised non-parametric tests to profile each strategic group as they are more robust in using categorical data (Eddison 2000; Kinnear and Gray 2000; Darren and Mallery 2001). Also in contrast to the two previously mentioned investigations, this study used non-parametric tests to check the interpretability and external validity of the clusters due to the existence of categorical data. Additionally, this study used logistic regression analysis in order to identify how the farm/farmers characteristics; the factors that affect farmers' distribution channel choice; information type and sources of information affect farmers marketing strategy selection in a multivariate way as all these factors and characteristics do not exist solely. Besides, this study is the only one that, by using non-parametric bivariate tests and logistic regression analysis, profiled the farmers who utilise each marketing channel.

However, the use of a questionnaire survey in Cornwall due to financial constraints and the fact that the researcher is normally based in Greece is one limitation of this study because the response rates were quite low in comparison with the Greek survey. Moreover, the fact that the questionnaires the Cornish farmers completed were collected by an officer of the University of Plymouth and mailed to the researcher in Greece present another limitation of the study because in this way the quality of the responses was not possible to be examined. Finally, the fact that there are no available data regarding the characteristics of the farmers operated in Cornwall and EMTh, made the examination of the representativeness of the sample in both study regions regarding farmers characteristics impossible.

Although many studies have developed typologies and taxonomies regarding the business strategies that enterprises follow, these focus on cost leadership, product or market differentiation, and firm diversification (Miles and Snow 1978; Porter 1980; Douglass and Rhee 1989; Barker 1989, Kohls and Uhl 1990; Kotler 1994, Feka *et al.* 1997; and Fearne and Bates 2000). Thus they can not describe adequately the way that agricultural businesses behave, due to the nature of the farming firms and the environment in which they operate. It is very difficult for the farmers to differentiate their produce, and the large number of small farm businesses impedes the creation of economies of scale that are required for cost leadership. Some other studies have sought to cluster farmers according to their strategic behaviour (already presented in the literature review; (Mitchell 1976; McLeay *et al.* 1996; Ohlmer *et al.* 1998; Davies 1999) but they did not examine the relationship between the business or marketing strategies agribusinesses follow and the marketing channels they utilise, as this study did. Hence this study is the only one that identified the livestock and milk marketing strategies farmers follow in the two examined Ojective One areas; and which marketing channel is preferred by the farmers who follow a particular strategy and for what reason. Specifically, this study identified that the sheep and goat farmers in EMTh follow three different livestock marketing strategies: (a) cost-focus strategy, (b) production-orientation strategy and (c) return-focus strategy; and three different milk marketing strategies: (a) differentiation strategy, (b) production orientation strategy and (c) return focus strategy. Besides, the sheep farmers in Cornwall adopt the following two marketing strategies: (a) differentiation strategy and (b) production-orientation strategy; while the dairy cow Cornish farmers adopt the following three marketing strategies: (a) opportunistic strategy, (b) return focus strategy and (c) market orientation strategy. It also indicated that factors including profit orientation, production orientation, market orientation, cost focus, differentiation and farmers' interpersonal relationships affect farmers' marketing behaviour. Furthermore, farmers' marketing strategy selection affects farmers' marketing channel utilisation. Also, the factors that

influence farmers in their distribution channel selection (such as sale price, speed of payment, buyers' loyalty, farmers' social relationships, animal welfare issues, marketing cost) have an impact on the adoption of a particular marketing strategy.

Other researchers described extensively the farmers's decision making process (Bradford and Johnson 1953; Errington 1986; Harling and Quail 1990; Gasson and Errington 1993; and Westgren *et al.* 1998),. In particular, they examined the objectives farmers set and the issues of the internal and external environment (tax, trade policies, environmental regulations, costumers, competitors) that affect the achievement of their business objectives; but they did not focus on their marketing decisions such as marketing strategy adoption or distribution outlet utilisation and the reasons behind those decisions. Hence, these studies in contrast to the current one, did not provide insights into the reasons that affect farmers' marketing strategy or distribution channel selection. Some other researchers have attempted to identify the factors (including transaction cost; risk; prices; selling liveweight or deadweight; farmers' age and education; farmers' market power; and animal welfare issues) that influence farmers' marketing decision making mostly in relation to distribution outlet choice (Christopher 1994 , Royer 1995; Hobbs 1996a; Hobbs 1996b; Hobbs 1996c; , Loader 1997; Bullen 1984; Kohls and Uhl 1990; Jones and Steel 1995; Hobbs 1997; Murray *et al.* 1998 and Davies 1999). Even though the above studies examined the strategic management process of farmers and the factors that affect them in their distribution channel decision making, they did not examine the marketing strategies that farmers follow and the factors that influence their choice on the selection of a specific marketing strategy as the present study has done. They did not examine the impact of marketing strategy selection on distribution pattern utilisation. Hence, the originality and the novelty of this study consists in the development of a typology about the marketing strategies followed by the farmers through an analysis of the factors that affect their marketing attitudes, using data relating to sheep and goat producers in the Region EMTh

and sheep and dairy cow farmers in the County of Cornwall. Furthermore, this study is the only one that profiled each of the identified marketing strategic groups in the examined livestock sectors in Objective 1 Regions, regarding the characteristics of the farms and the farmers themselves. It also examined and identified the factors behind farmers' distribution outlet choice and the association between marketing strategy adoption and distribution channel utilisation because both are important marketing decisions made by the farmers. Another original aspect of this study is that it managed to identify the impact of the factors that influence farmers' distribution channel selection to a particular marketing strategy choice, using bivariate and multivariate statistical techniques. This study is also the only one that examined in Greece the association between livestock and milk marketing strategy adoption by the sheep and goat farmers in EMTh, as these farmers produce and sell both meat and milk and therefore the effectiveness as well as the profitability of their farm depends on the production and marketing of both products.

Conclusively, this study indicated that farmers even in isolated Objective One regions like EMTh and Cornwall as well as with small farms, who are quite old and have a low level of education like the farmers examined in EMTh, behave and operate like businessmen. They make marketing decisions, follow business strategies, choose distribution outlets as well as analyse conditions and examine factors in order to make their marketing decision.

14.3.1 A comparison between the livestock and milk marketing strategies adopted by sheep and goat farmers in EMTh.

The marketing strategies that the sheep and goat farmers adopt in EMTh regarding their livestock and milk produce are quite similar. Furthermore, similar factors including sales price, buyer's loyalty speed of payment and the small volume of production have an impact on farmers livestock and milk marketing channel selection. Farm and farmers' characteristics that affect milk marketing strategy selection are also found to be similar to

those affecting livestock marketing strategy choice. Farm characteristics including: (i) the size of the farm land, (ii) size of the flock, (iii) volume of the livestock production, (iv) the farm allocation to the sheep and goat enterprise and (v) the size of the cultivated land farmers own, rent from other landowners or let to other farmers; affect the sheep and goat farmers in their livestock and milk marketing strategy selection. Farmers are also influenced in their marketing strategy choice by (i) their financial performance, (ii) debt, (iii) obtained livestock prices, (iv) long livestock experience and (v) non previous non – farm working experience. Moreover, the fact that most of them are not involved with off-farm activities nor with farm related activities away from their farm and derive the largest part of their farm income from their sheep and goat enterprise are some other characteristics that affect their marketing strategy choice regarding both products. Farmers' low education, old age and the fact that they do not hold a responsible position in an agricultural cooperative or organization also have a significant impact on their marketing strategy selection.

Furthermore, the farmers who adopt the cost-focus strategy regarding the marketing of their livestock follow the return-focus strategy regarding the marketing of their milk produce and vice versa because they are influenced in their livestock and milk marketing strategy selection by cost focus and profit orientation issues. They consider profit maximization as their most important farming goal, as well as believing that animal diseases consist of the major cause of fluctuations on their farm returns. Besides, they are very aware of the exact cost and return of their produce as well as considering budgeting and planning in order to achieve the lowest possible farm cost as their most important management activity. On the other hand, farmers who prefer the production-orientation strategy regarding the marketing of their livestock also follow the production-orientation strategy concerning the marketing of their milk production and vice versa; as the production orientation aspects have an impact on their marketing strategy choice regarding

both products. These farmers set aside a proportion of their livestock in order to experiment with new production techniques, breed animals that require special knowledge and equipment; and adapt their enterprise mix in order to minimize their risk. Therefore, the farmers in EMTh are influenced by similar factors regarding the selection of a particular livestock and milk marketing strategy. On the other hand, they are influenced in their milk marketing attitudes by another two factors which are related to differentiation and interpersonal relationships issues.

14.3.2 A comparison of the livestock marketing strategies adopted by sheep farmers in EMTh and Cornwall.

This research has also compared the marketing strategies as well as the characteristics and factors that affect farmers decision making in relation to marketing strategy and distribution channel selection in the two study areas.

Regarding livestock marketing, the farmers in the two study areas do not follow similar marketing strategies even though there are some similarities among them. The sheep and goat farmers in EMTh follow three different marketing strategies: (a) cost-focus strategy, (b) production-orientation strategy and (c) return-focus strategy. Besides, the sheep farmers in Cornwall adopt the following two marketing strategies: (a) differentiation strategy and (b) production-orientation strategy.

The production-orientated farmers in both areas aim to increase their productivity and therefore to reduce their farm cost in the long term and are very interested in intensive production methods. Furthermore, they continually monitor market prices in order to make their livestock production decisions. Sale prices and speed of payments are two factors that influence the production orientated farmers in both regions to choose a particular marketing channel. Both strategic groups have average financial performance and achieve

average livestock prices in the market as well as having long livestock experience. They are not involved with off-farm activities neither do they have previous non-farm experience. Therefore, farming consists of the only job that they have learned to do. It also is their main source of income. Both strategic groups are interested in being informed about the livestock and meat prices. On the other hand, the production orientated farmers in EMTh and Cornwall have many differences regarding their marketing orientation, distribution outlet selection, factors affecting marketing channel utilisation, farm and farmer characteristics as Table 14.1 presents.

Marketing Strategies	**Production orientation livestock marketing strategy in EMTh**	**Production orientation livestock marketing strategy in Cornwall**
Marketing orientation	• Set aside a proportion of their flock in order to experiment with new livestock techniques • Breed animals that require special knowledge and equipment. • Aim to improve the quality of the meat they produce. • Do not consider profit maximization as their primary farm goal. • Are not interested in external factors which may influence their farm profitability.	• Plan their livestock production and make their sales decisions simultaneously. • Are not interested in differentiating their produce and gaining premium sale prices. • Prefer to increase their farm profitability by increasing their productivity and reducing in that way the production cost per animal.
Marketing channel utilisation	Direct sales direct to wholesalers	Sales to more than one marketing channel
Factors affecting marketing channel utilisation	• Capability of the buyer to absorb large quantity of livestock • Buyer's loyalty	• Higher expected returns • Convenience • Time spend during the selling process • Marketing cost
Farm' characteristics	• Farm land: < 5 ha	• Farm land: 41-80 ha
Farmers' characteristics	• Derive more than 50% of their farm income from their sheep and goat enterprise • Primary education	• Derive between 25%-49% of their farm income from their sheep enterprise • Higher education
Type of information	• Milk prices • Animal diseases	• Animal welfare
Information sources	• Family • Other farmers • Governmental bodies	• Agricultural journals • Own files

Table 14.1: The differences between the production orientation strategies followed by the sheep farmers in EMTh and Cornwall

The remaining sheep farmers in EMTh and Cornwall followed completely different marketing strategies. In particular, the cost-focus strategy and the return-focus strategy followed by the sheep and goat farmers in EMTh have different marketing orientations compared with the differentiation strategy adopted by the Cornish farmers as presented in Table 14.2. On the other hand, all three strategic groups achieve average livestock prices in the market, are not involved with farm related activities away of their farm neither with off-farm activities. Furthermore, they do not have previous non-farm experience. Sale

prices and speed of payment are also two factors that affect farmers in EMTh and Cornwall to choose a distribution channel. Moreover, farmers of the three strategic groups are very interested in being informed about livestock and meat prices. They also prefer to be informed by other farmers.

Marketing strategies	**Cost focus livestock marketing strategy in EMTh**	**Return focus livestock marketing strategy in EMTh**	**Differenation livestock marketing strategy in Cornwall**
Marketing orientation	• Highly aware of the exact cost of the livestock they produce. • Very interested in budgeting and planning their production in order to achieve the lowest possible farm cost.	• Interested in maximizing their profits • Try to sell their livestock immediately because they can not wait for better prices. • Believe that they are not able to influence the configuration of the sale prices. • Consider that sale prices are mostly affected by external to their farm factors. • Think that other countries policies highly affect their farm profitability.	• Interested in differentiating their farm. • Interested in increasing their farm profitability by satisfying the buyers of their produce. • Adopt special livestock production techniques in order to achieve the highest quality premium for their livestock. • Aim to improve their farm business competitiveness by differentiating their produce. • Aim to increase their profitability by exploiting the added valued of their products.
Marketing channel utilisation	Direct sales to wholesalers	Direct sales to wholesalers	Sales to more than one marketing channels
Factors affecting marketing channel utilisation	• Buyer's loyalty • Capability of the buyer to absorb large quantities of livestock	• Buyer's loyalty • Capability of the buyer to absorb large quantities of livestock	• Time spend during the selling process • Animal welfare
Farm' characteristics	• Farm land: < 5 ha	• Farm land: < 5 ha	• Farm land: 41-80ha
Farmers' characteristics	• Derive more than 50% of their farm income from their sheep and goat enterprise • Below average financial performance	• Derive more than 50% of their farm income from their sheep and goat enterprise • Below average financial performance	• Derive less than 25% of their farm income from their sheep and goat enterprise • Average financial performance
Type of information	• Milk prices • Animal diseases	• Milk prices • Animal diseases	• Management practices
Information sources	• Governmental bodies • Family • Cooperative organisations	• Governmental bodies • Family • Cooperative organisations	• Own files • Agricultural journals • Livestock dealers

Table 14.2: The differences among cost focus, return focus and differention strategies followed by the sheep farmers in EMTh and Cornwall

The economic growth of both countries, the impact of the internationalisation of the trade and the globalisation of the economy on E.U. agricultural economy as well as the C.A.P. and W.T.O. agreements are the main factors that affect the sheep farmers in EMTh and Cornwall to reduce their farm costs, adopt intensive production methods and make their production decisions by monitoring market prices. Farmers marketing orientations in both case study regions are also influenced by the European and national legislation mainly on food safety issues. The retail concentration in Greece and U.K. influence farmers marketing orientation in the two study areas.

On the other hand, the differences that exist among the strategic groups in EMTh and Cornwall occur mainly because of the:

- different marketing systems that exist in the two countries and the higher dominance of the British meat retail market by the supermarket chains in comparison with the Greek market,
- different meat consumption preferences in the two countries and the high seasonality of the Greek lamb market,
- larger sheep farms operate in Cornwall in comparison with those in EMTh,
- longer distances of the Cornish farms from their marketing outlets in comparison with those in EMTh,
- importance of the European Carcass classification system in livestock marketing in U.K. while this system is not applicable in Greece,
- higher education that farmers have in Cornwall in comparison with the farmers in EMTh,
- fact that sheep enterprise is more important for the farm income of the farmers in EMTh compared to that of the Cornish farmers.

According to this study, the production-orientated farmers in EMTh have similar profiles (regarding their personal and farm characteristics) with the cost -ocused and return-focused farmers operating in the same region, but they have better financial performance. Therefore, this study suggests that the sheep and goat farmers in the Region of EMTh, in order to increase their farm profitability and the sustainability of their livestock enterprise within an intensively competitive environment, should focus on production orientation strategy. Moreover, this research identified that meat demand in Greece is influenced by (i) the increased interest of the consumers for high quality and healthy meat products, (ii) the economic growth. That has occurred in Greece the recent years, (iii) food safety legislation, (iv) consumers social class, (v) psychological needs for recognition and self-esteem. Therefore, a further opportunity for the farmers in order to increase their profits is to add value to their products by processing a part of their produce by themselves and selling either direct to consumers through their own retail outlets or through local retailers. On the other hand, the combined effect of the increased bargaining power of the supermarket chains (which affects negatively the profitability of the traditional butcher shops) is likely to add a further enterprise risk. They can reduce this risk by marketing a part of their livestock production direct to wholesalers.

It is not easy to find direct parallels between the Greek and British livestock marketing system due to the very different structural characteristics derived by this comparative study. Despite this, research suggests quite similar livestock marketing strategies, as well as marketing attitudes between the sheep farmers in the Region of EMTh and in the County of Cornwall. The factors that mainly influence the sheep farmers in both areas to select a particular marketing channel are basically the same. Moreover, the farm and farmer's characteristics that are significantly associated with the adoption of each marketing strategy are similar. The main difference is that the sheep farmers in Cornwall

marketed only livestock production while the Greek sheep and goat farmers marketed both livestock and milk produce.

The marketing strategies that sheep farmers follow in Cornwall, according to the results of this study, have similar profiles regarding the farm and farmers characteristics. Both strategies can contribute to the increase of the profitability and sustainability of the sheep farms in Cornwall by breeding large flocks with highly productive animals. Furthermore, the increased interest of British consumers for high quality and healthy meat products, the economic growth in U.K. during the recent years, C.A.P., W.T.O. agreements, food safety legislation, consumers' social class and their psychological needs for recognition and self-esteem, indicate that the adoption of the differentiation strategy by adding value to their products could help the farmers to operate in a more profitable way. Therefore, they should add value to their products either by processing their produce on their own and selling them through their own retail outlets; or by producing niche market products like organic meat. The sheep farmers, through the use of vertical coordinated relationships may increase their efficiency, gain market advantage, reduce uncertainty, reduce the cost of financing as well as reduce the risk regarding price, quantity, quality of supply and timing of delivery (Featherstone and Sherrick 1992; Davies 2001). On the other hand, the farmers that market their produce to a multi-marketing channel, have more chances to increase their market coverage, they have lower channel costs as well as lower enterprise risk.

14.3.3 A comparison of the milk marketing strategies the sheep and dairy cow farmers adopt in EMTh and Cornwall.

Turning to strategies for the marketing of milk, there were again few similarities between farmers in the two regions. More specifically, the sheep and goat farmers in EMTh follow three different marketing strategies: (a) differentiation strategy, (b) production orientation strategy and (c) return focus strategy. On the other hand, the dairy cow farmers in

Cornwall, adopt the following three marketing strategies: (a) opportunistic strategy, (b) return focus strategy and (c) market orientation strategy.

The return focused farmers in both areas aim to maximize their enterprise profits and consider the other farmers that operate in their area as their main competitors mainly due to the strong competition occuring in the milk market. In particular, the international competition in food industry and the globalisation of the economy force the dairy companies and milk processors to reduce their production cost and therefore to buy milk from farmers in quite low prices. Furthermore, the rapid changes occuring in the international economy due to the internationalisation of the market and information technology, the W.T.O. agreements and the C.A.P. force the farmers to reduce their production costs in order to have profits. The return focus farmers in EMTh and Cornwall derive the largest part of their farm income from the sheep and dairy cow enterprise, respectively, and hence they concentrate on their farm operation, are not involved with off-farm activities, neither do they have previous non-farm experience. On the other hand, the return focused sheep farmers in EMTh are more experienced than the return focused dairy cow farmers in Cornwall. Moreover, the farmers who follow the return focus strategy in both examined regions are influenced in their marketing channel choice by loyalty, speed of payment and sale price mainly due to the dominance of the dairy industry in the two study regions by a small number of dairy industries and milk processors with a lot of bargaining power. Both strategic groups are very interested in being informed about animal diseases and prefer to receive information useful for their farm information by other farmers and cooperative groups.

However, these two strategic groups have many differences regarding their marketing orientation, the factors that affect them in marketing channel utilization as well as farm and farmers' characteristics are presented in Table 14.3. These differences occur mainly

because the sheep and goat milk in Greece is used only for cheese and yoghurt production, while cow milk in U.K. is mainly used for fresh consumption. Furthermore, there is a completely different marketing tradition in the two countries, mainly due to the long existence of the Milk Marketing Boards and the power of the Milk Marketing Groups (that followed on the MMB) in U.K. in recent years. In contrast, the Greek milk market is mainly dominated by private dairy companies and milk processors, while the cooperative processing plants are not so strong as the milk marketing groups in U.K.. The long distances in the U.K. between dairy cow farms and marketing outlets as well as the fact that British farmers operate in a more businesslike way in comparison with the Greek farmers who operate in a more traditional and empirical way, are some reasons that explain some differences occur between the two strategic groups in the two study areas. Moreover, the marketing of milk in the sheep and goat sector in EMTh is very interlinked with marketing of meat as farmers produce and sell both products.

Marketing strategies	Return focus milk marketing strategy in EMTh	Return focus milk marketing strategy in Cornwall
Marketing orientation	• Have the impression that their farm profitability is depended on external factors. • Consider budgeting and planning as their most important management activity aiming to obtain the lowest possible farm cost. • Are very highly aware about the exact costs and returns for their milk produce. • Continually monitor market prices in order to make their production decisions.	• Prefer to deal with a minimum number of marketing outlets in order to maintain good relationships with their buyers e.g milk marketing cooperative groups. • The continuous examination of the quality of their milk produce is one of their most important farming activities.
Marketing channel utilisation	Local private milk processing plants	Milk marketing cooperative groups
Factors affecting marketing channel utilisation		• Their bargaining power • Transportation cost
Farmers' characteristics	• Not involved with farm related activities away of their farm	• Spend 1-3 days per month in farm related activities away of their farm
Type of information	• Livestock and meat prices • Milk prices • Animal diseases	• Management practices • Animal diseases • Financial subjects
Information sources	• Family • Governmental bodies	• Own records • Accountant

Table 14.3: The differences between the return focus strategy followed by the sheep farmers in EMTh and the dairy cow farmers in Cornwall

The sheep and goat farmers in EMTh who adopt the differentiation strategy and the market-orientated dairy cow farmers in Cornwall, even though they have different marketing orientation (Table 14.4), they are aiming to add value to their products by producing niche market dairy products such as organic milk, P.D.O. cheese and yoghurt mainly due to the high bargaining power of the dairy firms and milk processors as well as the dominance of the retail food market by the supermarket chains. Both strategic groups achieve average milk prices in the market, are not involved with off – farm activities, nor they have long livestock experience. Furthermore, other farmers operating in their areas comprise an information source of both strategic groups.

The different farm sizes and volume of milk production between the two strategic groups provide some reasons to explain their different marketing orientations. Moreover, the fact

that Cornish farmers are younger, more interested in management and financial issues and spend more time in farm-related activities (such as making contacts in the market) in comparison with the farmers in EMTh also explain some differences in the marketing orientation of both strategic groups. The dominance of the U.K. milk market by the big dairy firms, the high bargaining power that they have, the E.U. legislation about food market and the increased importance of food quality are some factors that affect the Cornish market-orientated farmers to be very interested in meeting market requirements effectively. On the other hand, the differentiation orientated farmers in EMTh mainly due to their low milk production aim to create a farm market (by selling the dairy products they produce) in order to gain the added value. In other words, the sheep and goat milk market operate supplementary to the other agricultural enterprises these farmers may have.

Marketing strategies	Differentiation milk marketing strategy in EMTh	Market orientation milk marketing strategy in Cornwall
Marketing orientation	• Own or manage facilities that normally are owned by the middlemen further down the milk distribution chain such as small milk processing plants. • Not interested in production orientated strategic issues such as: (i) experimentation with livestock techniques relative to milk production, (ii) breeding animals that require special knowledge and equipment, (iii) intensive production methods and (iv) risk minimization. • Not interested in being informed about the exact costs and returns for their milk produce. • Not interested in monitoring market prices in order to make their production decisions as their main concern is to create profits by adding value to their products.	• Meet market requirements by adapting their production methods. • Continually monitor market information different than price in order to plan their sales and programme their production. • Use special production techniques in order to gain the highest quality premium milk. • Very interested in understanding the needs and wants of the final consumer in order to increase their farms' business success. • Are interested in examining the detailed market requirements for their milk produce. • Consider the other dairy cow farmers operated in their area as their main competitors. • Consider the continuous examination of the quality of their milk produce as one of their most important farming goals.
Factors affecting marketing channel utilisation	• Small volume of milk production	• Sale price • Farmers' bargaining power • Higher expected returns • Speed of payment
Farm characteristics	• Flock size: less than 50 heads • Allocate less than 30% of their farm land to their sheep and goat enterprise	• Herd size: 81-150 heads • Allocate more than 61% of their farm land to their sheep and goat enterprise
Farmers' characteristics	• More than 60 years old • Derive less than 25% their farm income from their dairy cow enterprise • Below average financial performance	• 41-60 years old • Derive more than 70% their farm income from their dairy cow enterprise • Spend between 1-3 days in farm related activities away of they farm • Average financial performance
Type of information	• Animal diseases • Livestock and meat prices	• Financial subjects • Management practices • Production techniques
Information sources	• Family • Governmental bodies	• Own records • Milk marketing group • Accountant

Table 14.4: The differences between the differentiation strategy followed by the sheep farmers in EMTh and the market orientation strategy adopted by the dairy cow farmers in Cornwall

The dairy cow farmers in Cornwall who follow the opportunist strategy do not operate strategically regarding the marketing of their milk produce. Therefore, there are not any similarities or common issues between the strategy these farmers follow and the production

– orientation strategy adopted by the farmers operated in EMTh. In contrast, the production-orientation farmers in EMTh affected by the strong competition occur in the milk market, the W.T.O. and C.A.P., aim to reduce their operational costs by increasing their productivity and organising their farm operation in a better way. Both strategic groups are influenced in their marketing channel selection by sale prices and speed of payment. Furthermore, they have long livestock experience and long experience in decision-making. They do not have previous non-farm experience and are not involved with off-farm activities. Moreover, they derive the largest part of their farm income from their livestock enterprise and are very interested in being informed about animal diseases. Other farmers operating in their area comprise an information source that both strategic groups use for receiving information relative to their farm operation. Table 14.5 presents the differences between the marketing orientation, the factors affecting farmers' distribution outlet utilisation, farm and farmers' characteristics of the two strategic groups.

Marketing strategies	**Production orienation marketing strategy in EMTh**	**Opportunist milk marketing strategy in Cornwall**
Marketing orientation	• Keep a proportion of their flock in order to experiment with new milk production techniques. • Breed animals that require special knowledge and equipment that other farmers do not have. • Consider the intensive production methods quite important to their farm business operation. • Not aware for the exact cost of their produce. • Do not consider profit maximization as their primary farm goal. • Not interested in external factors which may influence their farm. • Not aware to differentiate themselves from the other farmers by adding value to their products.	• Not interested in meeting market requirements by adapting their production methods. • Not interested in monitoring market information different than price in order to plan their sales and programming their production. • Do not use special techniques to gain the highest quality premium milk. • Not interested in understanding the needs and wants of the final consumer in order to increase their farm business success. • Not interested in the detailed market requirements for the milk they produce. • Do not deal with a minimum number of marketing outlets. • Do not view the other farmers operated in their region as their main competitors. • Do not consider that the continuous monitorship of the quality of their milk consists of one of the most important production activities.
Factors affecting marketing channel utilisation	• Small volume of milk production • Personal relationships	• Their bargaining strength
Farm characteristics	• Allocate less than 30% of their farm land to their sheep and goat enterprise	• Allocate more than 61% of their farm land to their dairy cow enterprise
Type of information	• Livestock prices • Meat prices	• Financial subjects • Production techniques • Management practices
Information sources	• Family • Governmental bodies	• Own records • Accountant • Agricultural journal

Table 14.5: The differences between the production orientation strategy followed by the sheep farmers in EMTh and the opportunist strategy adopted by the dairy cow farmers in Cornwall

Hence, the sheep and goat farmers in Region of EMTh (Greece) do not follow similar milk marketing strategies with the dairy cow farmers in the County of Cornwall (U.K.) even though there are some common issues among them.

This study identified that the sheep and goat farmers in EMTh, who adopt each of the three identified marketing strategies, have similar profiles regarding the farm and farmers characteristics. Even though the financial performance of the three strategic groups is low financial performance, the adoption of the differentiation strategy together with breeding large flocks with highly productive animals (sheep and goat that produce many lambs and kids as well as large quantities of milk) can contribute to the improvement of their farm profitability and sustainability. Thus, in order for the farmers to operate successfully in the continuously changing competitive environment, they should focus on the differentiation strategy by adding value to their products through processing a part of their milk produce themselves and selling either directly to consumers through the establishment of their own shops (farm shops or shops in the market center) or by producing niche market products like organic milk, cheese, ice–cream. Furthermore, the adoption of this strategy is supported by the increased interest of the Greek consumers for food quality, health and safety. The influence of the milk and dairy products demand by the consumers' need for recognition, their social class, the economic growth of Greece, the national and European legislation for food safety also support the adoption of the differentiation strategy. On the other hand, this strategic option, together with the dominance of the dairy retail market by the supermarket chains, might increase the enterprise risk of these farmers, which they can suppress by distributing a part of their produce through cooperative milk processing plants. The adoption of the differentiation strategy, as described above, makes difficulties in the signing of selling contracts with the big dairy firms. Besides, the farmers who have their own milk processing plants and marketing outlets can not sell part of their milk to the local milk processing plants who are their main rivals.

Regarding the marketing attitudes of the Cornish dairy cow farmers, this study indicates that all three identified strategic groups have similar profiles regarding the farm and farmers' characteristics and none of the groups employed activities in order to add value to

their produce and increase in this way their financial performance. A comparison between the marketing strategies that sheep and goat farmers follow in EMTh and dairy cow farmers in Cornwall indicates that even though the products (sheep/goat milk in Greece and cow milk in U.K.) are quite different, both commodities can be used for further processing in order to produce milk products such as cheese and yogurt. Furthermore, the marketing systems in both cases are quite similar. The comparison of the two studies also indicates that the marketing strategies and the marketing channels that dairy cow farmers in U.K. and sheep/goat farmers in Greece follow have many similarities. This may suggest that the dairy cow farmers in Cornwall should focus on the market orientation strategy mainly by adding value to their products through processing a part of their produce by themselves and selling either direct to consumers through their shops or through local retailers and supermarkets. Alternatively, they may focus on producing niche market products such as organic milk, cheese, ice-cream. However, this is likely to add risk to their enterprise, which they can reduce by marketing a part of their milk production through the co-operative milk marketing groups.

Conclusively, the comparison of the livestock and marketing strategies farmers follow in the two examined Objective One Regions indicated that in order for the examined farmers to increase their farm profitability and the sustainability of their livestock holdings, they should breed animals that are characterised by high productivity and make investments in buildings and equipment in order to modernize their farms. They should further consider cultivating a large area in order to reduce the feeding cost. Furthermore, they should focus on adding value to their products through processing a part of their produce (meat and milk) by themselves and selling directly to consumers through the establishment of their own retail outlets (farm shops, shops in market centre) or by producing niche market products like local or organic milk, cheese, ice-cream, meat.

The recent food crises that have occurred in the U.K. and E.U. (particularly the Foot and Mouth Disease outbreak in the U.K in 2001), growing awareness about climate change, carbon emissions and environment protection have made the Local Food Agenda quite important during the last few years. Hence, topics such as the need to manage food miles, reduce carbon footprint would rarely have made it onto boardroom agenda two or three years ago, but today the need to go green are vital elements of business strategy (Deloitte and Touche 2007). With the spread of globalisation, the concept of local has been revisited and localisation of food has become a catchword (Roos *et al.* 2007). Some years ago Starbucks or Costa café were still a novelty in U.K. high streets, suchi was available only in Japanese restaurants and not on supermarket shelves, and local produce was confined to a handful of embryonic farmers' markets and village stores (Deloitte and Touche 2007). Local food is the food produced for local and regional consumption. For that reason "food miles" are small, the use fossil fuel as well as the pollution are reduced. Furthermore, fresher produce, less packaging and preservatives, food traceability and better return for local producers as well as the fact that money stay in the local economy are some benefits of local food (Thompson 2007). Furthermore, the creation of a market for local food give the farmers an incentive to diversify which might lead to the production of niche market products such as organic and P.G.O. products.

Besides, organic farming consists of a safe, sustainable farming system producing healthy crops and livestock without damaging the environment. In this way, farms remain biologically in balance with a wide variety of beneficially insects and other wildlife to act as naturals predators for crop pests and a soil full of micro-organisms and earthworms to maintain it vitality. In. U.K. there is an increasing development of the organic sector, which is rising with the organic food and non-alcoholic drink sales to represent 1.05% of the U.K. grocery market (DEFRA 2004f) Decoupling CAP support from production, combined with the area basis payment in England will mark a major shift in favour of less

intensive forms of farming. Moreover, the move towards more payments for environmental goods should benefit those wishing to be involved in organic farming (DEFRA 2004f). Further growth in the sector will also depend on the development of the infrastructure for the processing and distribution of organic products. Besides, there is an increase in the consumption of organic foods as consumers buying more regularly and spending more money each time they buy organic foods (DEFRA 2004f). Hence, DEFRA aims to a further increase of the organic food U.K. market. In particular, the key objective of its action plan is to increase the market of organic foods to increase to a similar level with the conventional foods by 2010. Organic produce in U.K. shops has increased significantly in the recent years and the target is to reach up to 70% by 2010. In June 2003, DEFRA introduced a scheme providing on-going support for organic farmers after ending conventional production as well as a much increased payment for top fruit production. It also supported the procurement of organic food by the public sector such as hospitals and schools. In Cornwall there is an increase in the registered organic producers, while there are about 40 organic processors many of whom have created successful brands (Soil Association 2005). On the other hand, organic farming in Greece is still in its early stages due to fact that most farmers ignore the economic possibilities of the sector and there is not efficient support of education from the state (Baourakis and Apostolakis 1999). The marketing network of organic products in Greece is still in a preliminary stage mostly due to the lack of well-organised marketing channels as the main marketing outlets for organic products are: (a) the organic farmers themselves, who sell their products at local weekly open markets or directly at the farm gate; (b) organic food shops found in many large cities of Greece such Athens, Thessaloniki; (c) health and natural food shops depending on the interest of the shop owner; and (d) a small number of specialised stores buy and sell organic food on a wholesale basis (Fotopoulos and Pantzios 1998). Greek consumers seem to become more and more sensitive and demanding at the same time, when it comes to their nutrition and they seek food products that are safe, natural and free from

agrochemicals. It should be noted that Greek consumers tend to buy organic products due to healthy reasons and not because of environmental consciousness, as in central and northern Europe.

Hence, the local food and organic products agenda which has been recently adopted by many U.K. regions, including the County of Cornwall, is going to become an issue in Greece in the near future, supports the suggestions of this study regarding the adoption of a differentiation and market orientation strategy by livestock farmers through the creation of a farm market with niche market livestock and dairy products.

14.4 Suggestions and policy implications for the improvement of the examined livestock sectors in EMTh and Cornwall

14.4.1 General policy implications

This section indicates the policy implications derived by the present study regarding the improvement of the examined livestock sectors in the two examined case study regions. Furthermore, it will describe the policy implications related to the Rural Development Program that, in the programming period 2007-2013, includes actions related to the whole European rural development. Cornwall and EMTh, fall under the European Agricultural Fund for Rural Development (EAFRD) under the new Rural Development Programme of England and Greece, respectively.

The financial cost for receiving bank credits in accordance with the high production cost the farmers face and the low prices in which they have to sell their livestock products, are some of the main constraints that exist in both case study areas that inhibit in farmers' decisions for making investments in their farm business. On the other hand, livestock

farmers within the E.U. can be supported from the EAGGF through the measures and programmes of the C.A.P. in order to make investments to enlarge their farm, improve the structure of their livestock holding, modernise their farm buildings and machinery, process and market their livestock products as well as develop niche market meat and dairy products. Hence, the rural stakeholders and policy makers of the local and regional authorities, if they want to support livestock farming in their area, should include in their master plans actions for the support by making investments funded by EAGGF in buildings, machinery, equipment and livestock in order to support Rural Development. They should also design actions that will aim to keep young people living and working in rural areas and farming sectors. In particular, they should develop funding programmes that will support productive investments to create and safeguard sustainable jobs, investment in infrastructure and the development of endogenous potential by measures that encourage and support local development, employment initiatives and the activities of small and medium sized enterprises

A general limitation of all the above is the low educational level of most of the sheep and goat farmers in EMTh, and the lack of involvement in off-farm activities by the examined farmers in both examined areas. This is likely to inhibit their willingness, confidence and ability to take up new opportunities requiring different processes to those of traditional agriculture. Therefore, the rural stakeholders including the local, regional and national authorities should focus on the improvement of the educational and professional training of the farmers mainly in animal production, management and marketing issues in order to ensure that the examined livestock sectors in EMTh and Cornwall have a chance of a better future.

The fact that most of the sheep and goat farmers in EMTh do not hold any responsible position in any agricultural organization implies the ineffectiveness of the Greek

cooperative system regarding the livestock sector. There is a role for the Greek State in taking appropriate actions in order to make the cooperative system more effective and competitive and able to help the livestock farmers regarding the production and marketing of their products. The local and regional rural stakeholders, using the bottom up approach that European Union proposes for the program planning of the period 2007 – 2013, regarding the Rural Development Policy, should include in their proposals for the development of the National plans actions for the improvement of the effectiveness, competitiveness and sustainability of the agricultural cooperative system directing it towards a marketing orientated cooperative structure like the Group marketing schemes in U.K., rather than a supplying orientated system that exists in most cases today.

Furthermore, policy makers at local and regional levels, especially in Greece, should develop strategies that promote the localism of food and other products. They should strengthen the overall economic fabric of the rural areas in order to achieve a sustainable rural economic revitalisation.

The parallel involvement of the farmers or their wives with off-farm activities may lead to the development of an additional source of family income and may create a minimum level of financial stability within the family, as well as may improve the quality of their lives. Many E.U. programs funded by E.S.F. and aiming to help the young and female population to find job (e.g. EQUAL program) could contribute to place farmers' wives or children in the labour market. Moreover the local and regional authorities could also predict in their masterplans for the period 2007-2013 actions that will help the induction of young people and females of rural areas in non-farm labour market. Such actions will assist the achievement of a combination between residential and employment development and will encourage farmers and the rural population in general to remain in the rural community.

The suggestions of this study are in accordance with the Council Regulation (EC) No 1698/2005 regarding the Rural Development Policy for the period 2007 – 2013. The rural stakeholders (local and regional authorities, farming organisations, agricultural cooperatives) of the EMTh and Cornwall (and other European Regions after conducting similar studies) based on the findings of this study may participate actively in the development of the National Strategy Plans about Rural Development. Consequently this study may contribute to the achievement of the objectives of the rural policy of the E.U. which are the improvement of the competitiveness, sustainability and cohesion of the rural regions.

Furthermore, both the examined regions qualify for funding for the period 2007 – 2013 from the European Territorial Co-operation Objective that succeeds the INTERREG III programme. Hence actions related to exchange of experience among the farmers in different European Regions under the Territorial Co-operation Objective regarding marketing and production issues can be developed. The stakeholders and policy makers can include such actions in their master plans.

Finally, this study developed a robust methodology which can be useful for policy makers. Similar studies based on the above methodology can be conducted in order to examine the marketing behaviour of farmers operating in other areas within the E.U. or around the world and help the rural stakeholders and local and regional authorities to assist farmers more effectively and precisely.

14.4.2 Implications for Objective 1 areas

Since the finance structural assistance is the European Union is concentrated on the regions with the greatest difficulties, Objective 1 has the largest allocation, accounting for approximately 70% of the Structural Funds including the ERDF, ESF and EAGGF. As a

rule, the contribution of the Structural Funds under Objective 1 is subject to the following ceilings: no more than 75% of the total eligible volume. In regions situated in a Member State eligible for assistance from Cohesion Fund (Greece, Spain, Ireland and Portugal) such as the Region of EMTh the rate can be increased to 80%. In the case of investment in firms, the contribution of the Funds may not exceed 35% of the total eligible volume. In the case of investments in small and medium-sized enterprises this rate can be increased by up to 10% of the eligible total volume for indirect forms of funding. In particular, the Objective 1 Programme of the Region of EMTh (Priority 1: Rural development) and the County of Cornwall (Priority 4: Community Economic Development and Rural Structural Adjustment) focus on supporting investments in agricultural holdings and rural enterprises.

Thus, the farmers in the two examined case study areas that have been designated by the E.U. as Objective 1 regions can be supported from the EAGGF through the measures and programmes of the C.A.P. in order to make investments to improve the structure of their livestock holding, the processing and the marketing their livestock products. Furthermore, both EMTh and Cornwall qualify under the Convergence Objective (the successor of Objective 1) for the programming period 2007 – 2013, which means access to the ERDF, ESF.

Livestock farmers in the two examined Objective One Regions should also establish agrotourism (inns and cottages) and handicraft activities orientated to the promotion of traditional fabric and food products (e.g. sweets and deserts), that will generate additional sources of farm income and develop new marketing outlets (e.g restaurants, pubs, retail shops). They can use the E.U. funding programs that are included in C.A.P. and Rural Development Policy and Convergence Objective Program in order to be supported for such investments. Furthermore, the local authorities and the rural stakeholders should include in

their master plans, actions which support the non-farm rural activities and could be funded by Convergence Objective Program

Generally, many of the suggestions of this study could be applicable for the improvement of the livestock sector in U.K. and other European areas which have been designated by the E.U. as Objective One Regions. But since the two examined Objective One areas are just two case study areas and have not been chosen scientifically as a representative sample of the E.U. Objective One regions, similar research based on the developed methodology should be conducted for each specific case. In particular, each Objective One Region has its own particularities regarding its geographical location, borders, distances from the main urban centres, structure of agricultural sector and importance of the livestock sector to the GRP; that have to be examined and taken into consideration. Therefore, the developed methodology can be applied in other E.U. Objective One (Convergence) areas in order for a more generalised typology about farmers' marketing behaviour to be developed and generalisation to be made regarding policy implication in those areas.

14.5 Future Work

This study has examined the marketing strategies, marketing channels the surveyed livestock farmers follow in EMTh and Cornwall regarding their livestock and milk produce. It also investigated the factors that affect farmers' marketing strategy and distribution channel selection and if they developed added value activities. But this study has not examined which meat and dairy products consumers prefer, the factors and consumer characteristics that affect their consumption patterns.

Therefore, additional research should take place regarding the consumers' preference on the sheep (and goat) meat and dairy products with an increased interest on goat milk

products (for demand is increasing greatly nowadays in a European Union level). Such research should be conducted and will contribute to the identification of which niche product the farmers should produce and which characteristics (taste, flavour, aroma, colour appearance, price, packing) they should have in order to be preferred by the final consumers.

Also a study is needed that will examine attitude of consumers and farmers towards localism of food, food health, food quality and bio-security in Objective One Regions. This will classify them into clusters regarding their behaviour on these issues, will identify the factors behind their behaviour, and will profile them regarding their characteristics. Such work will provide insights into farmers' and consumers' attitudes towards the local food agenda in poor areas like the Objective 1 regions and will help the policy makers to take the appropriate actions regarding the implications of the examined issues.

Whilst the current study examined the marketing strategies and distribution channels that livestock farmers follow in two Objective One Regions and identified the factors behind such decisions, it did not examine farmers' reaction to potential changes in production and consumption areas. Thus, research should be undertaken in order to examine how farmers are likely to respond to fundamental changes regarding production and consumption issues mainly in Objective 1 regions where the farming sector comprises an important pillar in their local economy. Such a study might provide policy implications regarding how the stakeholders could help farmers in responding more accurately and efficiently in such changes.

Although the current research examined the decision making of farmers regarding their marketing strategy selection and distribution channel utilization, it did not examine the succession process which is quite important for the future of farming sector mainly in the

two examined Objective One Regions. Therefore, further research, that will examine how the succession of the examined farms takes place in the examined regions and which factors affect it should be conducted in order to identify and propose actions that will help the young people to keep their fathers' farm and stay in their places.

Finally, this research consists of a preliminary study of examining farmers marketing behaviour in two Objective 1 areas in two different countries. As rural policy has been moved in Brussels, the valid and robust methodology that has been developed through this study can be used to identify farmers' marketing behaviour in further Objective 1 regions across E.U.. Thus, generalisations can be made regarding policy implications and strategic assistance in policy makers and stakeholders regarding the future of livestock sectors.

All the proposed studies will contribute to the improvement of the Regional GDP and could make rural areas more attractive to young people in order to stay and work there.

CHAPTER 15

CONCLUSIONS

This study examined the factors affecting the choice of distribution channels and marketing strategies of sheep and goat meat and milk producers in two case study areas; the Region of EMTh in Greece and the County of Cornwall in U.K., both of which have been designated by the E.U. as Objective 1 regions. These two study areas have many similarities and differences in the structure of their agricultural sector as well as ruminant livestock production being very important for the agricultural economy of both regions.

Previously, McLeay *et al.* (1996) and Davies (2001) used multivariate statistical approaches to identify marketing strategies of, respectively, New Zealand intensive crop producers, and beef and sheep farmers in South West England. In particular, McLeay *et al.* (1996) used factor and cluster analysis along with bivariate tests, ANOVA and chi square tests in order to create the profiles of farms and farmers characteristics. Davies (2001) extended that methodology by applying discriminant analysis to assess the predictive capability of the clusters to discriminate between strategic groups.

In the present study, those methods have been extended even further. In addition to the methods used in the previous work, this study utilised non-parametric tests in order to profile each strategic group as they are more robust in using categorical data (Eddison 2000; Kinnear and Gray 2000, Darren and Mallery 2001). In contrast to two previously mentioned studies, it also used non-parametric tests to check the interpretability and external validity of the clusters due to the existence of categorical data. Additionally, this

study used logistic regression analysis to examine, in a multivariate way, how the various factors affect farmers' marketing strategy because these factors and characteristics do not exist in isolation.

This study has developed a robust methodology that can be applied to any study area in order to indentify the marketing strategies and distribution channels that farm businesses adopt. In doing so, this method can identify the factors that affect farmers' marketing strategy and outlet choice and to profile the farmers who choose each marketing strategy or distribution channel regarding their farm and personal characteristics. In other words, this study has developed a tool that can be use by the policy makers, NGO's, local and regional authorities and other stakeholders in order to explore farmers' marketing behaviour and be in a better position to provide useful strategic assistance.

Moreover, this research proved that farmers even in isolated Objective 1 regions like EMTh and Cornwall who have small farms, who are quite old and have a low level of education like the farmers examined in Greece, think and behave like entrepreneurs. This study identified that farmers make marketing decisions, follow business strategies, choose marketing channels as well as analyse conditions and examine factors in order to make their marketing decisions.

The examination of farmers' marketing strategies provides suggestions regarding what farmers in the two examined study areas should do in order to become more efficient and profitable in the future. In particular, the farmers in EMTh and Cornwall in order to improve the efficiency and sustainability of their farm businesses should focus on increasing the productivity of their farm by breeding animals that are characterized by high productivity; cultivate large areas in order to reduce their feeding costs; and modernise the buildings and equipment of their farm They should also aim to differentiate their farms by

adding value to their products, producing niche market products and establising their own retail outlets. They should try to become more market orientated in order to be in position to know, understand and meet consumers' requirements. Furthermore, the development of alternative sources of farm income such as the development of agrotourism or handicraft activities will contribute significantly to their farm income and consequently to their farm sustainability.

This study provides insights in to the reasons that affect farmers' marketing decisions and can help the policy makers and extension workers to construct their master plans regarding the programming period 2007 – 2013, in such way that they can include actions and measures that will support farmers in making investments to increase the productivity of their farm; modernise the buildings and equipment of their farm; add value to their produce; and differentiate their farm. Moreover, the stakeholders should support farmers' attempts to create agrotourism activities and alternative sources of rural income. Additionally, the improvement of the Greek cooperative system and the development of professional training courses for the Greek farmers (mainly in production, management and marketing issues) will contribute to a better future for livestock farming. Hence, the results and suggestions of this study can help the stakeholders and policy makers to have a clear understanding about the marketing behaviour of the farmers and their decision making process enabling them to design programmes that are effective in assisting farmers to upgrade their competencies. Crucially, this study can contribute to the improvement of the GDP of the two examined regions regarding the livestock sector, and to stemming the migration of young people that live in those regions.

Conclusively, this study consists of a useful preliminary study of examining farmers marketing behaviour in two Objective 1 regions in two different countries. A valid and robust methodology has been developed that can be used in order to identify farmers'

marketing behaviour in further Objective 1 regions across the U.K and Europe. Hence, developing from this we are now in a position to formulate a more generalized typology that will describe farmers' livestock and milk marketing strategies, which in turn can lead to generalisations that can be made regarding policy implications and strategic assistance by regional authorities for farmers that can be focused more precisely and effectively.

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APPENDICES

APPENDIX I

HYPOTHESES REGARDING THE MARKETING SURVEY IN THE SHEEP AND GOAT FARMERS IN THE REGION OF EAST MACEDONIA AND THRACE (EMTh) IN GREECE

H1: The sheep and goat farmers in Greece (Region of EMTh) can be classified to strategic groups regarding their livestock and milk marketing activities and business orientations.

H2: It is unlikely that the existing generic business or agricultural typologies can describe farming businesses' marketing strategies in Greece at the beginning of the third millennium.

H3: The farm and farmer's characteristics do have significant impact on the selection of a particular livestock and milk marketing strategy by the sheep and goat farmers in Greece.

H4: The factors (e.g sale price, loyalty, speed of payment) that influence sheep and goat Greek farmers to the selection of a particular livestock or milk marketing channel are significantly associated with the selection of a specific livestock or milk marketing business strategy.

H5: The identified livestock and milk marketing business strategies are significantly related to the selection of particular livestock and milk marketing channels respectively.

H6: The farm and farmer's characteristics do have significant impact on the selection of a particular livestock and milk marketing channel by the sheep and goat farmers in Greece.

H7: The examined factors (e.g sale price, loyalty, speed of payment) do have significant impact on the sheep and goat Greek farmers' selection about a particular livestock or milk marketing channel.

H8: Information sources do have significant influence to the selection of a livestock and milk marketing business strategy.

H9: The sheep and goat farmers in the Region of EMTh follow similar livestock and milk marketing strategies.

H10: The sheep and goat farmers in Greece are influenced by the same factors regarding the selection of a particular livestock and milk marketing strategy.

APPENDIX II

THE VARIABLES USED IN THE SURVEY CONDUCTED IN THE REGION OF EMTh IN GREECE REGARDING THE LIVESTOCK AND MILK MARKETING STRATEGIES FOLLOWED BY THE SHEEP AND GOAT FARMERS

SHEEP AND GOAT LIVESTOCK MARKETING STRATEGIES

A) Factors affecting the livestock distribution patterns of sheep and goat farmers in EMTh (Region of EMTh).

(i) Farm Economics (5 point Likert Scale)

V1. "I plan my production decisions by continually monitoring market prices".

V2 "I have the lowest possible input costs".

V3 "I am aware of the exact costs and returns for the meat I produce".

V4. " Maximizing profit is my most important farming goal".

V5. "Budgeting and planning to obtain the lowest possible farm costs is the most important management activity".

V6. "When I have finished my livestock I must sell immediately and cannot afford to wait for prices to improve".

V7. "I have no influence over the price I receive for my meat produce".

(ii) Production Management (5 point Likert Scale)

V8. "I continually update the production techniques I use to produce my meat".

V9. " I focus on meat production".

V10."I breed animals which require special knowledge and equipment or facilities that other farmers do not have".

V11. "I maximize meat quality by using special techniques e.g. artificial insemination".

V12. "I adapt my enterprise mix to minimize risk".

V13. "I always set a side a proportion of my flock to experiment with livestock techniques relative to meat production I am not familiar".

V14. "High animal welfare standards are important to my production methods".

V15. "Intensive production methods are important to my farm business operation".

(iii) Marketing awareness (5 point Likert Scale)

V16. "I have detailed knowledge of the distribution channels my meat pass through after it leaves the farm".

V17. "I produce specialty, niche products e.g. organic".

V18. "I deal with a minimum number of marketing outlets so that I can maintain a good relationship with these channel members e.g dairy firms".

V19. "I own or manage facilities that are normally owned by middlemen further down the meat distribution chain e.g. farm shop, meat processing plant".

V20. "I continually seek out new market outlets to sell new local milk processing plant".

V21. "I plan my production to coincide with seasonal fluctuations".

(iv) Farmers' psychological factors (5 point Likert Scale)

V22. "Sheep/Goat Producers in my area are my main competitors".

V23. "Keeping the knowledge I have from other farmers is essential to my farm profitability".

(v) External environmental issues (5 point Likert Scale)

V24. "Policies of other countries have little influence on my farm profitability relative to meat sector".

V25. "Disease is the major cause of fluctuations on my farm returns".

B) Farm Characteristics.

V26. " Size of the land the farmer farmed in the year 2001".

V27. "Size of the land that was allocated by the farmers to his sheep and goat enterprise in 2001".

V28. "Size of the total flock (sheep and goat excluded young animals) in 2001".

V29. "Volume of slaughtered sheep and goat (all ages) in 2001".

V30. "Volume of milk production in 2001".

V31 "Area of farm that the farmer owned in 2001".

V32. "Area of farm that the farmer rent or leased from other farmers in 2001".

V33. "Area of farm that the farmer rent or leased to other farmers in 2001".

C) Farmer's Characteristics.

V34. "The farmer is involved in farm related activities away from his farm e.g. Meeting in the Local Agricultural Cooperative, at market, other (YES/NO)".

V35. The farmer is working and earning income at another job away from his farm e.g. for other farmers, in a business, other (YES/NO)".

V36. "Number of years that the farmer has been involved in livestock farming (since the age of 16)".

V37. "Number of years that the farmer has been in charge of making decisions on a livestock farm".

V38. "Hold of position (by the farmer) of more responsibility than normal voting member within an agricultural cooperative (YES/NO)".

V39. "Hold of position (by the farmer) of more responsibility than normal voting member within a farming organisation (YES/NO)".

V40. "Hold of position (by the farmer) of more responsibility than normal voting member within a non farm business that the farmer own (YES/NO)".

V41. "Hold of position (by the farmer) of more responsibility than normal voting member by directing or managing a non farm business that the farmer does not own (YES/NO)".

V42. "Farmer's previous non farm working experience (YES/NO)".

V43. "What is the farmer's debt service (interest and principal payments) as a proportion of his farm income for the financial year of 2001".

V44. "What percentage of the farmer's farm income was derived from his sheep/goat enterprise".

V45. "Farmer's financial performance compared to other livestock farmers (below average, average, above average)".

V46. "Farmer's age".

V47. "Farmer's level of education".

V48. "Member of Agricultural Cooperative (YES/NO)".

V49. "Farmer's livestock prices compared to the prices of the other sheep/goat producers (below average, average, above average)".

D) Factors that influence the sheep and goat farmers in Greece(Region of EMTh) to choose a particular livestock marketing channel(5 point Linkert Scale).

V50. "Sale price".

V51. "Capability of the buyer to purchase large quantities of livestock".

V52. "Loyalty".

V53. "Speed of payment".

V54. "Personal relationships".

V55. "Monopolistic phenomena".

V56. "Experimenting with different marketing channels".

V57. "Small quantity of lambs".

V58. "The farmer is not interested in selling his livestock".

V59. "Most farmers prefer the same marketing outlet".

V60. "The farmer is interested in selling in live weight".

V61. "Local demand".

V62. "The farmer sold the lambs late".

V63. "Wholesalers issue invoices which means that the farmer will get the VAT back".

V64. "There is not enough space to stock the lambs".

V65. "The farmer get used to sell his livestock through a particular marketing channel".

V66. "Contractual obligations".

E) Type of Information sources

V67. "Newspapers".

V68. "The farmer's files".

V69. "Cooperative Organisations".

V70. "Other farmers".

V71. "Governmental Bodies".

V72. "Agricultural Journals".

V73. "TV – Radio".

V74. "Family".

V75. "Livestock dealers".

V76. "Livestock, Meat and Milk Buyers".

V77. "Representative of feed companies".

V78. "Veterinarians".

V79. "Agricultural Bank".

F) Type of Information

V80. "Livestock prices (liveweight)".

V81. "Meat prices (carcass)".

V82. "Milk prices".

V83. "Production techniques".

V84. "Animal diseases".

V85. "Finance".

V86. "Consumer preferences and attitudes".

SHEEP AND GOAT MILK MARKETING STRATEGIES

A) Factors affecting the milk distribution patterns of sheep and goat farmers in Greece (Region of EMTh).

(i) Farm Economics (5 point Likert Scale)

V1. "I plan my production decisions by continually monitoring market prices".

V2. "I have the lowest possible input costs".

V3. "I am aware of the exact costs and returns for the milk I produce".

V4. " Maximizing profit is my most important farming goal".

V5. "I have no influence over the price I receive for my milk produce".

V6. "Budgeting and planning to obtain the lowest possible farm costs is the most important management activity".

(ii) Production Management (5 point Likert Scale)

V7. "I continually update the production techniques I use to produce my milk".

V8. "I focus on milk production".

V9. "I breed animals which require special knowledge and equipment or facilities that other farmers do not have".

V10. "I maximize milk quality by using special techniques e.g. special nutrition".

V11. "I adapt my enterprise mix to minimize risk".

V12. "I always set a side a proportion of my flock to experiment with livestock techniques relative to milk production that I am not familiar".

V13. "High animal welfare standards are important to my production methods".

V14. "Intensive production methods are important to my farm business operation".

(iii) Marketing awareness (5 point Likert Scale)

V15. "I have detailed knowledge of the distribution channels that my milk passes through after it leaves the farm".

V16. "I produce specialty, niche products e.g. organic".

V17. "I deal with a minimum number of marketing outlets so that I can maintain a good relationship with these channel members e.g. dairy firms".

V18. " I own or manage facilities that are normally owned by middlemen further down the milk distribution chain, e.g. farm shop, milk processing plant".

V19. "I continually seek out new market outlets to sell new local milk processing plant".

(iv) Farmers' psychological factors (5 point Likert Scale)

V20. "Sheep/Goat Producers in my area are my main competitors".

V21. "Keeping knowledge I have from other farmers is essential to my farm profitability".

(v) External environmental issues (5 point Likert Scale)

V22. "Policies of other countries have little influence on my farm profitability relative to milk sector".

V23. "Disease is the major cause of fluctuations on my farm returns".

V24. "The Common Agricultural Policy has the most important influence over my farm profitability".

B) <u>Farm Characteristics.</u>

V25. " Size of the land that the farmer farmed in the year 2001".

V26. "Size of the land that was allocated by the farmer to his sheep and goat enterprise in 2001".

V27. "Size of the total flock (sheep and goat excluded young animals) in 2001".

V28. "Volume of slaughtered sheep and goat (all ages) in 2001".

V29. "Volume of milk production in 2001".

V30. "Area of farm that the farmer owned in 2001".

V31. "Area of farm that the farmer rent or leased from other farmers in 2001".

V32. "Area of farm that the farmer rent or leased to other farmers in 2001".

C) Farmer's Characteristics.

V33. "The farmer is involved with farm related activities away from his farm e.g. Meeting in the Local Agricultural Cooperative, at market, other (YES/NO)".

V34. " The farmer is working and earning income at another job away from his farm e.g. for other farmers, in a business, other (YES/NO)".

V35. "Number of years that the farmer has been involved in livestock farming (since the age of 16)".

V36. "Number of years that the farmer has been in charge of making decisions on a livestock farm".

V37. "Hold of position (by the farmer) of more responsibility than normal voting member within an agricultural cooperative (YES/NO)".

V38. "Hold of position (by the farmer) of more responsibility than normal voting member within a farming organisation (YES/NO)".

V39. "Hold of position (by the farmer) of more responsibility than normal voting member within a non farm business that the farmer own (YES/NO)".

V40. "Hold of position (by the farmer) of more responsibility than normal voting member by directing or managing a non farm business that the farmer does not own (YES/NO)".

V41. "Farmer's previous non farm working experience (YES/NO)".

V42. "What is the farmer's debt service (interest and principal payments) as a proportion of his farm income for the financial year of 2001".

V43. "What percentage of the farmer's farm income was derived from his sheep/goat enterprise".

V44. "Farmer's financial performance compared to other livestock farmers (below average, average, above average)".

V45. "Farmer's age".

V46. "Farmer's level of education".

V47. "Member of Agricultural Cooperative (YES/NO)".

V48. "Farmer's milk prices compared to the prices of the other sheep/goat producers (below average, average, above average)".

D) Factors influence sheep and goat farmers in Greece (Region of EMTh) to choose a particular milk marketing channel(5 point Linkert Scale).

V49. "Sale price".

V50. "Quantity of milk".

V51. "Loyalty".

V52. "Speed of payment".

V53. "Personal relationships".

V54. "Monopolistic phenomena".

V55. "Experimenting with different marketing channels".

V56. "Small quantity of lambs".

V57. "The farmer is quite old to stock the flock".

V58. "The farmers in not interested in selling his milk".

V59. "There is not buyer for the milk in the area".

V60. "Isolation of the farm".

V61. "The farmer wants to add value to his product".

V62. "The same buyer buys the cow and the sheep/goat milk".

V63. "Easy delivery of the milk".

V64. "Small distance from the marketing outlet".

V65. "Easements of payment by the buyer".

V66. "Most farmers prefer the same marketing outlet".

V67. "The farmer sold the lambs late".

V68. "The goats are free to the mountain during the daylight".

V69 "The farmer get used to sell his milk through the same marketing channel".

V70. "Focus on meat production".

V71. "The reputation of the buyer that is a good businessman".

E) Type of Information sources

V72. "Newspapers".

V73. "The farmers files".

V74. "Cooperative Organisations".

V75. "Other farmers".

V76. "Governmental Bodies".

V77. "Agricultural Journals".

V78. "TV – Radio".

V79. "Family".

V80. "Livestock dealers".

V81. "Livestock, Meat and Milk Buyers".

V82. "Representative of feed companies".

V83. "Veterinarians".

V84. "Agricultural Banks".

F) Type of Information

V85. "Livestock prices (liveweight)".

V86. "Meat prices (carcass)".

V87. "Milk prices".

V88. "Production techniques".

V89. "Animal diseases".

V90. "Finance".

V91. "Consumer preferences and attitudes".

APPENDIX III

HYPOTHESES REGARDING THE MARKETING SURVEY IN THE SHEEP AND DAIRY COW FARMERS IN THE COUNTY OF CORNWALL IN U.K.

H1: The sheep and dairy cow farmers in the County of Cornwall (U.K.) can be classified to strategic groups regarding their livestock and milk marketing activities and business orientations respectively.

H2: It is unlikely that the existing generic business or agricultural typologies can describe farming businesses' marketing strategies at the beginning of the third millennium.

H3: The farm and farmer characteristics do have significant impact to the selection of a particular livestock and milk marketing strategy by the sheep and dairy cow farmers respectively in Cornwall.

H4: The factors that influence sheep and dairy cow Cornish farmers to the selection of a particular livestock and milk marketing channel respectively are significantly associated with the selection of a specific livestock and milk marketing business strategy.

H5: The identified livestock and milk marketing strategies are significantly related to the selection of particular livestock and milk marketing channels respectively.

H6: The farm and farmer's characteristics do have significant impact to the selection of a particular livestock and milk marketing channel by the sheep and dairy cow farmers respectively in Cornwall.

H7: The factors that influence the sheep and dairy cow Cornish farmers to the selection of a particular livestock and milk marketing channel respectively are significantly related to the selection of a particular livestock and milk marketing channel.

H8: Information sources do have significant influence to the selection of a livestock and milk marketing business strategy.

H9: The sheep and dairy cow farmers in the County of Cornwall follow similar marketing strategies.

H10: The sheep and dairy cow farmers in the County of Cornwall are influenced by the same factors regarding the selection of a particular livestock and milk marketing strategy.

H11: The sheep and goat farmers in Region of EMTh (Greece) flollow similar livestock marketing strategies with the sheep farmers in the County of Cornwall (U.K).

H12: The sheep and goat farmers in Region of EMTh (Greece) are influenced by the same factors regarding the selection of a particular livestock marketing strategy with the sheep farmers in the County of Cornwall (U.K.).

H13: The sheep and goat farmers in Region of EMTh (Greece) follow similar milk marketing strategies with the dairy cow farmers in the County of Cornwall (U.K.).

H14: The sheep and goat farmers in Region of EMTh (Greece) are influenced by the same factors regarding the selection of a particular milk marketing strategy with the dairy cow farmers in the County of Cornwall (U.K.).

APPENDIX IV

THE VARIABLES USED IN THE SURVEY CONDUCTED IN THE COUNTY OF CORNWALL REGARDING MARKETING STRATEGIES FOLLOWED BY THE SHEEP AND DAIRY COW FARMERS

SHEEP LIVESTOCK MARKETING STRATEGIES

E) Factors affecting the livestock distribution patterns of sheep farmers in U.K. (County of Cornwall).

(vi) Farm Economics (5 point Likert Scale)

V1. "I plan my production decisions by continually monitoring market prices".

V2 "I have the lowest possible input costs".

V3 "I am aware of the exact costs and returns for the meat I produce".

V4. "I work out the differences in returns resulting form selling livestock via different marketing outlets e.g. livestock markets".

V5. "Maximizing profit is my most important farming goal".

V6. "I have no influence over the price I receive for my produce".

V7. "I have an easy access to capital and so farm is less constrained way compared to other farmers".

V8. "Budgeting and planning to obtain the lowest possible farm costs is the most important management activity".

V9. "When I have finished my livestock I must sell immediately and cannot afford to wait for prices to improve".

(vii) Production Management (5 point Likert Scale)

V10. "I continually update the production techniques I use to produce my meat".

V11. " I have extremely flexible production plans".

V12."I produce livestock which requires specialist knowledge and equipment or facilities that other farmers do not have".

V13. "I maximize carcass quality by using specialist techniques e.g. artificial insemination".

V14. "I use special techniques to gain the highest quality premium for my livestock."

V15. "I produce livestock which are of a different quality than those produced by other farmers."

V16. "I adapt my enterprise mix to minimize risk."

V17. "I set a side a proportion of my production flock to experiment with livestock techniques relative to meat production I am not familiar".

V18. "My most important production activity is continually monitoring the quality of my livestock".

V19. "I increase my farm business success by producing quality livestock which I sell by formal or informal contract".

V20. "I produce livestock on a trial basis for feed companies or retailers".

V21. "High animal welfare standards are important to my production methods."

V22. "Being able to trace livestock back to source is essential to my farm business operation".

V23. "Intensive production methods are important to my farm business operation".

(viii) Marketing awareness (5 point Likert Scale)

V24. "I simultaneously plan production and sale decisions".

V25. "I produce livestock which meet market requirements".

V26. "I meet market requirements by adapting my production methods".

V27. "I have detailed knowledge of the distribution channels my livestock moves through after it leaves the farm".

V28"I produce specialty, niche products e.g. organic".

V29. "I understand detailed market requirements for the livestock I produce".

V30. "I continually monitor market information other than price to plan my sales and production decisions".

V31. "I am personally involved with off farm marketing activities e.g. producer groups".

V32. "I deal with a minimum number of marketing outlets so that I can maintain a good relationship with these channel members e.g. meal processing plants".

V33. "I own or manage facilities that are normally owned by middlemen further down the meat distribution chain e.g. farm shop, meat processing plant".

V34. "I continually seek out new market outlets to sell new producer group, direct to abattoir".

V35. "I plan my production to coincide with seasonal fluctuations".

V36. "I increase my farm profitability by satisfying the buyers of my produce".

V37. "I increase my farm business success by understanding the needs and wants of the final consumer".

(ix) Farmers' psychological factors (5 point Likert Scale)

V38. "I am not in competition with overseas livestock producers".

V39. "My main competitors are a small number of special producers".

V40. "Cornish farmers are my main competitors".

V41. "Keeping knowledge I have from other farmers is essential to my farm operation".

(x) External environmental issues (5 point Likert Scale)

V42. "Policies of other countries have little influence on my farm profitability".

V43. "Disease is the major cause of fluctuations on my farm returns".

V44. "The Common Agricultural Policy has the most important influence over my farm profitability".

F) Farm Characteristics.

V45 " Size of the land the farmer farmed in the year 2002".

V46. "Size of the land that was allocated to the sheep enterprise in 2002".

V47. "Size of the total flock (sheep and goat excluded young animals) in 2002".

V48. "Volume of slaughtered sheep and goat (all ages) in 2002".

V49 "Area of farm the farmer owned in 2002".

V50. "Area of farm the farmer rent or leased from other farmers in 2002".

V51. "Area of farm the farmer rent or leased to other farmers in 2002".

V52 "Livestock quota leased to other farmers".

V53. "Livestock quota leased from other farmers".

G) Farmer's Characteristics.

V54. "The farmer is doing farm related activities away from his farm e.g. NFU meetings, producer group meetings, at market, other (YES/NO)".

V55. The farmer working and earning income at another job away from his farm e.g. for other farmers, in a business, other (YES/NO)".

V56 "Number of years the farmer has been involved in livestock farming (since the age of 16)".

V57. "Number of years the farmer has been in charge of making decisions on a livestock farm (since the age of 16)".

V58. "Number of years the farmer worked on the current farm (since the age of 16)".

V59. "Number of years the farmer has been in charge of making decisions of his current farm (since the age of 16)".

V60. "Hold of position (by the farmer) of more responsibility than normal voting member with a marketing cooperative (YES/NO)".

V61. "Hold of position (by the farmer) of more responsibility than normal voting member with a farming organisation (YES/NO)".

V62. "Hold of position (by the farmer) of more responsibility than normal voting member with a non farm business the farmer own (YES/NO)".

V63. "Hold of position (by the farmer) of more responsibility than normal voting member by directing or managing a non farm business that the farmer does not own (YES/NO)".

V64. "Years of farmer's previous non farm working experience".

V65. "What is the farmer's debt service (interest and principal payments) as a proportion of his farm income for the financial year of 2002".

V66. "What percentage of the farmer's farm income came from his sheep enterprise".

V67. "Farmer's financial performance compared to other livestock farmers (below average, average, above average)".

V68. "Farmer's age".

V69. "Farmer's level of education".

V70 "Is the farm located in Less Favoured Area (YES/NO).

V71. "Member of a Group Marketing Scheme (YES/NO)".

V72. "The distance the farmer's livestock has to travel to his main marketing channel".

V73. Which classification categories the majority of the farmer's livestock falls into the Carcass Classification Grid".

V74. "Farmer's livestock prices compared to the prices of other sheep/goat producers (below average, average, above average)".

V75. "Use of adding value activities".

H) Factors influence sheep farmers in U.K. (County of Cornwall) to choose a particular livestock marketing channel(5 point Likert Scale).

V76 "Sale price".

V77. "Transportation cost".

V78. "Marketing cost".

V79. "Information about prices".

V80. "Farmer's time".

V81. "Loyalty".

V82. "Convenience".

V83. "Competitive offers".

V84. "Access to more buyers".

V85. "Grading uncertainty".

V86. "Experimenting with different marketing channels".

V87. "Higher expected returns".

V88. "Speed of payment".

V89. "Quality of livestock".

V90. "Social aspects".

V91. "Contractual obligations".

V92. "Proximity to farm".

V93. "Animal welfare".

V94. "Bargaining strength".

V95. "Ability to withdraw livestock".

V96. "Easy for parking, unloading and cleaning vehicles".

E) Type of Information sources

V97. "Land Agents/Auctioneers".

V98. "Agricultural journals".

V99. "Radio / TV".

V100 "My bank manager".

V101. "Other farmers".

V102. "Family members".

V103. "Livestock dealers".

V104. "Feed company representatives".

V105. "Business consultants".

V106. "Newspapers".

V107. "The farmers files".

V108. "Trade literature".

V109. "Meat and Livestock Commission".

V110 "Governmental Bodies".

V111. "Farmer's accountant".

V112. "National Farmers Union".

V113. "Producer Group".

V114. "Abattoir Agents".

V115. "Internet".

V116. "Marketing Groups".

F) Type of Information

V117 "National livestock prices".

V118 "Local livestock prices".

V119 "Overseas livestock prices".

V120 "Quality premia / penalties".

V121 "Production techniques".

V122 "Management practices".

V123 "Animal diseases".

V124 "Consumer information".

V125 "Financial".

V126 "Producer group information".

V127 "Classification".

DAIRY COW MILK MARKETING STRATEGIES

A) Factors affecting the milk distribution patterns of dairy cow farmers in U.K. (County of Cornwall).

(i) Farm Economics (5 point Likert Scale)

V1. "I plan my production decisions by continually monitoring market prices".

V2 "I have the lowest possible input costs".

V3 "I am aware of the exact costs and returns for the milk I produce".

V4. "I work out the differences in returns resulting from selling milk via different marketing outlets e.g. milk processing plants".

V5. "Maximizing profit is my most important farming goal".

V6. "I have no influence over the price I receive for my produce".

V7. "I have an easy access to capital and so farm is less constrained way compared to other farmers".

V8. "Budgeting and planning to obtain the lowest possible farm costs is the most important management activity".

V9. "When I have finished my livestock I must sell immediately and cannot afford to wait for prices to improve".

(ii) Production Management (5 point Likert Scale)

V10. "I continually update the production techniques I use to produce my milk".

V11. " I have extremely flexible production plans".

V12."I breed dairy cows which requires special knowledge and equipment or facilities that other farmers do not have".

V13. "I maximize milk quality by using special techniques e.g. artificial insemination".

V14. "I use special techniques to gain the highest quality premium for my milk".

V15. "I produce a different quality milk than those produced by other farmers".

V16. "I adapt my enterprise mix to minimize risk".

V17. "I set a side a proportion of my production herd to experiment with livestock techniques I am not familiar".

V18. "My most important production activity is continually monitoring the quality of my milk".

V19. "High animal welfare standards are important to my production methods".

(iii) Marketing awareness (5 point Likert Scale)

V20. "I simultaneously plan production and sale decisions".

V21. "I produce milk which meets market requirements".

V22. "I meet market requirements by adapting my production methods".

V23. "I have detailed knowledge of the distribution channels my milk moves through after it leaves the farm".

V24"I produce specialty, niche products e.g. organic".

V25. "I understand detailed market requirements for the milk I produce".

V26. "I continually monitor market information other than price to plan my sale and production decisions".

V27. "I am personally involved with off farm marketing activities e.g. producer groups".

V28. "I deal with a minimum number of marketing outlets so that I can maintain a good relationship with these channel members e.g. milk marketing cooperative group, big national dairy company".

V29. "I own or manage facilities that are normally owned by middlemen further down the milk distribution chain e.g. milk processing plant".

V30. "I continually seek out new market outlets to sell e.g. new dairy company".

V31. "I increase my farm profitability by satisfying the buyers of my produce".

V32. "I increase my farm business success by understanding the needs and wants of the final consumer".

(iv) Farmers' psychological factors (5 point Likert Scale)

V33. "I am not in competition with overseas dairy cow producers".

V34. "My main competitors are a small number of special producers".

V35. "Cornish farmers are my main competitors".

V36. "Keeping knowledge I have from other farmers is essential to my farm operation".

(xi) External environmental issues (5 point Likert Scale)

V37. "Policies of other countries have little influence on my farm profitability".

V38. "Disease is the major cause of fluctuations on my farm returns".

V39. "The Common Agricultural Policy has the most important influence over my farm profitability".

B) Farm Characteristics.

V40 " Size of the land the farmer farmed in the year 2002".

V41. "Size of the land that was allocated to the dairy cow enterprise in 2002".

V42. "Size of the total herd in 2002".

V43. "Volume of milk production in 2002".

V44 "Area of farm the farmer owned in 2002".

V45. "Area of farm the farmer rent or leased from other farmers in 2002".

V46. "Area of farm the farmer rent or leased to other farmers in 2002".

V47. "Milk quota leased to other farmers".

V48. "Milk quota leased from other farmers".

C) Farmer's Characteristics.

V49. "The farmer is doing farm related activities away from his farm e.g. NFU meetings, producer group meetings, at market, other (YES/NO)".

V50. The farmer is working and earning income at another job away from his farm e.g. for other farmers, in a business, other (YES/NO)".

V51 "Number of years the farmer has been involved in dairy farming (since the age of 16)".

V52. "Number of years the farmer has been in charge of making decisions on a dairy farm (since the age of 16)".

V53. "Number of years the farmer worked on the current farm (since the age of 16)".

V54. "Number of years the farmer has been in charge of making decisions of his current farm (since the age of 16)".

V55. "Hold of position (by the farmer) of more responsibility than normal voting member within a milk marketing cooperative group (YES/NO)".

V56. "Hold of position (by the farmer) of more responsibility than normal voting member within a farming organisation (YES/NO)".

V57. "Hold of position (by the farmer) of more responsibility than normal voting member within a non farm business the farmer own (YES/NO)".

V58. "Hold of position (by the farmer) of more responsibility than normal voting member by directing or managing a non farm business that the farmer does not own (YES/NO)".

V59. "Years of farmer's previous non farm working experience".

V60. "What is the farmer's debt service (interest and principal payments) as a proportion of his farm income for the financial year of 2002".

V61. "What percentage of the farmer's farm income came from his dairy cow enterprise".

V62. "Farmer's financial performance compared to other dairy cow farmers (below average, average, above average)".

V63. "Farmer's age".

V64. "Farmer's level of education".

V65 "Is the farm located in Less Favoured Area (YES/NO).

V66. "Member of a Group Marketing Scheme (YES/NO)".

V67. "Farmer's livestock prices compared to the prices of other sheep/goat producers (below average, average, above average)".

V68. "Use of adding value activities".

D) Factors influence dairy cow farmers in U.K. (County of Cornwall) to choose a particular livestock marketing channel(5 point Likert Scale).

V69. "Sale price".

V70. "Transportation cost".

V71. "Marketing cost".

V72. "Information about prices".

V73. "Farmer's time".

V74. "Loyalty".

V75. "Convenience".

V76. "Competitive offers".

V77. "Grading uncertainty".

V78. "Experimenting with different marketing channels".

V79. "Higher expected returns".

V80. "Speed of payment".

V81. "Quality of livestock".

V82. "Social aspects".

V83. "Contractual obligations".

V84. "Bargaining strength".

E) Type of Information sources

V85. "Land Agents".

V86. "Agricultural journals".

V87. "Radio / TV".

V88 "My bank manager".

V89. "Other farmers".

V90. "Family members".

V91. "Livestock dealers".

V92. "Feed company representatives".

V93. "Business consultants".

V94. "Newspapers".

V95. "The farmers files".

V96. "Trade literature".

V97. "Milk Development Council".

V98 "Governmental Bodies".

V99. "Farmer's accountant".

V100. "National Farmers Union".

V101. "Milk Marketing Group".

V102. "Dairy Companies ".

V103. "Internet".

V104. "Veterinarian".

F) Type of Information

V105 "National milk prices".

V106 "Local milk prices".

V107 "Overseas milk prices".

V108 "Quality premia / penalties".

V109 "Production techniques".

V110 "Management practices".

V111 "Animal diseases".

V112 "Consumer information".

V113 "Financial".

V114 "Milk Marketing group information".

APPENDIX V

SUPPORTING LETTER BY THE PRESIDENT OF THE PREFECTURAL AUTHORITY OF DRAMA – KAVALA – XANTHI REGARDING THE MARKETING SURVEY IN THE SHEEP AND GOAT FARMERS IN THE REGION OF EMTh in GREECE

HELLENIC DEMOCRACY
PREFECTURAL AUTHORITY
OF DRAMA – KAVALA -XANTHI
CENTRAL OFFICE

Central Square and Thermopilon 1
67100, Xanthi, Greece
Tel: +30 541 070108
Fax: +30 541 070109
E-mail: pref-dkx@otenet.gr

Xanthi 17/ 04/ 2002
Reg. No: 628 d25

DECLARATION

We declare that Mr Lamcros Tsourgiannis who work as an economist in our office, s supported (by the Prefecture of Drama – Kavala – Xanthi , Central Office) in his scientific survey which is referred to the sheep and goat producers of East Macedonia and Thrace.

This survey is part of his doctoral thesis entitled "Marketing Strategies of Agricultural Producers in Objective . Regions A comparative study between Greece and United Kingdom" The Prefecture of Drama – Kavala – Xanthi Central Office is very interested in it, as it is referred to a very important sector of prefecture's economy and of the whole regional economy too

The President
Prefectural Authority
of Drama – Kavala - Xanthi

Konstantinos Tatsis

XXX

APPENDIX VI

COVERING LETTERS REGARDING THE MARKETING SURVEYS IN THE SHEEP AND DAIRY COW FARMERS IN THE COUNTY OF CORNWALL IN U.K.

Covering letter used for the marketing survey in the sheep farmers in Cornwall

Survey supported by:

Facultyof Land, Food and Leisure
Seale Hayne Campus

University of Plymouth
Newton Abbot
Devon TQ12 6NQ

Tel. 01626 325664
Fax. 01626 325657
e-mail: ltsourgiannis@plymouth.ac.uk

1st July 2003

Dear NFU member

LIVESTOCK MARKETING SURVEY FOR FINISHED LAMB IN CORNWALL

I am currently studying for a PhD entitled "Marketing strategies of livestock enterprises in Objective One Regions: A comparative study between Greece and United Kingdom". As you are no doubt aware there have been major structural changes in meat and livestock distribution over recent years for a variety of reasons (including the Foot and Mouth Outbreak) resulting in significant changes in the way livestock is sold.

The primary aim of the enclosed survey is to investigate the reasons livestock producers select a particular marketing channel (e.g. livestock markets, direct to abattoir, electronic auctions), to establish if there is a link between farm/farmer characteristics and the channels they select and to identify changes in the use of marketing channels due to the recent Foot and Mouth outbreak.

I am using essentially the same questionnaire that I used last spring in the North East part of Greece (which is similar in population size to Cornwall). I plan to make a comparison between the types of marketing channel used by farmers in the two study areas.

Very little research has so far been undertaken on this topic and the supporting organizations acknowledge the importance of developing a greater understanding of the types of marketing strategies that farmers adopt in response to the increasing pressures that confront them.

This research has the full support of the National Farmers Union (who have kindly allowed me to use their membership database) according to following statement:

"The NFU fully supports the research that Lambros is undertaking. The foot and mouth disease outbreak of 2001 had a serious impact on so many areas of the agricultural industry and the wider economy of the South West region. We look forward to seeing the results of this study.

I would be extremely grateful if you could complete the questionnaire and return in the enclosed pre-paid envelope. Every completed questionnaire that is returned to me will make the research results more accurate and effective. Whilst I realize that the questionnaire is long, you will see that the majority of questions may be simply answered by either entering a number in a box or by a tick and should take approximately 20 minutes to complete.

I would like to emphasize that all the information collected **will be treated in the strictest confidence** and it will not be possible to identify any data given by any particular producer in the research results.

I would like to thank you in advance for your co-operation and assistance and look forward to receiving the questionnaire by the closing date: Thursday 31st of July 2003.

Yours Sincerely

Lambros Tsourgiannis
Postgraduate Research Student

Reminding letter used for the marketing survey in the sheep farmers in Cornwall

Survey supported by:

NFU

Faculty of Land, Food and Leisure
Seale Hayne Campus

University of Plymouth
Newton Abbot
Devon TQ12 6NQ

Tel. 01626 325664
Fax. 01626 325657
e-mail: ltsourgiannis@plymouth.ac.uk

18st August 2003

Dear NFU member

LIVESTOCK MARKETING SURVEY FOR FINISHED LAMB IN CORNWALL

I wrote you little while ago asking if you would kindly help me with the above survey.

If you have returned the questionnaire, I thank you very much indeed for your help and apologise for troubling you unnecessarily.

If however you have not been able to reply, I very much hope that you will find it possible to answer the questionnaire and returned it to me in the pre-paid envelope provided. I appreciate that you have pressures on your valuable time but in order to make the research results as effective and accurate as possible I would like to ensure that the survey is as complete as possible.

The primary aim of the enclosed survey is to investigate the reasons livestock producers select a particular marketing channel (e.g. livestock markets, direct to abattoir, electronic auctions), to establish if there is a link between farm/farmer characteristics and the channels they select and to identify changes in the use of marketing channels due to the recent Foot and Mouth outbreak.

I am using essentially the same questionnaire that I used last spring in the North East part of Greece (which is similar in population size to Cornwall). I plan to make a comparison between the types of marketing channel used by farmers in the two study areas

This research has the full support of the National Farmers Union (who have kindly allowed me to use their membership database). Very little research has so far been undertaken on this topic and the supporting organizations acknowledge the importance of developing a greater understanding of the types of marketing strategies that farmers adopt in response to the increasing pressures that confront them.

I would like to emphasize that all the information collected **will be treated in the strictest confidence** and it will not be possible to identify any data given by any particular producer in the research results.

I would like to thank you in advance for your co-operation and assistance and look forward to receiving the questionnaire by the closing date: Monday 8th September 2003

Yours Sincerely

Lambros Tsourgiannis
Postgraduate Research Student

Covering letter used for the marketing survey in the dairy cow farmers in Cornwall

Survey supported by:

Faculty of Land, Food and Leisure
Seale Hayne Campus

University of Plymouth
Newton Abbot
Devon TQ12 6NQ

Tel. 01626 325664
Fax. 01626 325657
e-mail: ltsourgiannis@plymouth.ac.uk

1st July 2003

Dear NFU member

LIVESTOCK MARKETING SURVEY FOR COW MILK IN CORNWALL

I am currently studying for a PhD entitled "Marketing strategies of livestock enterprises in Objective One Regions: A comparative study between Greece and United Kingdom". As you are no doubt aware there have been major structural changes in milk distribution over recent years for a variety of reasons (including the Foot and Mouth Outbreak) resulting in significant changes in the way milk is sold.

The primary aim of the enclosed survey is to investigate the reasons dairy producers select a particular marketing channel (e.g. dairy firms, local milk processing plants, milk marketing cooperative groups), to establish if there is a link between farm/farmer characteristics and the channels they select and to identify changes in the use of marketing channels due to the recent Foot and Mouth outbreak.

I am using essentially the same questionnaire that I used last spring in the North East part of Greece (which is similar in population size to Cornwall). I plan to make a comparison between the types of marketing channel used by farmers in the two study areas.

Very little research has so far been undertaken on this topic and the supporting organizations acknowledge the importance of developing a greater understanding of the types of marketing strategies that farmers adopt in response to the increasing pressures that confront them.

This research has the full support of the National Farmers Union (who have kindly allowed me to use their membership database) according to following statement:

"The NFU fully supports the research that Lambros is undertaking. The foot and mouth disease outbreak of 2001 had a serious impact on so many areas of the agricultural industry and the wider economy of the South West region. We look forward to seeing the results of this study."

I would be extremely grateful if you could complete the questionnaire and return in the enclosed pre-paid envelope. Every completed questionnaire that is returned to me will make the research results more accurate and effective. Whilst I realize that the questionnaire is long, you will see that the majority of questions may be simply answered by either entering a number in a box or by a tick and should take approximately 20 minutes to complete.

I would like to emphasize that all the information collected **will be treated in the strictest confidence** and it will not be possible to identify any data given by any particular producer in the research results.

I would like to thank you in advance for your co-operation and assistance and look forward to receiving the questionnaire by the closing date: Thursday 31st July 2003

Yours Sincerely

Lambros Tsourgiannis
Postgraduate Research Student

Reminding letter used for the marketing survey in the dairy cow farmers in Cornwall

Survey supported by:

Faculty of Land, Food and Leisure
Seale Hayne Campus

University of Plymouth
Newton Abbot
Devon TQ12 6NQ
Tel. 01626 325664
Fax. 01626 325671
e-mail: ltsourgiannis@plymouth.ac.uk

18st August 2003

Dear NFU member

LIVESTOCK MARKETING SURVEY FOR COW MILK IN CORNWALL

I wrote you little while ago asking if you would kindly help me with the above survey.

If you have returned the questionnaire, I thank you very much indeed for your help and apologise for troubling you unnecessarily.

If however you have not been able to reply, I very much hope that you will find it possible to answer the questionnaire and returned it to me in the pre-paid envelope provided. I appreciate that you have pressures on your valuable time but in order to make the research results as effective and accurate as possible I would like to ensure that the survey is as complete as possible.

The primary aim of the enclosed survey is to investigate the reasons dairy producers select a particular marketing channel (e,g. dairy firms, local milk processing plants, milk marketing cooperative groups), to establish if there is a link between farm/farmer characteristics and the channels they select and to identify changes in the use of marketing channels due to the recent Foot and Mouth outbreak.

I am using essentially the same questionnaire that I used last spring in the North East part of Greece (which is similar in population size to Cornwall). I plan to make a comparison between the types of marketing channel used by farmers in the two study areas

This research has the full support of the National Farmers Union (who have kindly allowed me to use their membership database). Very little research has so far been undertaken on this topic and the supporting organizations acknowledge the importance of developing a greater understanding of the types of marketing strategies that farmers adopt in response to the increasing pressures that confront them.

I would like to emphasize that all the information collected **will be treated in the strictest confidence** and it will not be possible to identify any data given by any particular producer in the research results.

I would like to thank you in advance for your co-operation and assistance and look forward to receiving the questionnaire by the closing date: Monday 8th September 2003

Yours Sincerely

Lambros Tsourgiannis
Postgraduate Research Student

APPENDIX VII

QUESTIONNAIRE USED FOR THE MARKETING SURVEY IN THE SHEEP AND GOAT FARMERS IN THE REGION OF EMTh in GREECE

University of Plymouth, U.K.
Seale-Hayne Faculty of Land, Food and Leisure

MARKETING SURVEY
IN SHEEP MEAT AND MILK SECTOR
IN THE REGION OF EAST MACEDONIA AND THRACE

PART 1: CHOICE CRITERIA FOR SELECTING MARKETING CHANNELS IN THE MEAT SECTOR

1. **Please indicate in the following boxes the methods of sale you used in the year 2001 in percentage terms** (e.g. direct sales to retailers 50%, direct to wholesalers 40%, direct to abattoir operating as wholesalers, 10%).

Direct to Retailers ☐

Direct to Wholesalers ☐

Direct to consumers (livestock) ☐

Direct to consumers (carcass) through butcher shop you might own ☐

Other method (Please state) ..... ☐

2. **Please indicate in the following boxes how many different sales channels you used during 2001** (e.g. direct sales to 3 retailers, direct to 2 wholesalers, direct to 1 abattoir operating as wholesalers).

Direct to Retailers ☐

Direct to Wholesalers ☐

Direct to consumers (livestock) ☐

Direct to consumers (carcass) through butcher shop you might own ☐

Other method (Please state) ..... ☐

3. Please indicate the relative importance of the following factors taken into account when selecting a marketing channel. Please respond to every factor and print the appropriate number of the following rate (between 1-5) in every box below.

Rate:

Not at all Important	*Not very important*	*Moderately Important*	*Important*	*Very Important*
1	*2*	*3*	*4*	*5*

Sale Price ☐ Personal relationships ☐

Capability of buyer to purchase great quantities of meat ☐ Monopolistic effect ☐

Loyalty ☐ Experimenting with different marketing channels ☐

Speed of payment ☐ Other (please specify)..... ☐

4. Please indicate if you are a member of any kind of Agricultural Cooperative

Yes ☐ No ☐

If **Yes** please specify in which Agricultural Cooperative you are a member of:
(e.g. Agricultural Cooperative of Tichero)

.....

.....

5. Compared to other sheep producers in your area, do you consider your livestock prices to be :

Below Average ☐ Average ☐ Above Average ☐

PART II: CHOICE CRITERIA FOR SELECTING MARKETING CHANNELS IN MILK SECTOR

1. **Please indicate in the following boxes the methods of sale you used in the year 2001 in percentage terms** (e.g. sales to local private milk processing plant 50%, sales to local cooperative milk processing plant 40%, sales to big national dairy companies, 10%).

Sales to Local Private Milk Processing Plant ☐

Sales to Local Cooperative Milk processing Plant ☐

Sales to Big National Dairy Companies ☐

Feed to lambs or kids ☐

Other method (Please state) ..... ☐

2. **Please indicate in the following boxes how many different sales channels did you used during 2001** (e.g. sales to 2 local private milk processing plant, sales to 1 local cooperative milk processing plant and sales to 2 big national dairy companies, 10%).

Sales to Local Private Milk Processing Plant ☐

Sales to Local Cooperative Milk processing Plant ☐

Sales to Big National Dairy Companies ☐

Feed to lambs or kids ☐

Other method (Please state) ..... ☐

3. **Please indicate the relative importance of the following factors taken into account when selecting a marketing channel. Please respond to every factor and print the appropriate number of the following rate (between 1-5) in every box below.**

Rate:

Not at all Important	*Not very important*	*Moderately Important*	*Important*	*Very Important*
1	*2*	*3*	*4*	*5*

Sale Price	☐	Personal relationships	☐
Quantity of milk	☐	Monopolistic effect	☐
Loyalty	☐	Experimenting with different marketing channels	☐
Speed of payment	☐	Other (please specify).....	☐

4. **Compared to other sheep producers in your area, do you consider your milk prices to be :**

Below Average ☐ Average ☐ Above Average ☐

PART III: MANAGEMENT ACTIVITIES AND ATTITUDES

Please print the appropriate number of the scale below in the box beside each of the following questions

1. To what extent do you orientate your farm business operation towards each of the following:

Rate:

Not at all		*To some extent*		*To a great extent*
1	*2*	*3*	*4*	*5*

a. I plan my production decisions by continually monitoring market prices ☐

b. I have the lowest possible input costs ☐

c. I am aware of the exact costs and returns for the meat I produce ☐

d. I am aware of the exact costs and returns for the milk I produce ☐

e. I continually update the production techniques I use to produce my meat ☐

f. I continually update the production techniques I use to produce my milk ☐

g. I have detailed knowledge of the distribution channels my meat passes through after it leaves the farm ☐

h. I have detailed knowledge of the distribution channels my milk passes through after it leaves the farm ☐

i. I focus on meat production ☐

j. I focus on milk production ☐

k. I produce specialty, niche market products e.g. organic ☐

l. I breed animals which requires special knowledge, equipment or facilities that other farmers do not have ☐

m. I maximize meat quality by using special techniques e.g. artificial insemination ☐

n. I maximize milk quality by using special techniques e.g. special nutrition ☐

o. I deal with a minimum number of marketing outlets so that I can maintain a good relationship with these channel members e.g. dairy firms ☐

p. I own or manage facilities that are normally owned by middlemen further down the meat distribution chain e.g. farm shop, meat processing plant ☐

q. I own or manage facilities that are normally owned by middlemen further down the milk distribution chain e.g. farm shop, milk processing plant ☐

r. I continually seek out new marketing outlets to sell e.g. new local milk processing plants ☐

s. I plan my production to coincide with seasonal fluctuations ☐

2. To what extent do you agree with the following statements:
Please print the appropriate number of the scale below in the box beside each of the following questions

Rate:

Strongly Disagree	*Disagree*	*Neither Agree nor Disagree*	*Agree*	*Strongly Agree*
1	*2*	*3*	*4*	*5*

a. Maximizing profit is my most important farming goal ☐

b. I have no influence over the price I receive for my meat produce ☐

c. I have no influence over the price I receive for my milk produce ☐

d. Policies of other countries have little influence on my farm profitability relative to meat sector ☐

e. Policies of other countries have little influence on my farm profitability relative to milk sector ☐

f. I adapt my enterprise mix to minimize risk ☐

g. Disease is the major cause of fluctuations on my farm returns ☐

h. The Common Agricultural Policy has the most important influence over my farm profitability ☐

i. Budgeting and planning to obtain the lowest possible farm costs is the most important management activity I undertake ☐

j. When I have finished my livestock I must sell immediately and cannot afford to wait for prices to improve ☐

k. I always set a side of proportion of my production flock to experiment with livestock techniques relative to meat production I am not familiar ☐

l. I always set a side of proportion of my production flock to experiment with livestock techniques relative to milk production I am not familiar ☐

m. Sheep/Goat Producers in my area are my main competitors ☐

n. Keeping knowledge I have from other producers is essential to my farm business operation ☐

o. High animal welfare standards are important to my production methods ☐

p. Intensive production methods are important to my farm business operation ☐

PART IV: INFORMATION SOURCES

1. Please indicate the relative importance of the *information sources* you use
Please respond to each information source and print the appropriate number of the scale below in every box.

Rate:

Not at all Important	*Not very Important*	*Moderately Important*	*Important*	*Very Important*
1	*2*	*3*	*4*	*5*

Newspapers	☐	TV – Radio	☐
My own files	☐	Family	☐
Cooperative Organisations	☐	Livestock dealers	☐
Other farmer	☐	Milk and Meat Buyers	☐
Govermental Bodies	☐	Representatives of feed companies	☐
Agricultural Journals	☐	Other source (please specify).....	☐

2. Please indicate the relative importance of the *types of information* you use.
Please respond to each information type and print the appropriate number of the scale below in every box.

Rate:

Not at all Important	*Not very important*	*Moderately Important*	*Important*	*Very Important*
1	*2*	*3*	*4*	*5*

Livestock prices	☐	Animal diseases	☐
Meat prices	☐	Financial	☐
Milk prices	☐	Consumer preferences and attitudes	☐
Production techniques	☐	Other (Please specify).....	☐

PART V: MARKETING OR VALUE ADDED QUESTIONS

If you produce specialist or niche market products, or further process, market or add value to your produce please give brief details e.g if you produce Products with Protected Origin Name like FETA cheese or organic meat etc.

.....

.....

.....

PART VI GENERAL FARM CHARACTERISTICS

Please print your answer to the boxes

1. How many hectares of land do you farm? ☐

2. Approximately how many hectares of land are allocated to your sheep enterprise (for feed production)? ☐

3. How many sheep is the size of your flock excluded lambs

4. How many goats is the size of your flock excluded kids

5. How many sheep under the age of 5 months did you sell (for slaughtering) during the years of 2001? (please print the number of heads)

6.How many sheep over the age of 5 months did you sell (for slaughtering) during the years of 2001? (please print the number of heads)

7. How many goats under the age of 5 months did you sell (for slaughtering) during the years of 2001? (please print the number of heads)

8.How many goats over the age of 5 months did you sell (for slaughtering) during the years of 2001? (please print the number of heads)

9.What quantity of milk did you sell during the years of 2001? (please print the quantity in kg)

10. What quantity of milk did you keep for your self-consumption during the years of 2001? (please print the quantity in kg)

11. What area of farm do you
    a. Own
    b. Rent or lease from others
    c. Rent or lease to others

PART VII GENERAL FARMER'S CHARACTERISTICS

Please print your answer to the boxes

1. How many working days a month do you usually spend away from the farm: (please print the number of days)
    a. doing farm related activities

       (e.g. Local Agric.Union of Cooperatives meetings, at market, or others)

    b. working and earning income at another job

       (e.g. for other farmers, in a business, or others)

2. Since the age of 16, approximately how many years have you: (please print a number)
    a. been involved in livestock farming
    b. been in charge of making decisions on a livestock farm

3. Please indicate if you hold positions of more responsibility than normal voting members:
(please tick the relevant boxes)

a. with an agricultural co-operative ☐

b. with a farming organization e.g. Local Agric.Union of Cooperatives ☐

c. with a non farm business you own ☐

d. by directing or managing a non-farm business you don't own ☐

4. If you have previous non – farm working experience please state:

Type of Job	Years Worked
.....	.....
.....	.....

5. What is your approximate debt service (interest and principal payments) as a proportion of your farm income for the financial years 2001?

0-9%	10-19%	20-29%	30-39%	40%+	Don't know
☐	☐	☐	☐	☐	☐

6. Approximately what percentage of your farm income came from your sheep enterprise for the year 2001?

0-24%	25-49%	50-69%	70-79%	80%-89%	90%+
☐	☐	☐	☐	☐	☐

7. Compared to other livestock farmers in your area do you consider your financial performance to be :

Below Average ☐ Average ☐ Above Average ☐

8. Please indicate your age: (tick one box)

Under 30	31-40	41-50	51-60	61-70	71 and over
☐	☐	☐	☐	☐	☐

9. Please indicate the level of education achieved: (tick one box)

Primary	Secondary	High School	Technical Education	Institute of Professional Training (IEK)
☐	☐	☐	☐	☐

Highest Institute of Tecchnical Education (TEI)	Degree	Postgraduate
☐	☐	☐

10. Please add any further comments you may have:

.....

.....

.....

.....

APPENDIX VIII

QUESTIONNAIRES USED FOR THE MARKETING SURVEY IN THE SHEEP AND DAIRY COW FARMERS IN THE COUNTY OF CORNWALL IN U.K.

Supported by:

NFU

University of Plymouth, U.K.
Seale-Hayne Faculty of Land, Food and Leisure

UNIVERSITY OF PLYMOUTH

MARKETING SURVEY IN SHEEP SECTOR IN THE COUNTY OF CORNWALL

PART I: CHOICE CRITERIA FOR SELECTING MARKETING CHANNELS

6. **Please indicate in the following boxes the methods of sale you used in the year 2002 in percentage terms** (e.g. direct sales to abattoir 50%, livestock markets 40%, electronic auctions, 10%).

Livestock Market	
Electronic Auction	
Direct to Abattoir	
Direct to Abattoir via Group Marketing Schemes	
Direct to consumers (livestock)	
Direct to consumers (carcass) through a butcher shop you might own	
Livestock dealer	
Other method (Please state)	

7. **Please indicate in the following boxes how many different sales channels did you used during 2002** (e.g. 3 different abattoir, 1 electronic auction and 2 livestock markets)

Livestock Market	
Electronic Auction	
Direct to Abattoir	
Direct to Abattoir via Group Marketing Schemes	
Direct to consumers (livestock)	
Direct to consumers (carcass) through a butcher shop you might own	
Livestock dealer	
Other method (Please state)	

8. Please indicate the relative importance of the following factors taken into account when selecting a marketing channel. Please respond to every factor and print the appropriate number of the following rate (between 1-5) in every box below.

Rate:

Not at all important	**Not very important**	**Moderately Important**	**Important**	**Very Important**
1	**2**	**3**	**4**	**5**

Sale price	☐	Transportation cost	☐
Marketing costs	☐	Information about the prices	☐
Loyalty	☐	Your time	☐
Competitive offers	☐	Convenience	☐
Grading uncertainty	☐	Access to more buyers	☐
Higher expected returns	☐	Experimenting with	☐
Quality of livestock	☐	different marketing channels	
Contractual Obligations	☐	Speed of payment	☐
Proximity to Farm	☐	Social Aspects	☐
Animal welfare	☐	Bargaining strength	☐
Ability to withdraw livestock	☐	Other reason (please specify)	☐

Please indicate if you are a member of a Group Marketing Scheme

Yes ☐ No ☐

If **Yes** please specify in which Group Marketing Scheme you are a member of:
(e.g. Cooperatives: Cornwall Quality Livestock Producers, Producer Clubs: Tesco)
.....
.....

9. Please indicate the distance (miles) your livestock has to travel to your main marketing channel(e.g. livestock market, abattoir)**:**

1-50	☐	151-200	☐	301-350	☐
51-100	☐	201-250	☐	351-400	☐
101-150	☐	251-300	☐	400 and over	☐
If you **Don't Know**, please tick to the next box				Don't know	☐

10. Please enter on the Carcass Classification Grid below which classification categories the majority of your livestock falls into: (e.g.2R, 3L-O)

Please tick the appropriate categories

If you don't know , please tick the next box Don't know ☐

Fatness

Conformation	1	2	3L	3H	4L	4H	5
E							
U							
R							
O							
P							

11. Compared to other sheep producers, do you consider your livestock prices to be :

Below Average ☐ About Average ☐ Above Average ☐

PART II: MANAGEMENT ACTIVITIES AND ATTITUDES

Please print the appropriate number of the scale below in the box beside each of the following questions

11. To what extent do you orientate your farm business operation towards each of the following:

Rate:

Not Extent		**To some extent**		**Iligh extent**
1	**2**	**3**	**4**	**5**

a. I plan my production decisions by continually monitoring market prices ☐

b. I simultaneously plan production and sales decisions ☐

c. I have the lowest possible input costs ☐

d. I am aware of the exact costs and returns for the livestock I produce ☐

e. I produce livestock which meet market requirements ☐

f. I continually update the production techniques I use to produce my livestock ☐

g. I have extremely flexible production plans ☐

h. I meet market requirements by adapting my production methods ☐

i. I have detailed knowledge of the distribution channels my livestock moves through after it leaves the farm. ☐

j. I produce specialty, niche market livestock e.g. organic. ☐

k. I produce livestock which requires special knowledge, equipment of facilities that other farmers do not have ☐

l. I understand detailed market requirements for the livestock I produce. ☐

m. I continually monitor market information other than price to plan my sales and production decisions ☐

n. I am personally involved in off farm marketing activities e.g. producer groups ☐

o. I maximize carcass quality by using special techniques e.g.artificial insemination ☐

p. I deal with a minimum number of marketing outlets so that I can maintain a good relationship with these channel members e.g. livestock market, abattoir ☐
q. I own or manage facilities that are normally owned by middlemen further down the distribution chain e.g. farm shop, slaughterhouse, haulage business, meat processing plant etc. ☐
r. I use special techniques to gain the highest quality premium for my livestock ☐
s. I continually seek out new market outlets to sell e.g new producer group, direct to butchers ☐
t. I work out the differences in returns resulting from selling livestock via different marketing outlets e.g. livestock markets, direct to abattoir ☐
u. I plan my production to coincident with seasonal fluctuations. ☐

12. To what extent do you agree with the following statements:
Please print the appropriate number of the scale below in the box beside each of the following questions

Rate:

Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Aggree
1	2	3	4	5

a. Maximizing profit is my most important farming goal ☐
b. I have no influence over the price I receive for my produce ☐
c. I produce livestock which are of a different quality than those produced by other farmers ☐
d. Policies of other countries have little influence on my farm profitability ☐
e. I am not in competition with overseas livestock producers ☐
f. I adapt my enterprise mix to minimize risk ☐
g. I increase my farm profitability by satisfying the buyers of my produce ☐
h. I have an easy access to capital and so farm in a less constrained way compared to other farmers ☐
i. My main competitors are a small number of special producers ☐
j. Disease is the major cause of fluctuations on my farm returns ☐
k. The Common Agricultural Policy has the most important influence over my farm profitability ☐
l. Budgeting and planning to obtain the lowest possible farm costs is the most important management activity I undertake ☐
m. When I have finished my livestock I must sell immediately and cannot afford to wait for prices to improve ☐
n. I always set a side of proportion of my production flock to experiment with livestock techniques I am not familiar ☐
o. Cornish farmers are my main competitors ☐

p. My most important production activity is continually monitoring the quality of my livestock ☐
q. I increase my farm business success by producing quality livestock which I sell by formal or informal contract ☐
r. I produce livestock on a trial basis for feed companies or retailers ☐
s. Keeping knowledge I have from other producers is essential to my farm business operation ☐
t. I increase my farm business success by understanding the needs and wants of the final consumer ☐
u. High animal welfare standards are important to my production methods ☐
v. Being able to trace livestock back to source is essential to my farm business operation ☐
w. Intensive production methods are important to my farm business operation ☐

PART III: INFORMATION SOURCES

1. Please indicate the relative importance of the information sources you use

Please respond to each information source and print the appropriate number of the scale below in every box.

Rate:

Not at all important	Not very important	Moderately Important	Important	Very Important
1	2	3	4	5

Land Agents / Auctioneers	☐	Newspapers	☐
Agricultural journals	☐	My own records	☐
Radio / Television	☐	Trade literature	☐
My bank manager	☐	Meat and Livestock Committee	☐
Other farmers	☐	Other Governmental Bodies (eg. MAFF)	☐
Family members	☐	My Accountant	☐
Livestock dealers	☐	National Farmers Union	☐
Feed company representatives	☐	Producer group information	☐
Business consultants	☐	Abattoir Agents	☐
Other sources (please Specify).....	☐		

5. Please indicate the relative importance of the types of information you use.
Please respond to each information type and print the appropriate number of the scale below in every box.

Rate:

Not Important	Intermediate Level	Moderately Important	Intermediate Level	Very Important
1	2	3	4	5

National livestock prices	☐	Management practices	☐
Local livestock prices	☐	Animal diseases	☐
Overseas livestock prices	☐	Consumer information	☐
Quality premium / penalties	☐	Financial	☐
Production techniques	☐	Producer group information	☐
Other sources ..... (please state).....	☐		

PART IV: MARKETING OR VALUE ADDED QUESTIONS

If you produce special or niche market livestock, or further process, market or add value to your produce please give brief details (e.g. organic, or you sell the meat with your trademark after you processed it in your own meat processing plant):

.....

.....

.....

PART V: GENERAL FARM'S CHARACTERISTICS

Please print your answer to the boxes

1. How many hectares of land do you farm? ☐

2. Approximately how many hectares of land are allocated to your sheep enterprise? ☐

6. How many sheep was the size of your flock in the year 2002: ☐

4. How many sheep over the age of 5 months did you sell (for slaughtering) during the years of 2002? (please print the number of heads) ☐

5. How many sheep under the age of 5 months did you sell (for slaughtering) during the years of 2002? (please print the number of heads) ☐

7. What area of farm do you
   a. Own ☐
   b. rent or lease from others ☐
   c. rent or lease to others ☐

8. Do you lease in or out any livestock quota? (please indicate the amount of quota)
   a. lease to others ☐
   b. lease from others ☐

PART VI: GENERAL FARMER'S CHARACTERISTICS

Please print your answer to the boxes

How many working days a month do you usually spend away from the farm:

(please print the number of days)

c. doing farm related activities ☐

(e.g. NFU meetings, producer group meetings, at market, or others)

d. working and earning income at another job ☐

(e.g. for other farmers, in a business, or others)

Since the age of 16, approximately how many years have you:

(please print a number)

e. been involved in livestock farming ☐

f. been in charge of making decisions on a livestock farm ☐

g. worked on your current farm ☐

h. been in charge of making decisions on your current farm ☐

Please indicate if you hold positions of more responsibility than normal voting members:

(please tick the relevant boxes)

i. with a marketing co-operative e.g. Cornwall Quality Livestock Producers ☐

j. with a farming organization e.g. NFU or others ☐

k. with a non farm business you own ☐

l. by directing of managing a non-farm business you don't own ☐

9. If you have previous non – farm work experience please state:

Type of Job	Years Worked
.....	.....
.....	.....

10. What is your approximate debt service (interest and principal payments) as a proportion of your farm income for the financial years 2002?

0-9%	10-19%	20-29%	30-39%	40%+	Don't know
☐	☐	☐	☐	☐	☐

11. Approximately what percentage of your farm income comes from your sheep enterprise for the year 2002?

0-24%	25-49%	50-69%	0-79%	80%-89%	90%+
☐	☐	☐	☐	☐	☐

12. Compared to other livestock farmers do you consider your financial performance to be :

Below Average ☐ About Average ☐ Above Average ☐

13. Please indicate your age: (tick one box)

Under 30	31-40	41-50	51-60	61-70	71 and over
☐	☐	☐	☐	☐	☐

14. Please indicate the level of education achieved: (tick one box)

Secondary	A levels	National Diploma	HND	Degree	Post-graduate
☐	☐	☐	☐	☐	☐

14. Please indicate if your farm is located in Less Favoured Area

Yes ☐ No ☐

15. Please add any further comments you may have:

.....

.....

.....

.....

.....

THANK YOU VERY MUCH FOR COMPLETING THE SURVEY, YOUR TIME AND EFFORT IS VERY MUCH APPRECIATED.

ALL RESPONSES WILL BE TREATED IN THE STRICTEST CONFIDENCE

If you require any further information with regard to this survey please contact:

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Supported by:

NFU

University of Plymouth, U.K.
Seale-Hayne Faculty of Land, Food and Leisure

MARKETING SURVEY IN COW MILK SECTOR IN THE COUNTY OF CORNWALL

PART I: CHOICE CRITERIA FOR SELECTING MARKETING CHANNELS

12. Please indicate in the following boxes the methods of sale you used in the year 2002 in percentage terms (e.g. Milk Marketing Cooperative Groups 50%, Local Milk Processing Plant 40%, Big National Dairy Firms, 10%).

Milk Marketing Cooperative Groups ☐

Local Milk Processing Plant ☐

Big National Dairy Firms ☐

Other method (Please state) ..... ☐

13. Please indicate in the following boxes how many different sales channels did you use during 2002 (e.g. 2 Local Milk Processing Plant , 1 Big National Dairy Firms,)

Milk Marketing Cooperative Groups ☐

Local Milk Processing Plant ☐

Big National Dairy Firms ☐

Other method (Please state) ..... ☐

14. Please indicate the relative importance of the following factors taken into account when selecting a marketing channel. Please respond to every factor and print the appropriate number of the following rate (between 1-5) in every box below.

Rate:

Not at all important	Not very important	Moderately Important	Important	Very Important
1	2	3	4	5

Sale price	☐	Grading uncertainty	☐
Transportation cost	☐	Experimenting with different marketing channels	☐
Marketing costs	☐	Higher expected returns	☐
Information about the prices	☐	Speed of payment	☐
Your time	☐	Quality of livestock	☐
Loyalty	☐	Contractual Obligations	☐
Convenience	☐	Bargaining strength	☐
Competitive offers	☐	Other reason (please specify)	☐

15. Please indicate if you are a member of a Group Marketing Scheme

Yes ☐ No ☐

If **Yes** please specify in which Group Marketing Scheme you are a member of:
(e.g. Milk Link)
.....
.....

6. Compared to other cow milk producers, do you consider your milk prices to be :

Below Average ☐ Average ☐ Above Average ☐

PART II: MANAGEMENT ACTIVITIES AND ATTITUDES

Please print the appropriate number of the scale below in the box beside each of the following questions

13. To what extent do you orientate your farm business operation towards each of the following:

Rate:

Not Extent		To some extent		High extent
1	2	3	4	5

a. I plan my production decisions by continually monitoring market prices ☐
b. I simultaneously plan production and sales decisions ☐
c. I have the lowest possible input costs ☐
d. I am aware of the exact costs and returns for the milk I produce ☐
e. I produce milk which meet market requirements ☐
f. I continually update the production techniques I use to produce my milk ☐
g. I have extremely flexible production plans ☐
h. I meet market requirements by adapting my production methods ☐
i. I have detailed knowledge of the distribution channels my milk moves through after it leaves the farm ☐
j. I produce specialty, niche market products e.g. organic ☐
k. I breed dairy cows which require special knowledge, equipment of facilities that other farmers do not have ☐
l. I understand detailed market requirements for the milk I produce ☐
m. I continually monitor market information other than price to plan my sales and production decisions ☐
n. I am personally involved in off farm marketing activities e.g. producer groups ☐
o. I maximize milk quality by using special techniques e.g. special nutrition ☐
p. I deal with a minimum number of marketing outlets so that I can maintain a good relationship with these channel members e.g. milk marketing cooperative group, big national dairy company ☐

q. I own or manage facilities that are normally owned by middlemen further down the distribution chain e.g. milk processing plant etc ☐

r. I use special techniques to gain the highest quality premium for my milk ☐

s. I continually seek out new market outlets to sell e.g new dairy company ☐

t. I work out the differences in returns resulting from selling milk via different marketing outlets e.g. milk marketing cooperative groups, big dairy companies ☐

14. To what extent do you agree with the following statements:

Please print the appropriate number of the scale below in the box beside each of the following questions

Rate:

Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Aggree
1	2	3	4	5

a. Maximizing profit is my most important farming goal ☐

b. I have no influence over the price I receive for my produce ☐

c. I produce a different quality milk than those produced by other farmers ☐

d. Policies of other countries have little influence on my farm profitability ☐

e. I am not in competition with overseas dairy cow farmers ☐

f. I adapt my enterprise mix to minimize risk ☐

g. I increase my farm profitability by satisfying the buyers of my produce ☐

h. I have an easy access to capital and so farm in a less constrained way compared to other farmers ☐

i. My main competitors are a small number of special producers ☐

j. Disease is the major cause of fluctuations on my farm returns ☐

k. The Common Agricultural Policy has the most important influence over my farm profitability ☐

l. Budgeting and planning to obtain the lowest possible farm costs is the most important management activity I undertake ☐

m. I always set a side of proportion of my production herd to experiment with livestock techniques I am not familiar ☐

n. Cornish farmers are my main competitors ☐

o. My most important production activity is continually monitoring the quality of my milk ☐

p. Keeping knowledge I have from other producers is essential to my farm business operation ☐

q. I increase my farm business success by understanding the needs and wants of the final consumer ☐

r. High animal welfare standards are important to my production methods ☐

PART III: INFORMATION SOURCES

1. Please indicate the relative importance of the information sources you use

Please respond to each information source and print the appropriate number of the scale below in every box.

Rate:

Not at all important	**Not very important**	**Moderately Important**	**Important**	**Very Important**
1	**2**	**3**	**4**	**5**

Land Agents	☐	Newspapers	☐
Agricultural journals	☐	My own records	☐
Radio / Television	☐	Trade literature	☐
My bank manager	☐	Milk Development Council	☐
Other farmers	☐	Other Governmental Bodies (e.g. MAFF)	☐
Family members	☐	My Accountant	☐
Livestock dealers	☐	National Farmers Union	☐
Feed company representatives	☐	Milk Marketing group	☐
Business consultants	☐	Dairy Companies	☐
Other sources (please Specify).....	☐		

7. Please indicate the relative importance of the types of information you use.

Please respond to each information type and print the appropriate number of the scale below in every box.

Rate:

Not Important	Intermediate Level	Moderately Important	Intermediate Level	Very Important
1	2	3	4	5

National milk prices	☐	Management practices	☐
Local milk prices	☐	Animal diseases	☐
Overseas milk prices	☐	Consumer information	☐
Production techniques	☐	Milk Marketing group information	☐
Financial	☐	Other sources ..... (please state).....	☐

PART IV: MARKETING OR VALUE ADDED QUESTIONS

If you produce special or niche market milk, or further process, market or added value to your produce please give brief details (eg: organic, special kind of cheese etc):

.....

.....

.....

.....

.....

PART V: GENERAL FARM'S CHARACTERISTICS

Please print your answer to the boxes

1. How many hectares of land do you farm? ☐

2. Approximately how many hectares of land are allocated to your dairy cow enterprise? ☐

3 How many dairy cows was the size of your herd in the year 2002: ☐

What quantity of milk did you sell during the year 2002 ☐
(please print quantity in kg)

What quantity of milk did you keep for self consumption for the year 2002 ☐
(please print quantity in kg)

What area of farm do you
- a. own ☐
- b. rent or lease from others ☐
- c. rent or lease to others ☐

Do you lease in or out any livestock quota?
(please indicate the amount of quota)
- lease to others ☐
- b. lease from others ☐

PART VI: GENERAL FARMER'S CHARACTERISTICS

1. How many working days a month do you usually spend away from the farm:
(please print the number of days)

   a. doing farm related activities ☐
   (e.g. NFU meetings, at market, or others)

   b. working and earning income at another job ☐
   (e.g. for other farmers, in a business, or others)

2. Since the age of 16, approximately how many years have you:
(please print a number)

   a. been involved in dairy farming ☐

   b. been in charge of making decisions on a dairy farm ☐

   c. worked on your current farm ☐

   d. been in charge of making decisions on your current farm ☐

3. Please indicate if you hold positions of more responsibility than normal voting members:
(please tick the relevant boxes)

   a. with a milk marketing co-operative group e.g Milk Link ☐

   b. with a farming organization e.g. NFU or others ☐

   c. with a non farm business you own ☐

   d. by directing of managing a non-farm business you don't own ☐

4. If you have previous non – farm working experience please state:

Type of Job	Years Worked
.....	.....
.....	.....

5. What is your approximate debt service (interest and principal payments) as a proportion of your farm income for the financial years 2002?

0-9%	10-19%	0-29%	30-39%	40%+	Don't know
☐	☐	☐	☐	☐	☐

6. Approximately what percentage of your farm income comes from your cow enterprise for the year 2002?

0-24%	25-49%	50-69%	70-79%	80%-89%	90%+
☐	☐	☐	☐	☐	☐

7. Compared to other livestock farmers do you consider your financial performance to be:

Below Average ☐ About Average ☐ Above Average ☐

8. Please indicate your age: (tick one box)

Under 30	31-40	41-50	51-60	61-70	71 and over
☐	☐	☐	☐	☐	☐

9. Please indicate the level of education achieved: (tick one box)

Secondary	A levels	National Diploma	HND	Degree	Post-graduate
☐	☐	☐	☐	☐	☐

10. Please indicate if your farm is located in Less Favoured Area

Yes ☐ No ☐:

10. Please add any further comments you may have:

.....
.....
.....

THANK YOU VERY MUCH FOR COMPLETING THE SURVEY, YOUR TIME AND EFFORT IS VERY MUCH APPRECIATED.

ALL RESPONSES WILL BE TREATED IN THE STRICTEST CONFIDENCE

If you require any further information with regard to this survey please contact:
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APPENDIX IX

LIVESTOCK MARKETING CHANNEL UTILISATION BY SHEEP FARMERS IN EMTH AND CORNWALL

(A) Livestock marketing channel utilisation by sheep and goat farmers in EMTh.

Data for the use of a particular marketing channel is not routinely collected in Greece. Therefore, a number of telephone surveys were performed in 2001. The local authorities in the Region of EMTh were contacted, providing information about the number of the abattoirs operating in the area, and the number of sheep and goats that were slaughtered in each abattoir. The 14 abattoirs in EMTh were also contacted, and they provided information about the percentage of the animals slaughtered in each abattoir, belonging to wholesalers, retailers (butchers) and what the abattoirs, themselves. One abattoir did not provide information. Hence, it is estimated that during the year 2000, the 38% of the slaughtered sheep, lambs and goats in EMTh were sold direct to wholesalers, while retailers absorbed the 12% of the finished sheep, lambs and goats and the abattoir that operate as wholesalers purchased the 50% of these animals. Some of the abattoirs sold some of the carcasses to retailers and supermarkets and some, after processing it in their own processing plants, to consumers through their own shops. Therefore, the farmers sold 88% of the slaughtered sheep and goats in 2000 to wholesalers, or the abattoir operated as wholesalers, and the remaining 12% direct to consumers.

(B) Livestock marketing channel utilisation by sheep goat farmers in Cornwall.

Data for the use of a particular marketing channel on a county basis are not routinely collected in U.K.. Therefore, in order to quantify the marketing channels that sheep farmers follow in Cornwall in the year 2000, a number of telephone surveys in the end of 2001 and the beginning of 2002 were performed. First an estimation of the number of sheep that were sold from Cornish farmers was made based on DEFRA census data of 2000 (personal communication with MLC, 2001). In the second stage of the survey all the livestock auction firms and abattoir that operated in Cornwall (determined from the Livestock Auctioneers Association and the National Farmers Union) were contacted. All the 6 livestock auction markets and 4 of the 6 abattoir operated in Cornwall replied. In the next stage, estimation was made of the percentage of sheep and lambs from Cornwall that were sold during the year 2000 through the electronic auction market. This estimation is based on data about U.K. slaughtering, analyzed by marketing type, that were provided by MLC (Personal communication with MLC, 2001). The Group Marketing Schemes operated in Cornwall were also contacted and provided information about the quantities of sheep and lambs that were sold through them to abattoir, to livestock auction markets and to electronic markets. Finally, the residual is an estimation of the sheep that were sold to markets outside the county (to auction markets or abattoirs). According to the survey, it is estimated that 41 % of sheep and lambs in Cornwall was sold during 2000 direct to abattoir, 43 % through live auction markets, 1.5% via electronic auction markets, 14 % through marketing schemes to abattoir, and 0.5 % sold outside the county.

APPENDIX X

MILK MARKETING CHANNEL UTILISATION BY SHEEP AND GOAT FARMERS IN EMTH AND DAIRY COW FARMERS IN CORNWALL

(A) Milk marketing channel utilisation by sheep and goat farmers in EMTh.

Data for the use of a particular marketing channel not routinely collected in Greece. Therefore in order to identify the quantities are sold through each marketing outlet during the year 2000 a number of telephone surveys were carried out in 2001 as presented in Appendix XII. Firstly, the total quantity of sheep and goat milk that was sold from farmers was estimated based on data of the Greek Ministry of Agriculture. In the second stage, the local authorities in each prefecture were contacted, providing information about the number of the big national and regional dairies and co-operative milk processing plants operated in each county (5 co-operatives milk – processing plants and 3 big national and regional dairies are operated within the Region). In the next stage all the co-operative milk-processing plants were contacted and provided information about the milk they purchased from sheep and goat farmers in each county of the Region of East Macedonia and Thrace. All the big national and regional dairies operated in Greece were contacted, but only two of the three provided information about the quantities of sheep and goat milk they purchased during the year 2000 from the farmers of the Region of EMTh. The residuals between the quantity of milk that was sold from the sheep and goat farmers in total and to the big

national dairy firms as well as to the cooperative milk processing plants can represent the quantity of milk that was purchased by the local milk processing plants. Therefore, the 77% of the sheep milk and goat milk is sold from farmers to local processing plants. The big national companies absorbed 14% of the sheep milk and the 13% of the goat milk, while the rest (9% of the sheep milk and 11% of the goat milk) was sold to the local cooperative processing plants.

(B) Milk marketing channel utilisation by dairy cow farmers in Cornwall.

The majority of milk producers in Cornwall according to Cornwall Dairy Focus Group (2000) are organized in 6 selling groups, most of which have members in other counties also. The total volume of milk processed within Cornwall has been estimated according to Cornwall Dairy Focus Group (2000) to about 345 million litres a year. It was also estimated that close to 100 million litres of milk moves for processing into the county, mostly from the producers marketing groups that have members in other counties (e.g. Devon).

Data for the use of a particular marketing channel in a county base are not routinely collected in U.K.. Therefore, in order to quantify the marketing channels that dairy cow farmers follow in Cornwall a number of telephone surveys were carried out at the end of 2001 and beginning of 2002. Firstly, an estimation of the quantities of cow milk that were produced in Cornwall in 2000 was done based on DEFRA data (MAFF 2001b; MAFF 2001c). In the second stage of the survey all the big dairy firms and dairy co-operative groups operating in England (Anon 2001) and in Cornwall (Cornwall Dairy Focus Group 2000) were contacted in order to provide information about the quantities of milk they purchased direct from Cornish Farmers and though Marketing Groups operated in

Cornwall. Only two dairies operating in England did not reply to the survey. Hence, estimation about the quantities of milk produced in Cornwall and was sold in 2000 to big national dairies and to milk co-operative groups was performed. The quantities of milk that were sold from the milk producers' groups to big national dairy firms and to local milk processors were also estimated. Finally, the residual between the milk production and the quantities that were sold to national dairy firms and to milk co-operative groups can be assumed to represent the milk that is purchased by local milk processing plants.

According to the survey, about 30% of the cow milk that was produced in Cornwall in 2000 was sold direct to big national dairy companies; 69% through milk co-operative groups; and 1% direct to local processing plants. The 14% of the quantities that were collected by milk co-operative groups were sold to big national dairy firms, 11% to small processors, and 75% was sold to milk processors outside the county.

APPENDIX XI

FACTORS AFFECTING THE DEMAND OF MEAT, MILK AND DAIRY PRODUCTS IN GREECE AND UNITED KINGDOM

The analysis below will describe which and how the factors presented in the model presented in Chapter 6 affect the demand of meat, milk and dairy products in Greece and United Kingdom.

(A) Factors Affecting Meat Demand in Greece and United Kingdom.

Meat quality characteristics as well as the high importance given by consumers in diet and health issues, are quite important factors that affect meat demand in Greece and U.K. (Brayshaw *et al.* 1965; Brayshaw *et al.* 1967; Allen 1997; Sotiropoulos and Demoussis 2002; Morrison *et al.* 2003). The recent food crises included the possible linkage between BSE in cattle and Creutzfeld Jacob Disease in humans; the *E. coli 0157:H7* food poisoning in Scotland and the 1991 publicity about Salmonella in the British national poultry; affect meat consumtion in both countries (Fotopoulos 1995; Sotiropoulos and Demoussis 2002; Morrison *et al.* 2003). Furthermore, the scandal about the use of dioxins in poultry industry in Belgium, the catarrhal fever outbreak in sheep and goat flock in Central Greece, the Food and Mouth Disease in North East Greece and GMO's are some of the factors that affected the rise of the demand in domestic meat, organic meat, the shift in consumer

preferences from red meat to white meat as well as the decrease of the frozen meats (Fotopoulos 1995; Sotiropoulos and Demoussis 2002; Morrison *et al.* 2003). Besides, people in the U.K., when they have to purchase meat, are concerned processing techniques; production methods in farming; and the use of feed antibiotics, growth hormones and feed additives (Woodward 1988; Barry *et al.* 1992; Eastwood 1995; Goode *et al.* 1995; Murray *et al.* 1996; Murray *et al.* 1998; Davies 2001). Animal welfare issues, such as the use of animals in testing the safety, efficacy of food and non – food products or intensive production methods, have been of potential concern to consumers (Hughes 1995).

Price also has significant influence on meat demand (Dixon 1965; Colley 1966; Hughes 1995; Murray *et al.* 1996; Davies *et al.* 2000). Meat is a fundamental part of Greek diet as it has low price elasticity; but analysing the influence of the price in various kinds of meat many researches indicated that beef in Greece is more price elastic than poultry, lamb and pork (Mergos and Donatos 1989; Fousekis and Pantzios 2000; Karagiannis *et al.* 2000; Lazaridis 2003; Morrison *et al.* 2003). In U.K. beef demand is also affected by price in higher extent than pork and bacon market while seasonal fluctuations in prices had significant impact on the demand of beef, bacon, pork and lamb (Dixon 1965; Colley 1966).

The governmental campaign for promoting the pork consumption during 1970s in Greece caused changes in tastes in favour of pork, sausages, bacon and ham whilst the campaign aiming to promote chicken consumption did not affect consumer habits significantly (ICAP 2000; Morrison *et al.* 2003). The impact of the publicity about meat scares, especially BSE, caused also a reallocation of consumer spending from red to white meat during 1990s (Murray *et al.* 1998; Davies *et al.* 2000; Fousekis and Revell 2004).

Another important factor that influences the meat demand in many countries is the distribution channels, which act as the principal link between producers and end-consumers and affect the price formation (OECD 2000). In Greece and United Kingdom, the meat market system mainly consists of the farm businesses and the merchants, wholesalers, processors and other food participants such as the supermarkets and retailers (Hughes and Ray 1994). One of the consistent and continuing trends in the meat marketing system in the two countries was the shift of power towards retailers and the dominance of the supermarket chains (Murray *et al.* 1996; Allen 1997; Davies *et al.* 2000). The increasing concentration of the distribution groups in the recent years as well as the formation of joint purchasing groups; the frequent vertical integration of the wholesales and retailers and the rising of the internationalisation of distribution groups in most countries are the main characteristics of the distribution industry (OECD 2000). Food retailers in Greece tend to strengthen their position by making co-operative agreements with other retailers in order to increase their bargaining power over their food suppliers – producers and other large scale retailers (Anon 1997; OECD 2000). Due to the concentration of the livestock industry in the recent years, together with the vertical links that were developed between large scale livestock producers (mainly in pigmeat, poultry and beef sector), meat processors and retailers, the latter are in a strong position to procure meat from the domestic market or to import it without being dependent on the livestock market system in Greece. In the last few years, supermarkets and meat processors import large quantities of meat, by-passing the traditional livestock distribution system of the importers – wholesalers (ICAP 2000). The increase of the supermarkets' power results in the development of meat outlets in their stores, better prices and therefore the attraction of more consumers contrary to the traditional butcher shops whose market share is declining. Furthermore, the increasing demand for "food eaten out of home" as well as for prepared food, pushed the development of integrated food supply chains such as the establishment of co-operations among farmers, food processing industry and food retailers

(Michalopoulos and Demoussis 2001). Furthermore, British consumers mainly prefer to buy their meat from the supermarkets (about 70% of the meat purchases in 1997 were bought from supermarket chains) while about the 60% of the grocery market share is concentrated in a few big supermarket chains (Hughes and Ray 1994; Allen 1997; Murray *et al.* 1998; Davies 2001). Food retailing in U.K. is one of the most efficient, profitable and concentrated retailing system in the world (Hogarth-Scott and Parkinson 1993). The meat retail market in U.K is also dominated by few major supermarket multiples which have great influence on vertical co-ordination throughout the meat marketing chain (Hobbs 1996b). Meat retailers are very concerned about the consistency of products quality, the traceability back through the supply chain and the consumer awareness about animal welfare while the transaction cost is a key factor that influences their procurement decisions (Hobbs 1996a; Hobbs 1996b; Hobbs 1996c). Supermarkets buy their meat direct from abattoir/meat processors through a centralised distribution system. Meat processors deliver the products to central warehouse facilities used by supermarkets which then distribute the products to their own stores. Thus the role of the wholesalers or distributor became less important (Fearne 1998).

The increasing concentration of the retail sector in both countries led to the need for investments in complex logistical and distributional technologies (e.g. Just – In – Time methods) to satisfy consumer needs and wants (Hogarth-Scott and Parkinson 1993; OECD 2000; Davies 2001). Moreover, the increasing concerns of Greek and British people about health, animal welfare, food safety, quality assurance and environmental protection for consumers led to the adoption of various technologies by livestock farmers, meat processors, wholesalers and retailers related to animal production, traceability of the livestock products, food safety (e.g. employment of HACCP, quality standardisation standards such as ISO 9000 and ISO 14000 as well as integrated production methods), transportation systems and slaughtering operations.

The initiation of the custom connection between Greece and European Economic Community in 1962, the rural exodus in association with the increased urbanisation in late 1960s as well as the economic growth of Greece developing the last two decades were the main reasons for the shifts of consumer preferences in favour of meat and fish and against the traditional Mediterranean diet (Grigg 1999; Byrd-Bredbenner *et al.* 2000; ICAP 2000; Morrison *et al.* 2003). The economic growth of Greece and United Kingdom led to an increase of the average real household income which means that most households are substantially better off than were those of their parents (Hughes and Ray 1994). Although in absolute terms, more money is spent on food as a proportion of total disposable income, food expenditure has declined; people are much wealther than was two or three decades ago; the expenditures on "food eaten away from home" have increased and food does not only satisfy physiological needs but it is consumed to meet complex social needs, to bolster self esteem and to earn recognition from family and relatives (Hughes and Ray 1994).

Meat demand is also affected by political actions undertaken by the Government of each Member State within E.U. as well as by the European Commission and European Union in general. The Common Agricultural Policy and the W.T.O. agreements have a significant impact on meat prices and therefore in the formation of the demand in different types of meat (Fousekis and Pantzios 2000). Furthermore, the European and Greek legislation about the application of HACCP and the provision of consistent quality, treaceability and assurance for the consumer by the meat processors, abattoir and other actors in food preparation chain, lead to the development of an integrated system that covers food safety, food quality and protection of the environment. The U.K. government has recognised consumer concerns regarding meat safety and in 1998 announced the Assured British Meat (ABM) to provide consumers with the assurance that meat and meat products are safe (Davies 2001). The introduction of the E.U. Directive on the Welfare Animals in Transit

95/29, effective from July 1997, set legal limits on livestock journey duration, standards for transporting vehicles and specific authorisation requirements for drivers transporting animals for more than eight hours (Murray *et al.* 1998; Davies 2001). Moreover, the Food Safety Act 1990 placed particular emphasis on aspects of food safety and covers all stages of commercial food manufacture and supply, food preparation, storage, labelling, processing, selling and transport (Davies 2001).

Religious prohibitions, cultural beliefs and counterculture attitudes have a significant influence on meat demand in both countries (Cooper *et al.* 1985). Even though the changing dietary habits of Greek consumers caused an increase in white meat mostly due to the influence of the western way of life, lamb and kid meat is consumed on special days like Easter despite the price being higher than other type of meats -about 20% of Greek population consume meat on Easter Day (Fotopoulos 1995). Kid and lamb are almost equally popular in Greece, but most consumers prefer kid meat slightly over lamb meat as it has less fat. Furthermore, the consumption of poultry is also high during Christmas, as the majority of people in Greece prefer to eat turkey in their Christmas dinner. On the other hand, Jews and Muslims due to religious tradition do not consume pork and Hindus do not eat beef. In U.K., ethnic minority groups account about 8% of the total population (National Statistics 2005a), while the impact of the Asian community is axiomatic as the smallest town has an "Indian" restaurant and a curry is a standard pub fare (Hughes and Ray 1994). Furthermore, the highest consumption in "takeaway foods" category in 2003 was the meat based meals such as Indian and Chinese takeaways (DEFRA 2004c).

The social characteristics of the consumers found to affect meat demand in Greece and U.K. (Michalopoulos and Demoussis 2001; Sdrali and Apostolopoulos 2002; Lazaridis 2003; DEFRA 2004c). The size of the family is positively associated with the demand of all types of meat, except poultry, as well as with the level of expenditures on "food eaten

away of home" (Michalopoulos and Demoussis 2001; Sdrali and Apostolopoulos 2002; Lazaridis 2003). In U.K., meat consumption is highest in households with three adults and no children, while expenditures on food eaten out is highest in households with 4 or more adults and no children (DEFRA 2004c). The role of the head of the family negatively affects the food expenditure: if the head of the family is female, then she spends more money on food than a male (Lloyd and Gage-Brandon 1993; Clements and Chen 1996; Sdrali and Apostolopoulos 2002).

Many personal characteristics of the British and Greek consumers found to influence meat demand in both countries. The age of consumer influence the meat consumption in Greece and U.K. (Woodward 1988; Burton *et al.* 1993; Burton *et al.* 1994; Burton *et al.* 1996; Lazaridis 2003; DEFRA 2004c). More particularly, the age of the head of the family positively affects the consumption of beef and lamb in Greece, and negatively the consumption of pork while his/her level of education is positively associated with the beef consumption while the opposite applies to the consumption of lamb (Lazaridis 2003). The educational level of the meal planner also affects the expenditure on "foods eaten away of home" (Michalopoulos and Demoussis 2001). Besides, British consumers with more formal education can make better and more informed decision regarding the food that they and their family eat (Woodward 1988; Hughes and Ray 1994; Hughes 1995). The sex of the head of the family and if he/she is fully employed are some other factors that have an impact on food expenditures, eating away of home as well as on the consumption of prepared or pre-cooked food (Michalopoulos and Demoussis 2001; Sdrali and Apostolopoulos 2002). The occupation of the householder also affects meat demand. (Burton *et al.* 1993; Burton *et al.* 1994; Burton *et al.* 1996; DEFRA 2004c). Another very important factor that positively affects the mead demand in Greece and U.K. is the high disposable income (Grigg 1999; Fousekis and Pantzios 2000; ICAP 2000; Michalopoulos and Demoussis 2001; Morrison *et al.* 2003; DEFRA 2004c).

Furthermore, beliefs and attitudes that people form regarding their nutritional and consumption habits from their childhood within their family, school and friend; influence their decisions concerning their food purchases (Hughes 1995; Davies 2001). Besides, the psychogenic needs of consumers which, as Kotler (1994) stated, arise from psychological states of tension such as the need for recognition, esteem or belonging affect the food expenditure. Hence, rich people who are considered professionally successful and belong to higher social classes tend to prefer to consume more red meat (mainly beef and veal) as well as to take meals away from their home (Sotiropoulos and Demoussis 2002). Furthermore, the willingness of consumers to "buy time" due to the full of deadlines western way of life, is one of the most important trends that are responsible for changes in food in the last few years (Hughes and Ray 1994; Davies and Madran 1997).

Therefore, British and Greek consumers are influenced in their decision about what type of meat to buy, in which price, from which marketing outlet by the factors described above. All these factors but mainly the retail concentration, food safety, health concerns and quality assurance, affect in a great extent the channel utilisation.

(B) Factors affecting Milk Demand in Greece and United Kingdom.

Milk and dairy products consist of an important part of people's dairy diet (Davies and Worrall 1998; Hjartaker *et al.* 2002). In Greece, cow milk is mainly used for liquid consumption as fresh milk but also for preparation of cheese, yogurt, butter, ice-cream and some other dairy products. Moreover, sheep and goat milk is used for making cheese, butter and yogurt. Cheese is the dairy product with the highest consumption in Greece as Greek people consume it in large quantities because they consider it very nutritious (Karathanassi 1995). Greek consumers classify cheese in two main categories: (a) white

cheeses that are domestically produced and mainly consumed with the meal, as ingredients in pies or as a snack with bread and (b) yellow cheeses that are usually imported and consumed as "mezes" (a special dish consumed with alcohol between meals) or as ingredients in toasts, sandwiches and pizzas (Karathanassi 1995; ICAP 2003). The dominant position of feta cheese in the dairy product market in Greece is the main factor that maintains the goat milk demand high (Fotopoulos 1995; Karathanassi 1995). On the other hand, there is an increase in the demand of imported cheeses such as *edam, gouda, emmental* as well as of *western type* yoghurts and *light* dairy products (Sotiropoulos and Demoussis 2002). People in U.K. urban areas consume somewhat more dairy products that people in Greek urban areas (Hjartaker *et al.* 2002). Cow milk comprised the largest proportion of the total dairy consumption followed by yoghurt, cheese, ice-cream and butter (Hjartaker *et al.* 2002). Cow's milk is also associated with a range of hard cheeses while goat's milk with soft and blue cheeses (Davies and Worrall 1998). Even, milk has declined in British diet in the recent years, cheese has increased as well as the variety of cheeses that are available on U.K. market (Kupiec and Revell 1998). Taste, quality, flavour, shelf life packaging, health, safety and origin also influence consumers purchase decision towards dairy products (Davies and Worrall 1998; Kupiec and Revell 1998; Kneafsey *et al.* 2001).

The demand for milk and dairy products is also influenced by price (Karathanassi 1995; Xepapadeas and Habib 1995). Karathanassi (1995) argued that especially cheese is considered by the Greek consumer quite expensive. Fotopoulos (1995) argued that milk prices in the sheep and goat sectors are much higher than meat prices mainly due to the dominance of feta cheese in the dairy products and the Greek diet. On the other hand, price does not have a very significant impact on milk demand in U.K., as a reduction on liquid milk prices did not cause any increase in milk purchases (E.U. 1999; DEFRA 2004c). However, price plays an important role on consumer's decision regarding cheese

purchases, especially when a product is to be purchased for the first time (Kupiec and Revell 1998).

Promotion activities such as price discounts and advertisement have a positive impact on the purchases of milk and dairy products in Greece and U.K. (Ryder and Fearne 2003; Dong *et al.* 2004).

Distribution systems also affect the demand of milk and dairy products in Greece and United Kingdom (Karathanassi 1995; Kupiec and Revell 1998; ICAP 2003). The distribution system of milk and dairy products includes numerous participants such as wholesalers, retailers, local representatives and distributors (Karathanassi 1995; ICAP 2003). In Greece the supermarket chains have provided the main marketing outlet of dairy products for the last ten years as they offer a big variety of dairy and other products to the final consumers (ICAP 2003). Due to their high bargaining power, they have the ability to require large discounts (about 15%-20% on the wholesale price) and credits (payment in 3-4 months after the delivery for the big dairy firms and in 2-6 months for the medium and small scale milk processors) from the dairy companies (ICAP 2003). Dairy firms pay the farmers in advance, usually every August, in order to buy their produce for the next year while the cheese production begins in November and the cheese sale between January – February of each year (ICAP 2003). This means that the milk processors and dairy firms commit a large amount of their capital for a period of 6-12 months. In U.K., supermarkets also consist of the most popular marketing outlet for the purchase of cheese and other dairy products (Stack and Sillen 1998; E.U. 1999; McCarthy *et al.* 2001). As the share of the "own –label" products in the supermarkets shelves is increasing, many farmers prefer to sell their milk products directly using farm outlets, mail orders and farmers' markets (Archer *et al.* 2003). Some others focus on products with high added values such as

artisanal cheese and market them via wholesalers to specialist retail outlets (Kneafsey *et al.* 2001).

Broader developments in the British, European and global economy have an impact on the demand of milk and dairy products in Greece and United Kingdom in the same way that influenced meat demand. Furthermore, the rise of the domestic and international trade as well as the development of transportation, financial and marketing services enhanced the "internationalisation" of food consumption patterns during the decade of 1990 against the traditional Greek diet (Sotiropoulos and Demoussis 2002). Thus, more people consume imported cheese (Gouda, Emmental, Mozzarella), west type yoghurt and "light" type dairy products (Sotiropoulos and Demoussis 2002). Moreover, the globalisation of the food market and more particular the expansion of large companies to control larger shares of trade in agriculture, manufacturing or retailing, have a negative sequences for smaller businesses in U.K., from farms to grocers shops (Tansey 1994).

The Common Agricultural Policy and the W.T.O. agreements also affected milk demand. Regulations imposed by E.U. regarding the conditions of dairy product manufacturing and transport had a negative influence on small scale Greek milk processors (Karathanassi 1995). On the other hand, the European legislation concerning the definition and methods of production of traditional Greek cheeses like feta distinguish them from the other Greek type cheeses produced in other European counties and therefore has a positive impact on Greek dairy industry. Furthermore, E.U. and national legislation contributed to the modernisation of many milk processing plants as well as the legal framework regarding the application of HACCP and the provision of consistent quality, traceability and assurance for the consumer by the dairy companies and other partners in the food preparation chain, leading to the development of an integrated system that covers food safety, food quality and environmental protection. Food safety remains the main issue for consumers and

therefore for E.U. and British government (Tansey 1994). Furthermore, the E.U. legislation and the Treaty of Rome anticipate the use of measures to aid the marketing of products and to promote their consumption. Hence, the Regulation 804/68 and 1080/77 established the common market organisation for milk and dairy products as well as the School Milk Measure (E.U. 1999). More particularly, the School Milk Measure aimed at the maintenance of the consumption of milk products by school children, encouragement of the habit of milk and dairy products consumption and after children leave school, assurance that the milk products are available in schools at competitive prices as well as to the improvement of the image and knowledge about milk products by providing information on their nutritional and other properties (E.U. 1999).

The big changes that occurred during the last decade in technology and particularly in bio and information technologies offer to different actors new means of control over their parts of the food system and therefore affect the demand in the dairy market (Tansey 1994). The new technologies in milk and dairy products processing also affect the demand of these products. For example the Tetra Pak extends the shelf life of the milk for between 3-5 days and this additional life gained may be used in the distribution chain to reduce wastage, improve logistics and increase consumer's confidence in the longevity of the product (Stack and Sillen 1998). The increase in the importance of issues related to health, animal welfare, food safety, quality assurance and environmental protection for the consumers, led to the adoption of various technologies by all those involved in the milk production chain in relation to production, processing, traceability, food safety including the adoption of HACCP, quality standardisation certifications like ISO 9000 and ISO 14000 and transportation systems.

Although the Mediterranean region is not so favoured for milk production, milk consumption in Greece is comparable with Western Europe due to the high consumption of

sheep and goat dairy products because Greeks consider them to be very nutritious (Grigg 1999). On the other hand, the decline of the tradinitional doorstep milk delivery in U.K. during the last two decades had an impact on the structure of the milk marketing channels, as most people prefer to buy their milk from retail, supermarkets and convenience stores (Stack and Sillen 1998). The most popular way of consuming milk in U.K. is with cereal in breakfast followed by milk consumed in tea while the consumption of more processed products such as dairy desserts and yoghurt is increasing (E.U. 1999).

In addition to cultural factors, the demand of milk and dairy products is also affected by the social characteristics of the Greek and British consumers. The size of the family is positively associated with milk demand (Michalopoulos and Demoussis 2001; Sdrali and Apostolopoulos 2002; ICAP 2003; Dong *et al.* 2004). Social class also affects the demand of milk and dairy products in U.K. (Davies and Worrall 1998; Kupiec and Revell 1998). Furthermore, households based on urban areas in the two countries spend more money on dairy products than those on rural areas (ICAP 2003).

Consumers' personal characteristics also influence the demand of milk and dairy products in Greece and U.K.. The demand of milk and dairy products in Greece is influenced by income (Mergos and Donatos 1989; Xepapadeas and Habib 1995; Karagiannis and Velentzas 1997). Income has also a significant impact on milk and dairy products consumption and expenditures in U.K. as speciality cheese buyers are usually people with high levels of income while people with low income are the highest consumers of milk (McCarthy *et al.* 2001; DEFRA 2004c). Education has also an important role on dairy products demand in both countries as people with high education prefer to buy special dairy products such as speciality cheese (Davies and Worrall 1998; McCarthy *et al.* 2001). Moreover, men found to consume more butter than women (Hjartaker *et al.* 2002). The age of the housekeeper also influences his/her purchase decision about milk and dairy

products. Kupiec and Revell (1998) found that people between 35-55 years old consist of a typical customer of a specialist shop while according to DEFRA (2004c) housekeepers between 50 and 65 years old consume more cheese in comparison with people of other ages. Besides, people between 65-75 years old have the highest milk consumption (DEFRA 2004c). According to DEFRA (2004c) data, white household persons consume larger quantities and expend more money in milk and cheese than other groups. Demand for milk and dairy products is also affected by the increasing number of women working in full time jobs and by housekeeper's occupation (Tansey 1994; DEFRA 2004c). "Small employers and own account workers" have the highest consumption of milk while "Higher Professionals" have the highest consumption of cheese and the highest expenditures in both milk and cheese (DEFRA 2004c).

Psychological factors such as the consumers' need of recognition, esteem or belonging, affect the food expenditures. People of higher social classes who are professionally successful are more familiar with the new international norms, consume luxury goods such as special kinds of cheese and prefer to eat out as well as to purchase from special and expensive food marketing outlet such as delicatessen shops and expensive supermarkets (Sotiropoulos and Demoussis 2002). The increasing number of people in western societies that are interested in values such as honesty, "substance" and environmental sustainability affect the food advertising as well as the demand for milk and dairy products' (Tansey 1994). Furthermore, the increasing concern of people in weight loss also affects the demand of those products (Davies and Worrall 1998).

All the factors, but mainly the increasing bargaining power of supermarkets as well as the food safety, health concern and quality assurance have a great impact on channel utilisation.

APPENDIX XII

DETAILED INFORMATION ON THE STATISTICAL ANALYSIS REGARDING THE SURVEY IN THE LIVESTOCK FARMERS IN GREECE.

(A) Examination of the Final Anti-image Correlation Matrix in Factor Analysis

Examination of the final anti-image correlation matrix of the livestock marketing data indicated that only 3 of the 55 (5%) anti – image correlations had large absolute values. The low percentage of large anti-image correlations was an indicator of the strength of interrelationships among variables. The Bartlett test of sphericity also indicated that the overall significance of the correlation matrix was significant (x^2=1483.86, df=55, P<0.001). The Kaiser – Meyer – Oklin Measure of Adequacy showed that the entire correlation matrix is appropriate for factor analysis (KMO MSA = 0.73). The MSA for each variable (MSAv3=0.60, MSAv4=0.67, MSAv5=0.85, MSAv6=0.75, MSAv7=0.84, MSAv10=0.86, MSAv11=0.66, MSAv12=0.84, MSAv13=0.59, MSAv24=0.77 and MSAv25=0.67) was also another indicator which supported the appropriateness of the intercorrelation among the variables for factor analysis. Examination of the determinant of correlation matrix (Determinant = 0.008149) also indicated the adequacy of the data for factor analysis.

Regarding the milk marketing data, the low proportion of large absolute values of anti-image correlation (4 of the 105 or 4%) supported the strength of intercorrelations among the variables. The Bartlett test of sphericity showed the overall significance of the correlation matrix was significant (x^2 = 1319.60, df=105, P<0.001) while the KMO MSA indicated the correlation matrix is appropriate for factor analysis (KMO MSA = 0.70). The values of the MSA for each variable (MSAv1=0.88, MSAv3=0.70, MSAv4=0.73, MSAv6=0.66, MSAv9=0.68, MSAv11=0.67, MSAv12=0.68, MSAv14=0.85, MSAv15=0.69, MSAv16=0.64, MSAv18=0.63, MSAv20=0.61, MSAv21=0.53, MSAv23=0.66 and MSAv24=0.74) also showed that the degree of intercorrelation among the variables was suitable for factor analysis. The determinant of correlation matrix (Determinant = 0.01362) also supported the suitability of the data for factor analysis.

(B) Description of the K – mean Cluster Analysis

Applying the recommendations of Punj and Stewart (1983) and McIntyre and Blashhield (1980), the sample was randomly split into data sets: D1 consisted the test sample and D2 consisted the internal validation sample. K-mean cluster analysis was first carried out on the test sample to identify possible alternative cluster solutions. Once the centroids describing the cluster were obtained, a K-mean cluster analysis was conducted to the internal validation sample in order to select the optimum solution based on its stability and reproducibility. Actually, a cross validation of the internal validation sample took place using constrained and unconstrained solution for each alternative solution for each alternative cluster. For a given number of clusters *(n)* the constrained solution grouped all cases of D2 (internal validation sample) based on the cluster centoids from the test sample D1, while the unconstrained solution posed no restrictions (McIntyre and Blashfield 1980; Punj and Stewart 1983; Davies 2001). The chance correlated coefficient of agreement, *kappa,* was calculated for the two solutions (constrained and unconstrained) of D2 cases on

each cluster solution *(n)*. The best *n* cluster solution was that which maximized *kappa* (McIntyre and Blashfield 1980; Punj and Stewart 1983). When the optimal cluster solution identified, the two samples (D1 and D2) were combined and *K-mean* cluster analysis was conducted for a number of clusters determined at the optimal value. The cluster solutions were then assigned to each case and saved for subsequent profiling and prediction analysis.

(C) Interpretation and external validation of the results of cluster analysis regarding livestock marketing in Greece with the Kruskal-Wallis non parametric test.

Before accepting this solution derived from cluster analysis all cluster solutions (based on all cases) were examined for interpretability and external validity. The three cluster solution found to be the most meaningful at it was highly interpretable and also had external validity i.e. significant inter-cluster differences were identified in variables that were not used in the cluster analysis.

The three clusters (based on the cluster means for the derived factor scores and the cluster sizes) were named according to the business strategy that the farmers in each group appeared to follow. The mean factor scores, the standard deviations and the results of ANOVA test for each strategic group regarding the strategic dimensions, are presented in the following table (Table 1). The high positive mean score of a particular strategic dimension means that this dimension is important to the farmers that follow the specific business strategy.

Key Strategic Dimensions	Strategic Groups			
	Cost Focus	Production Orientation	Return Focus	P
Profit Orientation	0.1277[a]	-0.1135[a]	0.3507[b]	0.0001
	0.4576	*0.7399*	*0.61251*	
Production Orientation	-0.4672[a]	1.6731[b]	-0.1752[c]	0.0001
	0.2836	*0.7152*	*0.3983*	
Cost Focus	0.8541[a]	0.2464[b]	-1.0117[c]	0.0001
	0.4912	*0.7260*	*0.4259*	
Number of Businesses (n=289)	**135**	**33**	**121**	

Table 1. Characteristics of the Three Clusters from Cluster Analysis

NB: Within rows, means with different superscript differ significantly at $P<0.05$ (the difference between Group 1(Cost Focus) and Group 2 (Production Orientation) within the 1st row (Profit Orientation) is significant at $P=0.07$) according to Tukey's post hoc test. Means are reported in standard text and standard deviations in *italics*.

The results of the ANOVA were validated with the Kruskal – Wallis non-parametric one-way ANOVA which was more robust in case of lack of normality (Kinnear and Gray 2000). The following table (Table 2) illustrates the results of this test as well as the level of significance of the difference among the clusters according to the Q test that is the equivalent non-parametric post hoc Tukey's test (Eddison 2000). High average ranks as well as high positive medians of a particular strategic dimension means that this dimension is important to the farmers that follow the specific business strategy. Both tests indicated that there is a significant difference among the three strategic groups regarding the importance of each key strategic dimension.

Key Strategic Dimensions	Strategic Groups			
	Cost Focus	Production Orientation	Return Focus	P
Profit Orientation	123.9[a]	107.7[b]	178.7[c]	0.0001
	0.224	*0.022*	*0.493*	
Production Orientation	88.4[a]	271.7[b]	173.6[c]	0.0001
	-0.554	*1.677*	*-0.334*	
Cost Focus	214.1[a]	162.8[b]	63.1[c]	0.0001
	0.802	*0.272*	*-1.131*	
Number of Businesses (n=289)	**135**	**33**	**121**	

Table 2. Characteristics of the Three Strategic Groups according to Kruskal–Wallis test

NB: Within rows, average ranks with different superscript differ significantly at $P<0.05$ according to Q non-parametric test. Average ranks are reported in standard text and medians in *italics*.

The three identified strategic groups were validated using Kruskal – Wallis non parametric one way ANOVA test with eight (8) strategic variables which were not used in factor analysis. The eight variables that were examined to ascertain: (a) the importance of monitoring market prices (v1), (b) input cost(v2), (c) updating production techniques (v8), (d) animal welfare (v14), (e) intensive production methods (v15), (f) detailed knowledge of the distribution channels (v16), (g) seasonal fluctuations (v21) and (h) considering the other farmers as main competitors (v22). The following table (Table 3) illustrates the results of this test as well as the level of significance of the difference among the clusters according to the Q test that is the equivalent non-parametric post hoc Tukey's test (Eddison 2000).

Strategic Variables	Strategic Groups			
	Cost Focus	Production Orientation	Return Focus	P
Monitoring Market Prices	161.88[a]	182.08[b]	116.05[c]	0.0001
	4.000	*4.000*	*4.000*	
Input cost	155.67[a]	208.17[b]	115.86[c]	0.0001
	2.000	*3.000*	*1.000*	
Update production techniques	150.25[a]	218.56[b]	119.08[c]	0.0001
	1.000	*4.000*	*1.000*	
Detailed Knowledge of the distribution Channels	144.57[a]	152.27[b]	143.50[c]	0.0001
	1.000	*1.000*	*1.000*	
Seasonal fluctuations	162.50[a]	182.91[b]	115.14[c]	0.009
	4.000	*4.000*	*1.000*	
Considering other farmers as main competitors	141.42[a]	192.92[b]	135.93[c]	0.001
	1.000	*2.000*	*1.000*	
Animal welfare	130.91[a]	199.30[b]	145.91[c]	0.0001
	1.000	*3.000*	*1.000*	
Intensive production methods	145.62[a]	166.62[b]	138.41[c]	0.0001
	1.000	*1.000*	*1.000*	
Number of Businesses (n=289)	**135**	**33**	**121**	

Table 3. Miscellaneous Characteristics of the Three Strategic Groups according to Kruskal–Wallis test

NB: Within rows, average ranks with different superscript differ significantly at $P<0.05$ according to Q non-parametric test. Average ranks are reported in standard text and medians in *italics*.

(D) Interpretation and external validation of the results of cluster analysis regarding milk marketing in Greece with the Kruskal-Wallis non-parametric test

Cluster analysis identified four possible cluster solution (n=2, n=3, n=4 and n=5). The kappa coefficient for each cluster solution was -0.65 for n=2 (P>0.05);-0.362 for n=3 (P<0.001); -0.131 for n=4 (P<0.001) and 0.311 for n=5(P<0.001). Since the decision is based on the

kappa maximization, the five cluster solution appeared optimal. However, before accepting this solution, all cluster solutions (based on all cases) were examined for interpretability and external validity. The three cluster solution found to be more meaningful than the other three as it has better and higher external validity than the five cluster solution which appeared the optimal solution by the kappa coefficients. In other words, the significant inter-cluster differences identified in variables that were not used in the cluster analysis were found to be higher for a 3-cluster solution than for a 5-cluster solution (Tables 8 and 9)

More specifically, the association between the key strategic dimensions and the classification of the farmers to the three strategic groups based on ANOVA test are presented in Table 4. The high positive mean score of a particular strategic dimension means that this dimension is important to the farmers that follow the specific business strategy.

Therefore, all the factors except the "interpersonal relationships" were found to be significantly associated with the classification of the farmers to the three strategic groups.

Key Strategic Dimensions	Strategic Groups			
	Differentiation Strategy	Production Orientation Strategy	Return Focused Strategy	P
Production Orientation	-0.093[a]	1.020[b]	-0.358[c]	0.0001
	0.328	*1.000*	*0.373*	
Cost Focus	-0.914[a]	-0.036[b]	0.128[b]	0.0001
	0.644	*0.926*	*0.985*	
Profit Orientation	-1.333[a]	-0.233[b]	0.365[c]	0.0001
	0.698	*0.753*	*0.560*	
Differentiation	0.023[a]	-0.183[b]	-0.166[b]	0.0001
	0.2836	*0.7152*	*0.3983*	
Interpersonal Relationships	0.108[a]	0.301[a]	0.013[a]	0.077
	0.974	*0.776*	*0.953*	
Number of Businesses (n=291)	**37**	**46**	**208**	

Table 4. Characteristics of the Three Clusters from Cluster Analysis

NB: Within rows, means with different superscript differ significantly at P<0.05 according to Tukey's post hoc test. Means are reported in standard text and standard deviations in *italics.*

The interpretation of the each strategic group according to the five cluster solution is presented in Table 5. A significant association found between all the identified key strategic groups and the classification of the farmers to each cluster. On the other hand no intercluster differences were identified among the five strategic groups regarding the key strategic dimensions.

Key Strategic Dimensions	Strategic Groups					
	Cost Focus Strategy	Return Focus Strategy	Production Orientation Strategy	Differen-tiation Strategy	Interpersonal Relationships Orientation Strategy	P
Production Orientation	-0.495[a] *0.242*	-0.157[b] *-0.394*	1.730[c] *0.581*	-0.041[b] *0.365*	-0.427[a] *0.288*	0.0001
Cost Focus	0.919[a] *0.601*	-0.850[b] *0.512*	0.486[c] *0.553*	-0.821[b] *0.758*	0.217[c] *0.865*	0.0001
Profit Orientation	0.021[a,d] *0.639*	0.536[b] *0.458*	-0.193[a] *0.689*	-0.162[c] *0.517*	0.289[b,d] *0.574*	0.0001
Differentiation	-0.218[a] *0.078*	-0.126[b] *0.128*	-0.176[a,b] *0.443*	0.030[c] *0.208*	0.149[a,b] *0.102*	0.0001
Interpersonal Relationships	-0.686[a] *0.501*	-0.253[b] *0.581*	0.309[c] *0.680*	-0.101[b,c] *0.872*	1.392[d] *0.637*	0.001
Number of Businesses (n=291)	**83**	**100**	**28**	**30**	**50**	

Table 5. Characteristics of the Five Clusters from Cluster Analysis

NB: Within rows, means with different superscript differ significantly at P<0.05 according to Tuckey's post hoc test. Means are reported in standard text and standard deviations in *italics*.

The results of the ANOVA were validated with the Kruskal – Wallis non-parametric one way ANOVA. The following tables (Table 6 and 7) illustrate the results of this test for the 3 clusters and 5 clusters solution, respectively, as well as the significance of the difference among the clusters according to the Q test (Eddison 2000). High average ranks as well as high positive medians of a particular strategic dimension mean that this dimension is important to the farmers that follow the specific business strategy.

Key Strategic Dimensions	Strategic Groups			
	Differentiation Strategy	Production Orientation Strategy	Return Focused Strategy	P
Production Orientation	196.9[a]	245.7[b]	114.9[c]	*0.001*
	-0.211	*1.129*	*-0.460*	
Cost Focus	71.8[a]	147.5[b]	158.9[c]	*0.001*
	-1.083	*0.323*	*0.106*	
Profit Orientation	32.4[a]	108.6[b]	174.5[c]	*0.001*
	-1.350	*-0.139*	*0.457*	
Differentiation	226.1[a]	116.5[b]	138.3[c]	*0.001*
	0.012	*-0.228*	*0.176*	
Interpersonal Relationships	159.6[a]	122.0[b]	148.9[c]	*0.084*
	-0.125	*0.417*	*0.189*	
Number of Businesses (n=291)	**37**	**46**	**208**	

Table 6. Characteristics of the Three Strategic Groups accordind to Kruskal–Wallis test

NB: Within rows, average ranks with different superscript differ significantly at P<0.05 according to Q non-parametric test. Average ranks are reported in standard text and medians in *italics.*

According to this test, all the key strategic dimensions except the "interpersonal relationships" were found to be associated with the classification of the farmers to the three strategic groups, while significant inter-cluster associations were found among all the clusters regarding all the dimensions.

Key Strategic Dimensions	Strategic Groups					P
	Cost Focus Strategy	Return Focus Strategy	Production Orientation Strategy	Differen-tiation Strategy	Interpersonal Relationships Orientation Strategy	
Production Orientation	76.2[a]	173.0[b]	276.7[c]	202.8[d]	100.6[e]	0.0001
	-0.560	*-0.258*	*1.705*	*-0.149*	*-0.488*	
Cost Focus	224.8[a]	76.0[b]	193.5[c]	79.7[b]	168.4[d]	0.0001
	0.921	*-0.861*	*0.518*	*-1.155*	*0.286*	
Profit Orientation	133.5[a]	193.9[b]	111.0[c]	19.6[d]	166.4[e]	0.0001
	0.346	*0.582*	*-0.330*	*-1.510*	*0.455*	
Differentiation	98.5[a]	174.2[b]	97.4[a]	225.10[c]	148.30[d]	0.0001
	0.230	*0.107*	*0.290*	*0.035*	*-0.153*	
Interpersonal Relationships	82.1[a]	132.8[b]	185.6[c]	144.3[d]	257.3[e]	0.0001
	-0.835	*-0.257*	*0.327*	*-0.555*	*1.271*	
Number of Businesses (n=291)	**83**	**100**	**28**	**30**	**50**	

Table 7. Characteristics of the Three Strategic Groups according to Kruskal–Wallis test

NB: Within rows, average ranks with different superscript differ significantly at $P<0.05$ according to Q non-parametric test. Average ranks are reported in standard text and medians in *italics*.

The above table (Table 7) illustrates that all the factors were found to be significantly associated with the classification of the farmers to the five strategic group, but significant inter-cluster differences were identified among all the clusters regarding the following factors: (i) "production orientation", (ii) "profit orientation" and (iii) "interpersonal relationships". The Q test did not identify any significant inter-cluster difference between return-focused and differentiation-orientated farmers regarding the "cost focus" dimension as well as between cost focused and production orientated farmers relative to the "differentiation" dimension.

The three and the five identified strategic groups were validated using Kruskal – Wallis non-parametric one way ANOVA with six (6) strategic variables not used in factor analysis. The six variables were examined to ascertain the importance of input costs (v2), updating production techniques (v6), maximization of milk quality by using special production techniques (v14), no influence over the milk price (v22), influence of other countries policies to farm profitability (v24) and animal welfare (v34). The results of the test for both cluster solutions (3 clusters and 5 clusters solution) as well as the level of significance of the difference among the clusters according to the Q test are presented in Tables 8 and 9, respectively. High average ranks as well as high positive medians of a particular strategic variable means that this variable is important to the farmers that follow the specific business strategy.

Strategic Variables	Strategic Groups			
	Differentiation Strategy	Production Orientation Strategy	Return Focused Strategy	P
Input cost	114.31[a]	183.96[b]	143.24[c]	0.0001
	4.000	*4:000*	*4.000*	
Update production	107.14[a]	191.74[b]	142.80[c]	0.025
techniques	*2.000*	*3.000*	*1.000*	
Maximization of milk	122.95[a]	153.74[b]	148.39[c]	0.0001
quality	*1.000*	*4.000*	*1.000*	
No influence over the milk	79.54[a]	122.58[b]	163.00[c]	0.009
price	*4.000*	*4.000*	*1.000*	
Influence of other countries	214.18[a]	184.35[b]	125.39[c]	0.001
policies to farm profitability	*1.000*	*2.000*	*1.000*	
Animal welfare	172.20[a]	179.14[a]	134.01[b]	0.0001
	1.000	*3.000*	*1.000*	
Number of Businesses (n=291)	**37**	**46**	**208**	

Table 8. Miscellaneous Characteristics of the Three Strategic Groups according to Kruskal–Wallis test

NB: Within rows, average ranks with different superscript differ significantly at $P<0.05$ according to Q non-parametric test. Average ranks are reported in standard text and medians in *italics*.

As the above table illustrates, all the strategic variables were significantly associated with the three strategic groups. Significant intercluster differences were identified among all the strategic groups regarding five of the six strategic variables. The test did not identify any significant inter-cluster difference between the farmers who adopted the differentiation strategy and those who followed the production orientation strategy regarding the importance of animal welfare for both these groups.

Concerning the five-cluster solution, all the examined strategic solutions were found to be significantly associated with the identified marketing strategies (Table 9). The Q test

indicated that significant intecluster differences regarding the examined strategic variables exist among some and not all the strategic groups (Table 10.9).

Strategic Variables	Strategic Groups					
	Cost Focus Strategy	**Return Focus Strategy**	**Production Orientation Strategy**	**Differen-tiation Strategy**	**Interpersonal Relationships Orientation Strategy**	**P**
Input cost	157.23[a,c]	115.11[b]	229.34[c]	121.07[b]	157.42[a]	0.0001
	2.000	*1.000*	*3.000*	*1.000*	*2.000*	
Update production techniques	160.79[a]	119.17[b]	224.80[c]	99.58[d]	158.84[a]	0.0001
	2.000	*1.000*	*4.000*	*1.000*	*1.500*	
Maximization of milk quality	156.48[a]	131.05[b]	170.09[c]	123.75[d]	158.36[a]	0.0001
	1.000	*1.000*	*1.000*	*1.000*	*1.000*	
No influence over the milk price	167.64[a]	138.43[b]	144.73[b]	75.60[c]	168.17[a]	0.0001
	5.000	*5.000*	*5.000*	*3.000*	*5.000*	
Influence of other countries policies to farm profitability	112.70[a]	158.06[b]	176.54[c]	217.67[d]	117.06[a]	0.0001
	1.000	*1.000*	*2.000*	*3.000*	*1.000*	
Animal welfare	124.15[a]	144.41[b]	219.41[c]	178.77[d]	124.68[a]	0.0001
	1.000	*1.000*	*3.000*	*2.500*	*1.000*	
Number of Businesses (n=291)	**83**	**100**	**28**	**30**	**50**	

Table 9. Miscellaneous Characteristics of the Five Strategic Groups according to Kruskal–Wallis test

NB: Within rows, average ranks with different superscript differ significantly at $P<0.05$ according to Q non-parametric test. Average ranks are reported in standard text and medians in *italics*.

Therefore, the interpretation and the external validation of the cluster solution based on the strategic variables that were not used in factor analysis indicated that the three cluster solution is more robust than the five cluster solution.

(E) The results of the Box's M, Bartlett Box F and Levene's test.

The Box's M test statistic was evaluated to test if there was equality of covariance of the independent variables across the identified group.

Regarding the livestock marketing the small probability (Box M= 295.290, approx F= 22.921, df =3191.7, P<0.001) indicated that the variance – covariance matrices were violated and Bartlett Box F statistic as well as the Levene's test were conducted using Minitab 12 to asses the homogeneity of variance for each depended variable (Siardos 2000). The results the Bartlett Box F statistic and the Levene's test (Table 10) indicated that the equality of variance for the examined strategic dimensions was violated and quadratic discriminant analysis was conducted in order to determine whether the identified variables could predict cluster membership in both case.

Key strategic dimensions	Bartlett Box F	P	Levene's statistic	P
Profit Orientation	6.632	0.036	4.428	0.013
Production Orientation	41.805	0.001	19.622	0.001
Cost Focus	3.034	0.219	3.467	0.033

Table 10 The results of Bartlett Box F and Levene's statistic regarding livestock marketing

The Box's M test statistic for milk marketing (Box M= 293.083 approx F= 11.895, df =1448.094, P<0.001 for the 3 cluster solution and Box M= 400.063 approx F= 7.660, df =2337.425, P<0.001 for the 5 cluster solution) indicated that the variance – covariance matrices were violated. In inference both the Bartlett Box F and the Levene's test statistic (Table 11) indicated that the equality of variance for production orientation, cost focus and interpersonal relationships regarding the three cluster solutions and for all the strategic dimensions regarding the five cluster solution was violated.

Key strategic dimensions	Three cluster solution				Five cluster solution			
	Bartlett Box F	P	Levene's statistic	P	Bartlett Box F	P	Levene's statistic	P
Production Orientation	35.572	0.001	27.756	0.001	79.851	0.001	27.165	0.001
Cost Focus	13.406	0.001	11.493	0.001	24.826	0.001	7.540	0.001
Profit Orientation	1.268	0.530	0.404	0.668	30.938	0.001	4.771	0.001
Differentiation	5.453	0.065	0.570	0.566	24.631	0.001	6.495	0.001
Interpersonal Relationships	23.637	0.001	4.419	0.013	17.488	0.002	3.495	0.001

Table 11 The results of Bartlett Box F and Levene's statistic regarding milk marketing

APPENDIX XIII

DETAILED INFORMATION ON THE STATISTICAL ANALYSIS REGARDING THE SURVEY IN THE SHEEP AND DAIRY COW FARMERS IN UNITED KINGDOM.

(A) Examination of the Final Anti-image Correlation Matrix in Factor Analysis

Examination of the final anti-image correlation matrix of the livestock marketing data indicated that only 2 of the 45 (5%) anti – image correlations had large absolute values. The low percentage of large anti-image correlations was an indicator of the strength of interrelationships among variables. The Bartlett test of sphericity (x^2= 250.543, df=45, P<0.001), the Kaiser – Meyer – Oklin Measure of Adequacy (KMO MSA=0.80) and the MSA for each examined variable (MSAv1=0.77, MSAv10=0.78, MSAv13=0.90, MSAv14=0.80, MSAv24=0.80, MSAv25=0.77, MSAv29=0.76, MSAv30=0.80, MSAv36=0.73, and MSAv44=0.91) indicated that the data were appropriate for factor analysis (Malhotra 1996; Hair *et al.* 1998; Darren and Mallery 2001). Examination of the determinant of correlation matrix (Determinant = 0.00475) also indicated the adequacy of the data for factor analysis.

Regarding the milk marketing data, the absence of large absolute values of anti-image correlation supported the strength of intercorrelations among the variables. The Bartlett test of sphericity (x^2= 131,984, df=36, P<0.001), the Kaiser – Meyer – Oklin Measure of

Adequacy (KMO MSA=0.75) and the MSA for each examined variable (MSAv5=0.79, MSAv14=0.83, MSAv18=0.75, MSAv22=0.75, MSAv25=0.60, MSAv26=0.79, MSAv28=0.66, MSAv32=0.71, and MSAv35=0.75) indicated that the data were appropriate for factor analysis (Malhotra 1996; Hair *et al.* 1998; Darren and Mallery 2001). The determinant of correlation matrix (determinant = 0.06826) also supported the suitability of the data for factor analysis.

(B) Description of cluster analysis regarding the identification of the marketing strategies that sheep farmers follow.

Ward's procedure was the hierarchical technique that was conducted in order to predetermine the number of clusters, profile the cluster centres and identify any obvious outliers. This procedure suggested between two and three cluster solution.

In the next stage the 52 observations were randomly split into the test (D1) and the internal validation sample (D2) according to the recommendations of Punj and Stewart (1983) and McIntyre and Blashhield (1980) that were presented in Chapter 8. Hence, k-mean cluster analysis performed in D1 sample for the two cluster values (n=2, 3) and when the centroids obtained for each cluster, k-mean analysis conducted in D2 for each alternative (n=2, 3) provided two constrained and two unconstrained solutions. Next the coefficient of agreement (kappa) between the constrained and unconstrained solution of D2 cases was calculated for each cluster solution. The kappa coefficient for each cluster solution was – 0.195 for n=3 ($P>0.05$), -0.490 for n=2 ($P<0.01$). The two cluster solution appeared to be more acceptable than the three cluster solution as its kappa coefficient is significant for $P<0.05$. However, before accepting this solution all cluster solutions (based on all cases) were examined for interpretability and external validity. The two cluster solution found to

be the most meaningful, it was highly interpretable and also had external validity i.e. significant inter-cluster differences were identified in variables that were not used in the cluster analysis.

The two identified strategic groups were validated using Kruskal – Wallis non-parametric one-way ANOVA with six (6) strategic variables not used in factor analysis as this test is more robust in cases of ordinal data (Kinnear and Gray 2000). The six variables were examined to ascertain the importance of input cost (v2), animal welfare (v21), intensive production methods (v23), search for new market outlets (v34), understanding of need and wants of the final consumer (v37) and knowledge obtained from other farmers that is considered as valuable for farm business operation (v41). The results of this test as well as the level of significance of the difference among the clusters according to the Q test (the equivalent non-parametric post hoc Tuckey's test) are presented in Table 1. High average ranks as well as high positive medians of a particular strategic variable means that this variable is important to the farmers that follow the specific business strategy.

Inter-cluster differences were observed in the five of the six variables. All the strategic variables appeared to be important for both strategic groups. The differentiation-orientated farmers were more interested in achieving high animal welfare standards, searching for new market outlets for their produce, exploring and understanding the needs and wants of the final consumer as well as they considered that the knowledge they obtained from the other farmers in their region were essential for their farm operation. On the other hand, production-orientated farmers were more interested in intensive livestock production techniques. Furthermore none of the two strategic groups were significantly associated (P=0.055) with reducing the input cost but this variable seems to be more important for the farmers adopted the differentiation strategy.

Strategic Variables	Strategic Groups		
	Differentiation Strategy	Production Orientation Strategy	P
Input Cost	29.91[a]	22.52[b]	0.055
	3.000	*3.000*	
Animal welfare	30.43[a]	21.92[b]	0.020
	4.000	*4.000*	
Intensive production methods	22.57[a]	31.08[b]	0.034
	2.000	*3.000*	
Search for new market outlets	30.39[a]	21.96[b]	0.026
	2.000	*1.000*	
Understanding of the need and wants of the final consumer	31.88[a]	20.23[b]	0.003
	4.000	*3.000*	
Knowledge obtained from other farmers is considered as important for farm business operation	30.29[a]	22.08[b]	0.044
	3.000	*2.000*	
Number of Businesses (n=52)	28	24	

Table 1 Miscellaneous Characteristics of the Two Strategic Groups according to Kruskal–Wallis test

NB: Within rows, average ranks with different superscript differ significantly at P<0.05 according to Q non-parametric test. Average ranks are reported in standard text and medians in *italics.*

(C) Description of cluster analysis regarding the identification of the marketing strategies that dairy cow farmers follow.

Ward's procedure was the hierarchical technique that was conducted in order to predetermine the number of clusters, profile the cluster centres and identify any obvious outliers. This procedure suggested between two and three cluster solution.

In the next stage the 54 observations were randomly split into the test sample (D1) and the internal validation sample (D2) according to the recommendations of Punj and Stewart (1983) and McIntyre and Blashhield (1980) that also are presented in Chapter 8. The k-mean cluster analysis performed in D1 sample for the two cluster values (n=2, 3) and when

the centroids obtained for each cluster, k-mėan analysis conducted in D2 for each alternative (n=2, 3) provided two constrained and two unconstrained solutions. Next the coefficient of agreement (kappa) between the constrained and unconstrained solution of D2 cases was calculated for each cluster solution. The kappa coefficient for each cluster solution was 0.300 for n=3 (P<0.05), 0.634 for n=2 (P<0.001). Since the decision is the kappa maximization in a significant level of P<0.05 the two cluster solution appeared to meet this criterion. Furthermore, both cluster solutions (based on all cases) were examined for interpretability and external validity. Examining the results of ANOVA that are presented in Tables 2 and 3, the three clusters solution found to be more interpretable than the two clusters solution.

Key Strategic Dimensions	**Strategic Groups**			
	Opportunist strategy	**Return focus strategy**	**Market orientation**	**P**
Market Orientation	-0.2052[a]	-0.5619[a]	1.4028[b]	0.0001
	0.6490	*0.5771*	*0.6131*	
Profit Orientation	-0.7884[a]	0.4478[b]	-0.0085[b.a]	0.001
	0.7114	*0.9693*	*0.9309*	
Interpersonal Relationships	-1.4417[a]	0.1120[b]	0.2794[b]	0.0001
	0.7438	*0.9040*	*0.6884*	
Number of Businesses (n=54)	**15**	**23**	**16**	

Table 2 Characteristics of the Three Clusters from Cluster Analysis

NB: Means are reported in standard text and standard deviations in *italics*. Within rows, average ranks with different superscript differ significantly at P<0.05 according to Tuckey post hoc test.

Key Strategic Dimensions	Strategic Groups		
	Opportunist strategy	Return focus strategy	P
Market Orientation	-0.3715	0.4081	0.007
	0.6540	*1.1240*	
Profit Orientation	-0.5611	0.7837	0.004
	0.7837	*1.0269*	
Interpersonal	-1.2343	0.7885	0.0001
Relationships	*0.7885*	*0.7836*	
Number of Businesses (n=54)	**20**	**34**	

Table 3 Characteristics of the Two Clusters from Cluster Analysis

NB: Means are reported in standard text and standard deviations in *italics*.

Moreover the three cluster solution had better external validity than the two clusters solution according to the results of the Kruskall – Wallis test that Tables 4 and 5 illustrate because the three clusters solution found to be significant associated with the four of the five variables that were not used in factor analysis contrary to the two clusters solution that was significant related to only one of the five examined variables. More particular, the three clusters and two clusters solutions were validated using Kruskal – Wallis non-parametric one-way ANOVA with five (5) strategic variables not used in factor analysis as this test is more robust in cases of ordinal data (Kinnear and Gray 2000). The five variables were examined to ascertain the importance of farmers' awareness about the exact cost and return of their milk produce (v3), extremely flexible production plans (v11), breeding of dairy cow which required special knowledge and equipment of facilities that other farmers do not have (v12), production of special, niche market products (v24) and involvement with off-farm marketing activities (v27).

Strategic Variables	Strategic Groups			
	Opportunist strategy	Return focus strategy	Market orientation	P
Awareness of the exact cost and returns	24.73[a]	25.11[a]	33.53[b]	0.150
of the milk produce	*4.000*	*4.000*	*5.000*	
Extremely flexible production plans	24.37[a]	22.48[a]	37.66[b]	0.005
	2.000	*2.000*	*3.000*	
Production of special niche market	28.03[a]	23.50[b]	32.75[c]	0.028
products, e.g organic	*1.000*	*1.000*	*1.000*	
Breeding dairy cows which require	18.90[a]	27.28[b]	35.88[c]	0.002
special knowledge and equipment that	*1.000*	*1.000*	*2.500*	
other farmers do not have				
Personal involvement in off marketing	22.00[a]	26.52[b]	34.06[c]	0.043
activities	*1.000*	*1.000*	*2.000*	
Number of Businesses (n=54)	15	23	16	

Table 4 Miscellaneous Characteristics of the Three Strategic Groups according to Kruskal–Wallis test

NB: Within rows, average ranks with different superscript differ significantly at P<0.05 according to Q non-parametric test. Average ranks are reported in standard text and medians in *italics*.

Strategic Variables	Strategic Groups		
	Opportunist strategy	Return focus strategy	P
Awareness of the exact cost and returns of the milk	25.00[a]	28.97[a]	0.340
produce	*4.000*	*4.000*	
Extremely flexible production plans	25.45[a]	28.71[a]	0.440
	2.000	*3.000*	
Production of special niche market products, e.g organic	26.65[a]	28.00[a]	0.653
	1.000	*1.000*	
Breeding dairy cows which require special knowledge	22.25[a]	30.59[a]	0.029
and equipment that other farmers do not have	*1.000*	*1.000*	
Personal involvement in off marketing activities	23.75[a]	29.71[a]	0.120
	1.000	*1.000*	
Number of Businesses (n=54)	20	34	

Table 5 Miscellaneous Characteristics of the Two Strategic Groups according to Kruskal–Wallis test

NB: Within rows, average ranks with different superscript differ significantly at P<0.05 according to Q non-parametric test. Average ranks are reported in standard text and medians in *italics*.

As the three clusters solution found to have better validity than the two clusters solution, the three clusters (based on the cluster means for the derived factor scores and the cluster sizes) were named according to the business strategy that the farmers in each group appeared to follow. The mean factor scores, the standard deviations and the results from ANOVA test for farmers in each strategic group with each strategic dimension are presented in the Table 13.3. The high positive mean score of a particular strategic dimension means that this dimension is important to the farmers that follow the specific business strategy.

(D) Description of discriminant analysis regarding the marketing strategies that sheep farmers follow.

Prior to discriminant analysis the normality of the key strategic dimensions was checked. The Box's M test statistic (Box M= 8.091, approx F= 1.260, df =16938.887, P=0.272) indicated that the equality of variance – covariance matrices is supported and the discriminant analysis is appropriate.

Therefore, a stepwise discriminant analysis was conducted to evaluate the prediction of group membership by the predictors derived from the factor analysis as there was not any *a priori* knowledge of the predictor variables. The criteria that were used to evaluate the discriminating power of the predictor variables were : **(a) Wilk's lamda, (b) canonical function** which relates the number of important functions through several tests included:(i) eigenvalues greater than 1 are significant, the greater the value the greater the discriminant power of the function, (ii) percentage of variance greater than 5% is significant, (iii) a canonical correlation greater than 0.6 is significant and (iv) overal chi-square statistics for the derived function, **(c) percentage of variance explained through the use of I^2** and **(d) percentage correctly classified** (Morrison 1969; Peterson and Mahajan 1976; Crask *et al.* 1977; Daniels and Darcy 1983; Tabachnick and Fidell 1989; Hair *et al.* 1998; Davies 2001).

(E) Description of discriminant analysis regarding the marketing strategies that dairy cow farmers follow.

Initially the normality of the key strategic dimensions was checked. The Box's M test statistic (Box M= 24.111 approx F= 1.828, df =9517.314, P=0.038) indicated that the variance – covariance matrices were violated.

Thus, the Bartlett Box F statistic and the Levene's Test were conducted additionally using Minitab to asses the homogeneity of variance for each depended variable (Siardos 2000). The results of both tests are presented in Table 6 and indicate that the equality of variance for each strategic dimension was not violated.

Key strategic dimensions	Bartlett Box F	P	Levene's statistic	P
Market Orientation	0.236	0.889	0.143	0.867
Profit Orientation	1.574	0.455	1.082	0.347
Interpersonal Relationships	1.432	0.489	1.419	0.251

Table 6 The results of Bartlett Box F and Levene's statistic

Therefore, a stepwise discriminant analysis was conducted in a similar way to that presented in the previous section.