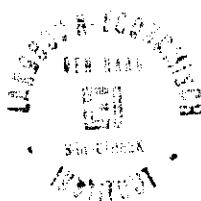


M.D. Hack  
J.C.M. van Meijl  
A.F. van Gaasbeek  
J.J. de Vlieger

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## COMPETITIVENESS MONITOR FOR THE AGRIBUSINESS

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## ABSTRACT

### COMPETITIVENESS MONITOR FOR THE AGRIBUSINESS

Hack, M.D., J.C.M. van Meijl, A.F. van Gaasbeek and J.J. de Vlieger

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The Competitiveness Monitor is an instrument to measure international competitiveness of agricultural industries on a regular basis. The results can primarily be used as mirror for the agricultural industries and trade and to give them practical points to work on improvement. In addition it supports the policy of enhancing the competitiveness of agricultural industries and trade of the Ministry of Agriculture, Nature Management and Fisheries. This publication describes and discusses the methodology of the Competitiveness Monitor and some pilot applications. Based on economic theories, dealing with competitiveness in one way or another, a new framework has been developed. The framework consists of four determinative key factors; Market adaptability, Supply chain effectiveness, Cost and efficiency and Strategic potential, with underlying variables. A standardized questionnaire measures the competitive position on the level of both buyers and exporters of the (Dutch) products. For the data collection markets, product and competitors are selected with formal procedures. The instrument was tested in two pilots. The results are presented in a standardized way, showing the competitive position of the Netherlands and their competitors on both the determinative key factors and the underlying variables.

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# FOREWORD

The Competitiveness Monitor is an instrument to measure international competitiveness of the Dutch agricultural industries on a regular basis. The results will primarily be used to have the agricultural industries and trade look at themselves and to give them practical points to work on improvement. In addition it can be used to support the policy of improving the competitiveness of agricultural industries and trade of the Ministry of Agriculture, Nature Management and Fisheries (LNV). In this publication the methodology of the Competitiveness Monitor is described and discussed.

LNV has commissioned the development of the Competitiveness Monitor. We thank the members and advisors of the following commission (per 1997 Nov.) who accompanied the research:

Mr. A.M.W. Kleinmeulman	(LNV, department Industry and Trade; president)
Mr. Th.M. Bakker	(LNV, department Industry and Trade; secretary)
Mr. W.J. Boersma	(Ministry of Economic Affairs, department EDI)
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Mr. A.F. van Gaasbeek, Mrs. M.D. Hack, Mr. J.J. de Vlieger and Mr. J.C.M. van Meijl did the research. Researchers who temporarily contributed are: Mr. G.J. Boers, Mr. M.H. Borgstein, Mr. C.A. van Dorp, Ms. I.A.M.A. Jahae, Ms. G.M.L. Tacken and Ms. C.J.H. Welberg. The project was co-ordinated by Mrs. M.D. Hack (LEI-DLO). The responsibility for the research is with LEI-DLO.

The director,



L.C. Zachariasse

The Hague, October 1998

# **1. INTRODUCTION**

## **1.1 Research question**

The competitive position of the Dutch agribusiness is of great concern for the Ministry of Agriculture, Nature Management and Fisheries. Especially since a research conducted by A.T. Kearney (1994) commissioned by the Ministry concluded the competitive position of a number of important industries was getting worse quickly. Although in the first place a good competitive position is a responsibility of the entrepreneurs themselves, the government also affects the competitive position. The policy of the Ministry Agriculture, Nature Management and Fisheries with respect to enhancing the competitiveness of the agribusiness is stated in 'Dynamiek en Vernieuwing' (1995). One important element of this policy is to develop an instrument that monitors the competitiveness of various agribusiness sectors.

The Ministry asked the Agricultural Economics Research Institute (LEI-DLO) to develop an instrument to measure international competitiveness of the Dutch agribusiness on a regular basis. The results will be used to hold up a mirror to the agribusiness, but also to offer practical suggestions for improvement. In addition it can be used to support the policy of the Ministry enhancing the competitiveness of agribusiness.

## **1.2 Aim of the project**

The aim of the research is to develop an instrument that can be used to measure international competitiveness in all agricultural industries on a regular basis, a so-called Competitiveness Monitor (CM). Measurements with the instrument must give the agribusiness practical points to improve their competitive position. Also it has to give information to support priority setting in policy. The instrument must be applicable to all agricultural industries, measurements must be verifiable, information has to be up-to-date and results must be comparable over years.

The central question the Competitiveness Monitor has to answer is: what is the present competitive position of the Dutch agribusiness, on what aspects is the performance of the Dutch agribusiness worse or better and what can be points of improvement?

### **1.3 Structure of the report**

Chapter 2 reviews the relevant literature on competitiveness. It is concluded that a new overall framework should be developed. Chapter 3 deals with this newly developed method: the Competitiveness Monitor. In chapter 4 it is described how the methodology was applied to the Dutch cut flower industry and the Dutch dairy industry. A comprehensive summary of the results of these two pilot projects is presented in chapter 5. More results can be found in Hack and Borgstein (1997) and Van Gaasbeek and Tacken (1997). Chapter 6 concludes with a discussion on the methodology of the Competitiveness Monitor: the validity of the results, and possibilities and limitations for further use.

## 2. LITERATURE ON COMPETITIVENESS

### 2.1 Introduction

To provide a sound theoretical background to the framework of the competitiveness monitor we performed a broad survey of the theoretical literature on competitiveness. In this chapter we present a short review of the treatment of competitiveness in several disciplines: i.e. trade theory, industrial economics, marketing and business economics. These theories deal with competitiveness on the macro, meso and micro level. In general one can say that when one moves from macro- to micro-level, theories have to relax more assumptions and become more detailed and complex, yet less precise (general theorems) and elegant. The issue addressed in the research should govern the choice between the levels of analysis.

Because the competitiveness monitor is directed at competitiveness on the industry and firm level we will be short on trade theory and treat industrial economics and especially business economics in more detail. With respect to the latter we discuss some concepts from the strategic management and marketing literature. At the end of this section we discuss the key elements that determine competitiveness in the theory under consideration. Furthermore, we select the key-elements that can be influenced by firms because the main aim of this research is to provide practical points to improve competitiveness to the agribusiness sectors.

### 2.2 Trade theory 1)

Adam Smith posed that a sector has a competitive advantage when there are absolute cost-differences between countries. Ricardo, who treated technology (labour productivity) as the main determinant of trade, showed the shortcomings of this theory because even if one country can produce all goods more efficiently trade is possible when the relative efficiency gap is not the same for all goods. If this is the case a country has a comparative advantage in the good that has the highest efficiency gap in relation to its competitor.

The Heckscher-Ohlin model which has been the standard trade model for a long time, assumed identical technologies across countries and factor endowments (labour, capital) became the main determinants of trade patterns. As in the Ricardian theory, trade patterns were explained by cost-based com-

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1) For a more elaborated survey of the trade theories see Van Berkum and Van Meyl, 1998.



parative advantage. However, Leontieff showed in an empirical study that theoretical predictions of this theory were inadequate to explain observed trade patterns. This so-called Leontieff paradox led to the inclusion of many new concepts in trade theory that constitute the basis of the modern debate on competitiveness (e.g. Porter, 1990). For example, Linder (1967) showed that demand conditions differ across countries, Vanek (1959) stressed natural resources. The Neo-technology trade theories emphasize that innovation creates temporary unique products and the integration of trade theory and industrial organization showed that individual industry characteristics (e.g. economies of scale, product differentiation), (knowledge) infrastructure, market institutions and technical characteristics matter.

However, there was no unified theory of empirical analysis of competitiveness anymore, but many theories stressing a particular concept (e.g. human capital, research and development, product-life-cycles, infrastructure). Therefore Bredahl et al. (1994) concluded that a unified, general theory to address competitiveness might be unattainable since industry specifics and market institutions matter.

## 2.3 Industrial economics

Porter (1990) left the formal approach used in trade theory and integrated the various concepts of competitiveness in a simple conceptual framework. The question inherited from trade theory he poses is: 'Why does a nation achieve international success in a particular industry?' He came to the conclusion that four interrelated factors that shape the national environment determine the competitive strength of nations. Because he draws them in a diagram on the four corners of a diamond, he calls this structure the diamond of a nation. Nations are most likely to succeed in industries where the national diamond is most favorable. The four determinants are:

1. *factor conditions*  
The nation's position in factors of production, such as skilled labour or infrastructure, necessary to compete in a given industry;
2. *demand conditions*  
The nature of home demand for the industry's product or service;
3. *related and supporting industries*  
The presence or absence in the nation of supplier industries and related industries that are internationally competitive;
4. *firm strategy, structure and rivalry*  
The conditions in the nation governing how companies are created, organized, and managed, and the nature of domestic rivalry.

Apart from these four basic determinants Porter distinguishes two additional factors:

5. *chance*  
Events that have an asymmetric influence on the competitive positions of industries and nations, such as for instance important technological

'break through', discontinuities in input costs such as caused by oil price shocks, wars, shifts in exchange rates;

6. *the role of government*

The role of government and its influence on the four determinants of the diamond.

These determinants measure the extent to which the national environment is a fertile one for competing in an industry. Furthermore, the determinants are mutually dependent because the effect of one depends often on the state of the other.

Sustainable competitive advantage is the fundamental basis of above-average performance in the long run in Porters' (1980,1985) theory. There are two basic types of competitive advantage firms can possess: *low costs or differentiation*. These two basic types of competitive advantage combined with the scope of activities lead to three generic strategies for achieving above-normal performance in an industry: cost leadership, differentiation, and focus. The focus strategy has two variants, cost focus and differentiation focus. The cost leadership and differentiation strategies seek competitive advantage in a broad range of industry segments, while focus strategies aim at cost or differentiation advantage in a narrow segment.

The ability of firms to earn above-normal profits is dependent on the attractiveness of an industry that is subject to the rules of competition. These are embodied in five competitive forces: the entry of new competitors, the threat of substitutes, the bargaining power of buyers, the bargaining power of suppliers and the rivalry of existing competitors.

To analyze the sources of competitive advantage Porter (1985, ch.2) introduces the *value chain*, which desegregates a firm into its strategically relevant activities to understand the behavior of costs and the existing and potential sources of differentiation. He distinguishes five kinds of primary activities (inbound logistics, operations, outbound logistics, marketing and sales, service) and four kinds of support activities (firm infrastructure, human resource management, technology development, and procurement) that each can create value. Every value activity employs purchased inputs, human resources (labour and management) and some form of technology to perform its function. Furthermore, each activity creates information that has to be linked with other activities (Porter, 1985, p. 38).

The value chain of a firm is embedded in a larger stream of activities that Porter calls the *value system*. Value is created by the value chain of suppliers, the value chain of channels and eventually a firm's product becomes part of the buyers value chain. Porter stresses that these vertical linkages are frequently overlooked and that gaining and sustaining competitive advantage depends on understanding not only a firm's value chain but how the firm fits in the overall value system. The competitiveness of a firm or chain can be improved by coordination and cooperation between chain members. Both product (logistics) and information flows are crucial.

## 2.4 Strategic Management

### 2.4.1 The Resource-based theory of Competitive Advantage

'A firm's competitive position is defined by a bundle of unique resources and relationships. The task of general management is to adjust and renew these resources and relationships as time, competition, and change erode their value'. (Rumelt, 1984, pp. 557-558)

The central point of the resource based theory is that firms ultimate objective is to obtain above-normal returns. These can be achieved for a long time if tangible and intangible *resources* of an organization are combined in a strategic manner such that the firm's product is distinctive in the eyes of buyers. (e.g. the firm's product must offer to consumers a dissimilar and attractive attribute/price relationship, in comparison to substitutes), or that a firm selling an identical product in comparison to competitors must have a low cost position (Conner, 1991).

Barney (1991) shows that there are four characteristics of resources that lead to sustainable above normal profits.

- The resources must be *valuable*; that is, it makes a positive contribution to exploiting a position in the market.
- The resources must be *rare*; it cannot be widely available to competitors.
- The resources must be *not perfectly imitable* by competitors. A resource cannot be easily replicated if it arises from the idiosyncratic history of the firm (path dependence), socially complex phenomena within or between organizations, or causal ambiguity in the strategy process (i.e. cause-effect relationships between resources and sustained performance are poorly understood and therefore difficult to imitate).
- There *cannot be substitutes* easily available for the resource.

The resources cover physical, financial and human capital on the one hand and organizational capital on the other (Tomer, 1987). The latter includes knowledge, information, intangible assets (such as brand names and market position), decision-making processes and coordination systems. Especially the latter are difficult to imitate and can create a sustainable competitive advantage.

### 2.4.2 Competing for the future, Hamel and Prahalad

Hamel and Prahalad (1994) state that studies of competitiveness deal almost all with the struggle for current market share in an existing market. However, the environmental, genetic and most of all the information revolution cause a period of rapid change where the rules of competition may change and new opportunities occur. To compete in the future a firm has to obtain a share of these opportunities. In a dynamic world 'opportunity share' is therefore more relevant than market share (p. 32). Firms should not be prepared for the market structure of tomorrow but they can also create this

industry structure. To create an industry structure a firm must develop a vision of the future. Questions to ask are for example: Who will be your customers over 5 or 10 years, what will be their needs, what will be the basis for your competitive advantage, which core competencies are needed to be successful in the future, etceteras. Therefore it is not enough to build on your existing core competence or make a new combination of existing core competencies but you have to create the core competencies that you expect are necessary to compete in the future.

## **2.5 Marketing**

### **2.5.1 Marketing and competitiveness: 'a market oriented approach can create a sustainable competitive advantage'**

In the recent marketing literature, competitiveness is dependent on the market orientation of firms or industries. A market orientation strategy includes (1) the systematic gathering on information on customers and competitors, both present and potential (market and competitor intelligence), (2) the systematic analysis of the information for the purpose of developing market knowledge, and (3) the systematic use of this knowledge to guide strategy.

Deshpande and Webster point out that market orientation 'defines a distinct organizational culture [...] that puts the customer in the center of the firms' thinking about strategy and operations' (1989, p. 3). Hooley, Lynch and Sheperd (1990, pp. 21-22) conclude that 'marketing should be viewed as a guiding philosophy for the whole organization because our evidence points to improved performance among companies that adopt this wider approach'. Furthermore, Jaworski and Kohli (1993) conclude after a review of the (empirical) literature that market orientation of a business is an important determinant of its performance, regardless market turbulence, competitive intensity or technological turbulence. Therefore implementing a market orientation could create a comparative advantage because it potentially enables a firm to produce for some market segments more efficiently or effectively than one's competitors (Glazer, 1991). The comparative advantage in one or more segments is achieved through product differentiation, product innovations, quality, service or a suitable product range.

The question remains whether or not this comparative advantage is sustainable. Hunt and Morgan (1995) argue that 'although competitors may know that consumers in the market segment strongly prefer their rival's offering, there may be great ambiguity as to precisely what attributes are making it perceived to be superior. Furthermore, there may be great ambiguity as to specifically which resources are being used to produce highly valued attributes' (p. 12). Another argument is that there is a tacit (i.e. not written on paper but only (unaware) in the heads of people) dimension in implementing a market orientation effectively and a change in organizational structure is needed. Employees learn how to be market oriented not solely from reading policy manuals or textbooks but from associating with other employees who are

market oriented approach can enjoy a sustainable comparative advantage that can lead to superior long term performance.

## **2.6 Conclusion**

In general one can say that competitive advantage and especially sustainable competitive advantage of a firm or industry is determined by a complex interplay between various factors. Different theories stress different factors, which is partly dependent on the level of analysis or the issues they consider. An overview of the theories with the factors is in figure 2.1. What is common between the various theories is that one can obtain a competitive advantage by being a low cost producer or by producing a product that is distinctive in the eyes of buyers. On the one hand, this advantage is dependent on factors that can be influenced by firms (the ownership of some unique ability, resource or 'core competence') and on the other hand this depends on the perfect match between national conditions and preferable conditions for competition.

With respect to the theories we can say that trade theories and the Porter (1990) framework are adequate to examine inter industry links and cross-product comparisons. Industrial and business economists that study competitiveness on the most detailed level of analysis and include therefore a whole range of determinants and detailed industry information are most likely to identify appropriate policy for a given industry or the likely failure or success of that industry.

The survey of the literature gives the following key-elements of competitiveness that can be influenced by firms. The trade theories focussed for a long time on costs as the main determinant of competitiveness. In more recent contributions, product differentiation and innovation become also important. Porter gives a broad overview in which activities directed at a low-cost or a differentiation strategy are important. Furthermore, vertical linkages (value system) with other firms are important. The strategic management literature stresses the possession of difficult to copy resources or core competencies. Strategies should be directed at the creation of resources that are needed in the future (long term and flexible strategy). The marketing literature stresses that a market-oriented approach is a key determinant of competitiveness.

The various key-elements stressed by each theory indicate that there is no unified general theory of competitiveness. Therefore, we have to develop a new framework that integrates the key-elements of the various approaches (figure 2.1).

Theory	Key elements	Key elements that can be influenced by firms:
Trade theory	<ul style="list-style-type: none"> <li>- Traditional trade theory: relative cost differences caused by differences in labour productivity (Ricardo) and factor endowments</li> <li>- Linder: demand conditions differ across countries;</li> <li>- Vanek: natural resources;</li> <li>- Neo-technology trade theories: innovation creates temporary unique products;</li> <li>- Modern trade theories: product differentiation and economies of scale.</li> </ul>	Costs Productivity Innovation Product differentiation Economies of scale
Industrial Economics	<ul style="list-style-type: none"> <li>- Porter 90: factor conditions, demand conditions, related and supporting industries, firm strategy, structure and rivalry, chance, role of government.</li> <li>- Porter 80/85: strategy (low costs or differentiation), the competitive forces, the value chain (nine strategic activities create value by using purchased inputs, human resources and technology), the value system (coordination and cooperation, product flows, information flows).</li> </ul>	Strategy: low costs or differentiation The value chain: nine strategic activities create value by using purchased inputs, human resources and technology The value system: coordination and cooperation Product flows information flows
Marketing	<ul style="list-style-type: none"> <li>- Market orientation: product differentiation, product innovations, quality, service or a suitable product range (assortment).</li> </ul>	Market orientation: product differentiation, product innovations, quality, service or a suitable product range (assortment).
Strategic Management	<ul style="list-style-type: none"> <li>- Resource based theory: resources or core competencies; strategy must be flexible and directed at adjusting and renewing these resources.</li> <li>- Hamel and Prahalad: creation of core competencies that you expect to be necessary to compete in the future; ability to adapt to external events; long term strategy.</li> </ul>	Core competence Resources Strategy Flexibility Vision Creation of new core competencies

Figure 2.1 Theories, their key elements and key elements influenced by firms

## 3. METHODS

### 3.1 Introduction

This chapter describes the framework which is developed to measure the competitiveness of Dutch agri-sectors on a regular basis; i.e. the 'Competitiveness Monitor'. The framework is based on the review of the literature (chapter 2) and its output has to fulfil the requirements specified by the Dutch Ministry of Agriculture, Nature Management and Fisheries (see section 1.2): i.e. the instrument should:

- measure competitiveness in *all* agricultural industries;
- provide first of all *practical* points for the Dutch agribusiness to improve their competitive position and secondly, it should support priority setting in policy;
- provide up-to-date information;
- provide results that are verifiable, and
- give results that are comparable over years.

Before we develop our own framework we study whether a framework used in other empirical studies on competitiveness is able to fulfil these conditions and what can be learned from these studies.

### 3.2 The methods used in empirical studies on competitiveness

In this section we study whether the method used in empirical studies fulfils all the requirements set by the Ministry and contains all the main theoretical concepts identified in the survey of the literature. In this section we examine the study of A.T. Kearney (1994) on the competitiveness of various Dutch agribusiness sectors, two studies performed by the Ministry of Economic Affairs one on the competitiveness of the total Dutch economy (1995a) and one that studies the competitiveness of different industry sectors (1995b).

A.T. Kearney measured the competitiveness of 7 Dutch agri sectors by identifying 6 key success factors that were specific and actual for these industries. Information on these 6 factors was primarily gathered by peer interviews. The following key success factors were identified: chain effectiveness, adaptability to market, ability to innovate, ability to control complex processes, ability to differentiate products and logistics.

With regard to the identification of the key variables we can say that in this way one can study a relatively small number of key success factors in much detail. However, a disadvantage is that key success factors may vary over time, which reduces comparability. It is also likely that key success factors differ

between industries, which is a disadvantage in developing a method that has to be applicable to all agricultural industries. Furthermore, with regard to the choice of the key-variables themselves we may notice that some key factors intersect. For example, it is difficult to separate chain effectiveness from logistics and adaptability to market from ability to differentiate and ability to innovate. Moreover, a confrontation with the key-elements of the literature (chapter 2) shows that only very limited attention is paid to costs and the resources identified by the strategic management literature such as the ability to create core competencies and a long term strategy based on a vision of the future. Finally, the choice of a few peer interviews limits the verifiability of the results.

The Netherlands Ministry of Economic Affairs (MEA) performed an 'Examination of Competitiveness' of the total Dutch economy (1995a, 'Toets op het concurrentievermogen'). Key factors of the competitiveness of the Dutch economy are monetary and budgetary stability, technological knowledge infrastructure, education, physical infrastructure (transportation, telecommunication, energy, environment), capital market, labour market, product markets/services, fiscal infrastructure. These key-factors compose several underlying variables (i.e. a hierarchical structure is used) on which statistical information is gathered. The competitiveness of the Dutch economy is examined by a comparison of their statistical scores on the underlying variables with these scores of some benchmarked countries (i.e. some immediate neighbouring countries (Germany, Belgium, Denmark) or countries that are at a comparable level of industrialisation (United States, Japan)).

The key-factors under consideration in this MEA study comprise the national environment for individual sectors and firms. Since firms cannot influence these factors, this study focuses precisely on the factors that will not be taken into account in the 'Competitiveness Monitor'. The hierarchical structure of determinants, where key-factors of competitiveness on the top level are fixed and where measurement is taken place at the lowest level is interesting, because this ensures comparability in time and provides flexibility with respect to the variables that are actually measured. The use of statistical data ensures the verifiability of results. However, we have to take into account that the collected data are macroeconomic data, which are relatively easy available in comparison to sector or firm data.

The Netherlands Ministry of Economic Affairs also commissioned a number of studies on the competitiveness of different industry sectors. These sectoral studies measure:

- the performance of a sector (using macroeconomic indicators such as growth in employment, growth in value added, contribution in GDP, share of export markets)
- industry structure (product portfolio), and
- determinants of competitiveness 1) (this study uses statistical data on: costs of labour, materials and energy, capital costs, environmental costs;

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1) See, for example, Competitiveness of the Dutch chemical industry (Ministry of Economic Affairs, 1995b).



technology efficiency, innovation (R&D), external factors such as infrastructure). For each industry the same benchmarked countries are studied (in detail: Germany, Belgium, USA, Japan; brief scan: Denmark, Taiwan). The choice of product groups is sector dependent. For example for the chemical sector the focus is on basic chemicals because it reflects the basis of the Dutch chemical industry and it permits a quantitative evaluation of the combined effect of input factors on costs of production, in an area where there is direct competition on price and where data are available. For more specialized products, competitive position is more usually achieved by differentiation in the total product.

The economic indicators are useful in giving a picture of how a sector as a whole is performing. However, the utility of economic indicators is limited by: lack of consistency between countries and data sources, lack of recent data and exchange rate fluctuation confuse comparison of absolute data. The selection of determinants of competitiveness is strongly biased towards cost variables, which is partly determined by the reliance on statistical data. The choice for statistical information and the focus on costs competition also induced the choice for the focus on basic chemicals. Therefore, the choice of using statistical data limits the usefulness of the study, because important aspects such as product differentiation are not taken into account. The selection of the regions is consistent with other studies initiated by the Ministry. However, they do not necessarily have special significance for the industry under consideration.

The methods used in the empirical studies did not satisfy all the requirements of theory and Ministry. This is not surprising because the aim and issues these studies consider is different. However, there are some lessons to be learnt from these studies. Firstly, the key factors of competitiveness have to cover all the important determinants of competitiveness and should not overlap. Secondly, a hierarchical structure of determinants, where key-factors of competitiveness on the top level are fixed and where measurement is taken place at the lowest level is interesting, because this ensures comparability in time and provides flexibility with respect to the variables that are actually measured. Thirdly, the use of statistical data ensures the verifiability of results but has the limits that information is often not actual and that there is no information on some important determinants of competitiveness.

### **3.3 The framework for the Competitiveness Monitor**

#### **3.3.1 The basic framework**

This paragraph describes the framework which is developed to measure the competitiveness of Dutch agri-sectors on a regular basis; i.e. the 'Competitiveness Monitor'.

First, based on the survey of the literature we have extracted the key-elements of the different theories that determine or influence competitive power. As many elements of the different theories have some relation and/or

Key elements of theory	Theory	Determinative Key Factor
<ul style="list-style-type: none"> <li>- product differentiation</li> <li>- (product) innovation</li> <li>- differentiation strategy</li> <li>- marketing and sales</li> <li>- service</li> <li>- product differentiation</li> <li>- product innovation</li> <li>- quality</li> <li>- service</li> <li>- product range</li> </ul>	<i>Trade theory</i>  <i>Industrial economics</i>  <i>Marketing</i>	Market adaptability
<ul style="list-style-type: none"> <li>- logistics</li> <li>- operations</li> <li>- coordination/cooperation</li> <li>- product flows</li> <li>- information flows</li> </ul>	<i>Industrial economics</i>	Supply-chain effectiveness
<ul style="list-style-type: none"> <li>- cost</li> <li>- labour productivity</li> <li>- (process) innovation</li> <li>- economies of scale</li> <li>- low cost strategy</li> <li>- purchased inputs</li> <li>- human resources</li> <li>- technology</li> </ul>	<i>Trade theory</i>  <i>Industrial economics</i>	Costs and efficiency
<ul style="list-style-type: none"> <li>- support activities</li> <li>- presence of unique resources</li> <li>- ability to adapt to external events</li> <li>- flexible strategy to create new resources for the future</li> </ul>	<i>Industrial economics</i>  <i>Strategic management</i>	Strategic potential

Figure 3.1 The four determinative key factors of competitive position in relation to the theoretical concepts

have an overlap with each other, we have grouped these elements. With the grouping we have tried to create groups that are

- as mutually exclusive as possible;
- have as much coherency as possible within the group;
- have a collective characteristic recognizable for policy makers.

In this way we have created a framework of four determinative key factors with underlying variables to describe competitive power. These four determinative key factors are:

1. Market adaptability
2. Supply chain effectiveness
3. Costs and efficiency
4. Strategic potential

*Market adaptability* includes all those variables that express the interaction between the supply chain and the market. From the nature of this determinative key factor all the elements of marketing are part of this factor but also elements of trade theories.

*Supply chain effectiveness* includes variables that primarily focus on exchange and coordination between parties in the chain. Within this factor elements of industrial economics are found.

*Costs and efficiency* focuses on the cost performance of the supply chain. This factor encompasses elements of both trade theory and industrial economics.

*Strategic potential* focuses on the variables that gives an indication of future prospects and the stability of a partner. The elements of strategic management are all part of this factor but also elements of industrial economics.

As can be seen in figure 3.1 this framework covers all the theoretical concepts discussed. Moreover the framework integrates the four theories, shows the overlap and the differences in focus.

### 3.3.2 Operationalization of the framework

The key elements of theory are partly qualitative and partly quantitative. But even with strictly quantitative elements there is a problem in interpreting the results in terms of to what extent they contribute to the competitive position. With qualitative elements this problem is even more cutting. As an example we take the first element of theory from table 3.1 'product differentiation'. Based on statistical data from firms or point of sale data (Nielsen) the number of different products within a product group of the competitors can be quantified. The extent to which the products are really distinctive is more difficult to measure. But even with the number of products it is difficult to tell whether a large number is better or worse than a small number, whether there is a linear relation between the number of products and competitive position or some other relation. In fact these problems are insoluble because there is no universal solution. On each market a different optimum exist, depending of a

broad range of characteristics such as buying power, consumer preferences, intensity of competition etceteras. The only one who can judge this and has a relevant opinion is the buyer. He chooses between the different competing suppliers on a number of arguments and his considerations are the only ones that matter in the assessment of the competitive position of the different suppliers. For this reason we have chosen to ask the buyer to rate the different suppliers on the elements of competitive power. The second reason for this way of collecting data is the fact that statistical data usually have a large time lag. With interviews an actual picture of the competitive position arises. This fundamental choice has a large impact on the operationalisation of the framework. First the four determinative key factors and the key elements of theory has to be transformed to a number of variables that can be used in a questionnaire. As repetitiveness and verifiability are limiting conditions the list of variable has to be transformed to a standardized questionnaire which can be applied to the agricultural industry at focus. As it is impossible to interview all the buyers in all the markets about all the product also a procedure has to be developed to select buyers, markets and products in such a way that data collection efforts are minimized and still a reliable picture of the overall competitive position of the industry can be put together.

This means the Competitiveness Monitor consists of four units. The first unit consists of the four determinative key factors and the underlying variables. This is the universal basis for all exercises with the monitor. From this the second unit, a standardized questionnaire is made which contains all elements that are relevant for the industry at study. The questionnaire is as much as possible standardized but can and will contain elements that are industry, product and market specific. The third unit is the procedure to select product groups and the fourth unit is the procedure to select the market on which the competitive position is measured and the selection of the competitors who are to be included in the comparison.

1. Four determinative key factors with underlying variables		
2. Standardized questionnaire	3. Selection of product groups	4. Selection of markets and competitors

*Figure 3.2 The four units of the Competitiveness Monitor*

### 3.3.3 Determinative key factors with underlying variables

Having chosen the four determinative key factors with the matching key elements of theory, the basic framework has to be completed with underlying variables which can be translated into topics for the questionnaire. This means a set of variables on which the respondents can have an opinion, have a direct

link with the key elements of theory and cover the tenor of the determinative key factors. The key elements of theory from figure 3.1 are transformed to the underlying variables of figure 3.3.

Determinative key factor	Underlying variables	Topic for questionnaire
Market adaptability	<ul style="list-style-type: none"> <li>- Product innovation</li> <li>- Differentiation of products</li> <li>- Service</li> <li>- Quality</li> <li>- Product range</li> </ul>	<ul style="list-style-type: none"> <li>- Number of product introductions</li> <li>- Number of successful product introductions</li> <li>- Quality of product introductions</li> <li>- Position of brands</li> <li>- Land of origin as differentiating feature</li> <li>- Packaging</li> <li>- Logistic service meeting buyers wishes</li> <li>- Other services meeting buyers wishes</li> <li>- Keeping contact which customers</li> <li>- Responsiveness to changing wishes</li> <li>- Product quality</li> <li>- Size of product range</li> <li>- Adaptation of product range</li> </ul>
Supply chain effectiveness	<ul style="list-style-type: none"> <li>- Information exchange</li> <li>- Logistics</li> <li>- Coordination and cooperation</li> </ul>	<ul style="list-style-type: none"> <li>- In time information</li> <li>- Completeness of information</li> <li>- Relevance of information</li> <li>- Integrated approach</li> <li>- Reliability</li> <li>- Unnecessary logistic costs</li> <li>- Way of coordination</li> <li>- Intensity of coordination</li> <li>- Traceability of the product in the chain</li> </ul>
Costs and efficiency	<ul style="list-style-type: none"> <li>- Purchased inputs</li> <li>- Factor costs</li> <li>- Productivity</li> </ul>	<ul style="list-style-type: none"> <li>- Price/quality relation</li> </ul>
Strategic potential	<ul style="list-style-type: none"> <li>- Core competence</li> <li>- Solvability/ vulnerability</li> <li>- Flexibility and strategy</li> </ul>	<ul style="list-style-type: none"> <li>- Starting position for the future</li> <li>- Presence of core competence</li> <li>- Possibilities to develop new core competencies</li> <li>- Financial position</li> <li>- Market risks and opportunities</li> <li>- Dependence of the environment</li> <li>- Flexibility to change the production process</li> <li>- Presence of a long-term strategy</li> <li>- External orientation</li> <li>- Market intelligence</li> <li>- Competitor intelligence</li> </ul>

Figure 3.3 Framework of determinative key factors, underlying variables and topics for the questionnaire

### 3.3.4 Standardized questionnaire

The condition that measurements with the Competitiveness Monitor have to be verifiable and the outcomes comparable over time led to the development of standardized questionnaires. To be sure of a good response face-to-face interviews were used.

In order to give a well-balanced idea of the international competitiveness of an industry not only buyers are interviewed but also suppliers. This prevents a biased view and will support the acceptance of conclusions by the agribusiness. Another advantage of this approach is that it gives information whether there exists a gap between the buyers' view on the performance of the industry and the view of the suppliers themselves. Therefore both parties were interviewed. Because the buyer decides which products are bought, the buyers' opinion was taken as leading for evaluating competitiveness. The opinion of exporters just serves as a mirror.

The framework of determinative key factors and underlying variables (see figure 3.3) served as starting point for the development of the questionnaires. These underlying variables were translated into topics for the questionnaire. As buyers opinion were leading and exporters opinion served as a mirror, underlying variables were only included in the questionnaires if buyers could give an opinion on it. For this reason factor costs and productivity were not included in the questionnaire.

For reasons of repeatability and verifiability the questionnaire consists almost entirely of questions with pre-coded answers. Of every aspect not only the performance of the Dutch industry and the selected competitors is asked but also the importance of the aspects for the competitive position. From the answers a weighed total judgement can be calculated on the four key factors for every respondent about every country under study. In this way the interpretation and weighing of the aspects is done by the interviewed and not by the researcher. Also some open-end questions were added to make the questionnaire varied enough to keep the respondents' attention.

### 3.3.5 Selection of product groups

The aim of the competitiveness monitor is to provide information on the sectoral or industry level. This information on competitiveness can be gathered at the sector or industry level or by collecting information on the level of product groups. Therefore, to measure the competitiveness of a Dutch agricultural industry compared to foreign competitors it should be decided whether to measure the competitiveness of the industry as a whole or the competitiveness of several product groups.

Only a few industries supply such a uniform product that it is meaningful to look at it as a whole. In many cases an industry produces such a diverse range that speaking of the average product is not useful. For instance the range of products from the dairy industry varies from condensed milk, butter, cheese, drinking milk, deserts to milk components. For respondents it is not easy, or even impossible, to give one's judgement on the performance of a

wide range of products. For such an industry insight into the competitiveness of several discrete groups of products is closer to their experience than insight into the competitiveness of the average range.

To obtain conclusions on the industry level by focussing on product groups, on the other hand, implies that one should measure competitiveness of all product groups or that conclusions on the industry level can be drawn on the basis of information on the main groups of products (cheese, desserts). Obtaining information on all product groups requires a lot of information and may not be necessary to obtain conclusions on the sector level. Considering only the main product groups has a disadvantage that industry conclusions are based on information of a few main product groups that do not cover the whole sector. However, in comparison with collecting information on the industry level it has the advantage that results will be more identifiable for producers of the selected groups of products. Because we use questionnaires to obtain information the identifiability of products is important. Therefore, in the Competitiveness Monitor the questions are not asked on the range as a whole (i.e. industry level), but on the main groups of products.

In defining the product groups the following aspect has to be taken into account. Firstly the Competitiveness Monitor measures the competitiveness of a whole industry. Therefore the production of a certain product group may not be limited to a few companies only. Secondly the product groups have to be rather homogeneous. From buyers viewpoint the products within a product group should be substitutes. To prevent that large numbers of small product groups have to be incorporated in the study as additional criterion can be used that a product group has to represent at least 10% of the export value of the industry.

For the selection of product groups several selection criteria can be used:

- the importance of the product group for the industry (share in: output value, number of employees or value added);
- the importance of the product group in the export value of the industry;
- the comparative advantage a product group gives a country over another country (RCA index 1);
- the growth percentage of the export value of the product group during the last three years.

Because the Competitiveness Monitor focuses on the measurement of the Dutch competitiveness on a foreign market and because the data for application of the criteria have to be available, the Competitiveness Monitor uses the following selection procedure for product groups. A combination of criteria is considered: large export value, growth of the export value, growth of the consumption and a high value added. Product groups that fit several criteria are selected. The selection of product groups continues until two-thirds of the

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1) The RCA or Balassa-index relates the share of the export value of the product group in the total exports, to the share of the product group in the total world export value.

export value is represented. If two thirds of the export value can only be reached by a large number of product groups than the range as a whole will be studied with in addition the main product group. The final selection of product groups is checked with the industry.

### 3.3.6 Selection of markets and competitors

Competitiveness is a relative concept: an industry is competitive in comparison with others. The decision who to compare with is therefore an important one. Competitiveness may also vary with the situation in the market under study. Penetrating a market requires other capabilities then keeping an established position. Both are essential for a balanced market portfolio and should be represented in the selection of markets.

International competitiveness is determined on the basis of the performance in two kinds of markets: a main export destination and a fast growing market. This combination gives insight into industries ability to penetrate a market and in its ability to keep its position once it is established.

The choice of the kind of competitors to compare with depends on the goal of the comparison. Possibilities are a comparison with the best of class, with the competitor with the largest market share, or with a fast growing competitor. A comparison with the best of class is especially aimed at learning. The best of class is not necessarily a competitor of the same industry and does not necessarily operate in the same markets. For an instrument that is designated to follow changes in competitiveness in time comparison with the best of class seems not the most appropriate, although it can be very interesting. A comparison with the competitor with the largest market share gives insight into the present position. Studying a fast growing competitor will reveal where potential competition and threats can come from.

In the methodology of the Competitiveness Monitor the Dutch industry is compared in two markets with the following competitors:

Main market	competitor with largest market share competitor with a fast growing market share domestic suppliers
Fast growing market	competitor with largest market share domestic suppliers

When this procedure is used for a repeated measurement the situation may change and the selection of countries may be different. The main market is not very likely to change in time. For instance in case of the Netherlands Germany has been for many products the main market since a long time. The fastest growing market however is more likely to change. In that case it is possible to involve both the old growing market and the newly selected growing market in the research. Comparison over time will still be possible and the dynamics of the market is taken into account.

The selection of product groups, markets and competitors has to be made



in consultation with the industry. The following criteria constitute the basis for the selection of markets and competitors:

- the main market is selected by taken the country with the largest share in the export value of the selected product group;
- the fastest growing market is selected by taken the country that has the highest average 3 years import growth rate of the selected productgroup. However, this market should have a considerable import value. It will however not be selected if the Dutch have a larger share of the import value than the largest competitor. In that case another fast growing market will be selected that meets the criteria;
- in both markets the Dutch industry is compared with the domestic supplier and with the (next) largest importer on the basis of import value share;
- as fastest growing competitor in the main market is selected the country with the largest in terms of percentage increase of import value in that market during the last three years (with a certain minimum import value);
- competitors are not selected if their export is only due to easy access to neighboring countries (Porter, 1990).

The application of these criteria guarantees measurement of competitive capabilities in different market situations and a comparison with qualified competitors.

Research on international competitiveness can best be done where the competition is really taking place. The market where the Dutch product comes into direct competition with the foreign competitors' product is usually trade between exporters and importers or between wholesalers and retailers. An overview of the international distribution structure of a specific industry has to make clear where Dutch products compete with foreign products and thus which parties should be interviewed. Depending on the importance of the various demanding parties in the distribution structure, samples are taken from importers, domestic wholesalers, retailers (specialists' shops, supermarkets) and/or processing industry. From the supply side samples are taken from Dutch exporters and processors, depending on their relative importance in the export. The international distribution structure also has to provide information on the presence of regional differences within countries, because this also influences sample taking.

Although the opinion of the final consumer is also relevant, it was not possible to include this into the research for budgetary reasons. A complicating factor in researching this topic with consumers is their generally low acquaintance with the country of origin of the products. It is supposed that preferences of the final consumer are effectively reflected in the opinions of the foreign wholesale and retail trade.

## 4. PILOTS FOR CUT FLOWERS AND CHEESE

### 4.1 Introduction: two pilots to test the methodology

The theoretical framework and procedures were tested in two pilot studies. The selection of product groups and countries was done and checked with the industries (section 4.2). The basic questionnaire was adapted to the topics and vocabulary of the industry (section 4.3). Sample taking procedures were developed (section 4.4) as were procedures for data collection and data processing (section 4.5). Figure 4.1 gives an overview of the activities and the data sources used for a measurement with the Competitiveness Monitor.

Activity	Data source
<i>selection of product groups, markets and competitors</i>	
- selection	- statistics
- check selection with the industry	- interviews with Dutch industry representativeness
<i>sampling and respondent selection</i>	
- make an overview of the distribution structure in the selected markets and in the Netherlands	- literature and informants
- determine the target stratification of the sample	- distribution structure
- gather the sample frame	- (inter)national organizations, databanks
<i>adjust the questionnaire to topics and the vocabulary of the industry</i>	- in depth interviews with the industry and industry watchers
<i>data collection and processing</i>	- face-to-face structured interviews with buyers and suppliers

Figure 4.1 Activities and data sources for a measurement of the Competitiveness Monitor

As pilots were selected the cut flower and the dairy industry. The selected pilot industries differ from each other in as many aspects as possible and at the same time cover as much as possible the variation between industries. The two selected industries were different with respect to non food/food, extent of concentration, product differentiation, type of product (processed/non-processed, vegetable or animal) and government regulation.

## 4.2 The selection of product group and countries

### 4.2.1 Cut flowers: results give rise to adjustment of the procedure

For the selection of product groups the procedure as described in section 3.3.5 was followed. The five most important product groups (rose, chrysanthemum, carnation, gladiolus and orchid) together represented less than 50% of the Dutch export value. Besides this different kind of flowers were substitutes in the opinion of consumers. The competitiveness of the cut flowers industry was therefore measured on basis of the product range as a whole with in addition the product rose.

	Cut flowers	Rose
<i>Main market</i>	Germany	Germany
- largest competitor	Israel	Israel
- fastest growing competitor	Columbia+Kenya	Kenya
- domestic suppliers	Germany	Germany
<i>Fastest growing market</i>	France	France
- largest competitor	Italy	Morocco
- domestic suppliers	France	France

Figure 4.2 Selection of markets and competitors for the cut flower industry

The selection of markets and competitors is summarised in figure 4.2. Germany was selected as main market. For many years almost half of the Dutch cut flower exports have been destined at Germany. Italy had the next largest import share on the German market, but its share was decreasing (see table 4.1). Italy has been replaced by Israel (2% import value share in 1994) as largest competitor. Columbia and Kenya both had realised an increase on the German market. Both countries were selected as fastest growing competitors. For roses Israel and Kenya both have an import share of 3%. The import share of Israel has decreased, while the Kenyan has increased. Therefore Israel was selected as largest competitor and Kenya as fastest growing competitor for rose on the German market.

The selection of the fastest growing market was less straightforward. Three criteria had to be applied combined with the advice of industry experts to select France as fastest growing market. In France the per capita consumption was low, the consumption was increasing, as was the import of cut flowers (see table 4.2). Other growing markets like Japan, the UK, Switzerland en Austria did not meet all criteria. Therefore France was selected.

Although Belgium and Luxembourg together had a larger import value share in France than Italy, the last mentioned was selected. Industry expert preferred a comparison with Italy as competitor. For rose Morocco had a import

**Table 4.1** *Share (%) of various countries in the import value of cut flowers in the German market*

	1990	1991	1992	1993	1994	1995	1996
Netherlands	85	86	87	86	86	87	88
Italy	6	5	5	3	3	3	3
Spain	1	0.6	0.4	0.3	0.1	0.0	0.1
Israel	3	2	2	2	2	2	2
Colombia	1	2	2	2	2	2	2
Kenya	2	1	1	2	2	2	2
Total EU	92	92	93	90	90	91	91
Total non-EU	8	8	7	10	10	9	9

Source: Eurostat.

**Table 4.2** *Size and development in per capita consumption and imports of cut flowers in several countries*

	Consumption/ capita	Increase consumption 1991-1994	Increase import 1993-1994 (x mln. gld.)	Absolute growth import
Denmark	59	-13	+19	14
Belgium/Luxembourg	74	+12	+12	15
France	60	+11	+5	24
Austria	103	+41	+7	10
United Kingdom	36	-5	+20	103
Japan	73	-22	+19	55
Switzerland	183	+18	+9	21
Germany	80	-1	+6	103

Source: Flower Council Holland, AIPH.

value share of 9%. It was the next largest importer of rose after the Netherlands. Therefore it was selected as the largest competitor on the fastest growing market (France).

Selection took place according to the procedure described in section 3.3.6, with two exceptions. France was selected as fastest growing market. Dutch imports however formed 86% of the French imports of cut flowers, the next competitor, Italy, had only 2% of the imports. The criterion that the Dutch import share must be less than the next competitor was added after the cut flower pilot because results from the fastest growing market and main market were very much alike and the competitiveness of competitors was very low in

the French market. This indicated that in the French market there was not a severe competition for market share but more likely a dominant position of the Dutch exporters. The aim of studying the capabilities of the Dutch exporters to settle in a new market was not met.

The second exception was the selection of Italy as largest competitor in the French market. Competitors were not checked for exporting only to easy to entry neighbour countries. This criterion has been added after the cut flower pilot, because of the very low performance of the Italian competition. Since the aim of the Competitiveness Monitor is to give practical points for improvement the competitiveness more can be learned from better performing and more threatening competitors.

#### 4.2.2 Dairy: the adjusted procedure functions well

Product groups were selected according to the procedure in section 3.4. Cheese was the product group with the largest share in the export value (49%; see table 4.3). Moreover cheese had the largest share in the sales of the Dutch dairy industry. The consumption of cheese in Europe has increased from 14.1 kilo per person in 1987 to 15.7 kilos in 1994. Because cheese fitted 3 criteria it was selected.

*Table 4.3 Export value of dairy product groups (mean of 1992-1994)*

Product group	Export value (mln. guilders)	% of export value
Butter	1,185	16
Cheese	3,692	49
Low fat milk powder	318	4
Fat milk powder	893	12
Other dairy	1,423	19
Total	7,510	100

Source: Statistics Netherlands, adapted by LEI-DLO.

Figures about the development of the consumption of other dairy products in Europe were not available. Therefore the consumption in the Netherlands was studied. Consumption of butter, milk powder and condensed milk has decreased between 1980 en 1990. The European market for condensed liquid milk products however was a growing market. This product group contained yoghurt, quark, porridges, sweet deserts and creams. Especially the special products were a fast growing category. On basis of the consumption developments the condensed liquid milk products are selected. In the Netherlands the production of these specialities is concentrated in only 3 firms which are strongly internationalised. Information gathered with the Competitiveness Monitor would be highly vulnerable. The risk that results would be traceable to specific firms was perceived too high. Therefore the Competitiveness Moni-

tor dairy was limited to cheese and measures only the competitiveness of the cheese industry.

The selection of markets and competitors took place according to the procedure in section 3.3.6. Of the Dutch exports of cheese and curdled milk the largest share was destined at Germany (46% of the export value in 1994). The import of cheese in Germany in 1994 originated for the largest part with the Netherlands (37% of the value) and with 28% with France (second largest importer in Germany). Therefore France is selected as largest competitor on the German market (see also figure 4.3).

Cheese	
<i>Main market</i>	Germany
- largest competitor	France
- fastest growing competitor	Denmark
- domestic suppliers	Germany
<i>Fastest growing market</i>	Spain
- largest competitor	France
- domestic suppliers	Spain

Figure 4.3 Selection of markets and competitors for the cheese industry

Table 4.4 Countries with growing import and an import amount of over 100,000 tonnes of cheese

	1991	1994	Growth (%) 1991-1994
Spain	47,913	103,178	+115
USA	102,492	123,996	+21
Japan	124,051	143,077	+15
United Kingdom	190,409	207,369	+9

Source: FAO.

Denmark was selected as fastest growing competitor on the German market, with a growth of 40% between 1990 and 1994 and an import share of 15%. Belgium/Luxembourg which had a growth of 53% and a import share of only 3.5% was not selected because the much lower market share.

In table 4.4 an overview is given of countries with a growing import and an import amount over 100,000 tonnes of cheese. For its large import growth and its large import amount Spain is selected as fastest growing market. The largest competitor of the Netherlands in the Spanish market was France. In 1994 the Netherlands imported 127 million kilos of cheese in Spain, France 129

million kilos. The Dutch dairy industry agreed with the selections as summarised in figure 4.3.

The results of the cheese study indicated that the competitiveness of all selected competitors was on a high level. Therefore there was no further need to change the procedure of selecting countries.

### **4.3 Formulation and adaptation of the questionnaire**

#### **4.3.1 Formulation of the cut flower questionnaire**

The basic questionnaire consisted of a block of general questions (like the number of outlets) and a block of questions for every key factor. For every variable the performance of the Dutch industry was asked, the performance of the various competitors and the importance of the variable for the international competitiveness. Also several open-end questions were asked. The questionnaire for the exporters was designed as a mirror of the questionnaire of the buyers.

To customise the questionnaires on the flower industry four orienting interviews were held with representatives of the flower auctions, a bank and an organisation of the flower wholesale trade. In these interviews particular attention was given to the adaptation of the framework of underlying variables and topics for the questionnaire (figure 3.3) to the flower industry. The interviews were also aimed at getting some indications of the core competence of the Dutch flower industry versus the flower industry of competitors. Respondents found it however very difficult to answer questions on this topic. Therefore a more general question on having a good/bad starting position for the future was included in the questionnaire.

From the orienting interviews it was concluded that product introductions was an important item. The interviewees observed a lot of product introductions but considered them variations on the current assortment rather than real innovations. Therefore quality of product introductions was split into two items: real innovations and variations on the existing range.

The supply chain of rose and other flowers is the same; only the product differs. For this reason in questions on the supply chain and the potential of the total industry no distinction was made between rose and cut flowers. The performance on certain variables of market orientation and costs and efficiency can be different between rose and cut flowers in general. Therefore these questions were asked for rose as well as for cut flowers in general.

Another point raised from the interviews was the traceability of the country of origin. For customers abroad it will hardly ever be clear whether flowers from Dutch exporters originate from Dutch growers or are imported from other countries. Both types of supply are sold through the auctions and there is also direct import by Dutch wholesalers. In general flowers sold by Dutch exporters are seen as Dutch flowers. This made us to decide not to measure the competitiveness of Dutch cut flowers but of Dutch exporters and of the flowers sold by them.

The questionnaire was pre-tested in 3 interviews with exporters. The original questionnaire took too long. Therefore it was decided to make two shorter questionnaires: one for exporters on the main market and the other for exporters on the fast growing market. This was also more in agreement with the organizational structure of trade firms, where different countries often are the responsibility of different persons.

Other improvements from the pre-test were: more open end questions, more compact formulation of the statements, no general question on buying price (price varies too much throughout the year) and a selection question on knowledge of competitors.

#### 4.3.2 Improvement of the questionnaire for the cheese study

Evaluation of the questionnaire of the cut flower industry revealed several points for improvement. The mirror between buyers and suppliers was incomplete, not every variable was included in the weighing questions, several scales were difficult to interpret and response on open-end questions was low.

For the cheese pilot, questions in the exporters questionnaire were formulated as identical as possible as in the buyers' questionnaire. Questions who had no counterpart in the buyers' questionnaire were eliminated. Missing items in the weighing questions were added.

In the cut flower exporters questionnaire the comparison between the Dutch and their competitors was asked relative to the Dutch performance (e.g. better or worse than the Netherlands). Therefore processing of these data was complicated. In both cheese questionnaires the performance of the Dutch and of the competitors were asked directly (not relative to the Dutch performance), as has been done in the cut flower buyers questionnaire.

In the cut flower questionnaire a few times a scale has been used ranging from 'far too much' to 'far too little'. Both extreme ends of the scale have a negative meaning. This kind of questions has been replaced by questions on the extent of (dis) satisfaction, followed by a question on why dissatisfied (is it too much or too less).

In the open end questions often was asked 'why do you think so?'. The response on these questions was low, while a question on aspects of quality was answered more often. Most open-end questions have been reformulated to more concrete questions.

To customise the questionnaires on the cheese industry two orienting interviews were held with representatives of the Product Board and the Dutch Dairy Organisation. From these interviews it was concluded that product safety was an important item. The item product liability and risks was added to the framework and the questionnaire. The final versions of the questionnaires of the cheese industry are included in appendix 1.

#### 4.3.3 Further improvements of the questionnaire for future study

Evaluation of the cheese questionnaire revealed one major point for improvement. Open-end questions are still not well answered. An explanation



could be that for interviewers and for interviewees it is difficult to switch from questions with pre-coded answers to open end questions and to take enough time to answer them. In a next measurement open end questions could be put together at the end of each block of questions on a key factor. This should create points of rest in the interview, in which it is more likely open-end questions get more attention.

#### **4.4 Sampling and respondent selection**

##### **4.4.1 Cut flowers**

The sample size is determined by the size of the population and the necessity to form a representative view on the Dutch international competitiveness per product-market combination even if the opinions differ a lot. A rule of thumb in social and market research is that in large populations the minimal sample size should be 30 respondents for every (sub)group on which statements have to be made. As mentioned in section 3.3.6 the sample depended on the relative importance of the parties in the distribution structure.

The selection of buyers of cut flowers in German and French market was limited to parties who buy directly from Dutch exporters and whose sales are at least 5% of the import value. For Germany this implies that the following parties have been selected and that was targeted at the following number of interviews within the parties:

- +/- 30 importers, wholesalers in cut flowers;
- +/- 20 florists in the Ruer area (customers of so-called flying Dutchmen);
- +/- all purchasers of supermarket chains.

Interviews were held in the Ruer region, Northern Germany, Berlin, Munchen and Leipzig/Dresden.

For France the target was:

- +/- 30 importers/wholesalers;
- +/- 20 florists;
- all purchasers of supermarket chains.

Interviews were held in the region of Paris, Lyon and Bordeaux. Florists were only interviewed in the Lille region, close to the northern France border.

It was aimed at 60 interviews with Dutch cut flower exporters: 30 on Germany and 30 on France. A stratified sample has been taken from all flower-exporting companies on Germany and the same for those exporting on France, with the aim to make the samples representative for sales in stead of for number of firms. The sample was stratified according to 15 companies with 1-9 employees, 8 with 10-49 employees en 7 with 50 or more employees.

Addresses were collected from the Verband der Deutschen Blumengross- und Importhandel, the Netherlands Agricultural Attaché in Germany, the Yellow pages, the Federation Nationale des Grossistes et Fleurs Coupees et Plantes and from the Office Hollandais des Fleur.

In first instance addresses of Dutch exporters were selected from a database of the Dutch Chamber of Commerce from the category exporters of flowers and plants. During the respondent selection it became clear that a large number of firms was not in export of cut flowers, but for instance exported dried flowers or nursery products. A shift was made to a stratified sample from the addresses database of the Dutch Floricultural Wholesale Board.

To be able to make a comparison between the performance of several international suppliers respondents had to be acquainted with more than one country. Potential respondents of the buyer questionnaire were screened by telephone on familiarity with Dutch suppliers and with at least two competitors. Potential respondents of the exporter questionnaire were only asked for co-operation if they were familiar with at least two other suppliers. Knowledge of the foreign competitors was measured by asking potential respondents to scale their knowledge of the local competitors on a five point scale diverging from very good to very badly. Only potential respondents who have very good or moderate knowledge of their local competitors were submitted. Of non-cooperating firms some additional information on firm size and area should be administered for non-response analysis.

The above-described way of sample taking applies to the first time an industry in a certain country is under study. For repeated measurements the population needs to be established again. Former informants still active in the industry should be asked to co-operate again. The additional selection of new respondent gives the opportunity to adapt the sample to changes in the population. In this way equilibrium will be created between comparability over time and representativeness of the actual situation.

#### 4.4.2 Cheese

In the international cheese markets the following parties can be recognised as important local purchasers: local wholesalers, local cheese wholesalers, purchasers of large supermarket chains, and purchasers of speciality stores with international contacts. The local sample composition was determined by the proportionally influences in the market.

Large retail chains that have purchase departments with a lot of international contacts characterise the German retail market. Speciality stores have a relatively low market share and wholesalers only supply the relatively small retail stores. A few chains of hyper stores and a relatively large group of medium-sized supermarkets that are supplied by wholesalers characterise the Spanish retail market. Spain counts relatively few speciality stores.

The objective was to realise 60 interviews in Germany and 60 interviews in Spain. Because of the totally different retail markets the sample objectives for Germany and Spain were as follows.

In the Netherlands about 110 companies export cheese to Germany; 45 exporters export cheese to Spain. As in the cut flowers study, the objective was to interview 30 exporters for every country: 30 exporters to Spain and 30 exporters to Germany.

**Table 4.5** Sample properties, respondents in Germany and Spain

	Germany	Spain
Wholesalers	15	21
Retailers	30	24
Speciality stores	15	9

Dutch-German Chamber of Commerce in Dusseldorf and the Economic Information Office in The Hague provided the addresses for the German market. The addresses for the Spanish market were provided by the Chamber of Commerce of Spain in Belgium and Luxembourg, the Dutch Office of Dairy Products in Barcelona, the Chamber of Commerce in Madrid, the Chamber of Commerce in Valencia, the Chamber of Commerce in Barcelona, the Export Promotion Office Vlaanderen in Brussels and the Office Foreign Affairs Vlaanderen in Brussels. The Dutch Dairy Office in The Hague provided the addresses of the Dutch exporters.

#### **4.5 Data collection and processing**

Data collection with interviews was by done by Research International Netherlands and associated market research bureaux in the selected markets. The fieldwork for the cut flower industry was conducted in the winter of 1996/1997. Interviews for the cheese industry were held in May 1997.

The data file was checked for applying the right routings in answering. Also a check was made on outliers. Where necessary corrections were made. Per variable mean and standard deviation were calculated. T-tests (95%) were performed to check for statistical significance.

To determine the final score on the key factors per respondent every variable was weighed with the weight the respondent assigned to it. These weighed scores per respondent were summed over the total sample and divided by the sum of the weights. In this way a final score on the four key factors was calculated for every competing country on the fastest growing market and the main market both from the viewpoint of the suppliers and from the buyers viewpoint. T-tests (95%) were performed to check for statistical significance.

To get more insight into the key factor costs and efficiency additional data were collected from literature and from additional expert interviews. Methods to measure more underlying variables of costs and efficiency and their development are being developed.

Further data collection from statistics and literature was aimed at selection of product groups, markets and competitors and at sampling. Used were import, export and consumption figures and information on the distribution structures in the selected markets.

## 5. RESULTS

### 5.1 Response

#### 5.1.1 Cut flowers

Four types of respondents have been interviewed: German buyers, French buyers, Dutch exporters on Germany and Dutch exporters on France (see table 5.1 and 5.2). In general the targets and the number of interviews were very much alike.

*Table 5.1 Response and target sample of buyers for the pilot study cut flower industry*

	German buyers	French buyers	Target
Total	61	57	50
- florist	23	19	20
- importer/wholesaler	36	33	30
- supermarket	2 a)	5	5

a) 2 out of a population of 5.

*Table 5.2 Response and target of exporters for the pilot study cut flower industry*

	Dutch exporters on Germany	Dutch exporters on France	Target
Total	52	28	30
- 1 – 9 employees	22	9	15
- 10 – 49 employees	23	9	8
- 50 or more	7	10	7

In order to obtain sufficient response on countries with a small import share, respondents were selected on being familiar with at least two foreign suppliers (see section 4.4). As to this the number of German buyers familiar with Columbia, Kenya or Israel is larger than can be expected on basis of an import share of 2%. This also applies to the number of French buyers knowing Italian and Moroccan suppliers, both with an import share of 2%.

*Table 5.3 Respondents' acquaintance with supplier countries*

	German buyers	French buyers	Exporters to Germany	Exporters to France
Total	61	57	52	28
- Netherlands	52	46	52	28
- Germany	57		52	
- Columbia	19		46	
- Kenya	17		48	
- Israël	19		50	
- France		52		28
- Italy		28		14
- Morocco		23		13

The non-response rate with the Dutch exporters was as low as 19% (table 5.4). Of the 161 firms contacted, 62 firms were not a member of the population because they were not in export of flowers (addresses from the Chamber of Commerce database), or did not fit the criteria (export on France or Germany and familiar with 2 foreign suppliers).

*Table 5.4 Response with Dutch exporters*

	Dutch exporters
Approached	161
Not qualified	62
Response rate	81% of 99

No reliable response rate can be computed for German and French buyers. Of the contacted German and French wholesalers/importers 26% co-operated in the study. It is not possible to make a distinction between not interviewed firms who did not fit the criteria and thus were no part of the population or firms who refused to co-operate.

### 5.1.2 Cheese

The ultimate response composition of foreign purchasers of Dutch cheese is presented in table 5.5.

*Table 5.5 Response and target sample for the pilot study cheese*

	Germany	Targets Germany	Spain	Targets Spain
Total	79	60	44	60
- wholesalers	38	15	13	21
- supermarkets	26	25	19	30
- specialty stores	13	15	4	9
- other	0	0	8	0

It was very difficult to find qualified respondents in Spain. The import of foreign cheese products seemed to be more concentrated than expected. As a result the percentage (14%) of the potential respondents that did not meet the selection criteria was relatively high (table 5.6).

In Germany the response rate of the potential respondents was as high as 65% (table 5.6). As in Spain the main non-response reason was having no time.

*Table 5.6 Response buyers in Germany and Spain*

	Germany	Spain
Approached	124	120
Not qualified	2	16
Response rate	65% of 122	42% of 104

The composition of the non-response in terms of number of employees of the company and residence are not available because the German market research legislation prohibits providing identifiable company information to clients.

The companies that did not want to co-operate had the following characteristics (table 5.7 and 5.8).

*Table 5.7 Number of employees of non-co-operating and co-operating firms in Spain*

	Non-co-operating	Co-operating
1 to 4 employees	3	1
5 to 9 employees	3	3
10 to 49 employees	20	12
50 or more employees	22	28
Not available	3	-

*Table 5.8 Area of non-co-operating and co-operating firms in Spain*

	Non-co-operating	Co-operating
Madrid	12	17
Catalonia	30	19
Valencia	7	7
Other	-	1
Not available	2	-

The response-rate with Dutch exporters amounts 32%. Of the 155 potential respondents almost 60% could not meet the strict selection criteria (table 5.9). The objective of 60 interviews with exporters was therefore hardly to realise; only 65 potential respondents remained.

*Table 5.9 Response of Dutch cheese exporters*

	Dutch cheese exporters
Approached	155
Not qualified	90
Response-rate	43% of 65

Table 5.10 shows the characteristics of firms that did not co-operate.

*Table 5.10 Number of employees of non-co-operating en co-operating export firms in the Netherlands*

	Non-co-operating	Co-operating
1 to 4 employees	6	3
5 to 9 employees	4	6
10 to 49 employees	9	8
50 or more employees	11	11
Not available	4	-

## **5.2 Performance on key factors and underlying variables**

Scores on key factors and underlying variables were calculated according to the procedure described in 4.5. Examples of the presentation of the scores

on the four key factors and on the underlying variables of one of the key factors are shown in figure 5.1 and 5.2. Leading for the conclusions on competitiveness is the opinion of the buyers.

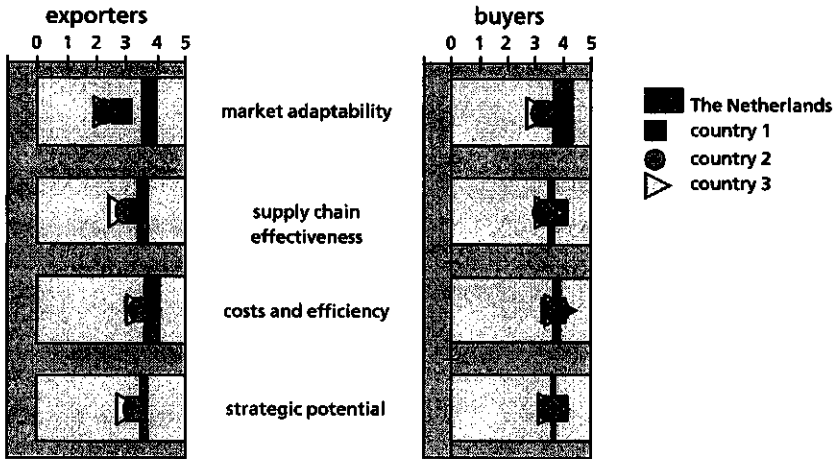


Figure 5.1 International comparison of the competitiveness

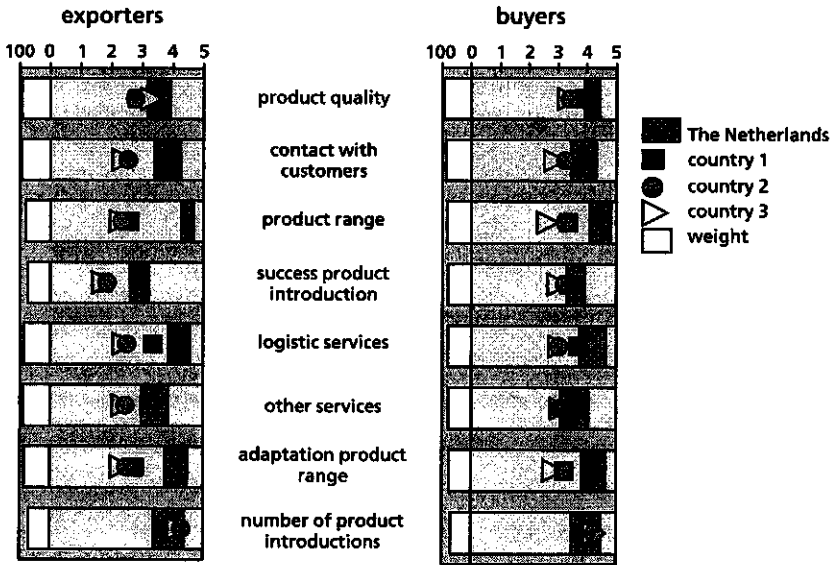


Figure 5.2 Market adaptability in the view of buyers and suppliers



From results like the ones presented in figures 5.1 conclusions were drawn on:

- the competitiveness of the Dutch industry in a certain market in comparison with competing countries on the four key factors;
- significant differences between the view of exporters and the view of buyers on the four key factors of competitiveness;
- differences in competitiveness of the Dutch industry in the main market and the growing market.

Per key factor conclusions were drawn on:

- the reasons for a high, moderate or low performance on the key factor;
- the importance of the underlying variables of the key factor in the view of buyers and suppliers;
- significant differences between the view of exporters and the view of buyers on the underlying variables of the key factor;
- differences in performance on the underlying variables in the main market and the growing market.

In the cut flower study the Dutch industry performed on two out of four key factors significantly better than the competitors in the German market. In the French market the Dutch industry outperformed the competitors on all four key factor. In the cheese study in the Spanish market there were on two key factors statistical significant differences between the performance of the Dutch industry and the performance of the competitors; in the German market only on one key factor. In both studies the Dutch exporters overestimated their competitive power in both markets. This was caused by an underestimation of the performance of the competitors. In every key factor there were some underlying variables on which the Dutch industry differed significantly from competitors.

## 6. DISCUSSION AND CONCLUSIONS

### 6.1 Validity

The aim of the project was to develop a Competitiveness Monitor as an instrument for assessing international competitiveness in agricultural industries. Pilot measurements were carried out in the cut flower and cheese industry.

The validity of the instrument was checked in two ways (1) by comparing the competitiveness as measured by the Competitiveness Monitor with the present competitive position and (2) by discussing the results with representatives of the industry (i.e. face validity).

Dutch cut flowers exporters have a dominant competitive position in the imports in Germany and France. The nearest competitors are having a market share that does not even approach the Dutch market share (see also table 4.2). The domestic growers supply 60% of the demand in France and 20% of the demand in Germany. The dominant position of the Netherlands corresponds with a significant better performance score on the key factors 'market adaptability' and 'strategic potential' (see figure 5.1). In the cheese study the scores on the four key factors correspond with the present development of market shares. French cheese is gaining market share in the German market and local cheese is strongly preferred as well in the German as Spanish market. The results of both pilot studies are therefore in line with the expected development of market shares.

The cut flower and cheese outcomes were checked with representatives of the industry. They thought the results of the measurement recognizable and consistent with their own impression. They confirmed the measured differences in competitiveness and the differences in performance on the underlying variables. Therefore a positive judgement was given on the face validity of the outcomes of measurements with the instrument.

For both industries the Competitiveness Monitor seems to measure competitiveness of the industry and to give indications for future developments of market shares. Face validity of the results is satisfactory. Because the two pilot industries differ in many aspects the Competitiveness Monitor seems suitable for different kinds of agricultural industries that range from concentrated to diverse, from industries with a diversified products range to only one product, from industries with processed to fresh products and from food to ornamental industries.

## **6.2 Reliability**

The response rates were high: 43% and 81% for exporters of cheese and flowers and 42% and 65% for cheese buyers. In order to establish the representativeness of the samples we compared non-co-operating firms with co-operating firms for number of employees and region (table 5.8, 5.9 and 5.10). This was only possible for the cheese study. In Spain the large medium sized firm (10 to 49 employees) are somewhat under represented and the small medium sized firms (5-9 employees) are somewhat over represented. The number of non co-operating firms was higher in Catalonia. However with a chi-square test no statistical significant differences were found (reliability 95%) between the size of co-operating firms and non-co-operating firms.

A comparison of sample targets with the actual response showed a few differences. In the cut flower study exporters on Germany with 10-49 employees were over represented and exporters on France with 1-9 employees were under represented (table 5.2). An analysis of possible differences in answering between large, medium and small firms revealed a limited number of significant results. In particular in the key factor market adaptability and his underlying variables the answers differ between large, medium and small exporting firms, mostly with respect to the position of foreign competitors. In the cheese study the number of interviewed Spanish buyers was lower than the target (table 5.5). However the proportion between the categories remained the same. The number of German wholesalers included was higher than the target. Hardly any significant differences were found between the scores of this group and the scores of the German retailers.

## **6.3 Possibilities and limitations of the Competitiveness Monitor**

The Competitiveness Monitor measures competitiveness on four key factors. It looks at the appreciation of the purchasers for the product and services (key factor market adaptability) and at the way firms are organized and manage their resources (key factors supply chain effectiveness, costs and efficiency and strategic potential). The Competitiveness Monitor does not just analyse the present competitiveness but also the potential to maintain a good international competitive position in the long term (key factor strategic potential). Therefore it is a tool which not just monitors the present competitive position but also gives warnings for worsening which can effect the competitive position in future.

In oligopolistic markets firm strategy is a major factor in competitiveness (Porter, 1980). In case a few international firms dominate the industry, measuring competitiveness of an industry of a certain country is less relevant and firm level would be more realistic.

Although the Competitiveness Monitor is developed to measure competitiveness of agricultural industries it also may be applied on firm level. Only minor adaptation would have to be made in the underlying variables of the

four key factors. For instance human resources has to be added in the key factor strategic potential. The four key factor themselves remain unaltered.

The Competitiveness Monitor is primarily focussed on the industry but it will also give useful results for governmental policy making. Subsidies such as the 'stimuleringskader' may be used to stimulate initiatives of entrepreneurs aimed at improvement of relative weak points and at strengthening of strong points that are deteriorating. The Competitiveness Monitor will give information on the purchasers' view on performance of the Dutch industry vis-à-vis her competitors but also on the view of the Dutch industry itself. The Ministry may use this information to start the discussion with the industry in order to stimulate anticipating activities from both the industry and the ministry itself.

The competitiveness Monitor is developed to measure competitiveness of agribusinesses. It consists of four elements (market adaptability, supply chain effectiveness, costs and efficiency, strategic potential), which are designed to measure in a representative, objective, repeatable and comparable way (figure 6.1). With the four elements of the methodology of the Competitiveness Monitor some variation is possible depending on the goals of the measurement and the end-user of the results. Possible variations are: the addition of extra statistical information, measuring the competitiveness of a product or of product group(s), measuring the competitiveness of an industry with a few companies or with many companies. Potential end users are: firms industry organizations, the government and agricultural attachés etcetera.

**Market adaptability:**

the extent to which industries succeed in getting a good competitive position by meeting the wishes/needs from the market

**Supply chain effectiveness:**

the extent of coordination between the parties in the supply chain to organize the flow of goods and information more suitable in order to meet the needs of the market well. The more suitable the flows of information and goods, the better the competitiveness

**Costs and efficiency:**

the extent to which companies and industries control costs en utilise resources efficiently

**Strategic potential:**

the extent to which companies and industries are able to strengthen their position, realize new ideas and withstand difficult times

Figure 6.1 The four key factors

Not every research question poses such strict requirements on comparability between industries and repeatability in time. In that case it is possible to use only a few elements of the Competitiveness Monitor.

The four key factors and its underlying variables can be used as a framework in every research on competitiveness. It will give insight to what elements attention is paid and which elements were not considered. It can, for instance, be used as a framework for a competitors analysis as a building block for a marketing strategy.

The standardised questionnaire can be used to measure the opinion of buyers and sellers, but also to measure the opinion of just buyers or a specific group of buyers. In this way the image of Dutch suppliers and their product can be established.

The selection of product groups can be left out if the main interest is the competitiveness of a specific product group and not the competitiveness of the industry. The selection of markets is only necessary if it is important to give a balanced view on the competitiveness of the industry. If the main focus is the competitiveness of an industry in a certain country the selection of markets is not relevant. In a study where the main aim is learning from others the best in class competitor may be chosen for a comparison. This selection can be an addition to the described selection procedure.

The Competitiveness Monitor was designed as an instrument for measuring competitiveness of agricultural industries. It is applicable to all agricultural industries and gives practical clues for entrepreneurs in the agribusiness to improve their competitive position. The information used is up to date, measurement are verifiable and the outcomes comparable over time. The Competitiveness Monitor also contains several useful elements for research in the field of competitiveness with less strict requirements.

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