Entrepreneurship of Dutch dairy farmers

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R.H.M. BERGEVOET

Entrepreneurship of Dutch dairy farmers

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Abstract

Several developments in the Netherlands as well as in the other countries within the EU are forcing dairy farmers to reconsider their involvement in dairy production. Farmers are being called to account more for the entrepreneurial element of their farming behaviour. Up till now it was unclear how dairy farmers score on entrepreneurial characteristics and whether their entrepreneurial competencies can be improved. Therefore, this study had a two-fold aim: (1) to gain insight into the entrepreneurship of dairy farmers and into what makes a dairy farmer a successful entrepreneur; and (2) to investigate the possibilities for improving the entrepreneurial competencies of dairy farmers by means of a training programme. Two groups of farmers were selected for a case-control analysis. Participants were members of study groups and all living in the north of the Netherlands. Members of the Project group (n= 75) participated in the project meetings related to entrepreneurship, whereas the members of the Control group (n=180). At the start and end of the project, data collected by means of a questionnaire, were analysed. Investigated were farmers' goals, objectives, and attitudes in relation with farmers' strategic and entrepreneurial behaviour; the importance of psychological characteristics and competencies as predictors of self-reported entrepreneurial success of Dutch dairy farmers; the items of the strategic process that influence the job satisfaction of dairy farmers; and, the effect of a training programmes aimed at improving entrepreneurial competencies.

The goals, objectives, and attitudes are determinants of strategic and entrepreneurial behaviour of dairy farmers. Farm size is mainly explained by farmers' instrumental goals, such as striving for a large and modern farm. Dairy farmers who had higher scores on self-reported entrepreneurial success also had higher scores on entrepreneurial competencies. Entrepreneurial competencies have a positive relation to the farm size. The dairy farmers are generally satisfied with their job. Especially the non-economic goals of the farmer, like pleasure in work, are important for explaining differences in job satisfaction. It is possible to improve the entrepreneurial competencies of dairy farmers through developing and discussing the farmers' strategic plans in study groups. In general, all participants benefited from the programme, irrespective of farmers' and farm characteristics or the level of competencies at the start of the programme. Using the concept of competencies provides a means of evaluating an intervention programme designed to develop a strategic plan for and by entrepreneurs, and is an effective way to identify a possible effect of an intervention.

Keywords:

Dairy farming, farm size, Theory of Planned Behaviour, goals, attitudes, entrepreneur entrepreneurship, competencies, psychological characteristics, agriculture, entrepreneur, dairy farms, entrepreneurial success, job satisfaction, training programme.

Voor Elly en Ben (†), mijn ouders.

Voorwoord

Het in dit proefschrift beschreven onderzoek is onderdeel van het project “Veranderingsgericht ondernemerschap in de Melkveehouderij”. Dit project is gefinancierd door het J. Mesdag fonds en toenmalig NLTO (nu onderdeel van LTO Noord). Het project is ontstaan vanuit de visie dat van melkveehouders in de naaste toekomst niet alleen vakmanschap en managementkwaliteiten wordt gevraagd, maar nog meer dan in het verleden een beroep wordt gedaan op de ondernemersvaardigheden. Het project bestond naast het onderzoek, zoals beschreven in dit proefschrift ook uit het ontwikkelen en toetsen van een trainingsprogramma om melkveehouders te ondersteunen bij het verwerven van ondernemerscompetenties.

“Wat beweegt een dierenarts nu om onderzoek naar ondernemerschap van melkveehouders te gaan doen?”, is een vraag die me de afgelopen jaren veel gesteld is. Sinds mijn afstuderen in 1986 was ik werkzaam in de diergeneeskundige praktijk. In deze tijd hebben de werkzaamheden van een dierenarts werkzaam in de landbouwhuisdierenpraktijk een evolutie doorgemaakt waarbij de aandacht verschoof van het individuele zieke dier via preventieve diergeneeskunde naar integrale bedrijfsbegeleiding. Daarbij werd de rol van ondernemer steeds belangrijker, een ontwikkeling die me zeer interesseerde. Het was voor mij dan ook een logische stap om me verder in dit ondernemerschap te verdiepen.

Onderzoek is steeds meer een teamspel geworden, ook dit onderzoek. Dit mag onder meer blijken uit het aantal mede-auteurs die een bijdrage hebben geleverd aan de verschillende artikelen waaruit dit proefschrift bestaat. Allemaal hartelijk dank voor jullie bijdrage. Ik wil een aantal van hen speciaal bedanken. Op de eerste plaats mijn twee promotoren. Bij het verkrijgen van de opdracht en ook tijdens de uitvoering van het onderzoek is de rol van prof.dr.ir. Ruud Huirne van doorslaggevende betekenis geweest. Ruud bedankt voor je aanstekelijk enthousiasme en je betrokkenheid, kennis, tijd en moeite die je vanaf het begin in dit onderzoek hebt gestopt. Naast kennis op het gebied van de agrarische bedrijfseconomie was het vanaf het begin duidelijk dat ook de op het gebied van communicatie en innovatie noodzakelijk was. Mijn tweede promotor prof.dr. Cees van Woerkum heeft op dit gebied en belangrijke bijdrage geleverd aan dit proefschrift. Cees, bedankt voor de altijd weer inspirerende discussies over ondernemerschap, de rol van de agrarische ondernemer en kennisverwerving.

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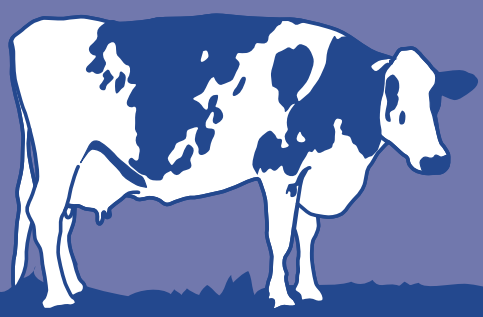
Ron Bergevoet, 2005

Contents

CHAPTER 1

General introduction



1.1 Introduction

Several developments in the Netherlands as well as in the other countries within the EU are forcing dairy farmers to reconsider their involvement in dairy production. First, changes in the European Union's Common Agricultural Policy (CAP) are directly affecting dairy farmers' incomes. As part of the CAP since the 1960s, dairy farmers in the EU were benefiting from commodity-specific support programmes. However the CAP has been reformed. The reasons for this are the increased budgetary pressure within the EU, the over-production of commodities, increasing pressure from the World Trade Organisation, and EU citizens are increasingly demanding that farmers should provide more in return for the substantial support they received from citizen and customer made. This led to a set of reforms being introduced in "Agenda 2000", the Mid-Term review in 2002, and the CAP reforms of 2003. All these reforms are resulting in an on-going decrease in the price the farmer is receiving for his products and a consequent expected significant decrease in income. This decrease is only partly compensated by direct payments to the farmer for his role as multifunctional provider of non-commodity outputs valued by society (Burrell, 2004). One way to keep the dairy farmer's income at an acceptable level is to create added value to his products. However, food companies—and therefore the farmers and their suppliers—are under constant competitive pressure.

A second change is that consumers are believed to be becoming less predictable in their behaviour, as consumer demands become more fragmented and less consistent. The result is that the consumer is able to choose from a whole range of dairy products. Although most of the product diversification is done in the dairy processing industry, it is expected that the farmer's product will change too (Grunert *et al.*, 1997).

A third change is the increased interest by the general public and consumer in agricultural production. Public concern expressed during the BSE- and the dioxin crises or the foot-and-mouth disease outbreaks illustrates this. A more transparent way of production is necessary.

A fourth change is the increased interest of the public for aspects related to food safety, animal welfare, and health-promoting effects of dairy products. Food safety and animal welfare issues are placed on the agenda by consumer's organisations as well as policy makers. This resulted in the EU commission's approach to food safety, which aims to assure a high level of food safety, animal health, animal welfare and plant health within the European Union through coherent farm-to-table measures and adequate monitoring, while ensuring the effective functioning of the internal market (Commission, 2000).

Through a step-by-step and continuous process during the last 50 years, dairy farms have doubled farm size to an average farm production of 468,600 litres of milk per year. This confronts the dairy farmer with new challenges: higher investments and a different set of competencies to adequately run the farm are needed (Anon., 2005).

To summarise then, the farmer is faced with new challenges: the changing agricultural policy, the increasing pressure of and demands from the market, and increased demands from within his own farm. In the past it was possible to manage and control a farm using a mixture of experience and common sense. The question is whether this will be sufficient in the future or whether new competencies are needed to cope with the new challenges. These new competencies are different from the competencies that made Dutch dairy farmers successful in the past. Policy makers as well as farmers' organisations see entrepreneurship

as the panacea that will enable farmers to cope with the challenges they are facing. Although craftsmanship and management still are considered to be important, something else has to be added: entrepreneurial competencies (Olsson, 1988). Farmers are being called to account more for the entrepreneurial element of their farming behaviour. However, research on the entrepreneurship of farmers and insight into the factors that contribute to this entrepreneurship has been lacking up till now. This insight however is needed if one wants to evaluate and improve the entrepreneurship of farmers.

1.2 Entrepreneurship: a brief introduction

Being the sole labour force on the farm, an important task of the farmer is to combine the functions of entrepreneur, manager, and craftsman in such a way that this combination enables him to successfully achieve his goals. Since the call for entrepreneurship is a new situation for dairy farmers, up till now it has been unclear whether dairy farmers have the capabilities for the entrepreneurial behaviour needed. Literature does not give a clear answer to this question since the role of entrepreneurship has not been given much emphasis in the field of economics and even less in agricultural economics (Knudson *et al.*, 2004), although entrepreneurship has been the topic of research in a variety of other academic fields. Therefore we have to look at those other sources of literature. Entrepreneurship has been addressed more extensively for example in small and medium sized businesses (SME) research. Since, in dairy farming, the role of the owner/entrepreneur can be compared to SME, SME literature on entrepreneurship is used as starting point for this thesis. In this section, relevant aspects related to entrepreneurs and entrepreneurship are introduced.

Recent literature on entrepreneurship starts with Schumpeter's view on entrepreneurship. He described an entrepreneur as "an idea man and a man of action who possesses the ability to inspire others, and who does not accept the boundaries of structured situations. He is a catalyst of change, instrumental in discovering new opportunities, which makes for the uniqueness of the entrepreneurial function" (Schumpeter, 1949). Based on this description, several other authors have added other entrepreneurial characteristics. From literature it can be concluded that an entrepreneur's most prevalent characteristics are: risk-taker, provider of capital (from his own resources but also by attracting other resources), innovator, and a person who identifies possibilities of profit making (Chell *et al.*, 1991; Elfring, 1999; Wärneryd, 1988).

The entrepreneur is the individual responsible for the process of creating new value—an innovation and/or a new organisation (Bruyat and Julien, 2001) and change (Audretsch, 2002). Rogers (2003) defines an innovation as an idea, practice or object that is perceived as new by an individual. It matters little as far as human behaviour is concerned, whether or not an idea is objectively new. If an idea seems new to an individual it is an innovation. However change and innovation are relative to some benchmark. What is perceived as change to an individual or enterprise may not be new for the industry (Audretsch, 2002). For example, although changing to organic farming for an individual dairy farmer in 2005 might be a significant change, this does not have the same impact for the whole dairy industry as, for example, the first farmers trying to produce organic products.

A broader definition of an entrepreneur and more of a description of his status is based

on an economic perspective. Hebert and Link (1988) define an entrepreneur as: “someone who specialises in taking responsibility for and making judgmental decisions that affect the location, form and the use of goods, resources or institutions”. In line with this, Brandstätter (1997) uses two criteria to define entrepreneurship: ownership of the firm and responsibility for decision making. However, this does not assume that everybody who fits these two criteria, and therefore has the status of entrepreneur, achieves high scores—as identified by the literature—on the characteristics on entrepreneurship, and has the ability to effectively fulfil this task (competencies) as entrepreneur.

The thesis investigates the extent to which dairy farmers, while having the status of entrepreneur, score on entrepreneurial characteristics, and whether their entrepreneurial competencies can be improved. The aspects related to these entrepreneurial characteristics and competencies are discussed in depth.

1.3 Aim of the study and research questions

This thesis has a twofold aim:

First it wants to study the entrepreneurship of dairy farmers by getting insight into what it takes for a dairy farmer to be a successful entrepreneur, and second it investigates the possibilities of improving entrepreneurial competencies of dairy farmers through a training programme. To achieve these aims, the following research questions will be addressed:

1. Do farmers’ goals, objectives and attitudes determine farmers’ strategic and entrepreneurial behaviour?

   To get insight into the entrepreneurship of dairy farmers, the relation between farmers’ goals, objectives, and attitudes and strategic and entrepreneurial behaviour has first to be studied. Insight into the goals, objectives, and attitudes relating to the entrepreneurship of farmers is needed, since they are important determinants for farmers’ behaviour (Willock *et al.*, 1999). One way in which the dairy farmer can express entrepreneurial behaviour is by increasing the size of the farm. Therefore, this farm characteristic is used as an indicator of entrepreneurial behaviour.

2. What is the importance of psychological characteristics and competencies as predictors of self-reported entrepreneurial success of Dutch dairy farmers?

   Much of the American research on entrepreneurs has been founded on the premise that entrepreneurs embody distinctive, identifiable personality characteristics that distinguish entrepreneurs from the general public (McClelland, 1987). According to this research, entrepreneurs differ from the general public with regard to a number of psychological characteristics. This study aims to investigate whether these differences also can be observed amongst the participants in this study and whether these differences influence entrepreneurial success.

   In addition to a set of psychological characteristics, an entrepreneur needs to have the ability to perform his task as an entrepreneur successfully. A whole set of competencies is needed. For example, he needs to look for and evaluate relevant information to see what kinds of opportunities exist in the market. When an opportunity

is discovered, he has to be able to make, implement, and execute a strategy to successfully convert this opportunity into a product. He will probably need to reorganise his firm, use all his skills to acquire resources, and develop a market for the new product. Insight is needed into those competencies that enable dairy farmers to be successful. Also, it is not clear which psychological characteristics of the farmer relate to these entrepreneurial competencies.

3. Which items of the strategic process influence the job satisfaction of dairy farmers?
   The circumstances in which the farmer has to produce are in a state of transition. It is very likely that within the near future the dairy farmer will be farming in a different environment. In such a different farming environment, it is important to establish if the same factors continue to influence entrepreneurial success and job satisfaction of dairy farmers or whether different factors come into play. This question focuses on which items from the strategic process contribute to the level of job satisfaction of dairy farmers?

4. Do training programs that aim at improving entrepreneurial competencies have measurable effects?
   Answering the first three research questions helps to identify the factors that are important with respect to the entrepreneurship of dairy farmers. Now the question emerges as to whether these factors can be changed. This question focuses on whether it is possible to develop a training programme that enables dairy farmers to improve their entrepreneurial competencies and measure an effect when such a programme is implemented?

1.4 Project Veranderingsgericht Ondernemerschap, the Innovative Entrepreneurship Project

This thesis is based on data collected during a large-scale training programme called the Innovative Entrepreneurship Project. The aim of this project is to improve the entrepreneurial competencies of dairy farmers. This project resulted from a discussion amongst farmers and their organisation in the Northern part of the Netherlands (formerly NLTO, now part of LTO-Noord) around the question of whether their members possessed sufficient potential to cope with future challenges.

In the Netherlands, a long history of extension and education exists. Together with research this has been a vital motor for the success of Dutch agriculture (OVO[2] -drieluik). The project on which this thesis is based fits into this tradition. A two-year training programme was developed and implemented to investigate the extent to which it is possible to improve entrepreneurial competencies. In this training programme, farmers developed and discussed their entrepreneurial strategy in study groups. The farmers developed, used, and improved their strategic, opportunity- and information-seeking competencies by making a strategic management plan.

Programmes to improve entrepreneurial competencies are intensive and time-consuming for the participants and facilitators. They involve large investments in time and money on

[2] OVO stands for Onderzoek Voorlichting and Onderwijs (Research, Extension and Education)

the part of all parties. However, empirical research on extension programs dedicated to entrepreneurship investigating the effectiveness of these programmes has until now not been given much attention, although extension programs involve big investments on the part of participants in terms of time and money. In this thesis, the effectiveness of the training programme is investigated.

Two groups of farmers were selected for a case-control analysis. Participants were members of study groups and all living in the north of the Netherlands. Thirteen study groups were asked to participate actively in the training programme (112 farmers), the initial project group (P group). A comparable group of farmers was selected to participate in a control group (C group). The C group consisted of study-group members also living in the north of the Netherlands (337 farmers). These farmers were selected from the database of the Northern Dutch Farmers' Organisation (NLTO). Members of the P-group participated in the project meetings related to entrepreneurship, whereas the members of the C-group did not. The participants of the P-group met six to eight times in a time span of two winter seasons to discuss the items related to entrepreneurship. At the start and end of the project, data were collected in the P-group and C-group by means of a questionnaire. Statistical analysis was used to determine an intervention effect.

1.5 Outline of the thesis

The outline of the thesis is in line with the diagram given in figure 1.2. The formulated research questions are focused around the two aims of the thesis. The first aim deals with the question of how entrepreneurial factors and characteristics relate to dairy farmers, their personal characteristics, skills and competencies, and also how these relate to the characteristics of their farm.

Chapter 2 presents the results of research on the relation between farmers' goals, objectives, and attitudes and their strategy and the relation with entrepreneurial behaviour. Since attitude theories are used for research on entrepreneurs to gain insight into these goals, objectives, and attitudes, the Theory of Planned behaviour is used to gain insight into the question. Chapter 3 investigates the relation between the psychological characteristics and competencies of dairy farmers and success. Structural equation modelling is used to study to what extent the entrepreneurial psychological characteristics and competencies mentioned in literature influence the entrepreneurial success perception of dairy farmers. Chapter 4 studies the influence of a the strategic process on the job satisfaction of the dairy farmer by means of path analysis.

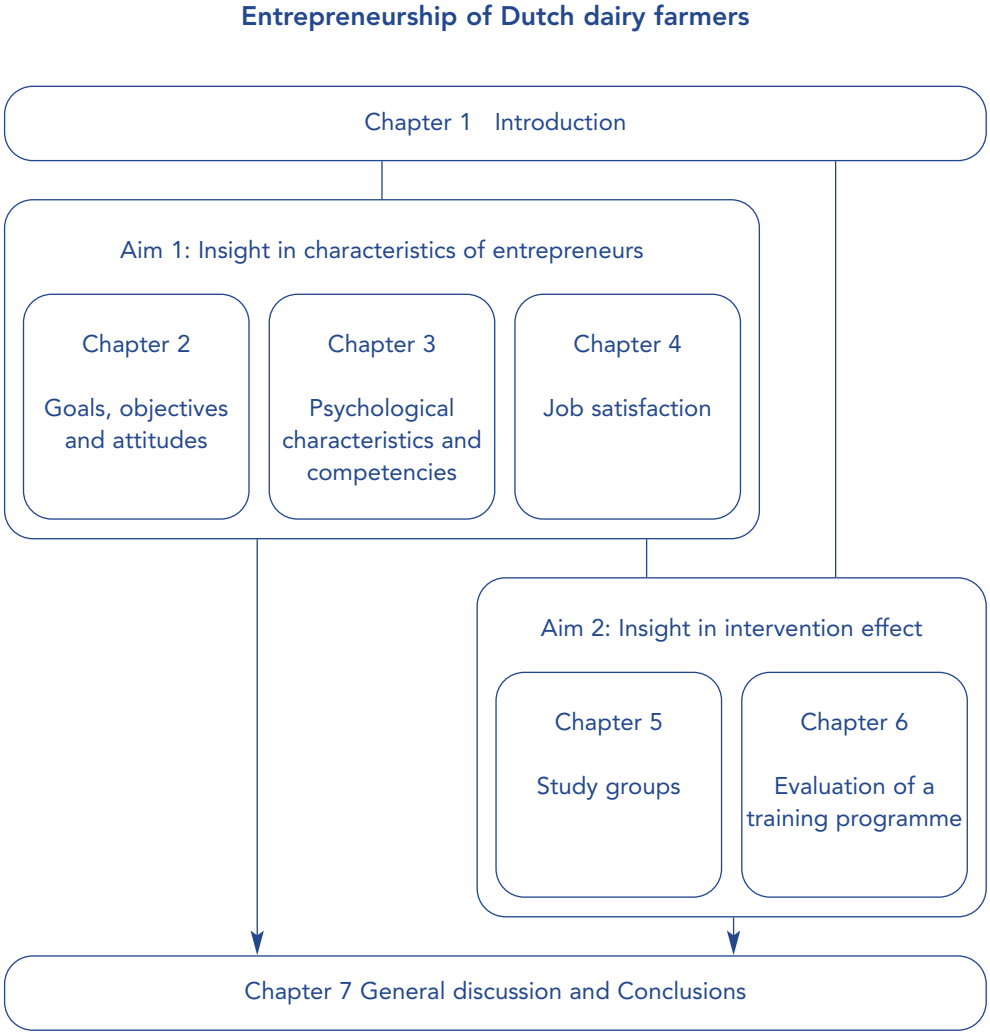


Figure 1.1 The outline of the thesis

The second aim of this thesis is to test whether entrepreneurial competencies of dairy farmers can be developed by means of a training programme. Therefore, in Chapter 5 the learning process of farmers, and the process and content of such a training programme is described. After developing and implementing a programme the programme was tested to see whether the expected effects materialised. In Chapter 6 the results of the training programme and the effect on entrepreneurial competencies are evaluated by means of multiple linear regression.

Chapter 7 integrates the results of the various chapters into a general discussion and provides the main conclusions of this thesis.

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CHAPTER 2

Entrepreneurial behaviour of Dutch dairy farmers under a milk quota system: goals, objectives and attitudes

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Abstract

An empirical model, based on the Theory of Planned Behaviour, was developed to test the hypothesis that differences in farmers' goals, objectives and attitudes are a determinant of strategic and entrepreneurial behaviour and will, therefore, result in differences in farm size. The theory states that a person's behaviour results from his/her goals and intentions, attitudes, perceived behavioural control and social norms. Data (n=257) were gathered from a questionnaire that was sent to a selected group of Dutch dairy farmers, members of study-groups in the northern part of the Netherlands. Answers to statements about goals as well as statements related to attitudes, subjective norms and perceived behavioural control, explained 38 % of the variance in farm size as expressed by farmers' milk quota. The goal of having a "large and modern farm" was positively correlated with farm size, while those related to "having a breeding farm" and "extra source of income" were significantly negatively correlated with farm size. A significant relationship was found between behaviour (farm size as expressed by a farm's milk quota) and goals and intentions of farmers. This relationship is even stronger when statements on attitudes, social norms and perceived behavioural control are included. Farm size is mainly explained by farmers' instrumental goals. This suggests that farm size is not relevant for fulfilling intrinsic, expressive and social goals. This research shows a consistency with the Theory of Planned Behaviour and can be used in empirical research by applying it to data collected in a questionnaire. Such psychological models on decision making can help to yield insight into aspects related to entrepreneurial behaviour of dairy farmers.

Keywords: dairy farming, farm size, Theory of Planned Behaviour, goals, attitudes, entrepreneur.

2.1 Introduction

In the Netherlands, dairy producers operate under the European law of milk quota. Therefore, on Dutch dairy farms, milk quota, is the most important constraint in farm production. Neo-classical economic theory suggests there is an optimal farm size to which farmers should expand, given that profit maximisation is the main objective (Chambers, 1988). Despite these economic arguments, however, large differences exist in farm size (in terms of milk quota), suggesting that factors other than economic ones also play a role in determining the decision to enlarge a farm's milk quota.

Milk production in the Netherlands is limited by a system of tradable farm-based milk quota, introduced in 1984. The production volume of a farm is the sum of the milk quota assigned in 1984 (minus obligatory quota reductions) together with subsequent milk quota purchases. If a farmer wishes to expand, he/she must buy or lease quota and engage in active strategic and entrepreneurial behaviour. Farm size, therefore, is the result of (past) strategic and entrepreneurial behaviour. Until now the main emphasis in management research has been on short and medium term craftsmanship and operational management (see, for example, Rougoor *et al.*, 1998), but recently, long term strategic and entrepreneurial behaviour is receiving more attention (Boehlje and Eidman, 1984).

The number of dairy farms in the Netherlands has more than halved since the 1980s. The average herd size has increased from 35 to 50 cows per farm and the average production has doubled to an average of 398.600 litres of milk per farm per year (Bureau of statistics, 2000; Agricultural Economics Research Institute, 2002). Even though the ownership of milk production rights (quota) is the limiting factor in milk production per farm, the variation in farm size, measured in kg of milk produced per farm remains large (Bureau of Statistics, 2000). In order to improve our understanding of these differences, the strategic and entrepreneurial behaviour of the farmer, his/her attitudes, objectives and goals should, therefore, be considered (Battershill and Gilg, 1997).

It is hypothesised that farmers' goals, objectives and attitudes are a determinant of strategic and entrepreneurial behaviour, and that differences in the latter will result in differences in farm size, which can be measured as total milk quota. To test this hypothesis, a model based on the Theory of Planned Behaviour was used and tested using data collected by a questionnaire. This theory has previously been used in a number of behavioural and economic research areas in agriculture: e.g. in management research (Nandram and Samsom, 2000; Robinson *et al.*, 1991) and agricultural futures market research (Pennings and Leuthold, 2000). In the present study, it was used to try and explain farmers' entrepreneurial behaviour.

The following section describes the Theory of Planned Behaviour (Fishbein and Ajzen, 1975, Ajzen and Madden, 1986, Ajzen, 2001) and its application to dairy farmers. Based on this theory a working model was developed to explain differences in farmers' behaviour. The analytical procedures to test the hypothesis are outlined in the next section and the empirical results are presented and discussed. Conclusions make up the final section.

2.2 Theoretical background

2.2.1 Theory of Planned Behaviour

Entrepreneurial activity is planned behaviour and reflects, to some degree, cognitive processing (Krueger *et al.*, 2000). In the literature there are several theories that try to explain behaviour. All have some common elements, attitudes and intentions, that result in a specific behaviour. Among the most commonly used is the Theory of Planned Behaviour (TPB) developed by Fisbein and Azjen (1975) and further extended by Azjen and Madden (1986). This theory describes the relationship between attitudes, intentions and behaviour and is reviewed in detail by Leone *et al.* (1999) and Ajzen (2001). It is based on the assumption that human beings are usually quite rational and make systematic use of the information available to them (Ajzen and Fishbein, 1980).

While several alternative models with comparable elements have been developed, (e.g. Bagozzi and Kimmel, 1995;Perugini and Conner, 2000), TPB is still the most widely used model, especially when cognitive processing forms a vital part. The reason for this is that the TPB is parsimonious, easy to implement, and applicable to a wide range of behavioural domains (Leone *et al.*, 1999). For these reasons TPB was selected as the basis of the current study.

2.2.2 The components of the Theory of Planned Behaviour

The components of TPB are behavioural intentions, attitudes, subjective norms, and perceived behavioural control (Ajzen and Madden, 1986). Past behaviour has later been added as another component to further complete the theory (Van der Pligt and Vries, 1992). A schematic presentation of the TPB is given in Figure 2.1. In the following section the definition and characteristics of the components of the theory are explained.
Behaviour is the observable response to a certain attitude-object (Van der Pligt and de Vries, 1995). TPB states that intention is a good predictor of planned behaviour (Ajzen and Madden, 1986). However the relationship between intentions and behaviour can be complicated by barriers to expression of the behaviour or by a lack of skills (Van der Pligt and Vries, 1992). Behaviour can be the response to a single intention but also a response to several intentions (Gasson, 1973). Zimbardo and Leippe (1991) define behavioural intentions as plans to act in specific ways, and these are the best predictors of planned behaviour (Ajzen, 2001), even when time lags exist (Bagozzi and Kimmel, 1995). A person's intentions are influenced by attitudes, subjective norms, perceived behavioural control, and past behaviour. Intention is interpreted as a transition between the cognitive and evaluative components of attitude and behaviour. Intentions are direct functions of both individually and socially related variables. Moreover, intentions completely mediate the influences of attitudinal variables so that no direct path from attitude to behaviour can be hypothesised (Ajzen and Madden, 1986).

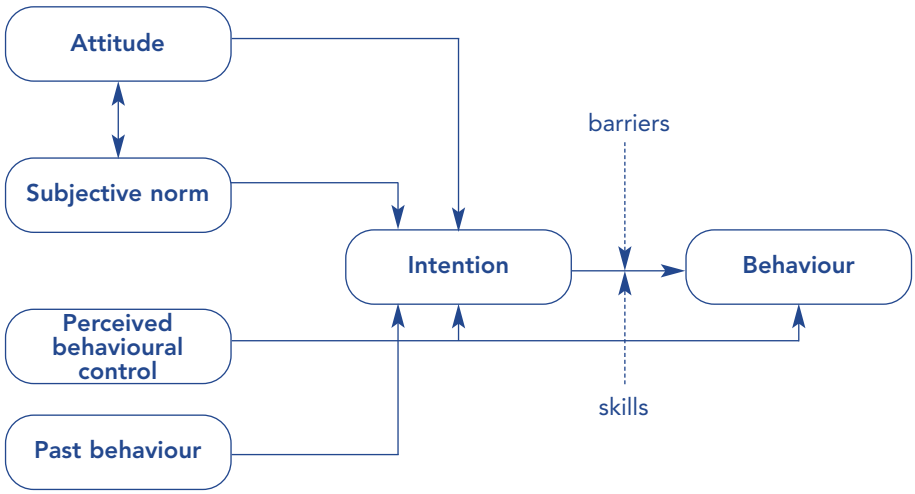

Figure 2.1 The model of behavioural determinants (after Van de Pligt and De Vries 1992)

An attitude is a disposition to respond favourably or unfavourably to an object, person, institution or event (Kim and Hunter, 1993). An attitude is (a) directed towards an object, person, institution, or event; (b) has evaluative, positive or negative, elements; (c) is based on cognitive beliefs towards the attitude-object (i.e., the balancing between positive and negative attributes of an object leads to an attitude); and (d) has consequences for behaviour when confronted with the attitude object (Van der Pligt and de Vries, 1995).

Subjective norms are defined as a person's perceptions of the social pressures put on him/her to perform or not perform the behaviour in question (Ajzen and Fishbein, 1980). A subjective norm may exert pressure to perform or not to perform a given behaviour, independent of the person's own attitude toward the behaviour in question. Subjective norms are used for self-evaluation when no objective evidence exists. Similar others are used for social comparison (Festinger, 1954). Interestingly, subjective norms are less predictive for intentions in subjects with a highly developed internal locus of control (Ajzen and Madden, 1986) or a strong orientation toward taking action (Bagozzi and Kimmel, 1995). In explaining behaviour through subjective norms, the most important influences (e.g., parents, significant others, friends), including any "role model" or "mentor", have to be identified empirically.

Perceived behavioural control is the perceived ability to execute a behaviour (Ajzen and Madden, 1986). According to the TPB, perceived behavioural control influences intention and behaviour in such a way that the greater the perceived behavioural control, the more positive the behavioural intention, and the more likely that the behaviour will, in fact, occur. However, a direct path is assumed to exist only if the perceived behavioural control is a good proxy of actual behaviour, but this is not likely to be the case when, for instance, the behaviour is new to the subjects (Ajzen and Madden, 1986).

Past behaviour was considered by Ajzen and Madden (1986) as a component of perceived behavioural control. However, the research of Van der Pligt en De Vries (1995) and Bagozzi and Kimmel (1995) showed that the total effect of past behaviour cannot be mediated by including it in perceived behavioural control; it must be added as a separate component to the model.

The TPB explained above can be illustrated with the following example. A dairy farmer might consider an increase in milk quota as the best way to secure the continuity of his farm *(attitude)*. People in his immediate surroundings also have an attitude regarding increasing farm size *(subjective norms)*. Some consider improving the production parameters on the present farm as the best way to secure continuity, whereas others think that a constant growth of the farm is the best way. The valuation of the farmer's own *perceived behavioural control* (can I manage a large farm at acceptable risks?), combined with the experiences of the increase in farm size of the last years *(past behaviour)*, might result in the *intention* to buy a large amount of milk quota. He might undertake training to get the specific *skills* needed to manage a large farm and he must get an additional loan to remove the *barrier* of inadequate funding. And after this he will buy milk quota *(behaviour)*.

2.2.3 Research on goals, objectives, attitudes, and behaviour in agriculture

In order to develop a sound basis for the survey in the present study, a literature review was conducted in search for any elements in the TPB framework that have been studied in agriculture. Only studies on goals and attitudes were found and these are briefly discussed below.

A comparison of TPB with business literature, which focuses on goals and objectives to explain behaviour, leads to the assumption that 'attitudes' stemming from psychology on one hand and 'goals and/or objectives' stemming from business literature on the other can be used interchangeably. Goals are broad, long-term attributes that a business seeks to accomplish. They tend to be general and sometimes even abstract, whereas objectives are more specific targets of performance involving profitability, productivity and other key aspects of business (Zimmerer and Scarborough, 1998). Patrick (1983) found that farmers' goals need to be interpreted in a multidimensional framework because trying to measure goals on a one-dimensional scale oversimplifies the problem of measuring goals. In her research on farmers' goals, Gasson (1973) stated that goals direct a persons' behaviour towards a desired end. She identified four orientations: instrumental, social, expressive and intrinsic. She was among the first to emphasise that (for farmers) there is more to farming than just money. In a large survey among Scottish farmers Willock *et al.* (1999) identified five types of goals: success in farming, sustainability, quality of life, status, and off-farm work. Willock *et al.* (1999) stated that goals help to establish priorities and focus attention on the relevant information. Intentions and behaviour were the topic of several studies of which Willock et al (1999) reviewed. They concluded that, according to the literature, the following attitudes impact farmers' behaviour: achievement in farming, legislation, pessimism, openness in farming, financial risk, chemical use and policy measurement. It was also concluded that management behaviour of farmers could be subdivided into 4 categories: production oriented behaviour, environmentally oriented behaviour, stressed behaviour and business oriented behaviour. So in studying farmers' behaviour these different goals and intentions have to be taken into account.

2.3 Methods and materials

2.3.1 The modelling approach

To test the hypothesis that farmers' goals, objectives and attitudes are a major determinant of strategic and entrepreneurial behaviour a working model was developed based on the TPB. The model is shown in Figure 2.2. The farm size, represented by milk quota, represents behaviour that is related to farmers' goals (intentions), which in turn are related to statements about the farmers' attitudes, perceived behavioural control and subjective norms. Past behaviour, skills and barriers were not addressed in the model because the focus of this study was to find the effect of the original components of TPB on behaviour. The variables used for testing the hypothesis were collected using a questionnaire.

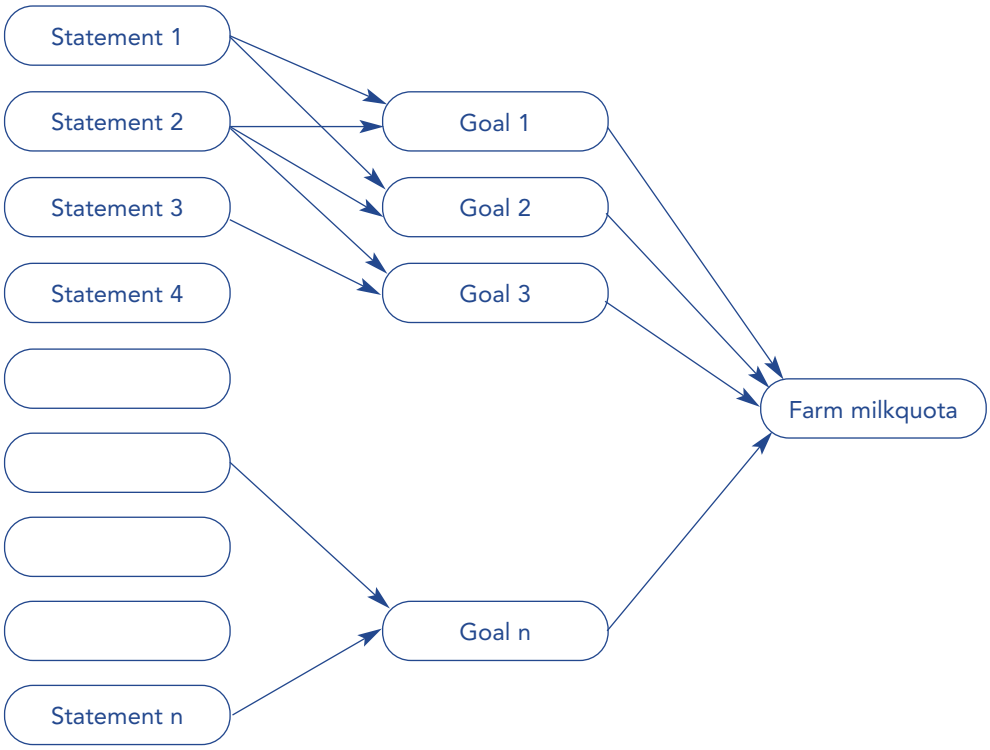

Figure 2.2. The analytical model showing the relation between farm milk quota, the farmers' goals and the statements on attitudes, perceived behavioral control and subjective norm.

2.3.2 The questionnaire

A questionnaire was developed made up out of three parts. First, background data on size of the enterprise, age, gender, and level of education of the farmers were asked. Second, data on farmer's goals were collected through a list of statements (for example: "As an entrepreneur my goals are: To realise an income as high as possible."). The third section contained statements on attitudes, perceived behavioural control and subjective norms. An example of each category is given below.

- Attitudes: "I take challenges more often than other dairy farmers do."
- Subjective norm: "The way colleagues think about my farm is very important to me."
- Perceived behavioural control: " I can further lower the cost price of my milk."

A complete list of the statements is given in appendix A.

All the questions from the second and third section were so-called closed questions, using Likert- type scales. The questionnaire was pre-tested both internally and with farmers and farmer related experts. The questionnaire was accompanied with a letter of recommendation from a local farm leader. The questionnaire used is given in appendix B (in Dutch).

2.3.3 The farmers

This study is part of larger project aimed at improving entrepreneurial competencies. For this purpose two groups of farmers were selected to be able to conduct a case-control analysis. The case group was asked to participate actively in the project (n=112). These participants were members of study-groups and living in the north of the Netherlands. The control group also consisted of study-group members living in the north of the Netherlands (n=337). These farmers were selected from the database of the Northern Dutch Farmers' Organisation (NLTO). Since this study describes the starting point of the project, it is assumed that no significant differences exist between farmers in the two groups. They are therefore considered as one group for analysis. A total of 35 farmers answered the questionnaire during study-group meetings (February 2001), however the threat, and later actual, outbreak of Foot and Mouth Disease prevented further visits to study-groups, so the remaining 414 questionnaires were sent by mail in March 2001.

From the original 449 farmers approached, 269 (60%) responded. The results of 12 respondents could not be used, as they were either not involved in dairy farming anymore, were not the owner of the farm, or because the questionnaire was not completely filled out. The remaining 257 questionnaires resulted in a response-rate of 57 %, which is relatively high given this type of research (Pennings *et al.*, 2002; Yammarino *et al.*, 1991).

2.3.4 Statistical analysis

The statistical analysis involved four steps.

• Step 1: Factor analysis.

The aim of the first step of the analysis was to get insight into common factors underlying the specific goal statements of the farmer. Therefore data reduction was performed by means of factor analysis with varimax orthogonal rotation. Factors with an eigenvalue larger than 1 were identified and described. For further analysis, the original set of variables, related to the goals, was replaced with a set of variables created from the factor scores. These new variables were computed, based on the factor loadings of all variables on the factor.

• Step 2: Analysis of the relationship among the attitudes, subjective norms and perceived behavioural control, and goal factors resulting from the first step.

A stepwise linear regression analysis was then employed in which the new variables, based on the identified factor scores from step 1, served as dependent variables and the scores to the statements as independent variables. This was done to relate the statements on attitudes, social norms and perceived behavioural control to the identified goal factors.

• Step 3: Analysis of the relationship between goal factors, and the size of milk quota.

A linear regression analysis was used with the identified factors on goals acting as the independent variables and the milk quota as the dependent variable. The goal factors were analysed in a stepwise procedure and only those factors that contributed significantly were entered into the model.

• Step 4: Improving the model by including statements

To investigate whether including variables from statements on attitudes, social norms or perceived behavioural control could further improve the variance explained, a linear regression of the Log milk quota on the statements was performed but with the identified factors of equation 1 entered as fixed variables. The variables of the statements were entered in a stepwise procedure to these variables. Only statements, which significantly improved the model, were entered into the final model.

2.3.5 Data transformation

An univariate analysis showed a skewed distribution for milk quota size. A log transformation was therefore applied to yield a normally distributed variable. This variable was used in the regression analysis of step 3.

2.4 Results and discussion

2.4.1 General characteristics of the participating farms

Table 2.1 shows that the average farm in this survey is larger, with respect to all the examined variables, compared both with the average Dutch dairy farm as well as with the average farm in the northern part of the Netherlands. It is likely that a selection bias was introduced through the selection of farms in study-groups, rather than sampling the total population. The average age of the farmers in the survey is 39.4 years. No correlation between age and farm size was found.

Table 2.1
General characteristics of the farms in the survey, compared to average Dutch farms and average farms in the region of origin of the surveyed farms.

	Average dairy farm in the survey (n=256)		Average dairy farm in the Netherlands [a] (n= 396)	Average dairy farm in the Northern part of the Netherlands [b] (n=79)
	Mean	(S.D.)		
Average milk quota per farm in liters [c]	654,855	(287,084)	398,600	472,700
Age	39.41	(8.48)		
Number of dairy cows	81.56	(35.46)	53.30	62.90
Kg Milk per cow	8,397	(788)	7,540	7,641
Average size of the farm (ha)	54.69	(35.48)	33.48	40.66
Labour units per farm	1.67	(0.65)	1.50	1.50

[a] Sample of 396 out of 27,800 dairy farms in the Netherlands.

[b] Sample of 79 out of 5,410 dairy farms in this region. Source: LEI (2001).

[c] total milk quota (included. leased quota).

All but one respondent provided information on the education that they had received. Of the 256 farmers, 228 received specialised agricultural education, whereas the other respondents had a non-agricultural education. The number of respondents with low level agricultural education in this sample was only 7%, whereas this number is about 50% for the total Dutch dairy farmers population (Ministery of Agriculture, Nature Management and Fisheries, 2000). It can be concluded that respondents received a higher agricultural education than the average Dutch farmer. This probably positively affects membership of a study-group since education is a key factor, which induces farmers to participate in extension schemes (Gasson, 1998). Farmers in study groups can be seen as future-oriented farmers in a growth or consolidation phase of the family farm lifecycle and this might explain the difference in size.

2.4.2 The components of farmers' goals

The first two columns of Table 2.2 (upper part) show the average scores and standard deviation of the farming goals. The respondents were asked to score each goal on a 5-point. Individual evaluation revealed that "Enjoy my work" was ranked highest (4.79). "Producing a good and safe product" (4.66), "Work with animals" (4.20), "Contribute to a positive image" (3.96) were also considered to be more important than "Realise an income as high as possible" (3.69). Goals of minor importance were " Have sufficient leisure time" with an average score of 2.85. The same held true for "Develop and maintain nature and landscape values" (average score 2.55) as well as "Earn respect from my colleagues" (average score 2.45). The farmers also scored the farm types they preferred to manage to meet these goals (Table 2.2, lower part). The highest scores were received for "A modern farm" (4.03), " A highly productive farm" (3.61), "A farm producing environment friendly" (3.55), and "A large farm" (3.33). The lowest scores were returned for "A farm, in which recreation is a second source of income" (1.31), "A farm in which nature conservation is a second source of income" (1.85), and "An organic farm" (1.6).

The ranking of the average scores on the goals shows that farmers consider the intrinsic value of farming as more important than the economic value. This ranking can be caused by the relatively good financial position of the Dutch dairy farmer and enables them to emphasise other goals as well.

2.4.3 Factor analysis: Reduction of goal and desired farm type variables.

Applying factor analysis to the data reduced the number of variables, related to the goals and desired farm type of the dairy farmer from 21 to 7. The identified factors had eigenvalues greater than, and the total variance explained by these factors was 63% (which - in social sciences – is generally regarded as satisfactory (Hair *et al*., 1998)). Table 2.2 shows the factor loadings (after varimax orthogonal rotation) of the goals on the seven factors identified. Analysis of the seven factors showed the following.

Factor 1 (*A large, modern farm*): the variables, which have a relatively high loading on this factor are "A large farm", "A high-productive farm", 'An environment friendly producing farm", "An innovative farm', and "A modern farm "(bold factor loadings in Table 2.2).

Factor 2 *(Quality of life and status)*: all the variables which are related to intrinsic

human values have a high loading on this factor: “Earn respect from my colleagues”, “Have sufficient leisure time”, “ Develop and maintain nature and landscape values”, “Contribute to a positive image of my professional group”.

Factor 3 (*Farming with an extra source of income*): variables that have high loading on this factor are “ Develop and maintain nature and landscape values”, “A farm in which recreation is a second source of income”, “A farm in which nature conservation is a second source of income” and “ An organic farm”.

Factor 4 (*Dairy-farming as a way of life*): variables with high loading are “Enjoy my work”, “Work with animals”, and “Producing a good and safe product”. This factor covers the aspects of craftsmanship.

Factor 5 (*The family farm*): the two variables underlying the factor family farm are “Create an existence for my future successor” and “A family farm”.

Factor 6 (*The breeding farm*): besides the variable “A breeding farm” also the variable “Work with animals” and “A high productive farm” had significant loading on this factor. By “A breeding farm” means obtaining extra income by selling animals with a high genetic potential.

Factor 7 (*High income*): has significant loading of the single variable “Realise an income as high as possible”.

The identified factors gave insight into a whole array of goals of dairy farmers that are both economic and non-economic. These findings are consistent with the findings in the literature (Gasson, 1973; Coughenour and Swanson, 1988; Gasson and Errington, 1993; Fairweather and Keating, 1994; Willock *et al.*, 1999). Besides economic goals (or instrumental goals, as they were termed by Gasson, 1973) (Factors 1, 3 and 7) several non-economic goals related to dairy farming can be distinguished. These are intrinsic (Factors 2 and 4, farming is valued as an activity in its own right), social (Factor 5, farming for the sake of interpersonal relations), and expressive (Factor 6, farming is a means of self-expression or personal fulfilment).

Table 2.2
Personal and farm-related goals of farmers

	Average [a]	SD	Factors [b]						
			Large/ modern farm	Quality of life and status	Extra source of income	A way of life	Family farm	Breeding farm	High income
Goals									
Realise an income as high as possible	3.69	0.88	0.15	0.10	0.00	0.01	-0.04	-0.02	**0.84**
Enjoy my work	4.79	0.52	-0.09	0.16	-0.22	**0.71**	-0.03	0.02	-0.14
Work with animals	4.2	0.77	-0.14	-0.01	0.06	**0.67**	0.14	**0.36**	0.13
Create an existence for my future successor	3.05	1.37	0.15	0.20	0.05	0.13	0.71	-0.08	0.10
Earn respect from my colleagues	2.45	1.16	0.08	**0.52**	-0.10	-0.09	**0.35**	0.30	0.15
Have sufficient leisure time	2.85	1.17	-0.01	**0.74**	0.01	-0.07	-0.12	-0.11	0.23
Develop and maintain nature and landscape values	2.55	1.1	0.00	**0.70**	**0.38**	0.13	0.09	0.02	-0.22
Contribute to a positive image of my professional group	3.96	1.01	0.04	**0.68**	0.02	0.32	0.11	-0.01	-0.07
Producing a good and safe product	4.66	0.61	0.15	0.06	0.02	**0.76**	0.09	-0.15	0.01

(Continued on next page)

Table 2.2 continued

	Average [a]	SD	Factors [b]						
			Large/ modern farm	Quality of life and status	Extra source of income	A way of life	Family farm	Breeding farm	High income
Farm type									
A large farm	3.33	1.05	**0.65**	-0.01	-0.22	-0.26	0.10	0.10	0.23
A highly productive farm	3.61	0.93	**0.67**	-0.05	-0.20	0.02	-0.08	**0.43**	0.15
A farm producing in an environment friendly way	3.55	0.85	**0.53**	0.23	0.35	0.17	-0.13	0.06	-0.34
An innovative farm	2.93	1.16	**0.60**	0.07	0.22	-0.11	0.17	-0.05	-0.13
A modern farm	4.03	0.87	**0.66**	-0.04	-0.11	0.24	0.12	-0.26	0.17
A family farm	2.81	1.21	0.02	-0.07	0.08	0.05	**0.81**	0.15	-0.13
A breeding farm	2.41	1.07	0.03	0.00	0.02	0.04	0.07	**0.85**	-0.04
A farm in which recreation is a second source of income	1.31	0.8	-0.23	-0.09	**0.55**	-0.12	0.13	0.14	0.33
A farm in which nature conservation is a second source of income	1.85	0.95	-0.08	0.13	**0.81**	0.04	-0.06	0.01	0.02
An organic farm	1.6	0.89	0.13	0.06	**0.67**	-0.12	0.12	-0.11	-0.16
Results of Factor Analysis									
Initial Eigenvalues			2.70	2.27	1.92	1.47	1.36 1	.11	1.045
Rotation Sums of Squared Loadings			2.13	1.95	1.88	1.86	1.46 1	.31	1.27
% of Variance explained			11.24	10.30	9.91	9.81	7.71	6.93	6.72
Cumulative % of the variance explained			11.23	21.54	31.46	41.27	48.99	55.92	62.64

[a] Average and standard deviation results of a 1-5 Likert scale, [b] Factors: extracted from factor analysis. Factors with.loadings > 0.35 or <- 0,35 are bold.

2.4.4 The relationship between farmers' goals and statements on attitudes, social norms and perceived behavioural control

Step 2 of the analysis related the thirty-five statements on attitudes, social norms and perceived behavioural control to the identified goal factors (Factors 1 through 7 from step 1). The results of a stepwise regression analysis are presented in Table 2.3.

The statements "lower cost-price" (0.184), "high producing" (0.158), "informed about legislation" (0.124), "negotiate with buyers and suppliers", "try new things" (0.171), "plans on paper" (0.110) and "keeping farm up-to-date" (0.252) were significantly positively related to Factor 1 (*Large and modern farm*). Significantly negatively related to Factor 1 was "strive for low debts" (-0.137).

The statements " high producing" and "keeping farm up-to-date" were also asked in a somewhat different way under "farm type" (Table 2.2) indicating consistency in the answers given by the respondents. The statements "informed about legislation", "plans on paper", and "lower cost-price" represent managerial abilities. These abilities have been found to be positively related to farm results by several authors e.g. Rougoor et al, (1996) and Nuthall (2001). The statements "try new things" and "negotiate with buyers and suppliers" relate to entrepreneurial characteristics (Wärneryd, 1988; Chell *et al.*, 1991; Brandstatter, 1997; Van Dijk and Thurik, 1998; Elfring, 1999).

For the rest of the goal factors some of the most interesting results of Table 2.3 are discussed. Factor 3 (*Creating an extra source of income*) was associated with rural business other than traditional dairy farming. This is shown by high correlations with statements like "take environment into consideration", "try new things", "having off-farm income is important", " I can increase the sales-price of milk". The significantly negatively related variable "keeping farm up-to-date" is also in agreement with this since dairy farming does not have top priority.

Factor 4 (*Dairy farming as a way of life*) is significant in its positive relationship to "administrative obligations take lots of time", "I can increase the sales-price of my milk" and "farming is still fun and satisfying". These statements fit into the picture of a farmer who wants to farm for the intrinsic qualities of farming. The farmer likely considers other things, like administrative obligations, as interfering with his main objective (i.e. to farm).

Factor 7 (*High income*) was significantly positively correlated with "equity capital as risk buffer" and "negotiate with buyers and suppliers". Both statements relate to increasing income. Significantly negatively related to this factor was "take environment into consideration". Apparently farmers whose goal is to attain a high income from farming view environmental care as a hindrance in achieving this goal.

There was a large variation among the different goals, expressed in the amount of variance explained by the different statements. For Factor 1, the statements explain 45% of the variance. However, for Factors 2 through 7 the variance explained, although statistically significant, varied between 7% and 25%.

Table 2.3
Regression results of goals on attitudes, perceived behavioural control and subjective norms [a].

		Objective						
	Statement	Large/ modern farm	Quality of life and status	Extra source of income	A way of life	Family farm	Breeding farm	High income
a	I strive for very low debts on my farm	-0.137					0.128	
a	My goals and objectives are clear and on paper	0.110						
a	I try to be among the highest producing farms.	0.158					0.406	
a	I regularly negotiate with suppliers and buyers	0.171					0.151	0.153
a	I like to try new things on my farm	0.244		0.136				
a	Keeping my farm up to date is very important to me	0.252		-0.276				
a	In decision-making I take the environment into consideration, even if it lowers profit			0.265				–0.371
a	Off-farm income is important for the continuity of our farm			0.130			0.150	
a	When making important decisions I ask for a lot of advice			0.156				
a	I take challenges more often than other dairy farmers						0.177	
a	I use my equity capital as a risk buffer							0.138
a	I try to minimise contract work					0.297		
a	Farming is still fun and satisfying				0.346	0.243	0.135	
a	I seriously recommend young people not to become a farmer							–0.137
p	I'm well informed on the relevant legislation for my farm	0.124						
p	I can further lower the cost price of my milk	0.184						
p	Before I take important decisions I thoroughly inform myself		0.165					
p	When I need a new loan, I always go to the same bank			-0.145				
p	I can increase the sales-price of my milk			0.130	0.130			
p	Administrative obligations consume a lot of time on my farm				0.156			
p	I don't make plans because they don't work out in reality						0.193	
s	The way colleagues think about my farm is important to me		0.066					
	F-value	23.11*	8.534*	6.75 *	11.98*	17.59*	11.33*	14.33*
	Adjusted R2	0.45	0.07	0.16	0.13	0.14	0.25	0.20

[a] Only significant ($P<0.001$) β values are shown; a: attitudes, p: perceived behavioural control and s subjective norms; *P <0.001

2.4.5 Goals as predictors of behaviour

The third step in the analysis was carried out to identify the relationship between the seven factors on goals and the size of the farm in terms of milk quota. A stepwise regression resulted in three factors contributing significantly to the explanation of the difference in farm size as expressed in milk quota. Eq. (1) shows the results. In this equation the constant and the partial regression coefficients B_i are given.

$$\begin{aligned} LOG\ MILK\ QUOTA = {} & 5.777 + 0.081^{*}\ Large\ and\ modern\ farm \\ & - 0.093^{*}\ Farming\ with\ an\ extra\ source\ of\ income \\ & - 0.030^{*}\ A\ breeding\ farm \end{aligned} \qquad (1)$$

F value 26.66, $p < 0.001$, Adjusted $R^2 = 0.25$

The total model was significant and the three factors explained a total of 25% of the variation in milk quota size. The size of a farm in terms of milk quota is positively related to factor 1(*Large and modern farm*). Farmers, who strive for a large and modern farm, appear to actually have a relatively large farm. The instrumental Factor 3 (*Farming with an extra source of income*) is negatively related to the farm's milk quota as well as Factor 6 (*A breeding farm*). It can be concluded that goal factors, that distract the focus of a large and modern farm, have a negative impact on farm size in terms of milk quota. Neither intrinsic nor social goals showed a significant relationship with farm size.

2.4.6 Improving the model by including statements

A further analysis was carried out to investigate whether including variables from statements on attitudes, social norms and perceived behavioural control could further improve the variance explained. This can be the case if unidentified goals exist to which the statements relate. For this reason a linear regression of the Log milk quota on the statements was performed with the identified factors of Equation 1 entered as fixed variables. The variables of the statements were entered in a stepwise procedure to these fixed variables. A number of variables improved the model. Equation 2 shows the results. In the equation the constant and the partial regression coefficients B_i are given.

$$\begin{aligned} LOG\ MILK\ QUOTA = {} & 5.750 + 0.065^{*}\ Large\ and\ modern\ farm \\ & - 0.028^{*}\ Extra\ source\ of\ income \\ & - 0.016^{*}\ A\ breeding\ farm - 0.038^{*}\ Statement\ 1 \\ & + 0.038^{*}\ Statement\ 2 + 0.029^{*}\ Statement\ 3 \\ & - 0.021^{*}\ Statement\ 4 - 0.020^{*}\ Statement\ 5 \end{aligned} \qquad (2)$$

F-value16.94, $p<0.001$, Adjusted $R^2 = 0.38$

Statement 1 Off-farm income is important for the continuity of our farm
Statement 2 I have sufficient possibilities to monitor the production-process
Statement 3 I seriously recommend young persons not to become a farmer
Statement 4 I strive for very low debts on my farm.
Statement 5 The moment there are more possibilities to solve a problem, I find it difficult to choose.

Adding the additional variables to the model increased the amount of variance explained from 25 % to 38%. Of these variables, significantly positively related ones were "sufficiently monitor production process", and "recommend youngsters not to become farmers". Negatively related variables included "having off-farm income is important", "strive for low debts", and "difficulties to choose". Of these variables "importance of off-farm income" was also related to factor 3 (Extra source of income). This indicates that there might be a more general goal, additional income besides dairy farming, of which Factor 3 and the statement are part. The other statements were not significantly related to the factors in the equation. Entering the additional variables to the equation did not cause problems, when tested for multicollinearity. Some statements were significantly positively correlated, however the extent of the correlation between these statements was low and a common factor underlying the included statements could not be identified. An explanation for these variables to improve the variance in farm size explained could be that "Sufficiently monitor production process" (positive sign) and "difficulties to choose " (negative sign) relate to the managerial task of the dairy farmer. They are both aspects related to perceived behavioural control. "Having off-farm income is important", and "strive for low debts" relate to the entrepreneurial characteristics of the farmer as risk-taker, provider of capital, innovator and an arbitrator (a person who identifies possibilities of profit making) (Wärneryd, 1988; Chell, Haworth and Brearley, 1991; Brandstatter, 1997; Van Dijk and Thurik, 1998; Elfring, 1999). The attitude statement "recommend young people not to become farmers" was significantly positively related to "LOG MILK QUOTA". Perhaps these farmers view a large farm as a necessity for survival in the current harsh environment and they see problems for young people to take over a farm of sufficient size. These problems relate to the investments needed to take over a farm, since both quota and land require increasing investments nowadays while returns are decreasing (for both milk and cattle).

2.5 General discussion

Using the final model can help to improve the understanding of the entrepreneurial and strategic behaviour of farmers. The model could likely be improved by inclusion of past behaviour (i.e. quota purchasing behaviour), barriers and skills. All these elements are also part of TPB and thus explain strategic and entrepreneurial behaviour. Specific circumstances of farm and farmer (e.g., geographical location and financial situation) may further improve the explanation of farm size.

In this study non-economic goals like enjoying work, working with animals and producing a good and safe product were ranked higher than the economic goals of achieving a maximum income, usually assumed in classical economic models of decision making.

TPB explains more of the variance when the intended behaviour is easier to express (Gollwitzer and Brandstatter, 1997). Obtaining a large farm involves strategic behaviour and is not so easy to accomplish, due to the barriers and required skills. Taking this into account the explained part of the variance by the model reported here is comparable to results of Kim and Hunter (1993) and Bagozzi and Kimmel (1995).

Diversification was addressed in this research by investigating diversification on and off the farm. On the farm diversification was represented by factor 3 (Extra source of income) that relates to farm types with recreation or nature conservation as second source of income or an organic farm. Off the farm, the statement "having off-farm income is important" represents diversification. Anosike and Coughenour (1990) found that diversification, as a risk reduction strategy, was positively related to farm size. Results from this study showed that diversification strategies are negatively related to the amount of obtained milk quota. For farmers, within a quota system, the benefits of economies of scale outweigh the advantages of risk reduction by diversification. Market protection and relative stable prices caused by the quota system, reduce the risk already to a large extent.

2.6 Conclusions

Farmers' goals, objectives and attitudes are a determinant of strategic and entrepreneurial behaviour in dairy farmers. Differences in the latter will result in differences in farm size, which can be measured as total milk quota.

In can be concluded from the analyses that the TPB can be used in empirical research by applying it to data collected in a questionnaire. Such psychological models can help to gain insight into aspects related to entrepreneurial behaviour of dairy farmers.

Farm size is mainly explained by farmers' instrumental goals. This means that farm size is not relevant for fulfilling intrinsic, expressive and social goals. For extension and consulting agencies the results of this study imply that it is very important to know the goals, attitudes, perceived behavioural control and social norms of the farmer. Only then advice can be better geared towards the fulfilment of the farmer's goals, both economic and non-economic.

Moreover, if society wants farmers to express specific behaviour, this model gives opportunities to influence this. Adoption of a policy by farmers is more likely if it is in agreement with their specified economic and non-economic goals. There can also be a role for policy to remove obstacles that prevent the society-preferred behaviour of the farmer.

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Appendix A. Description of the statements used in the questionnaire*

a It is clear to me where my farm has to be within 5 years
a When making important decisions I ask for a lot of advice
a I take challenges more often than other dairy farmers do.
a The moment there are more possibilities to solve a problem, I find it difficult to chose.
a Contact with the general public is important to me, that is the reason why I invite visitors to my farm.
a I strive for very low debts on my farm.
a In decisions I take the environment into consideration, even if it lowers profit.
a I use my equity capital as a risk buffer
a I try to be amongst the highest producing farms.
a I try to minimise contract work
a We save and invest outside the farm to be able to retire early
a Farming is still fun and satisfying
a When I've made up my mind it is not easy to change it
a I regularly negotiate with suppliers and buyers
a I like to try new things on my farm
a Off-farm income is important for the continuity of our farm
a My goals and objectives are clear and on paper
a I try to cover as many risks as possible by using insurance
a When it comes to business I like to play it safe
a Keeping my farm up to date is very important to me
a I seriously recommend young persons not to become a farmer
p Administrative obligations consume a lot of time on my farm
p I can further lower the cost price of my milk.
p Before I take important decisions I'm thoroughly informing myself
p I use the internet to find information for my farm
p I'm well informed on the legislation, which can have its impact on my farm.
p When I need a new loan, I always go to the same bank
p Monitoring of my production targets I do by analysis of my farm results
p I have sufficient possibilities to monitor the production-process
p I don't make plans because they don't work out in reality
p I can increase the sales-price of my milk
s The way colleagues think about my farm is very important to me.
s I consider government policy to an increasing extend unpredictable
s Legislation spoils the pleasure in my work
s The increasing amount of regulation interferes with my plans for the future

* a. statement related to attitudes, p. statements related to perceived behavioural control, s. statements related to subjective norms

Appendix B. The full questionnaire

Naam: .....
Adres: .....
Woonplaats: .....
UBN .....
Telefoon no. .....

vraag
In welke provincie woont u (svp aankruisen wat van toepassing is)

○ Groningen	○ Utrecht
○ Friesland	○ Noord-Holland
○ Drenthe	○ Zuid-Holland
○ Flevoland	○ Zeeland
○ Overijssel	○ Noord-Brabant
○ Gelderland	○ Limburg

vraag
Wat is uw leeftijd _____ jaar

vraag
geslacht ○ man ○ vrouw

vraag
Welke bedrijfstakken zijn aanwezig op uw bedrijf? Hoeveel tijd besteedt u aan de verschillende bedrijfstakken? (percentage van de beschikbare werktijd)

			% van de totale tijd
melkvee	aantal		_____
	_____	melkkoeien	
	_____	kg/melk/koe	
	_____	hectares grasland	
	_____	hectares maisland	
	_____	stuks jongvee	
	_____	stuks schapen	
	_____	melkquotum	
akkerbouw	aantal		_____
	_____	hectares	
anders nl	.....	.....	Totaal 100%

vraag

	aantal
Aantal VAK op uw bedrijf	_____

een VAK(= volwaardige arbeidskracht) is iemand die 40 uur of meer per week op uw bedrijf werkt

ENQUÊTTE STRATEGISCH ONDERNEMERSCHAP/AGRARISCHE BEDRIJFSECONOMIE/INTERACT AGRIMANAGEMENT BV/NLTO

vraag *(svp aankruisen wat van toepassing is)*

Genoten opleiding:

		voltooid? ja	nee
Lager land/tuinbouwonderwijs	○	○	○
LTS en Overig lager onderwijs	○	○	○
MULO / MAVO	○	○	○
Middelbaar land/tuinbouwonderwijs	○	○	○
MTS en Overig middelbaar onderwijs	○	○	○
HBS / HAVO / VWO	○	○	○
Universitair/Hoger agrar.onderwijs	○	○	○
Anders, nl.	○	○	○

vraag *(svp aankruisen wat van toepassing is)*

Heeft u de laatste 5 jaar cursussen voor uw bedrijf gevolgd?

	ja	nee
	○	○

Zo ja welke?

Middelbare kadercursussen	○	
Hogere kadercursussen	○	
Automatiseringscursussen	○	
Boekhoudcursussen	○	
Managementcursussen	○	
Doe het zelf KI	○	
Anders n.l.	○	

vraag *(svp aankruisen wat van toepassing is)*

	ja	nee
Bent u lid van een studiegroep?	○	○

sinds _____ jaar

Zo ja welke? .....

vraag	*(svp aankruisen wat van toepassing is)*			
Bent u geabonneerd op een van de volgende tijdschriften?	ja		nee	
Boerderij	○		○	
Oogst	○		○	
Agrarisch dagblad	○		○	
Anders nl	○		○	
Buitenlandse vakliteratuur nl.	○		○	

Welke artikelen leest u in deze vakbladen?	*(svp aankruisen wat van toepassing is)*			
	nooit	soms	vaak	altijd
Bedrijfsreportages & vaktechniek eigen bedrijfstak	○	○	○	○
Bedrijfsreportages & vaktechniek andere bedrijfstakken	○	○	○	○
Achtergrondartikelen	○	○	○	○
Artikelen over wet- en regelgeving	○	○	○	○
Ingezonden brieven & columns	○	○	○	○
Interviews met politici en bestuurders	○	○	○	○
Artikelen over emigratie	○	○	○	○

vraag *(svp aankruisen wat van toepassing is)*

Heeft u het bedrijf overgenomen of bent u zelfstandig begonnen?

- ○ overgenomen van ouders
- ○ overgenomen van ander familielid
- ○ overgenomen van derde
- ○ zelfstandig begonnen

vraag *(svp aankruisen wat van toepassing is)*

Bent u lid van een maatschap? ja ○ nee ○

indien ja wie is uw maatschappartner?

- ○ partner
- ○ broer/zus
- ○ kind(eren)
- ○ vader/moeder
- ○ overig

vraag

Sinds hoeveel jaar bent u (mede)-eigenaar van uw bedrijf? _____ jaar

vraag *(svp aankruisen wat van toepassing is)*

Is er een opvolger op uw bedrijf? ja ○ nee ○ nog niet bekend ○

vraag

Zijn er nog andere inkomsten van buiten de agrarische sector op uw bedrijf?
(bv salaris van andere baan, inkomsten partner / vergadervergoeding etc

ja ○ nee ○

vraag
U heeft in het verleden - bewust of onbewust -het besluit genomen zelfstandig ondernemer te worden. Kunt u bij onderstaande redenen aangeven in welke mate ze bij uw besluit een rol gespeeld hebben?
Het gaat hier om de overwegingen die u hebben doen besluiten om ondernemer te worden.
(1- is van geen belang, 5 - van groot belang)

Mijn ouders en familie vonden het vanzelfsprekend dat het bedrijf door een van de kinderen werd voortgezet.	van geen belang	**1 2 3 4 5**	van groot belang
Zelfstandig ondernemerschap geeft meer vrijheid dan in loondienst. Ik ben vrijer om te beslissen wat gedaan moet worden	van geen belang	**1 2 3 4 5**	van groot belang
Er was geen geld om verder te leren.	van geen belang	**1 2 3 4 5**	van groot belang
Als je melkveehouder wil worden dan kan dat bijna niet anders dan als ondernemer.	van geen belang	**1 2 3 4 5**	van groot belang
De perspectieven op goede verdiensten met een eigen bedrijf waren beter.	van geen belang	**1 2 3 4 5**	van groot belang
De waardering in familie en kennissenkring voor een ondernemer was groter dan voor iemand in loondienst.	van geen belang	**1 2 3 4 5**	van groot belang

vraag

Hieronder vindt u enkele stellingen die verschillende doelen aangeven die u als ondernemer kunt nastreven . Kunt u aangeven hoe belangrijk deze stellingen voor uw situatie zijn?
(1- is van geen belang, 5 - van groot belang)

Een zo hoog mogelijk inkomen realiseren.	van geen belang	**1 2 3 4 5**	van groot belang
Plezier in het werk hebben.	van geen belang	**1 2 3 4 5**	van groot belang
Met dieren omgaan.	van geen belang	**1 2 3 4 5**	van groot belang
Het bieden van een bestaan aan mijn toekomstige opvolger.	van geen belang	**1 2 3 4 5**	van groot belang
Waardering oogsten bij collega's.	van geen belang	**1 2 3 4 5**	van groot belang
Het hebben van voldoende vrije tijd.	van geen belang	**1 2 3 4 5**	van groot belang
Het ontwikkelen of instandhouden van natuur- en landschapswaarden.	van geen belang	**1 2 3 4 5**	van groot belang
Bijdragen aan een positief imago voor mijn beroepsgroep.	van geen belang	**1 2 3 4 5**	van groot belang
Het produceren van een goed en gezond product.	van geen belang	**1 2 3 4 5**	van groot belang
Overig nl…			

vraag	
Wilt u deze doelen op volgorde van belangrijkheid voor uw bedrijf zetten?	Zet de onderdelen op volgorde van belangrijkheid. Het belangrijkste onderdeel = 1 etc
Een zo hoog mogelijk inkomen realiseren.	
Met dieren omgaan.	
Plezier in het werk hebben.	
Het bieden van een bestaan aan mijn toekomstige opvolger.	
Waardering oogsten bij collega's.	
Het hebben van voldoende vrije tijd.	
Een positieve bijdrage leveren aan natuur en landschap.	
Bijdragen aan een positief imago voor mijn beroepsgroep.	
Het produceren van een goed en gezond product.	
Overig nl……	

vraag Hier staan enkele karakteristieken van een bedrijf. Kunt u aangeven welk type bedrijf u belangrijk vindt om na te streven.	(1- is van geen belang, 5 - van groot belang)		
Een groot bedrijf.	van geen belang	**1 2 3 4 5**	van groot belang
Een hoog productief bedrijf.	van geen belang	**1 2 3 4 5**	van groot belang
Een milieuvriendelijk producerend bedrijf.	van geen belang	**1 2 3 4 5**	van groot belang
Een innovatief bedrijf*.	van geen belang	**1 2 3 4 5**	van groot belang
Een modern bedrijf**.	van geen belang	**1 2 3 4 5**	van groot belang
Een echt familiebedrijf***.	van geen belang	**1 2 3 4 5**	van groot belang
Een fokbedrijf.	van geen belang	**1 2 3 4 5**	van groot belang
Een bedrijf met recreatie als tweede tak.	van geen belang	**1 2 3 4 5**	van groot belang
Een bedrijf met natuur beheer als tweede tak.	van geen belang	**1 2 3 4 5**	van groot belang
Een ecologisch producerend bedrijf.	van geen belang	**1 2 3 4 5**	van groot belang
Overig nl.	van geen belang	**1 2 3 4 5**	van groot belang

* Onder innovatief wordt hier verstaan: als een van de eerste nieuwe ontwikkelingen toepassen ook al hebben deze ontwikkelingen zich nog niet volledig bewezen.

** Onder modern wordt verstaan: meegaan met alle moderne ontwikkelingen waarvan bewezen is dat ze van blijvende aard zijn.

*** Een echt familiebedrijf richt zich op de instandhouding van de werkgelegenheid van de familieleden

vraag Hier onder vindt u enkele stellingen. Geef aan in hoeverre deze stellingen op u van toepassing zijn	1 = niet op mij van toepassing, 5 =volledig op mij van toepassing					
De doelen, die ik met mijn bedrijf wil behalen, zijn me helder	niet	**1**	**2**	**3**	**4**	**5** volledig
Het is mij duidelijk waar mijn bedrijf over 5 jaar moet staan	niet	**1**	**2**	**3**	**4**	**5** volledig
Mijn doelstellingen zijn uitgewerkt in duidelijke op papier gestelde plannen.	niet	**1**	**2**	**3**	**4**	**5** volledig
De bewaking van mijn productie-doelstellingen doe ik door middel van analyse van gegevens van mijn bedrijf.	niet	**1**	**2**	**3**	**4**	**5** volledig
Ik ben niet makkelijk van de doelen die ik me gesteld heb af te brengen.	niet	**1**	**2**	**3**	**4**	**5** volledig
Ik kan wel plannen maken maar de realiteit van de dagelijkse gang van zaken dwingt me toch iedere keer iets anders te doen. Daarom maak ik maar geen plannen meer.	niet	**1**	**2**	**3**	**4**	**5** volledig
Bij het afsluiten van een nieuwe lening ga ik altijd naar dezelfde bank, indien deze bank akkoord gaat met de aan-vraag dan ga ik ook niet meer overleggen bij andere banken.	niet	**1**	**2**	**3**	**4**	**5** volledig
Op het moment dat er meer mogelijkheden zijn om een probleem op te lossen vind ik het moeilijk om een keuze te maken.	niet	**1**	**2**	**3**	**4**	**5** volledig
De kostprijs van mijn melk kan ik nog sterk verminderen.	niet	**1**	**2**	**3**	**4**	**5** volledig
Administratieve verplichtingen zijn een grote tijdbelasting voor het bedrijf.	niet	**1**	**2**	**3**	**4**	**5** volledig
Als het op zaken doen aankomt dan speel ik graag op safe.	niet	**1**	**2**	**3**	**4**	**5** volledig

vraag		1 = niet op mij van toepassing, 5 =volledig op mij van toepassing	
Ik onderhandel regelmatig met leveranciers of afnemers over de prijzen en condities waaronder we zaken doen.	niet	**1 2 3 4 5**	volledig
De opbrengstprijs van mijn melk kan ik nog verhogen .	niet	**1 2 3 4 5**	volledig
De toenemende regelgeving is een grote belemmering voor mijn toekomst plannen.	niet	**1 2 3 4 5**	volledig
Voordat ik belangrijke beslissingen neem, informeer ik me altijd terdege.	niet	**1 2 3 4 5**	volledig
Het succes van mijn bedrijf is het resultaat van een goede planning.	niet	**1 2 3 4 5**	volledig
Ik probeer zoveel mogelijk risico's via verzekeringen af te dekken.	niet	**1 2 3 4 5**	volledig
Ik ben goed op de hoogte van de voor mijn bedrijf relevante wet- en regelgeving.	niet	**1 2 3 4 5**	volledig
Het bedrijf up-to-date houden is voor mij erg belangrijk.	niet	**1 2 3 4 5**	volledig
Wet en regelgeving bederven mijn plezier in het werk.	niet	**1 2 3 4 5**	volledig
Het hebben van inkomsten buiten het bedrijf is belangrijk voor de continuïteit van ons bedrijf.	niet	**1 2 3 4 5**	volledig
Wij sparen en beleggen buiten het bedrijf, zodat we eerder kunnen stoppen met werken.	niet	**1 2 3 4 5**	volledig
Over het algemeen probeer ik graag nieuwe dingen in mijn bedrijf.	niet	**1 2 3 4 5**	volledig
Ik streef naar zo weinig mogelijk schuld.	niet	**1 2 3 4 5**	volledig

vraag	1 = niet op mij van toepassing, 5 =volledig op mij van toepassing						
Boer worden zal ik jonge mensen ten zeerste afraden.	niet	**1**	**2**	**3**	**4**	**5**	volledig
Ik heb voldoende mogelijkheden om de voortgang van het productieproces te bewaken.	niet	**1**	**2**	**3**	**4**	**5**	volledig
Ik probeer zo weinig mogelijk werk via loonwerk te laten doen.	niet	**1**	**2**	**3**	**4**	**5**	volledig
Hoe collega's over mijn bedrijf denken vind ik belangrijk.	niet	**1**	**2**	**3**	**4**	**5**	volledig
Ik houd bij mijn beslissingen rekening met het milieu, ook al gaat dit ten koste van het saldo.	niet	**1**	**2**	**3**	**4**	**5**	volledig
Ik probeer bij de hoogst productieve bedrijven te horen.	niet	**1**	**2**	**3**	**4**	**5**	volledig
Ik vind het beleid van de overheid in steeds grotere mate onvoorspelbaar.	niet	**1**	**2**	**3**	**4**	**5**	volledig
Boeren is nog steeds mijn lust en mijn leven.	niet	**1**	**2**	**3**	**4**	**5**	volledig
Contact met burgers vind ik belangrijk, daarom mogen burgers ook regelmatig op mijn bedrijf komen kijken.	niet	**1**	**2**	**3**	**4**	**5**	volledig
Als ik een belangrijke beslissing moet nemen dan laat ik mij altijd ruimschoots adviseren.	niet	**1**	**2**	**3**	**4**	**5**	volledig
Ik gebruik het eigen vermogen van mijn bedrijf als risico buffer.	niet	**1**	**2**	**3**	**4**	**5**	volledig
Ik gebruik internet om informatie voor mijn bedrijf op te zoeken.	niet	**1**	**2**	**3**	**4**	**5**	volledig
Ik neem uitdagingen vaker aan dan andere melkveehouders.	niet	**1**	**2**	**3**	**4**	**5**	volledig

vraag

In welke mate ervaart u onderstaande ontwikkelingen als kans of als bedreiging?
Een bedreiging is een ontwikkeling die negatieve gevolgen kan hebben voor de bedrijfsvoering.
Een kans kan positieve gevolgen hebben. (-3 ernstige bedreiging ,
0 geen kans geen bedreiging +3 grote kans)

Imago product.	ernstige bedreiging	-3	-2	-1	0	1	2	3	grote kans
Beschikbaarheid grond.	ernstige bedreiging	-3	-2	-1	0	1	2	3	grote kans
grote kans Voor de wereldmarkt prijzen produceren.	ernstige bedreiging	-3	-2	-1	0	1	2	3	grote kans
Nabijheid natuurgebied.	ernstige bedreiging	-3	-2	-1	0	1	2	3	grote kans
Ontwikkeling melkrobot.	ernstige bedreiging	-3	-2	-1	0	1	2	3	grote kans
Ontwikkeling Internet en andere informatica-mogelijkheden.	ernstige bedreiging	-3	-2	-1	0	1	2	3	grote kans
Milieubewustzijn consument.	ernstige bedreiging	-3	-2	-1	0	1	2	3	grote kans
Meer aandacht voor dierenwelzijn bij consument.	ernstige bedreiging	-3	-2	-1	0	1	2	3	grote kans
Meer aandacht voor voedsel-veiligheid bij de consument.	ernstige bedreiging	-3	-2	-1	0	1	2	3	grote kans
Mineralenbeleid.	ernstige bedreiging	-3	-2	-1	0	1	2	3	grote kans
Subsidiebeleid.	ernstige bedreiging	-3	-2	-1	0	1	2	3	grote kans
Wegvallen Europese binnengrenzen.	ernstige bedreiging	-3	-2	-1	0	1	2	3	grote kans
Ruimtelijke ordeningsbeleid.	ernstige bedreiging	-3	-2	-1	0	1	2	3	grote kans
Natuurbeleid.	ernstige bedreiging	-3	-2	-1	0	1	2	3	grote kans
Toekomstige wet en regelgeving	ernstige bedreiging	-3	-2	-1	0	1	2	3	grote kans
Anders nl.....	ernstige bedreiging	-3	-2	-1	0	1	2	3	grote kans

vraag

Hier volgen een aantal factoren van belang voor uw bedrijf . Kunt u aangeven of deze factor een sterk of een zwak punt voor uw bedrijf is.

	erg zwak punt	zwak punt	gemiddeld punt	sterk punt	erg sterk punt
Melkprijs.	**-2**	**-1**	**0**	**1**	**2**
Kg melk per melkkoe.	**-2**	**-1**	**0**	**1**	**2**
Werk door derden.	**-2**	**-1**	**0**	**1**	**2**
Omzet en aanwas per melkkoe.	**-2**	**-1**	**0**	**1**	**2**
Aangehouden kalveren per 100 melkkoeien.	**-2**	**-1**	**0**	**1**	**2**
Krachtvoer hoeveelheid per melkkoe.	**-2**	**-1**	**0**	**1**	**2**
Gemiddelde leeftijd veestapel.	**-2**	**-1**	**0**	**1**	**2**
Ruwvoeraankopen per melkkoe.	**-2**	**-1**	**0**	**1**	**2**
Voldoen aan de toekomstige milieueisen.	**-2**	**-1**	**0**	**1**	**2**
Voldoen aan regelgeving over diergezondheid en dierwelzijn.	**-2**	**-1**	**0**	**1**	**2**
Arbeidsomstandigheden op het bedrijf.	**-2**	**-1**	**0**	**1**	**2**

vraag

Aan welke punten gaat u de komende jaren extra aandacht besteden.

	Benoem de belangrijkste 5 punten in volgorde van belangijkheid. Het belangrijkste onderdeel = 1 etc.
Melkprijs	
Kg melk per melkkoe	
Werk door derden	
Omzet en aanwas per melkkoe	
Aangehouden kalveren per 100 melkkoeien	
Krachtvoer hoeveelheid per melkkoe	
Gemiddelde leeftijd veestapel	
Ruwvoeraankopen per melkkoe	
Voldoen aan de toekomstige milieueisen	
Voldoen aan regelgeving over diergezondheid en dierwelzijn. Arbeidsomstandigheden op het bedrijf	
Anders nl.	

vraag

Hoe bevalt de rol van ondernemer?

heel slecht	-3	-2	-1	0	1	2	3	heel goed

vraag

Als u terug kijkt op de laatste 5 jaar, hoe tevreden bent u over het succes van uw bedrijf?

heel erg ontevreden	-3	-2	-1	0	1	2	3	heel erg tevreden

vraag

Aan de hand van welke factoren meet u uw succes?

	Zet de onderdelen op volgorde van belangrijkheid. Het belangrijkste onderdeel = 1 etc.
Inkomen	
Groei eigen vermogen	
Stijging productie per melkkoe	
Voldoen aan milieudoelstellingen	
Groei melkquotum	
Kostprijs per liter melk	
Anders nl....	

vraag
Waaraan is het mee of tegenvallen van de resultaten volgens u te wijten?

in lage mate aan mezelf	-3 -2 -1 0 1 2 3	in hoge mate aan mezelf
in lage mate aan de economische situatie	-3 -2 -1 0 1 2 3	In hoge mate aan de economische situatie
in lage mate aan toeval	-3 -2 -1 0 1 2 3	in hoge mate aan toeval
in lage mate aan de gezondheid van mijn veestapel	-3 -2 -1 0 1 2 3	in hoge mate aan de gezondheid van mijn veestapel
In lage mate aan andere omstandigheden	-3 -2 -1 0 1 2 3	In hoge mate aan andere omstandigheden

vraag
Hoe schat u de kans op succes van uw bedrijf in voor de komende 5 jaar?

zeer ongunstig	-3 -2 -1 0 1 2 3	zeer gunstig

vraag
Hoe waarschijnlijk is het dat uw bedrijf de komende jaren sterk zal groeien?

heel erg onwaarschijnlijk	-3 -2 -1 0 1 2 3	heel erg waarschijnlijk

vraag
Hoe waarschijnlijk is het dat u uw bedrijf de komende 5 jaar zult beëindigen?

heel erg onwaarschijnlijk	-3 -2 -1 0 1 2 3	heel erg waarschijnlijk

vraag
Heeft u de afgelopen 3- 5 jaar een ingrijpende beslissing voor uw bedrijf genomen?
Te denken valt aan aankoop van een (deel van een) ander bedrijf, bedrijfsverplaatsing, overname, aankoop van een behoorlijke hoeveelheid melkquotum, aankoop melkrobot, ingrijpende renovatie van stal of stalinventaris

ja	nee
○	○

Indien ja mogen we u dan voor een vervolg enquete benaderen waarin we nader op dit beslissingsproces ingaan? De duur van deze enquete is ongeveer 10 tot 15 minuten

ja	nee
○	○

ALLEEN VOOR DEELNEMERS AAN DE PROEFGROEP (en de betrokken studiegroep begeleiders)

In het vervolgtraject van dit project willen we samen met u de verschillende onderdelen van ondernemerschap onder de loep nemen. Verschillende aspecten van belang zullen hierbij aan de orde komen. Uw inbreng bij deze processen is van vitaal belang.
De volgende aspecten komen hierbij aan de orde:

- Inzicht krijgen in de samenhang van economische en technische resultaten.
- Het opstellen van een sterkte zwakte analyse van uw bedrijf.
- Het opstellen van een bedrijfsplan/ ondernemingsplan.
- Het opstellen van een strategie.
- Welke doelstellingen wilt u bereiken?
- Hoe kan er gekozen worden uit de verschillende alternatieven?
- Kan dit ook worden doorgerekend en hoe dan?
- Het bewaken van de strategie door regelmatige terugkoppeling en evaluatie
- Het effectief en efficiënt leren gebruiken van elkaars kennis en inzichten.
- Het op tijd inroepen van de juiste deskundigen om kennisvragen mee op te lossen.
- Het ontwikkelen van hulpmiddelen (Checklist, software e.d.) die u bij uw strategisch management kunnen helpen.

Heeft u suggesties over onderdelen die u nog aan dit programma toegevoegd moeten worden, c.q. onderdelen die u helemaal niet belangrijk vindt en dus beter niet aan de orde kunnen komen
Uw suggestie:

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CHAPTER 3

Psychological characteristics and competencies as predictors of self-reported entrepreneurial success of Dutch dairy farmers

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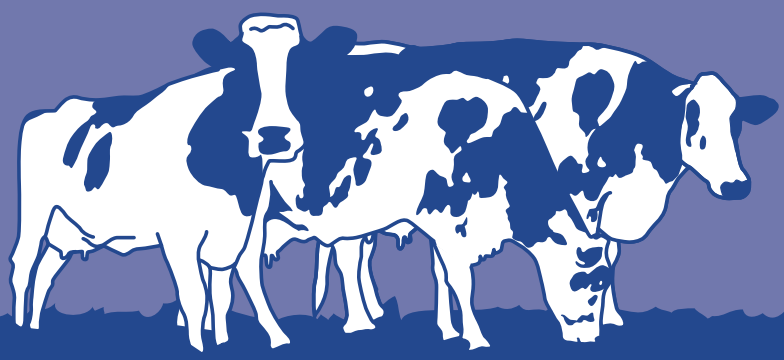

Submitted to Agricultural Systems

Abstract

In today's society, the farmer running a family farm has to combine the skills of a craftsman, manager, and entrepreneur. Although much is known about the first two roles, there is little insight available regarding the entrepreneurial aspects of farming. and how successful farmers consider themselves to be as entrepreneurs. The aim of this paper is to investigate the importance of psychological characteristics and competencies as predictors of self-reported entrepreneurial success of Dutch dairy farmers. Data from 269 Dutch dairy farmers were collected by means of a questionnaire. A Structural Equation Modelling approach is used to explore the relationships and test the validity of an analytical framework based on the presented conceptual model. A positive correlation (0.37) between innovativeness and self-reported entrepreneurial success, and a weak negative correlation (-0.13) between risk avoidance and self-reported entrepreneurial success was found. The model fits the data reasonably well, as shown by the goodness-of-fit statistics. Results show that psychological characteristics influence entrepreneurial strategic competencies and information-seeking competencies. Self-reported entrepreneurial success showed higher scores with those entrepreneurs who achieved higher scores on entrepreneurial competencies. Improving these strategic competencies may be a way to improve entrepreneurial success perception. Insight into the differences in psychological characteristics and entrepreneurial competencies among farmers could facilitate well-adapted extension, education, and policy.

JEL Classification codes
L21 - Business Objectives of the Firm, M13 – Entrepreneurship, Q19 Agricultural Extension Services - Other

Keywords:
Competencies, psychological characteristics, agriculture, entrepreneur, dairy farms, entrepreneurial success.

3.1 Introduction

Until recently, for a farmer to be successful in his profession, all that was required to manage and control a farm was good craftsmanship. However, recent economic developments have changed the working environment of farmers drastically. In a rapidly changing world, it is not sufficient to possess production skills alone (David, 2001). In today's society, the farmer running a family farm has to have the skills of a craftsman, manager, and entrepreneur. (Olsson, 1988). In larger enterprises, several different individuals perform these functions, whereas in typical family-run agricultural enterprises, one person combines these three tasks. In the role of entrepreneur, the farmer is responsible for making strategic choices for the business and for providing capital. The farmer as a manager is responsible for the implementation and control of the plans. The farmer as a craftsman carries out the actual work on the farm, for example milking and feeding cows. To fulfil this combination of tasks, the farmer needs to possess a balanced mix of knowledge and skills in all three areas.

Although there is an extensive body of literature on craftsman's and managerial aspects

in farming (see Rougoor *et al.*, (1998) or Nuthall, (2001) for a review), there is little literature available concerning the entrepreneurial aspects of farming. In addition, insight into how farmers evaluate their success as entrepreneurs is also lacking. This insight into the entrepreneurial role of the farmer is relevant, among other reasons, for the development of competency-enhancing training and education programs (Lans *et al.*, 2004) as well as for evaluating the risks related to external financing.

The literature research on entrepreneurship is approached from two perspectives. The first focuses on the study of attitude of entrepreneurs (Robinson *et al.*, 1991.). The second focuses on psychological characteristics and competencies that distinguish entrepreneurs from non-entrepreneurs (Busenitz and Barney, 1997). We investigated attitude theories in relation to entrepreneurship in detail in Chapter 2. The present chapter deals with the second perspective, i.e. entrepreneurship from the perspective of psychological characteristics and competencies. A conceptual representation is presented in figure 3.1.

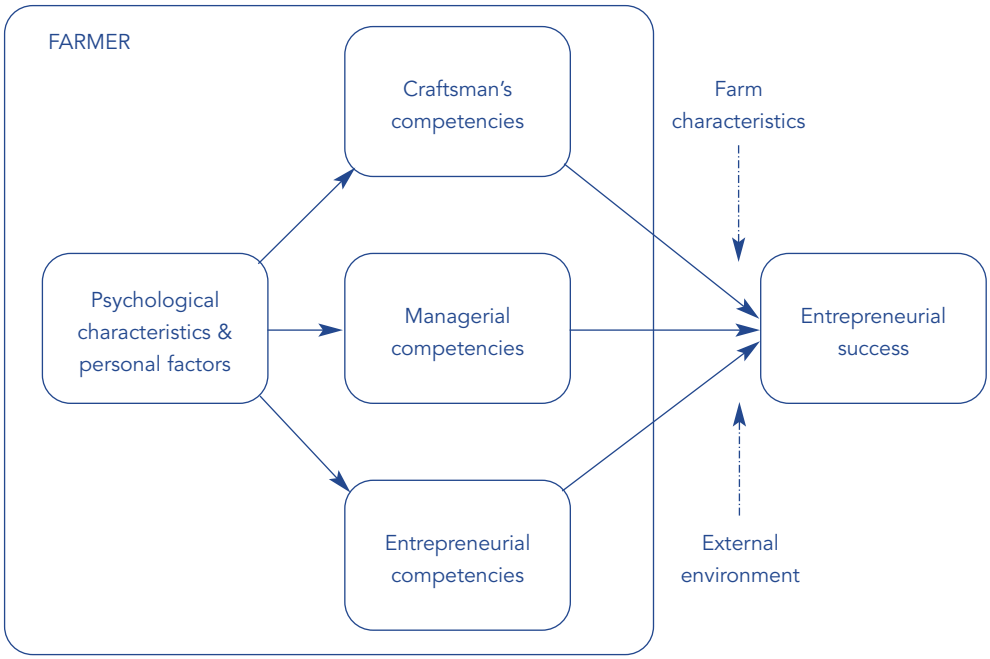

Figure 3.1 The conceptual framework of farmers' psychological characteristics and competencies that affect entrepreneurial success

Gartner (1985) hypothesised that individual characteristics of the entrepreneur, the external environment, the organisation, and the entrepreneurial process are interrelated and are important factors in the creation of new ventures. The individual characteristics of the entrepreneur consist of his psychological characteristics; the external environment is an outside set of conditions fixed on the short- and medium term to which the entrepreneur must adapt; the organisation in our context is the farm. The entrepreneurial process can be differentiated from other more routine functions such as the managerial process, it consists of the actions an entrepreneur performs to create new ventures (Gartner, 1985). Competencies are needed for this entrepreneurial process and these are defined as the ability to perform specific tasks and affect the successfulness of task-fulfilment, (Langbert, 2000; Mulder, 2001a). Psychological characteristics determine the extent of the competencies and the way in which these can be developed (Bandura and Schunk, 1981; McClelland, 1973; Mulder, 2001b). Each farmer has a set of psychological characteristics and a specific combination of competencies, which are related to the three function domains of the farmer: entrepreneur, manager and craftsman. The combination of the psychological characteristics and competencies—given the characteristics of the farm that the farmer tends and the external environment (e.g. market, legislation)—is considered to be of importance for entrepreneurial success.

The aim of this paper is to investigate the importance of psychological characteristics and competencies as predictors of self-reported entrepreneurial success of Dutch dairy farmers. The outline of the remaining paper is as follows: in section 2 the theory related to our conceptual framework is discussed. This includes a discussion of the psychological characteristics and competencies related to entrepreneurship. Because of the lack of specific agricultural literature, general literature on entrepreneurship is referred to. For a general overview of the state-of-the-art in the field of research on entrepreneurship see Bruyat and Julien, (2001); Ripsas, (1998) or Shane (2003). Section 3 describes the material and methods used. A Structural Equation Modelling approach is used to explore the relationships of interest and to test the validity of an analytical framework based on the conceptual model. Modelling is performed using data from the Project Veranderingsgericht Ondernemerschap, the Innovative Entrepreneurship Project already described in Chapter 1. As part of this study, a detailed survey on farmers' business behaviour was conducted. In this survey, a range of variables (personality, attitudes, intentions, and objectives) was measured. Results and discussions are presented in section 4. Conclusions are presented in section 5.

3.2 The farmers' psychological characteristics and competencies

3.2.1 Psychological characteristics of entrepreneurs

Psychological characteristics affect farmers' economic decision-making (Austin *et al.*, 2001). Recent research investigating psychological factors that influence entrepreneurial behaviour is limited. After two decades, however, in which personality research diminished in significance under heavy criticism of social psychologists, there is a renewed interest in issues of personality related to economic behaviour (Perugini and De Raad, 2001). In relation to entrepreneurship, the following psychological characteristics are mentioned

consistently in literature: locus of control, innovativeness, and risk attitude (see e.g. Brockhaus (1982), Chell *et al*. (1991), Brandstätter (1997); Hebert and Link (1988), Elfring, (1999); Van Dijk and Thurik (1998) and Wärneryd (1988)).

Locus of control refers to 'expectancy that rewards, reinforcements or outcomes in life are controlled either by one's own actions (internality) or by other forces (externality). People perceive the outcome of an event as being within their (internal locus of control) personal control and understanding and not beyond (external locus of control)' (Gray and Densten, 1998). Entrepreneurs tend to have more of an internal locus of control than the general population (Brockhaus, 1982; Chen *et al*., 1998). A distinction can be drawn between locus of control in a specific context and locus of control as a personality predisposition (in other words, a generalised locus of control) (Kaine *et al.*, 2003). This means that while an individual has a general predisposition to exhibit an internal or external locus of control, their locus may vary and be different from their general predisposition in specific subject areas. The learning, experience and knowledge that they possess of a specific subject area influences the locus of control in that specific context. When interpreting results of research on locus of control in relation to entrepreneurship, the specific context has to be taken into consideration. Kaine *et al*. (2003) and Wärneryd (1988) investigated the locus of control of farmers and found that, with respect to the specific context of entrepreneurship, farmers possessing a strong internal locus of control are more likely to improve their skills base, are more likely to seek opportunities, and are more likely to try out new things (innovativeness).

Innovativeness is the orientation towards innovation, towards introducing changes or new ideas to the way something is done or made. Innovative activity is explicit in Schumpeter's description of the entrepreneur. Schumpeter (1949) defined the role of the entrepreneur as a catalyst of change and of discovering new opportunities. Innovativeness is a characteristic that is often mentioned as being the distinguishing factor between entrepreneurs and non-entrepreneurs (Chell *et al.*, 1991; Elfring, 1999; Wärneryd, 1988; Brandstätter, 1997; Van Dijk and Thurik, 1998). Mueller and Thomas, (2001) found innovativeness and locus of control positively correlated with each other and with entrepreneurial orientation.

Entrepreneurs are often characterised as risk-takers (Ripsas, 1998; Brandstätter, 1997; Chell *et al.*, 1991; Elfring, 1999; Wärneryd, 1988; Van Dijk and Thurik, 1998), and more likely to be involved in riskier events (Busenitz, 1999). However, it is hard to show that entrepreneurs differ in their risk-taking attitude from the general public (Brockhaus, 1982) or managers in enterprises (Palich and Bagby, 1995; Busenitz, 1999). A possible explanation for an involvement in riskier events could be that entrepreneurs evaluate business opportunities in a more positive/optimistic way compared to others (Palich and Bagby, 1995). As shown by (Busenitz and Barney, 1997), entrepreneurs' decision-making styles differ from that of managers in a large organisation in the way in which they perceive risk. Specifically, they found that entrepreneurs tend to be more overconfident than managers in making decisions in situations where information is limited or where there is a high degree of outcome uncertainty (Busenitz and Barney, 1997). Such findings support the notion of Mueller and Thomas (2001) that entrepreneurs tend to discount risk in business situations and perceive themselves as 'in control' of their ventures. Jonassen and Grabowski (1993) also found the preference for risk-taking to be related to locus of control. People with an internal locus of

control have a sense of personal efficacy. Their expectations of success are based on their view of their effort, ability, and competency (all characteristics of internal locus of control) and, as a consequence, people with an internal locus of control correlate to risk-takers. So the fact that entrepreneurs are involved in riskier events might be determined by the risk perception of the entrepreneurs rather than their risk-taking attitude.

Whether risk-taking is favourable or not is determined by the industry in which the entrepreneur is involved. In an industry where cost control is the key to survival, experimentation, risk-taking, the search for new product markets and new competencies may create a counter-productive income stream because this search incurs immediate costs while payoffs are uncertain and long term in nature. Taking risks under these conditions may harm the enterprise's performance in the short term and could ultimately threaten the survival of the enterprise (Chatterjee *et al.*, 2003). It also shows that persons with a lower risk-taking propensity perform better at entrepreneurial activity, because they will take less risky approaches to strategy, for example (Shane, 2003).

3.2.2 Entrepreneurial competencies

As described above, competencies are defined as the ability to perform specific tasks. They are the underlying knowledge, skills, abilities, personality traits, and know-how that result in effective task fulfilment (Langbert, 2000, Mulder, 2001a). An impression of a person's competencies is given by the observed behaviour either in a natural or artificial environment (Man *et al.*, 2002). Onstenk (2001) identifies three aspects of competencies: first, the content or disciplinary knowledge (know what), secondly, the skills and practical experience (know how), and thirdly, broader qualifications related to meta-cognition (know why). Van Woerkum (1999) identifies three aspects of competencies: task-related competencies, social-communicative skills, and normative-cultural competencies. All three have to be sufficiently developed to fulfil a task. Competencies can be characterised by content, level of control, and involvement. Three levels of development can be seen in a specific competency: basic, experienced, and excellent. Competencies can be developed in three dimensions: (1) by broadening (content), (2) deepening (improved control), and (3) enrichment (more commitment) and they are changeable and learnable, allowing intervention in terms of the selection and teaching (Onstenk, 2001). As such, they would appear to be promising as a theoretical concept for improving entrepreneurship. In the literature, several competency areas related to entrepreneurship are identified (see (Man *et al.*, 2002) for an overview). We will now discuss these competencies in brief.

Opportunity competencies

Opportunity competencies relate to recognising and developing market opportunities through various means (Man *et al.*, 2002). An opportunity is defined as the chance to meet a market need through a creative combination of resources to deliver superior value (Schumpeter, 1952). Identifying and selecting the right opportunities for new businesses rate amongst the most important abilities of a successful entrepreneur. Not all people are equally likely to recognise the same entrepreneurial opportunities that, for example, arise from technological change. The process of discovery can be driven by recognition of knowledge already possessed rather than by a search for knowledge needed. Consequently, individuals

who have developed particular knowledge through education and work experience will be more likely to discover particular entrepreneurial opportunities in response to a given change (Shane, 2000). Information-seeking behaviour is an important part of the opportunity competencies. Information-seeking behaviour of entrepreneurs differs from the general population. Entrepreneurs are able to search for the relevant information about the factors that are important (Shanteau, 1992). The psychological characteristics, locus of control, risk attitude, and innovativeness have all been mentioned as factors influencing opportunity discovery (Brockhaus, 1982; Chen *et al.*, 1998).

Strategic competencies

Strategic competencies relate to setting, evaluating, and implementing the strategies of the enterprise (Man *et al.*, 2002). They are competencies related to strategic management. (Davie, 2001) defined strategic management as 'the art and science of formulating, implementing, and evaluating cross-functional decisions that enable an organisation to achieve its objectives'. Strategic management as described by David (2001) involves (1) the defining of a farm's mission, (2) converting this mission into objectives, following an internal and external analysis, (3) formulating a strategy to achieve these objectives, (4) implementing and evaluating the strategy. Harling (1992) found that more successful farmers thought more along the lines of strategic management than less successful farmers (Harling, 1992). Ondersteijn et al (2003) found that level of education was an important factor in explaining changes in strategic behaviour of farmers that occurred after changes in legislation on nutrient management.

Conceptual competencies and organising competencies

Conceptual competencies relate to different conceptual abilities that are reflected in the behaviour of the entrepreneurs e.g., decision skills or absorbing and understanding complex information. Organising competencies are competencies related to the organisation of different internal and external human, physical, financial, and technological resources, including team-building, managing employees, training, and controlling (Man *et al.*, 2002). These competencies are closely related to strategic competencies. Since most dairy farms in the Netherlands are family farms, where the owner performs most of the labour, organising competencies are especially related to the planning of the activities of the individual farmer.

Relationship competencies

Relationship competencies relate to person-to-person-based interactions or individual-to-group-based interactions, e.g., building an environment of co-operation and trust, using contracts and connections, persuasive ability, and communication and interpersonal skills (Man *et al.*, 2002). Social-communicative skills and normative-cultural competencies are vital if individuals wish to innovate and change (Woerkum *et al.*, 1999). Relationship competencies are an essential part of—and a prerequisite for—the other entrepreneurial competencies. For example, having a large network of peers, advisers, and other contacts facilitates the discovery of new opportunities. Acquiring additional capital to implement a strategy (strategic competencies) is also easier if a good relation with potential suppliers of financial funds already exists.

3.2.3 Entrepreneurial success

How an entrepreneur evaluates his own success and that of his firm is the result of the bottom-line evaluation about himself and his firm (Bono and Judge, 2003). In other words, to what extent do the results of the firm match the initial goals. These goals are broad, long-term attributes that a business seeks to accomplish. They tend to be general and sometimes even abstract targets of performance involving profitability, productivity, and other key aspects of business (Zimmerer and Scarborough, 1998). Definitions of farming success are necessarily variable and subjective, governed by personal goals and resources and capabilities (Walter, 1997). Harling (1992) defines successful entrepreneurship as the achieving of (multiple) goals. Some of these results are reflected in, for example, an increase in farm size, others can be more abstract, like pleasure in work. In Chapter 2 it was shown that the farmers' goals in this research were related to achieving a large and modern farm.

Cooper and Artz (1995) found that entrepreneurs who had higher expectations at the start of a business, and who had set non-economic goals, were more satisfied with the success of their enterprise than entrepreneurs with lower expectations and with predominantly economic goals. Farmers value the intrinsic and non-economic rewards of farming more than achievement and economic rewards (Coughenour and Swanson, 1988; Gasson, 1973). Chandler *et al.* (1992) state that self-reported entrepreneurial success is a good predictor of real entrepreneurial success.

3.3 Materials and Methods

3.3.1 Material

Data originate from a questionnaire that is part of the Innovative Entrepreneurship Project. The aim of this project is to investigate the possibilities for developing entrepreneurial competencies of dairy farmers and to establish whether dairy farmers can be trained to improve their entrepreneurial capabilities by evaluating a large entrepreneurial training programme (Chapter 1).

3.3.1.1 Data

Participants in the study were selected from the database of the Northern Dutch Farmers' Organisation (NLTO). These were dairy farmers living in the Northern part of the Netherlands and members of study groups. A case group (n=112) was asked to participate actively in the project. A comparable group (n=337) was use as control group. All participants were asked to fill in a questionnaire. A full description of the questionnaire is given in Chapter 2 Appendix B.

A total of 35 farmers answered the questionnaire during study group meetings (February 2001); however, the threat—and later actual—outbreak of Foot and Mouth Disease prevented further visits to study groups, so the remaining 414 questionnaires were sent by post in March 2001. Of the original 449 farmers who were approached, 269 responded. The results of 12 respondents could not be used, as they were no longer involved in dairy

farming, or were not the owner of the farm, or because the questionnaire was not completely filled out. The remaining 257 questionnaires resulted in an overall response rate of 57 %, which is relatively high for this type of research (Pennings *et al.*, 2002; Yammarino *et al.*, 1991). Of these respondents, 101 were active participants in the project and 147 were in the control group. Data analysis showed that the results between the two groups did not vary significantly. Non-respondents were mainly in the control group. Since the prior assumption was made that there were no differences between test group and control group at the beginning of the research (when our survey was conducted) and the results of the two groups did not differ, we concluded that a non-response bias was limited. In the remainder of the analysis, the farmers in the test and control groups were treated as one group.

Table 3.1 presents the characteristics of the farmers and farms participating in this research. From this table it can be seen that the participants are farming on farms that are larger (larger acreage, larger milk quota, and more labour units) and have a higher production per cow than both the average farm in the Netherlands and the average farm in the Northern part of the Netherlands. An explanation for these differences may be the fact that participants were members of study groups. Farmers in study groups can be seen as being future-oriented farmers in a growth or consolidation phase of the family farm lifecycle (Boehlje and Eidman, 1984) and this might explain the difference in size.

Table 3.1
General characteristics of the farms in the survey, compared to average Dutch farms and average farms in the region of origin of the surveyed farms.

	Average dairy farm in the survey (n=256)		Average dairy farm in the Netherlands [a] (n= 396)	Average dairy farm in the Northern part of the Netherlands [b] (n=79)
	Mean	S.D.	Mean	Mean
Age of the dairy farmer	39.41	8.48	Not known	Not known
Milk quota per farm in litres [c]	654,855	287,084	398,600	472,700
Acreage of the farm (ha)	54.69	35.48	33.48	40.66
Number of dairy cows	81.56	35.46	53.30	62.90
Kg milk per cow	8,397	788	7,540	7,641
Full time labour units per farm	1.67	0.65	1.50	1.50

[a] Sample of 396 out of 27,800 dairy farms in the Netherlands, [b] Sample of 79 out of 5,410 dairy farms in this region. Source: Farm Accountancy Data Network LEI (2001) [c] total milk quota (included leased quota)

The variables for measuring a farmer's psychological characteristics, competencies, and entrepreneurial success were collected by means of a list of statements to which the farmers were required to respond. Table 3.2 shows the items that were included. All the questions in this section were so-called closed questions, using Likert scales. The data collected in this research were the respondents' perceptions of their own characteristics, competencies, and success. A crucial assumption when using these data for analysis is that individuals are able to accurately judge their own ability. Evidence exists that this is the case. For example,

Ackerman et al (2002) investigated correlations of self-ratings and objective-score pairing. Their results indicated that individuals have both generally accurate and differentiated views on their relative standing on abilities and knowledge (Ackerman *et al.*, 2002). To further test the ability of respondents to accurately evaluate their entrepreneurial competencies, a separate research was performed (Lans *et al.*, 2005). In this research, competencies were evaluated by comparing the respondents' scores with the evaluation of the respondents' competencies by a peer (business partner or family member) and an expert. The results of that study indicate that farmers are able to accurately judge their entrepreneurial competencies, and therefore the method chosen can be justified.

3.3.1.2 The analytical model

The analytical model that served as the basis for our research is presented in Figure 3.2.

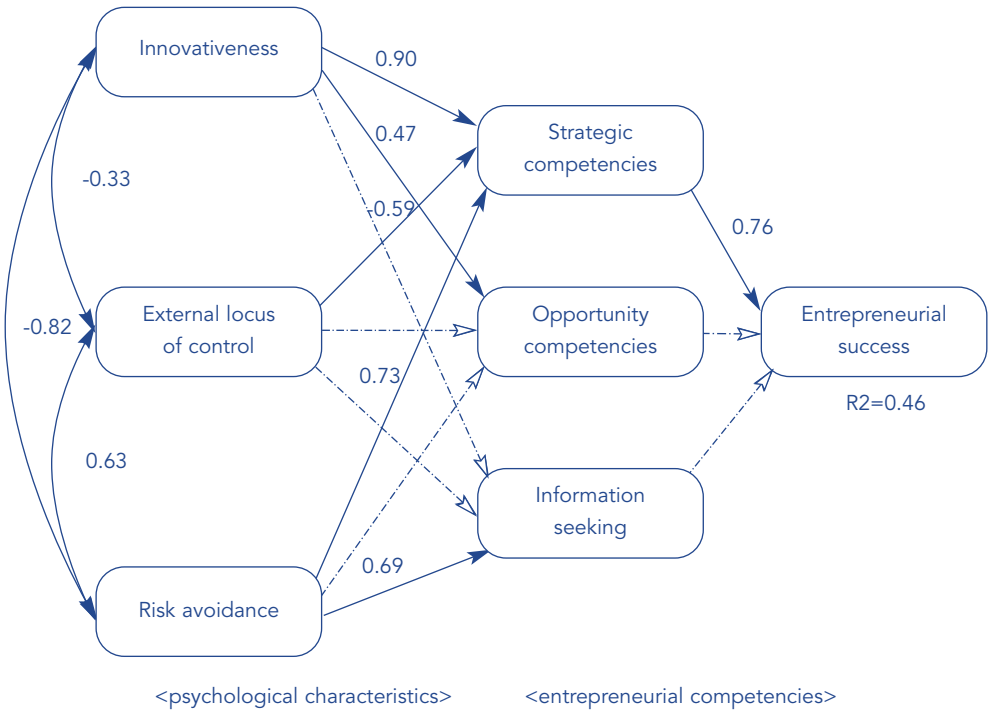

Figure 3.2 Analytical model with path diagram for the analysed model of agricultural entrepreneurship.

→ Significant path ($p<0.05$), -- > non-significant path, Goodness-of-fit measures for the Structural model: χ^2 = 194.60, df = 155, P-value= 0.02, RMSEA= 0.039, NFI= 0.73, NNFI= 0.89, GFI= 0.90, AGFI= 0.86. R^2 = amount of variance explained

The selected psychological characteristics were innovativeness, locus of control, and risk attitude. We focused on these characteristics since theory on entrepreneurship considers them to be predominant characteristics of entrepreneurs. To facilitate the interpretation, the questions on locus of control were limited to *external locus of control* ('I don't make plans because they don't work out in reality', 'the moment there are more solutions to a problem, I find it difficult to make a choice'). The questions on risk attitude were limited to *risk avoidance* ('When it comes to business I like to play it safe', 'I try to cover as many risks as possible by using insurance'). Of the entrepreneurial competencies discussed in section 2.3, we selected s*trategic competencies*, *opportunity competencies*, and *information-seeking* competencies. The reason for this selection is that the farmers involved in the study were farming on family farms in which they were the predominant or sole labour force. Therefore, *relationship competencies* and *organising competencies* were not expected to have a significant impact on entrepreneurial success. Chandler and Jansen, (1992) show that self-reported competencies are predictive for entrepreneurial performance and can, as such, be used to study entrepreneurship. Since we considered the farmers' assessment of their own success the bottom-line of the evaluation, we asked the participants to evaluate their role as entrepreneur and to also evaluate how successful they considered themselves to be in that role. We used this self-reported *entrepreneurial success* in our analysis.

3.3.2 Methods

3.3.2.1 Structural equation modelling

To analyse the relationships in the analytical model, Structural Equation Modelling (SEM) is employed. SEM has two main features. First, it enables the estimation of multiple and interrelated dependence relationships, and second, it is able to represent unobserved concepts, or hypothetical constructs (latent variables) in these relationships, and takes into account measurement errors in the estimation process (Hair *et al.*, 1998). In the present study LISREL8.50 (Jöreskog and Sörbom, 1996) is used to estimate the parameters in the model. The basic LISREL model consists of two parts: a measurement model and a structural equation model. The measurement model specifies how constructs are indicated by the observed or manifest variables, and describes the measurement properties of the manifest variables. Two types of latent variables can be observed: exogenous variables and endogenous variables. An exogenous variable is a latent variable that acts as predictor for other latent variables in the model. They are not predicted by other constructs in the model. In the analytical model in figure 3.2, *innovativeness*, *external locus of control* and *risk avoidance* are the exogenous variables. Endogenous variables are latent variables in which they are the dependent or outcome variable of at least one causal relationship. In figure 3.2, *strategic competencies*, *opportunity competencies*, *information-seeking* and *entrepreneurial success* are the endogenous variables. The measurement model can be compared to factor analysis whereas the structural model is similar to linear regression models; in other words, the structural model specifies the causal relationships among the constructs, describes the causal effects, and assigns the explained and unexplained variance (Mueller, 1996; Jöreskog and Sörbom, 1996).

There are three applications of SEM: (1) to assess the statistical significance of a specified model (confirmation), (2) to compare competing models (comparison), or (3) to improve a model (development)(Hair *et al.*, 1998). Mueller (1996) states that 'one of the strengths of SEM lies in its disconfirmatory power rather than its confirmatory power. Based on empirical data, theoretically proposed structures *can* be rejected as good approximations to 'reality' but *cannot* be confirmed as being *the* representation of the true underlying processes'. This limitation of SEM has to be taken into account when assessing the result of the analysis. We use SEM for confirmatory purposes, i.e. to see whether, on theoretical considerations, the proposed model could be a representation of reality.

The models were specified and estimated using LISREL 8.5 (Jöreskog and Sörbom, 1996). PRELIS with list-wise deletion procedure for missing data was used to analyse the raw data and create the polychoric correlation matrix from the ordinal variables. An effective sample size of 172, out of 257 questionnaires, resulted from the data processing in PRELIS. Hair *et al*. (1998) advises a ratio of at least five respondents for each estimated parameter. Given the 17 variables used in the analysis, this is an appropriate sample size. The resulting correlation matrix was used as input for LISREL 8.5. For the sample size of 172, Maximum Likelihood (ML) estimation is the preferred estimation procedure in SEM, since ML is robust for sample sizes between 100 and 200 (Hair *et al.*, 1998).

Because the scope of our research is to understand the pattern in the relations of the constructs, and not to explain the total variance of a construct, we used correlations. Since the variables in our model are based on Likert scales and the variables in this research are not metrically measured, Pearson product-moment correlation cannot be used. Polychoric correlation has to be employed when both variables are ordinal measures with three or more categories (Hair *et al.*, 1998). The polychoric correlation matrix is estimated using PRELIS (Jöreskog and Sörbom, 1996). The actual matrix used is shown in Appendix A.

3.3.2.2. Overall goodness-of-fit measures for structural equation modelling

SEM has no single statistical test that best measures the 'strength' of the model's fit. Instead, a number of goodness-of-fit measures have been developed to assess the results from three perspectives: absolute fit, comparative fit to a base model, and model parsimony (for comparison between models). Since in this research we want to test the model proposed on theoretical considerations, only the first two perspectives are of interest.

Absolute fit measures determine the degree to which the overall model predicts the observed covariance or correlation. The first measure is the Likelihood Ratio Chi-Square statistics (χ^2). A large value of χ^2 relative to the degrees of freedom means that estimated matrices differ considerably from the observed matrices. A resulting P value larger than 0.05 indicates that the actual and predicted input matrices are not statistically significantly different (note: we are looking for *non-significant differences*). χ^2 is quite sensitive to sample size. This test is appropriate for sample sizes between 100 and 200, with the significance of the test becoming less reliable with sample sizes outside this range (Hair *et al.*, 1998). Degrees of freedom in structural models are derived from the number of unique data values (s) in the input matrix. s can be derived from k, where k is the total number of measured variables for both endogenous and exogenous constructs, according to the formula (1)

$$s = \tfrac{1}{2}(k)-(k-1) \qquad (1)$$

The degrees of freedom (*df*) for any estimated model are then calculated as *df* = s- *t*, where *t* is the number of estimated coefficients.

The second measure, the Goodness-of-Fit Index (GFI), represents the overall degree of fit (the squared residuals of the predicted input matrices compared with the observed data), but it is not adjusted for the degrees of freedom. Values greater than 0.90 for the GFI are considered to reflect acceptable model fit.

The third measure for absolute fit is the Root Mean Square Error of Approximation (RMSEA). It is representative of the goodness-of-fit that could be expected if the model were in the population, but not just the sample drawn for the estimation. An RMSEA with a value less than 0.05 indicates close fit, and values up to 0.08 indicate reasonable errors of approximation in the population.

Incremental fit measures compare the proposed model to some baseline model, referred to as the null model. This is a single construct model with all indicators perfectly measuring the construct. The first measure determined is the Adjusted Goodness-of-Fit Index (AGFI). It is an extension of the GFI, adjusted by the ratio of the *df* from the proposed model to the *df* for the null model. A recommended acceptance level is greater than or equal to 0.90. The second and third measures are the Non Normed Fit Index (NNFI) and the Normed Fit Index (NFI). NNFI and NFI are derived according to formulas (2) and (3), respectively.

$$NNFI = ((\chi^2_{null} / df_{null}) - (\chi^2_{proposed} / df_{proposed})) / ((\chi^2_{null} / df_{null}) - 1) \qquad (2)$$

and

$$NFI = (\chi^2_{null} - \chi^2_{proposed}) / \chi^2_{null} \qquad (3)$$

Both NNFI and NFI have a recommended value of 0.90 or greater. (Jöreskog and Sörbom, 1996), (Hair *et al.*, 1998) (Mueller, 1996).

3.4 Results and discussion

3.4.1 Results of the Measurement model

The first step of the analysis is to determine how well the manifest variables describe the latent variables. Factor loadings give the correlation between the manifest variable and the latent variables. These factor loadings are significant when they have a student t-value greater than 1.96 or smaller than - 1.96 (two tailed *t*- test)(Jöreskog and Sörbom, 1996). Seventeen out of nineteen observed variables had significant loadings on the latent variables that they are conceptually meant to represent. From the two exceptions with non-significant loadings, one related to information-seeking competencies ('I use the Internet to find information for my farm') and one related to strategic competencies ('I can increase the sales price of my milk'). These two questions were eliminated from further analysis. Hence, the final confirmatory model for the seven latent factors consisted of seventeen manifest variables.

Table 3.2 shows descriptive statistics of the remaining observed variables and the loadings of these variables on the constructs. As can be seen from the standard deviations, there is

considerable variation among the respondents regarding the perception on issues related to entrepreneurial behaviour and success. The constructs *external locus of control innovativeness*, and *risk avoidance* were the exogenous variable, (not predicted by other constructs in the model). The other latent variables were not only predicted by the manifest variable but also by other latent variables and are therefore endogenous variables in the model.

Table 3.2
Descriptive statistics of the observed variables and their factor loadings on the constructs.

		Mean	S.D.	Factor loadings	T value*
	Innovativeness [1]				
V1	I like to try new things on my farm	3.12	1.18	0.55	6.53
V2	I take on challenges more often than other dairy farmers do.	3.05	1.10	0.86	9.37
	External locus of control [1]				
V3	I don't make plans because they don't work out in reality	1.97	1.13	0.56	4.14
V4	The moment there are more solutions to a problem, I find it difficult to make a choice	2.80	1.11	0.41	3.64
	Risk avoidance [1]				
V5	When it comes to business, I like to play it safe	3.57	0.98	0.57	4.76
V6	I try to cover as many risks as possible by using insurance	2.93	1.00	0.24	2.37
	Strategic competencies [1]				
V7	My goals and objectives are clear and in writing	2.53	1.38	0.61	7.18
V8	I monitor my production targets by analysing my farm results	3.76	0.97	0.45	4.50
V9	I'm well informed on the legislation that can have an impact on my farm.	3.46	0.91	0.60	5.49
V10	I have sufficient possibilities to monitor the production process	3.72	0.85	0.37	3.86
	Opportunity competencies [2]				
V11	Consumer's concern for the environment	0.54	1.48	0.69	7.80
V12	Consumer's concern for animal welfare	0.66	1.52	0.89	9.22
V13	Consumer's concern for food safety	1.11	1.51	0.80	9.12
	Information-seeking competencies [1]				
V14	I'm thoroughly informed when I have to make important decisions	4.28	0.82	0.74	2.77
V15	When making important decisions I ask for a lot of advice	4.04	0.84	0.75	3.35
	Entrepreneurial success [3]				
V16	How much do you like being an entrepreneur?	2.04	0.98	0.63	5. 29
V17	When you look back over the last 5 years, how successful do you consider yourself?	1.51	1.15	0.64	4.03

[1] Scores on a 5-point Likert scale 1= not important to 5= very important, [2] Scores on a 7-point Likert scale -3= great threat to +3= great opportunity, [3] Scores on a 7-point Likert scale -3= very good to +3= very bad, * T-values >1.96 are considered significant $p < 0.05$.

Table 3.3 shows the correlation matrix for the psychological characteristics and entrepreneurial competencies and self-reported entrepreneurial success.

Table 3.3
Correlation coefficient between the constructs used in the study

		1	2	3	4	5	6	7
	Endogenous variables							
1	External locus of control	-						
2	Innovativeness	-0.33	-					
3	Risk avoidance	0.63	-0.82	-				
	Exogenous variables							
4	Strategic competencies	-0.54	0.60	-0.15	-			
5	Opportunity competencies	-0.23	0.34	-0.11	0.36	-		
6	Information-seeking competencies	-0.11	0.13	0.22	0.35	0.15	-	
7	Entrepreneurial success	-0.35	0.37	-0.13	0.64	0.05	0.08	-

Fornell and Larker (1981) suggest that discriminant validity exists if the average variance extracted from two constructs is higher than the square of the correlation between the two constructs. This discriminant validity exists for the constructs. However, it does not exist for innovativeness versus risk avoidance, mainly due to the high negative correlation between the two constructs. (Jonassen and Grabowski, 1993) also found a high correlation between internal locus of control (from which innovativeness is derived).

As expected from theory, examining the psychological characteristics in relation to entrepreneurship show a positive correlation (0.37) between *innovativeness* and self-reported *entrepreneurial success* (Brockhaus, 1982; Chen *et al.*, 1998). We also found a weak negative correlation (-0.13) between *risk avoidance* and self-reported *entrepreneurial success*.

3.4.2 Results of the structural equation models

In figure 3.2 the results of the structural equation model are shown. The path diagram indicates the relations between psychological characteristics, entrepreneurial competencies, and self-reported entrepreneurial success. Of the 15 examined relations and paths, 9 were statistically significant ($p<0.05$). These paths are represented in the diagram by a solid line, non-significant paths are represented by dotted lines. The significant paths will be discussed in the following sections.

This model fits the data reasonably well, as shown by the goodness-of-fit statistics: $\chi^2 = 127.22$, ($df = 104$, P-value= 0.06), $\chi^2/df = 1.22$, GFI = 0.92 and AGFI = 0.88, which are equal to (GFI) or slightly smaller (AGFI) to the proposed 0.90 for a good fit. NFI = 0.80 and NNFI = 0.92, which are slightly smaller than (NFI) or equal to (NNFI), the proposed 0.90. The RMSEA indicates a close fit (0.036) (Hair *et al.*, 1998). We can conclude that the goodness-of-fit statistics indicate that the model should not be rejected. We therefore accept the model based on the theoretical and analytical considerations as a way of expressing the relation between the psychological characteristics, entrepreneurial competencies, and self-reported entrepreneurial success.

3.4.3 Relation between psychological characteristics and entrepreneurial competencies

Psychological characteristics influence entrepreneurial competencies. As can be seen in table 3.2, the participants had on average high scores on the variables (V1 3.12 and V2 3.05) underlying the innovativeness scale. An innovation is something new for the farmer and does not necessarily mean that the innovation is also new for the sector (Rogers, 2003). Given the commodity, milk, that dairy farmers produce, innovations on dairy farms are mostly restricted to on-farm innovations. A positive relation (figure 3.2) was found between *innovativeness* and *strategic competencies* (0.90, t = 2.99) and a positive relationship between *innovativeness* and *opportunity competencies* (0.47, t = 2.62). Innovativeness enhances the strategic competencies and opportunity competencies, and is required when needing to look for possibilities and to implement them into the business.

The scores on the variables V3 and V4 were low on average and a negative relationship was found between *external locus of control* and *strategic competencies* (- 0.59, t = -2.42). Individuals with an *external locus of control* perceive the outcome of an event as being beyond their personal control and understanding (Gray and Densten, 1998). Strategic planning on the other hand assumes that the farmer's daily planning can influence at least part of the future business results. So the negative relation found is in concordance with the expectations.

On average, the scores on the variables related to risk avoidance were high amongst the participants. Farmers like to play it safe, although most literature suggests that entrepreneurs are more willing to take risks and that entrepreneurs have higher scores on risk-taking propensity than for example managers (Busenitz and Barney, 1997). Miner *et al.* (1994) show that, with respect to entrepreneurial activity, individuals with a lower risk-taking propensity outperform persons with a higher risk-taking propensity. Individuals with a lower risk-taking propensity perform better at entrepreneurial activity because they will take less risky approaches to, for example, strategy (Shane, 2003). Also in our research, risk avoidance was positively related to strategic competencies and helps to successfully exploit a strategy. A positive relation was found between *risk avoidance* and *strategic competencies* (0.73, t = 2.26), and between *risk avoidance* and *information-seeking competencies* (0.69, t = 2.35). Strategic planning is a way to limit unexpected negative outcomes, something which a person wishing to avoid risks is also interested in. Information-seeking is necessary to acquire an insight into the risk associated with decisions. So a risk-averse person is more likely to collect more information before they decide, than a risk-seeking person would. The findings in this research are in concordance with the expectations.

3.4.4 Relation between entrepreneurial competencies and self-reported entrepreneurial success

The average scores on the variables V16 and V17 were high, indicating that the participants considered themselves successful as entrepreneurs. The evaluation of entrepreneurial success is basically a personal process. In this process, objectively measurable aspects as well as subjectively aspects are involved. As stated in section 2.3, farmers have several goals they want to achieve to be successful. From Chapter 2 it can be seen that the farmers' major goals

were: (1) 'owning a large and modern farm', (2) 'having a high income', (3) 'enjoying farming as a way of life'. Rougoor *et al.* (1998) argue that, following a well-defined process (strategic planning) enables decision-makers to achieve better results and consequently be better able to achieve their goals. It also helps to formulate more realistic and attainable goals. In order for opportunities to turn into business, the farmer must recognise them (opportunity competencies and information-seeking) and evaluate them (strategic competencies) (Ardichvili *et al.*, 2003). *Strategic competencies* were positively related to self-reported *entrepreneurial success* (0.76, $t = 3.88$).

Opportunity competencies were not significant related to the *self-reported entrepreneurial success* (at $p<0.05$, -0.19, $t = -1.63$).
Shane (2003) puts the discovery, evaluation, and exploitation of opportunities in the centre of the entrepreneurial activities (Shane, 2003). Opportunity competencies are therefore important for dairy farmers. Opportunities can be used to focus the farm's strategy to cost-leadership, differentiation, or focus (Porter, 1985). But with respect to dairy farming, a few remarks have to be made. Most dairy farmers produce a product that can be considered a commodity. For these farmers, cost-leadership is an important strategy. Organic farmers (focus) or farms that sell their products directly to the consumers (differentiation strategy) can be considered an exception. The Dutch dairy chain is characterised on the one hand by a lack of concentration (many farmers that are interchangeable commodity producers) and on the other hand a high degree of concentration (two large co-operatives dominating the market. Exploiting opportunities outside the farm gate therefore involves working with chain partners. Co-operation amongst these partners however requires trust and mutual dependency (Nooteboom *et al.*, 1997). Chatterjee *et al.* (2003) state that looking for and developing new opportunities can be costly and therefore threaten the competitive position in the short term. A second explanation can be the difficulty in successfully identifying and developing opportunities in a commodity market. It remains open to doubt whether the chain partners in the dairy chain share the same sense of urgency to collectively explore and exploit market opportunities. This is perhaps also the reason that there is no relation between opportunity competencies and entrepreneurial success.

Also, *information-seeking* competencies were not significant related to the self-reported *entrepreneurial success* (at $p<0.05$ (- 0.17, $t = -1.16$). The reason for not finding a significant relation between information-seeking and self-reported entrepreneurial success can be the small variance (table 3.2) for the variables related to information-seeking opportunities. This can be caused by the selection procedure of the participants. The participants were members of farmers' study groups. The main function of these groups is to learn from each other by exchanging information. One can assume that the study group participant in general has better information-seeking competency than a non-study group colleague.

Risk avoidance and entrepreneurship As mentioned in section 3.2.1, the literature is not consistent with respect to opinions on risk attitude of entrepreneurs; both positive and negative relations are reported. In the conceptual framework presented, no direct relation between risk avoidance and entrepreneurial success is assumed. Table 3.3 shows that risk avoidance was negatively correlated with self-reported entrepreneurial success. Figure 3.2 shows a strongly positive relationship of risk avoidance with strategic competencies. These strategic competencies, in their turn, strongly influenced self-reported entrepreneurial success. Opportunity competencies and information-seeking competencies are negatively

related to entrepreneurial success, although not statistically significant at $p < 0.05$. This combined effect might explain the overall negative relation between risk avoidance and entrepreneurial success. Therefore, the concept in which risk attitude is studied is of importance. Is the direct relationship between entrepreneurial success and risk attitude being studied, or does risk attitude indirectly influence entrepreneurial success, for example through competencies?

3.5 Conclusions

The conceptual model is helpful for gaining insight into the psychological characteristics and competencies as predictors of self-reported entrepreneurial success of Dutch dairy farmers. The analytical framework described is a suitable way to address the relation between psychological characteristics, entrepreneurial competencies, and self-reported entrepreneurial success.

This study shows that:

- Entrepreneurs who had higher scores on self-reported entrepreneurial success also had higher scores on entrepreneurial competencies. Improving these strategic competencies can be a way of improving entrepreneurial success perception.
- Risk-avoiding respondents rely on strategic competencies and information-seeking competencies. Respondents with an external locus of control did not rely on these strategies.

Psychological characteristics influence entrepreneurial competencies and have to be taken into account when designing plans for extension, education, or policy. Having a better understanding of the differences in psychological characteristics and entrepreneurial competencies between farmers opens up possibilities for more effective extension, education, and policy.

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Appendix 3A correlation matrix of manifest variables used as input in Structural Equation Modelling

	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13	V14	V15	V16	V17
V1	1																
V2	0.48	1															
V3	-0.05	-0.16	1														
V4	-0.01	-0.17	0.25	1													
V5	-0.22	-0.35	0.06	0.18	1												
V6	-0.01	-0.07	0.12	0.11	0.17	1											
V7	0.19	0.33	-0.20	-0.02	-0.05	-0.11	1										
V8	0.15	0.13	-0.13	0.06	0.03	-0.02	0.35	1									
V9	0.21	0.27	-0.15	-0.14	0.03	-0.01	0.33	0.29	1								
V10	0.21	0.30	-0.17	-0.10	-0.15	-0.06	0.27	0.23	0.18	1							
V11	0.07	0.25	-0.10	-0.16	-0.04	0.04	0.22	0.11	0.13	0.09	1						
V12	0.09	0.25	-0.08	-0.06	-0.09	0.03	0.32	0.05	0.17	0.04	0.63	1					
V13	0.16	0.25	-0.12	-0.09	-0.05	0.06	0.27	0.11	0.30	0.04	0.53	0.72	1				
V14	0.06	0.02	-0.07	0.02	0.14	0.10	0.10	0.25	0.16	0.00	0.06	-0.02	0.10	1			
V15	0.10	0.14	-0.09	0.00	0.00	0.15	0.20	0.26	0.13	-0.02	0.02	0.06	0.13	0.55	1		
V16	0.17	0.27	-0.23	-0.20	-0.21	-0.07	0.16	0.08	0.34	0.11	0.03	0.12	0.07	0.09	0.05	1	
V17	0.02	0.19	-0.15	-0.05	-0.06	-0.02	0.21	0.14	0.31	0.10	-0.03	-0.05	0.06	0.02	0.05	0.40	1

Number of observations = 172

CHAPTER 4

Job Satisfaction of Dairy Farmers - a Comparison between Dairy Farmers in the Netherlands and Pennsylvania (US)

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Abstract

For farmers, job satisfaction is an important component of their sense of well-being with regard to work. This study explores entrepreneurial job satisfaction of dairy farmers and explores its relationship with the strategic management process. To study the items relevant to the job satisfaction of dairy farmers. a conceptual framework has been developed and tested. Two data sets—one of Dutch (NL) farmers and one of Pennsylvanian (PA) farmers—were used to test the framework. Results show that despite regional differences, the farmers in this study share common objectives and perceptions that can explain differences in job satisfaction. The dairy farmers in this study—both in the Netherlands and Pennsylvania—are satisfied with their job It is especially the non-economic objectives such as pleasure in the work of farming that are important for explaining differences in job satisfaction. Perceiving the challenges their business environment poses as opportunities rather than threats increases job satisfaction. It can be concluded that using the conceptual model that has been developed provides insight into the items of the strategic management plan that determine the job satisfaction of dairy farmers. Taking the identified factors into consideration when formulating strategic plans can help to improve future job satisfaction of dairy farmers.

Key words: dairy, goals and objectives, farmer characteristics, assessment of environment, job satisfaction.
Abbreviation key: EU =European Union, NL =Netherlands, PA =Pennsylvania.

4.1 Introduction

The appraisal of one's job or job experience, in other words job satisfaction, is an important component of one's sense of well-being with regard to work. To date, research on job satisfaction has been reported primarily in the literature on organizational behaviour and human resource management, and has focused upon the antecedents and consequences of employee satisfaction (Cooper and Artz, 1995). However, little research exists on job satisfaction with regard to entrepreneurs or farmers and no known research that investigates the level of job satisfaction amongst Dutch dairy farmers. It is therefore unclear how satisfied they are with their job and which factors influence their job satisfaction.

The reduction of governmental protection and subsidies for agriculture in Europe is causing farmers to focus more on entrepreneurial activities rather than craftsmanship. The farmer, as the entrepreneur responsible for determining the strategy of the firm, has to evaluate whether these strategies are likely to affect the level of his job satisfaction as well as that of his family members. Insight into factors that contribute to the level of job satisfaction can be of value for farmers and their advisers, as well as for policy makers.

The aim of the paper is to investigate the farmers' job satisfaction. The following research questions are addressed: (1) which items of the strategic process influence the job satisfaction of dairy farmers, and (2) can the proposed conceptual framework be used to gain insight into these items. To investigate the research questions and to test the impact of a different environment, two data sets are used: one originating from the Netherlands and one from Pennsylvania.

The outline of the remainder of the paper is as follows: section 4.2 will present the theoretical aspects of job satisfaction; section 4.3 introduces a conceptual framework to analyse job satisfaction; in section 4.4 the material—data collected from Dutch and Pennsylvanian dairy farmers by means of a questionnaire—is presented, as well as the method of data analysis (path analysis); section 4.5 presents and discusses the results; conclusions are drawn in section 4.6.

4.2 Job satisfaction

Job satisfaction is defined as a pleasurable or positive emotional state, resulting from the appraisal of one's job or job experience (Locke in (Vogelaar, 1990)). It is an affective experience formed through a process of evaluation (Bono and Judge, 2003). It as an overall measure of the degree to which a person is satisfied and happy with his or her job (Vogelaar, 1990).

Michalos (cited by (Cooper and Artz, 1995)) describes two theories related to job satisfaction: the goal achievement gap theory and the expectation-reality gap theory. The goal achievement gap theory focuses on the discrepancies between the general goals set and the actual outcomes that are realised. The degree to which outcomes are consistent with the initial goals of the individual in turn determines the satisfaction levels that the person experiences. The expectation-reality gap theory addresses the perceived gap between the achievement in the prevailing situation, and what the individual expected to achieve. In the expectation-reality gap theory, expectations are based on the evaluation of the prevailing situation rather than on the initial goals set (Michalos, 1986).

Coughenour and Swanson (1988) are amongst the very few to perform research on job satisfaction of farmers. They found that the level of one's job satisfaction is determined by the perceived discrepancy between aspiration and achievement. It is the evaluative component in one's sense of well-being with work. Job satisfaction is an attitude consisting of cognitive, affective, and evaluative elements in one's job. A job is satisfying when three conditions are fulfilled. The first condition is that the reward and values meet a need, e.g. working with animals. The second is that the difference between what is considered a fair reward and what is actually received from the job is in balance (equity). And the third condition is that the difference between what the person ideally would like to have and what he or she is actually getting, is satisfying (desired state). The researchers found a large proportion of farmers still satisfied with farming, even in times when income was not that high. This implies that the farmers in their research considered non-economic rewards as important aspects of job satisfaction.

As shown in Chapter 2, Dutch dairy farmers' initial goals are mixtures of both economic (income) and non-economic goals (e.g. pleasure in work). It was also shown that their farm size was explained by their instrumental goals (striving for a large and modern farm). It is unclear to what extent these different goals determine the level of job satisfaction of the Dutch dairy farmer.

Cooper and Artz (1995) consider satisfaction to be a fundamental measure of success for the individual entrepreneur. Entrepreneurs differ from hired employees with regard to the commitment they have to their organisations. Entrepreneurs work in organisations

whose strategies they have developed themselves and where the economic benefits of the venture's success flow directly to them. The researchers state that economic performance, initial goals, and the entrepreneur's expectations are important aspects that determine the entrepreneur's job satisfaction. Therefore, a possible relation between these aspects and the job satisfaction of dairy farmers is investigated.

4.3 The conceptual framework

To explore the aspects related to job satisfaction a conceptual framework was constructed based on the strategic management process (SMP) developed by David (2001). A strategy is the plan to bridge the gap between aspiration and desired outcome. Is formulating a strategy the plan to come from presence to future, evaluation is the process that assesses to what extent the desired outcomes are achieved. For farmers, strategy evaluation is very important, because the results of the strategies not only affect the outcomes of the firm but also immediately affect the well-being of the farmer's household. The evaluation process determines whether the realized results match the farmer's aspirations. This evaluation process is not only a key process in the theory of job satisfaction but also in the SMP. In the following we will further elaborate on the choice for the SMP as conceptual framework.

David (p 5) defines strategic management as *"the art and science of formulating, implementing, and evaluating cross-functional decisions that enable an organisation to achieve its objectives"*. In line with Cooper and Artz (1995), aspects that determine job satisfaction are also part of the SMP: initial goals (including reasons for becoming a farmer and general objectives) are comparable with the mission statement in the SMP. Entrepreneur's expectations are based on the internal and external assessment and their mission statement, resulting in a strategy. Farm performance is the result of implementing that strategy. Although the SMP is often presented as a linear model, in practice, there is a constant interaction and feedback between the different elements of the model (Ondersteijn *et al.*, 2002a). Evaluation is done not only at the end of the SMP but also at each step of the SMP. The result of the evaluation process determines the farmer's satisfaction with the process that is taking place in the firm and, consequently, job satisfaction. This places job satisfaction in a key position.

Because SMP focuses in particular on converting a farmer's mission statement, after internal and external assessment, into a farm's strategy that has been implemented and evaluated, we consider it a good basis for our conceptual framework. In Figure 4.1, a schematic overview of the conceptual framework is presented.

The items that directly and indirectly influence job satisfaction are described below.
The mission of the farm consists of two parts: *the reasons for becoming a farmer and the general objectives*. Reasons for becoming a farmer refer to the initial reasons, influencing the decision to go into farming (historical reasons), whereas general objectives are the current long-term goals the farmer wishes to pursue. The general objectives might be subject to change over time (Boehlje and Eidman, 1984; Trip *et al.*, 2001). In general, wealth, independence, lifestyle, and challenge are reasons mentioned by entrepreneurs for starting up their business. Wealth attainment is generally considered less important than the other reasons given (Amit *et al.*, 2001). A characteristic that distinguishes farms from most

non-farm businesses is that they are passed on from generation to generation. For younger people, a partnership together with their parents followed by succession is the predominant way to get involved in farming (Taylor *et al.*, 1998). Ensuring the continuation of the farm and passing it over to the next generation might therefore be important objectives for the farmer. Parents might value continuity of the farm highly as an objective for farming and may consequently make significant sacrifices to enable their heir to succeed them. The heir might feel a moral obligation to take over the farm (Vanclay, 2004).

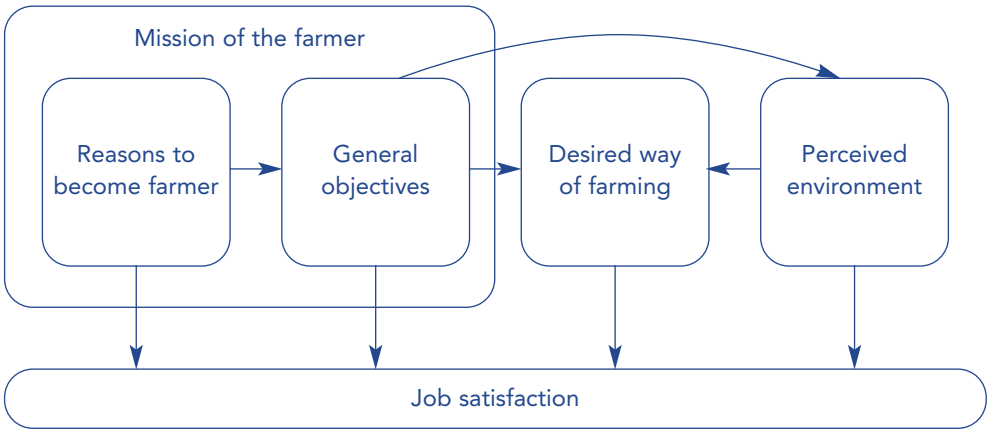

Figure 4.1 The conceptual framework to analyse job satisfaction of dairy farmers

The general objectives are broad, long-term goals that a farmer seeks to accomplish. As their name suggests, they tend to be general and sometimes even abstract targets of performance involving profitability, productivity, and other key aspects of business (Zimmerer and Scarborough, 1998). A family dairy farm is a small business and its mission is closely intertwined with the values of the family members (Coughenour and Swanson, 1988; Fairweather and Keating, 1994; Gasson, 1973; Gasson and Errington, 1993; Willock *et al.*, 1999). Many farmers consider farming as both a way of life and a business. Farming as a way of life refers to establishing non-economic objectives. These non-economic objectives can be (1) intrinsic (farming is valued as an activity in its own right), (2) social (farming for the sake of interpersonal relationships), or (3) expressive (farming is a means of self-expression or personal fulfilment). Farming as a business means establishing economic objectives. Farmers value the intrinsic and non-economic rewards of farming more than achievement and economic rewards (Coughenour and Swanson, 1988; Gasson, 1973). It is expected that the reasons for being or becoming a farmer also influence the general objectives of the farmer.

The *desired way of farming* is the result of the farmer's synthesis of objectives, internal assessment, and external assessment. A strategy is developed to move from the present situation of farming to the desired way of farming in the future. The strategy is the means used to bridge the gap between present and future.

The *perceived environment* is how the farmer thinks that external forces influence the business. These external forces can be divided into five broad categories: (1) economic forces, (2) social, cultural, demographic, and environmental forces, (3) political, governmental, institutional, and legal forces, (4) technological forces, and (5) competitive forces (David, 2001). The boundaries of the perceived environment are set by the objectives of the firm. Decision-makers limit their perceptions of the environment according to its importance for the achievement of their objectives. The objectives and environment can impact performance and set clear boundaries for decision-making. But within the same environment it is the perception and interpretation of environmental opportunities and threats that determines its degree of importance. Farmers perceive the business environment of their firm as unpredictable (Ondersteijn *et al.*, 2002b). The reason for this can be that (1) they feel unable to estimate the chances of an event occurring, or (2) they are unsure about the effect of the change on the organisation, and/or (3) they are unsure about the responsive action that must be taken (Milliken, 1987). This evaluator's perception of risk and uncertainty is important when an external force is being evaluated as an opportunity or a threat (Aarts and Woerkum, 2002; Murray-Prior and Wright, 2001)).

4.4 Materials and methods

To gain insight into the research questions, two data sets were used: one from the Netherlands and one from Pennsylvania. The reason for this was to explore whether a different farming environment (perceived environment) had an influence on the items that were related to job satisfaction.

4.4.1 Questionnaire

Data were collected through a questionnaire consisting of two parts. The first part included background demographic information such as the size of the enterprise and the age of the farmer. The second part consisted of questions related to the conceptual framework. Questions were grouped into different clusters. There were questions about (1) the reasons for becoming a farmer, (2) general objectives, (3) desired way of farming, (4) perception of the environment, and (5) job satisfaction. With the exception of the questions about background information, all the questions were closed, Likert-type scaled, questions. Farmers could add comments or other aspects. Since the item *How much do you like being an entrepreneur?* asks for an overall evaluation of all the aspects, this was used to measure job satisfaction. So job satisfaction was measured in an indirect way amongst others to avoid socially-desired answers of the respondents.
In the Netherlands (NL), the questionnaire was pre-tested in a desktop test and a pre-test with three farmers and four farmer-related experts. For Pennsylvania (PA) farmers, the questions were translated from Dutch into English and pre-tested with one PA dairy farmer. Only small changes were made in wording to two questions following the test interview.

4.4.2 Data collection

As stated earlier, two groups of dairy farmers were selected: a group from NL and a group from PA. The farmers chosen had to have similarity in family ownership and family involvement in management and strategic decision-making. These farmers represent full-time commercial dairy farmers that rely on their dairy operation for income.

The Netherlands: 449 farmers were selected from the database of NLTO (the Northern Dutch farmers' organisation) to complete the questionnaire. All farmers were participants of a study group. Study groups are small groups (about 10 members) of farmers meeting on a regular basis to discuss farm-related issues with each other. Thirty-five of the farmers completed the questionnaire during group meetings (February 2001). However the threat—and subsequently the outbreak—of Foot and Mouth Disease prevented further visits to farmers' groups, so the rest of the questionnaires were completed and returned by mail in March 2001. A letter of recommendation from a local farm leader accompanied all questionnaires that were mailed. Of the original 449 farmers surveyed, 269 (60%) responded. Of these, the results of 13 respondents could not be used because the respondents were no longer involved in dairy farming, were not the owner of the farm, or because the questionnaire was not completely filled out. This number of 256 usable questionnaires resulted in a response rate of 57 %, which is a relatively high response rate for this type of study (Pennings *et al.*, 2002; Yammarino *et al.*, 1991).

Pennsylvania: in a related project, agribusiness consultants identified farms that, according to their opinion, had a high level of profitability and that would be willing to participate in this study. The questionnaire was incorporated into a larger survey for the related project. The entire survey, including the questions for this study, took between one and two hours to complete. All questions were asked in the same sequence each time. The interviewers recorded additional comments that farmers had made for any of the questions. To avoid bias, the interviewers posed the questions exactly as they were written down and did not interpret any information for the farmer. Only the data collected for this study are presented here. Farms that were nominated for the research project were contacted by phone and asked to provide some preliminary information during a ten-minute conversation. At that time they were asked if they would be willing to participate in a larger survey involving a visit to the farm from a member of the research team. All of the participants that were initially contacted agreed to participate, and subsequently provided data for the current project. There were 76 participants in the PA group, 73 of whom completed the entire questionnaire. Those who did not complete the entire questionnaire were not included in the analysis.

Table 4.1
Characteristics of dairy farms in the survey and average dairy farms in the Netherlands and Pennsylvania

	Average Dutch farm in the survey (n=257)		Average dairy farm in NL [a]	Average Pennsylvania farm in the survey (n=73)		Average dairy farm in PA [b]
	Average	SD [c]		Average	SD [c]	
Milk production per farm in 1000 kg	655	287	399	2,413	1,561	530
Age of respondents	39.41	8.48	NA	46.00	7.32	NA
Number of dairy cows	81.56	35.46	53.30	252.61	145.10	64.40
Milk per cow (kg)	8,397	788	7,540	9,675	887	8,232
Acreage of the farm (ha)	54.69	35.48	33.48	132.01	95.13	54.58
Labor units per farm	1.67	0.65	1.50	5.72	3.78	NA

[a] Source: LEI (2001)

[b] Source: USDA, National Agricultural Statistics Service (2001). [c] (SD)= standard deviation

Table 4.1 provides general descriptive information about the dairy farms in this study as well as some data on the average dairy farm in the NL and PA. For both groups in the study, farm size was larger and milk production was higher than that of the average farm in the respective geographical area. This is a common phenomenon as farmers of larger and higher productive farms have better future perspectives and are more likely to participate in scientific studies (Huirne *et al.*, 1997).

4.4.3 Methods

The conceptual framework of Figure 4.1 served as the analytical model for the analysis. Appendix A gives a description of the NL and PD data used in the analysis. An appropriate method for analysing the relationships such as those of our conceptual model (figure 4.1) is path analysis (Hair *et al.*, 1998) (Garson, 2004). Path analysis is a method that employs simple bivariate correlations to estimate the relationships in a system of structural equations. The starting point is a set of structural equations that represent the structure of interrelated hypotheses based on the analytical model. The method is based on specifying these relationships in a series of regression-like equations that can be estimated by determining the number of correlations attributable to each effect in each equation simultaneously (Hair *et al.*, 1998). The numerical estimate of this causal relationship between two items is called the path coefficient. Path coefficients may be used to decompose correlations in the model into direct and indirect effects, corresponding, of course, to direct and indirect paths reflected in the arrows in the conceptual framework (figure 4.1). This is based on the rule that in a linear system, the total causal effect of item i on item j is the sum of the values of all the paths from i to j.

In general, any bivariate correlation (the measured effect) may be decomposed into total causal and unanalysed (including spurious) effects. The total causal effect can be decomposed into a direct and an indirect (via other variables) effect. The total causal effect is the beta

coefficient for the usual standardised solution. The unanalysed effect is the measured effect minus the total causal effect. The direct effect is the partial coefficient (beta for standardised, controlling for all prior variables and all intervening variables in the model. The indirect effect is the total causal effect minus the direct effect, and measures the effect of the intervening variables (Garson, 2004). When there is correlation between variables that can not be explained by the relations defined by the analytical model, we call it unanalysed including the spurious effect. Spurious effect is defined as a correlation between two variables that correlate due to one or more other variables not included in the analytical model (Bohrnstedt and Knoke, 1994).

To test the model with all its paths, goodness-of-fit tests from a structural equation program should be used (Garson, 2004). In the present study a structural equation model (SEM) is used to estimate the parameters in the model. The structural model specifies the causal relationships between the variables, describes the causal effects, and assigns the explained and unexplained variance. (Jöreskog and Sörbom, 1996; Mueller, 1996). In the previous chapter an extensive explanation of SEM and tests to evaluate the outcome of a structural equation model was given.

To answer the research questions, analysis was done on the NL data set and the PA data set separately. The models were specified and estimated using LISREL 8.5 (Jöreskog and Sörbom, 1996). PRELIS with list-wise deletion procedure for missing data was used to analyse the raw data and create the polychoric correlation matrix necessary to analyse the ordinal variables of the questionnaire (Jöreskog and Sörbom, 1996). An effective sample size of 242 out of 256 questionnaires for the NL data and 73 out of 73 for the PA data resulted from the data processing in PRELIS. The original number of variables in the data set was 34. Hair *et al.* (1998) advise the ratio of the number of variables and the number of observations to be at least five observations per variable. This means that for the PA data set especially there were insufficient observations to include all the variables in the path analysis. This meant that the number of variables had to be reduced.

We chose to select from each separate component of the conceptual framework (figure 4.1) those items that have a significant relation with our measurement item for job satisfaction. Stepwise regression was used to determine these items and was done for both data sets separately. This resulted in 8 items for the NL data and 9 items for the PA data. The correlation matrix for these variables is presented in Appendix 4.B.1 for the NL data set and in Appendix 4.B.2 for the PA data set. These correlation matrices were used as input for LISREL 8.5 for the NL and PA framework. Generalized Least Squares was chosen as the estimation method due to the non-normal distribution of the data (Jöreskog and Sörbom, 1996).

The framework was evaluated using the following measures. Absolute fit measures determine the degree to which the overall model predicts the observed covariance or correlation. The first measure is the Likelihood-Ratio Chi-Square statistics (χ^2). A large value of χ^2 relative to the degrees of freedom means that estimated matrices differ considerably from the observed matrices. A resulting P value larger than 0.05 indicates that the actual and predicted input matrices are not statistically different (note: we are looking for non-significant differences). χ^2 is quite sensitive to sample size. This test is appropriate for sample sizes between 100 and 200, with the significance of the test becoming less reliable with sample sizes outside this range. The Goodness-of-Fit Index (GFI), represents the overall degree of fit (the squared residuals of the predicted input matrices compared with the observed data),

but it is not adjusted for the degrees of freedom. Values greater than 0.90 for the GFI are considered to reflect acceptable model fit. The third measure for absolute fit is the Root Mean Square Error of Approximation (RMSEA). It is representative of the goodness-of-fit that could be expected if the model were in the population, but not just the sample drawn for the estimation. RMSEA with a value less than 0.05 indicates close fit, and values up to 0.08 indicate reasonable errors of approximation in the population. Incremental fit measures compare the proposed model to some baseline model, referred to as the null model. NFI has a recommended value of 0.90 or greater (Hair *et al.*, 1998; Jöreskog and Sörbom, 1996; Mueller, 1996).

4.5 Results and discussion

4.5.1 Level of job satisfaction

In tables 4.2a and 4.2b, the scores of the respondents on the job satisfaction variable are given.
Farmers in both countries are very satisfied with their job, as can be seen from the high scores for the question *How much do you like being an entrepreneur?* (2.04 for the NL data and 2.57 for the PA data. The maximum possible response was 3.0) There is however a statistically significant ($p<0.05$) difference between the NL and PA farmers. That is, PA farmers are more satisfied than NL farmers.

4.5.2 Items related to job satisfaction

The selected variables of the conceptual model that were significantly related to job satisfaction resulting from the step-wise regression are presented in the 2nd columns of table 4.2a (NL data) and 4.2b (PA data). In the last column, the bivariate correlations of the selected items with job satisfaction are given. First, the identified items from the model are discussed separately. Their interrelations are discussed in a following section.

Reasons for becoming a farmer:
There is a negative relation between the item PARENTS and job satisfaction for the NL farmers, as can be seen from the measured effect (-0.14 for NL). Also, there is a negative relationship (of –0.42) between EDUCATION and job satisfaction for the PA dairy farmer. Pressure to become involved in farming has a negative influence on job satisfaction. In NL there was a positive relationship (of +0.39) between ENTREPRENEUR and job satisfaction. This relation does not exist in the PA. The fact that in Pennsylvania it is possible to work in the dairy sector without owning a farm might explain this.

The *general objectives* of the farmers:
Of the general objectives, PLEASURE is positively related to job satisfaction (+0.25 and +0.56 respectively), for both NL and PA. For the PA group, the non-economic objectives IMAGE DAIRY and ANIMAL WORK are positively related to job satisfaction (+0.57 and +0.44). Both

Table 4.2a.
Division of estimated bivariate associations into direct, indirect and common cause (spurious) components for job satisfaction. (results of the Dutch sample, n=256).

Components of the conceptual model			Estimated association					
	Selected variables		Score		Causal			
	Dependent variable:		Average	SD	Direct	Indirect	Total	Measured
Job satisfaction	How much do you like being an entrepreneur?		2.04 [1]	1.00				
	Independent variables:							
Reasons for becoming a farmer	My parents considered it natural that the farm would be continued by one of the children	PARENTS	2.12 [2]	1.26	-0.15 **	-0.02	-0.17	-0.14
	The only way to be a dairy farmer is to own my own business	ENTREPRENEUR	3.51 [2]	1.39	0.26 **	0.06	0.32	0.39
General objectives	Take pleasure in my work	PLEASURE WORK	4.79 [2]	0.52	0.23 **	-0.04	0.19	0.25
Desired way of farming	A large farm	LARGE FARM	3.33 [2]	1.05	0.21 *		0.21	0.27
	A modern farm	MODERN FARM	4.03 [2]	0.87	0.13**		0.13	0.35
Perceived environment	Image of the product	IMAGE PRODUCT	1.18 [3]	1.75	0.17 *	0.02	0.19	0.22
	Producing for world market prices	WORLD MARKET	-1.79 [3]	1.26	0.17 **	0.06	0.23	0.15
R^2 of the total model							0.29	

[1] Scores on a 7-point Likert scale -3= very dissatisfied to +3= very satisfied, [2] Scores on a 5-point Likert scale 1= not important to 5= very important, [3] Scores on a 7-point Likert scale from (-3 = severe threat, 0 = neither opportunity nor threat, 3 = large opportunity). Results of path analysis using Generalized Least Squares. Goodness-of-fit measures for the Structural model: $\chi^2 = 33.63$, df = 9, P-value= 0.00, RMSEA= 0.17, NFI= 0.79, GFI= 0.97, AGFI= 0.86. * $P < 0.1$, ** $P < 0.05$.

Table 4.2b

Division of estimated bivariate associations into direct, indirect and common cause (spurious) components for job satisfaction. (results of the PA sample, n=73).

Components of the conceptual model	Selected variables Dependent variable:		Estimated association: Score Average	Score SD	Causal Direct	Causal Indirect	Total	Measured
Job satisfaction	How much do you like being an entrepreneur? Independent variables:		2.57 [1]	0.66				
Reasons for becoming a farmer	There was no money available for further education.	EDUCATION	1.25 [2]	0.80	-0.11 [NS]	-0.38	-0.38	-0.42
General objectives	Take pleasure in my work	PLEASURE	4.64 [2]	0.63	0.24 [**]		0.24	0.56
	Contribute to the positive image of dairy producers	IMAGE DAIRY	4.39 [2]	0.78	0.35 [**]		0.35	0.57
	Achieve as high an income as possible	INCOME	3.91 [2]	1.03	- 0.37 [**]		-0.37	-0.18
	Work with animals	ANIMAL	3.93 [2]	0.94	0.12 [NS]	0.06	0.06	0.44
Desired way of farming	A farm producing in an environmentally friendly way	ENVIRONMENT ALLY FRIENDLY FARM	4.42 [2]	0.64	0.07 [NS]		0	0.41
Perceived environment	Consumer's concern for food safety	FOOD SAFETY	-0.45 [3]	1.64	0.13 [*]		0.13	0.43
	Producing for world market prices	WORLD MARKET	-0.25 [3]	1.61	0.17 [**]		0.17	0.36
R^2 of the total model							0.66	

[1] Scores on a 7-point Likert scale -3= very dissatisfied to +3= very satisfied, [2] Scores on a 7-point Likert scale from (-3 = severe threat, 0 = neither opportunity nor threat, 3 = large opportunity). Results of path analysis using Generalized Least Squares. Goodness-of-fit measures for the Structural model: $\chi^2 = 33.63$, df = 9, P-value= 0.00, RMSEA= 0.17, NFI= 0.79, GFI= 0.97, AGFI= 0.86. * $P < 0.1$, ** $P < 0.05$.

groups of farmers place more emphasis on the non-economic aspects of farming than on the economic aspects. This means that (1) non-economic aspects of farming are of great importance to farmers and have always to be fulfilled, and (2) the economic situation for dairy farming at the time of the research is such that farmers can afford to put this emphasis on these objectives. For PA, the economic goal INCOME was negatively related to job satisfaction (-0.18). This means that farmers who place a lot of emphasis on income were not that satisfied with their job when compared to their colleagues.

Desired way of farming:
The desired way of farming for the NL farmer that contributes to his job satisfaction is farming on a LARGE FARM (+0.27) and a MODERN FARM (+0.35) whereas for the PA farmer it is farming on an ENVIRONMENTALLY FRIENDLY FARM (+0.41). *Perceived environment*

For the NL farmers, the aspects from the perceived environment that influence job satisfaction are IMAGE PRODUCT and WORLD MARKET (+0.22 and +0.15 respectively). For the PA farmers these are FOOD SAFETY and WORLD MARKET (+0.43 and +0.36 respectively). All these aspects are positively related to job satisfaction. This means that the farmers perceive these developments as opportunities. A positive attitude towards the business environment increases job satisfaction.

4.5.3 Evaluation of the conceptual model using Path Analysis

The variables identified in the previous step were entered in the framework. For the NL data set, this gave 17 possible relations and paths (figure 4.2a). Fifteen were statistically significant ($p<0.05$) and are used for further analysis. For the PA data set there are 27 relations and paths, 10 of which were statistically significant at $p<0.05$ and an additional 3 are statistically significant at $p<0.1$. For further analysis we use these 13 relations and paths (figure 4.2b). We chose to take the significance level of $p <0.05$ for the NL data set and $p < 0.1$ for the PA data set because of the differences in number of observations.

The paths with standardized path coefficients are presented in figures 4.2a and 4.2b for the NL and PA data sets. Tables 4.2a and 4.2b show the division of associations into direct and indirect effect with job satisfaction being the dependent variable. The direct causal associations are the standardized path coefficients mentioned in figures 4.2a and 4.2b. The indirect causal associations are calculated by tracing out all possible paths between a variable and job satisfaction in figures 4.2a and 4.2b. The results will be discussed in the following sections.

Overall model fit
The evaluation of the model fit is done by assessing the goodness-of-fit statistics. For the estimated NL mode, the results are: $\chi^2 = 33.63$, df = 9, p-value= 0.00, χ^2/df = 3.74, GFI = 0.97 and AGFI = 0.86, which are higher (GFI) or slightly smaller (AGFI) to the proposed 0.90 for a good fit. NFI = 0.79, which is smaller than the proposed 0.90. The RMSEA indicates a not-so-close fit (0.17), a suggested reasonable fit being 0.08 (Hair *et al.*, 1998). For the estimated PA model, the results are $\chi^2 = 114.49$, df = 9, p-value= 0.00, χ^2/df = 12.71, GFI = 0.93 and AGFI = 0.64, which are higher (GFI) or smaller (AGFI) than the

proposed 0.90 for a good fit. NFI = 0.81, which is slightly smaller than the proposed 0.90. The RMSEA indicates a not-so-close fit (0.40). Overall we can conclude that the conceptual model fits the NL data set better than it does the PA data set. The R square of the total model job satisfaction was 0.29 for the NL model and 0.66 for the PA model.

Certain factors might explain the marginal fit of the PA model. For example, a "good fit" is not the same as strength of relationship. In fact, the lower the correlations stipulated in the model, the easier it is to find "good fit." The stronger the correlations, the more power SEM has to detect an incorrect model. When correlations are low, the researcher may lack the power to reject the model at hand (Garson, 2004). The rather high proportion of variance explained in the target item job satisfaction might cause the relative marginal fit of the model.

4.5.4 Relations of the individual parameters in the path diagram

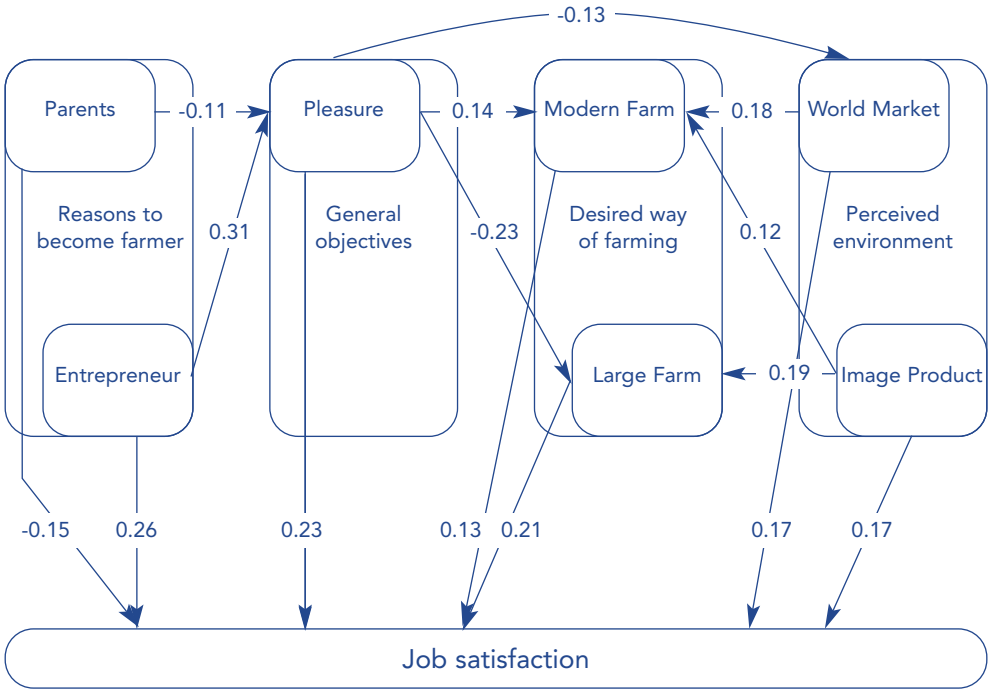

Figure 4.2 a.
Path diagram of the items of the conceptual model that are related to job satisfaction. Results of the Dutch data set. Arrow weights are standardised regression coefficients Only significant paths (P< 0.05) are displayed. Results of path analysis using Generalised Least Squares. Goodness-of-fit measures for the Structural model: χ^2 = 33.63, df = 9, P-value = 0.00, RMSEA= 0.17, NFI= 0.79, GFI= 0.97, AGFI= 0.86.

The Netherlands: figure 4.2a shows that for the NL data set, ENTREPRENEUR and PLEASURE are the most important items to explain variance in job satisfaction. The item PARENTS is not only negatively related to job satisfaction (path coefficient of –0.15) it is also negatively related to the goal PLEASURE. PLEASURE had a positive path coefficient with modern farm but a negative path coefficient with large farm. Additionally, a negative path coefficient was found from PLEASURE to WORLD MARKET. Striving for a large farm or producing for world markets to be an opportunity is not considered the result of striving for pleasure in work. Both WORLD MARKET and LARGE FARM have a positive path coefficient toward job satisfaction. This implies that items (either from the model, but then not statistically significant, or from outside the model) other than PLEASURE have a larger impact on the end evaluation of WORLD MARKET and LARGE FARM.

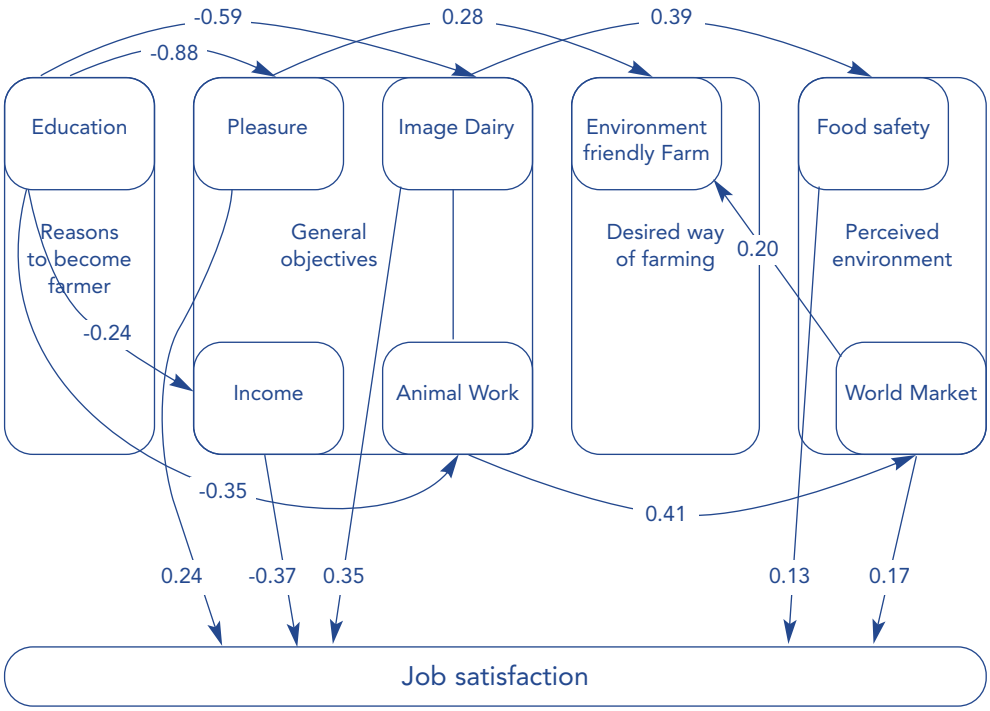

Figure 4.2 b.
Path diagram of the items of the conceptual model that are related to job satisfaction. Results of the Pennsylvanian data set. Arrow weights are standardised regression coefficients. Only significant paths (P< 0.1) are displayed Results of path analysis using Generalised Least Squares. Goodness-of-fit measures for the Structural model: $\chi^2 = 114.49$, df = 9, P-value = 0.00, RMSEA= 0.40, NFI= 0.81, GFI= 0.93, AGFI= 0.64.

Pennsylvania: As the results in figure 4.2.b show, objectives have the largest impact on explaining variation in job satisfaction. Note the negative path coefficient (–0.37) between income and job satisfaction. The data suggest that the PA dairy farmer who places more emphasis on economic objectives is less satisfied with his job. An explanation might be that because of the increased farm size and the employment of external labour force in the firm, a farm has to be run more as a business. The relative impact of economic objectives has, in this case, become more important.

EDUCATION negatively influences scores on all objectives mentioned. This is in concordance with the findings in the NL data set. Factors outside the farmer's control that force him into farming have a negative impact on job satisfaction. It is also worth noting that the desired way of farming does not have a significant path coefficient with job satisfaction.

The items Image DAIRY, environmentally friendly farm and FOOD SAFETY are related to an external orientation of the farmer. For the PA dairy farmer, the perception of the outside world has an impact on his job satisfaction. Environmental issues have been of interest for all dairy farmers in the EU longer than in the US. (see e.g. (Ondersteijn *et al.*, 2002c). In the U.S., regulation currently is focused on larger operations. Recent changes in environmental policies (see: http://cfpub.epa.gov/npdes/afo/cafofinalrule.cfm) mean that environmental regulation will be an issue for more dairy farmers in the US. The response of the dairy farmers in this study suggests that they are aware of these issues and this impacts their evaluation of job satisfaction.

4.4.3 Impact of a different environment

A different farming environment affects the emphasis that farmers place on different items of the conceptual model. In the NL data set especially, the objective PLEASURE is related to job satisfaction. In the PA data set, multiple objectives PLEASURE, IMAGE DAIRY, ANIMAL WORK, and INCOME are related to job satisfaction. The negative relation between job satisfaction and the economic goal, INCOME, in the PA data set is of interest. If, as assumed by Burrell (2003), EU policy and economic circumstances are forcing farmers into farming on larger farms, this implies that farmers have to assume stronger manager and entrepreneur roles. In that case, other market-related and income-related issues become more important in determining job satisfaction. It can be questioned whether the goals that have a positive impact on job satisfaction, such as pleasure in work, are not being put under too much pressure. Whether farmers will be less satisfied with their job or they just adapt their objectives to these different circumstances has to be determined. If, as predicted, milk prices drop and farm income decreases, it can also be questioned whether farmers who have mainly economic goals will stay in business.

4.4.4 General discussion

The selection procedure for the farmers who participated in this study was different for NL and PA. The NL farmers were participating in research on improving entrepreneurial competencies, whereas the PA farmers were involved in an exploratory study to gain insight into their profitability. The two groups of farmers had in common that they were farming on larger farms than other farmers in their region, and both groups were expected to be future

oriented. The two data sets can therefore only be compared to a limited extent. For the results of this research, this does not have a serious drawback since the aim of this paper is to explore aspects related to job satisfaction and not to compare dairy farmers in NL with dairy farmers in PA. Further research is needed to investigate whether the findings of this research also hold true for other groups of farmers, for example the large group of small farmers that are less profitable than the group investigated.

For both the NL and PA models, the goodness-of-fit showed mixed results: some of the indices were within the acceptance level, while others were outside this level. This is however a situation often observed when using SEM. One way to improve these indices is to apply model respecification within the theoretical possible relationships (Hair *et al.*, 1998). However, in this study this did not result in an improvement of the indices. This indicates that other factors outside the presented conceptual framework are likely to have an impact on job satisfaction. Factors that could be of influence on the farmers' job satisfaction and were not included the model are, for example, the threats or outbreaks of major diseases (which was the case during the data collection of the Dutch data with Food –and Mouth disease). The perceived increased control of farmers by governmental and other authorities might have an impact on the farmers' job satisfaction as well. Extending the model with these kinds of aspects might further improve the framework and our understanding of farmers' job satisfaction.

However, given the above-mentioned limitations, the presented conceptual framework was able to identify aspects related to strategy formulation that had an impact on job satisfaction.

4.5 Conclusions and Implications

This study is amongst the first to explore entrepreneurial job satisfaction of dairy farmers and tries to link it with the items from the strategic management process. It can be concluded from the analysis that using the developed conceptual model provides insight into the items of the strategic management process that determine the job satisfaction of dairy farmers. The dairy farmers in this study—both in the Netherlands and Pennsylvania—are satisfied with their job. The results show that especially the non-economic objectives as pleasure in the work of farming are important for explaining differences in job satisfaction. Despite differences between the NL and north-eastern US, both groups of dairy farmers shared common objectives and perceptions that explain differences in their job satisfaction. Those farmers who perceive the challenges their business environment poses as opportunities rather than threats are more satisfied with their job. A negative relationship between job satisfaction and the economic goal, income, in the PA data set is found. This finding might also be of interest for the Dutch situation. If external economic circumstances, e.g. EU policy, force farmers into farm expansion, market-related and income-related items may become more important in determining job satisfaction.

Aspects related to entrepreneurial decision-making influence his level of job satisfaction. Taking these factors into consideration when formulating strategic plans can help to improve future job satisfaction of dairy farmers.

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Appendix A

Descriptive statistics of the response of the Dutch and Pennsylvanian farmers

		Average Dutch farm (n=256)			Averag Pennsylvania farm (n= 76)			Differences between the two samples [4]
		Average Score		(SD)	Average Score		(SD)	
	Reason given in the survey [1,5]							
X1	Being a dairy owner gives you more freedom than being employed	4.28	a	0.94	3.32	g	1.36	**
X2	The only way to be a dairy farmer is to own my own business	3.51	b	1.39	2.7	h,i	1.54	**
X3	There is potential for higher income with farm ownership	2.54	c	1.16	3.16	g,h	1.31	**
X4	My parents considered it natural that the farm would be continued by one of the children	2.12	d	1.26	2.42	i	1.28	NS
X5	I gain more respect among family and friends for owning a dairy rather than being employed elsewhere	1.45	e	0.84	2.13	j	1.23	**
X6	There was no money available for further education	1.07	f	0.37	1.25	k	0.80	*
	General personal and farm-related objectives of Dutch and Pennsylvania dairy farmers [1,5]							
X7	Take pleasure in my work	4.79	a	0.52	4.64	h	0.63	*
X8	Produce a high-quality and safe product	4.66	b	0.61	4.72	h	0.74	NS
X9	Working with animals	4.2	c	0.77	3.93	i,j	0.94	*
X10	Contribute to the positive image of dairy producers	3.96	d	1.01	4.39	k	0.78	**
X11	Achieve as high an income as possible	3.69	e	0.88	3.91	l,m	1.03	*
X12	Create an existence for my future successor	3.05	f	1.16	3.8	i,n	1.17	**
X13	Have sufficient leisure time	2.85	f	1.17	3.41	d,j,n	1.21	**
X14	Earn respect among colleagues	2.45	g	1.16	3.36	o	1.17	**

(Continued on next page)

		Average Dutch farm (n=256)			Averag Pennsylvania farm (n= 76)			Differences between the two samples [4]
		Average Score		(SD)	Average Score		(SD)	
	Farm type that is related to the desired way of farming [1,5]							
X15	A modern farm	4.03	a	0.87	3.92	h	0.81	NS
X16	A highly productive farm	3.61	b	0.93	4.36	i,j	0.81	**
X17	A farm producing in an environmentally friendly way	3.55	b	0.85	4.42	j,k	0.64	**
X18	A large farm	3.33	c	1.05	4.53	i,k	0.70	**
X19	An innovative farm	2.93	d	1.16	3.36	l,m	1.11	*
X20	A family farm	2.81	d	1.21	3.82	h,m	1.03	**
X21	A genetically superior herd/farm	2.41	e	1.07	3.29		1.19	**
X22	An organic farm	1.6	f	0.89	1.2	n	0.43	**
X23	A farm with recreation as a secondary source of income	1.31	g	0.80	1.39	n	0.61	NS
	Perceived environment of dairy farmers [2,5]							
X24	Image of the product	1.18	a	1.75	2.05	h	1.20	**
X25	Availability of land	-0.21	b	1.90	-0.86	i,j,k,l	1.63	*
X26	Producing for world market prices	-1.79	c	1.26	-0.25	h,i	1.61	**
X27	Development of the internet and ICT	1.56	d	1.08	1.53	h	1.18	NS
X28	Consumer's concern for the environment	0.61	e	1.45	-0.61	j,i	1.86	**
X29	Consumer's concern for animal welfare	0.63	f	1.60	-1.14	J	1.82	**
X30	Consumer's concern on food safety	1.11	a	1.50	-0.45	k,l	1.64	**
X31	Legislation concerning nutrient management	-0.3	b	1.78	0.24	m	1.50	*
X32	Local town and county planning	-1.43	g	1.28	-0.13	n	1.42	**
X33	Increasing legislation	-1.69	c	1.28	-0.78	l	1.16	**
	Job satisfaction [3]							
Y1	How much do you like being an entrepreneur?	2.04		1.00	2.57		0.66	**

[1] Scores on a 5-point Likert scale 1= not important to 5= very important, (SD)= standard deviation

[2] Scores on a 7-point Likert scale from (-3 = severe threat, 0 = neither opportunity nor threat, 3 = large opportunity)

[3] Scores on a 7-point Likert scale -3= very dissatisfied to +3= very satisfied

[4] Mann-Whitney test sign. * differences are significant at $p< 0.05$, ** differences are significant at $p< 0.01$,

[4] For each separate part of the table a,b,cMeans with different superscripts within each column are different ($P < 0.01$). in the Wilcoxon Signed Ranks Test

Appendix 4 B

1 Correlation Matrix: the Netherlands

		V1	V2	V3	V4	V5	V6	V7	V8
V1	My parents considered it natural that the farm would be continued by one of the children	1.00							
V2	The only way to be a dairy farmer is to own my own business	0.04	1.00						
V3	Take pleasure in my work	-0.11	0.24	1.00					
V4	A large farm	0.1	0.21	-0.25	1.00				
V5	A modern farm	-0.02	0.26	0.11	0.38	1.00			
V6	Image of the product	0.05	0.16	-0.04	0.04	0.18	1.00		
V7	Producing for world market prices	-0.05	-0.13	-0.13	0.15	0.12	-0.07	1.00	
V8	How much do you like being an entrepreneur?	-0.14	0.39	0.25	0.27	0.35	0.22	0.15	1.00

2 Correlation Matrix Pennsylvania

		V1	V2	V3	V4	V5	V6	V7	V8	V9
V1	There was no money available for further education	1.00								
V2	Achieve as high an income as possible	-0.01	1.00							
V3	Take pleasure in my work	-0.66	0.15	1.00						
V4	Working with animals	-0.12	0.3	0.48	1.00					
V5	Contribute to the positive image of dairy producers	-0.26	0.28	0.43	0.51	1.00				
V6	A farm producing in an environmentally friendly way	0.15	0.16	0.3	0.35	0.62	1.00			
V7	Producing for world market prices	-0.16	0.06	0.2	0.38	0.22	0.23	1.00		
V8	Consumer's concern on food safety	-0.2	-0.08	0.24	0.23	0.38	0.28	0.07	1.00	
V9	How much do you like being an entrepreneur?	-0.42	-0.18	0.56	0.44	0.57	0.41	0.36	0.43	1.00

CHAPTER 5

Improving the entrepreneurial competencies of Dutch dairy farmers through the use of study groups

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Abstract

The objective of this paper is to describe and analyse the role that study groups might play in improving the entrepreneurial competencies of farmers. The emphasis is placed on the group learning process and the role of the study group facilitator in this process. Theories of adult learning and team learning in relation to our experiences in the 'Innovative Entrepreneurship' project are addressed. We conclude that in this project too, it was difficult to give full credit to learners as being self-directed and autonomous; and second, to a conception of the teacher as facilitator of learning rather than presenter of content. Effective learning in study groups involves using all the extension paradigms (i.e. transfer of technology, problem solving, education, and participatory approaches). Training facilitators in when and how to use these different paradigms is crucial. In addition to having a thorough education in agricultural science, potential study group facilitators require support in using participatory approaches.

5.1 Introduction

The environment in which farmers are working today is becoming increasingly complex. Farmers are being confronted with significant changes that are rapid and novel. Changing markets and stricter regulation have generated new limitations and challenges to the agricultural production chain and for the people working in that chain. These changes undermine farmers' traditional patterns of decision-making (Loevinsohn *et al.*, 2002). They need to acquire new skills/competencies so that they can perform the necessary tasks effectively. To be prepared for these challenges, farmers need to be engaged in a continuous process of learning.

Sporleder and Peterson (2003) see knowledge, intellectual capital, relationships, and the ability to manage these as the key to success for today's firms. Organisations have to become 'learning organisations' (Senge, 1990). Farmers, managing their own farms, also have to constantly increase their knowledge base if then want to cope with their ever-changing environment.

In order to meet these new challenges, increased emphasis is being placed on entrepreneurial competencies. The entrepreneurial competencies required involve strategic planning, looking for new opportunities, organising the firm, and building and maintaining internal and external relationships (Man *et al.*, 2002). In the agricultural sector too, entrepreneurial competencies are crucial for entrepreneurial success (Bergevoet *et al.*, submitted).

A farmer running a family farm has three roles: in addition to being craftsman and a manager he/she[6] is an entrepreneur. In larger firms, different persons perform these tasks and functions, whereas in family farms the farmer is involved in all three of them. In the past, education and extension emphasised the competencies needed to be a good craftsman and manager. To cope with the present challenges in farming, the farmer needs to be well-informed, analytical, proactive, and flexible. Possessing social skills and knowing how to get access to sources of knowledge are also becoming important for the farmer (Gielen *et al.*, 2003). Therefore, he has to acquire entrepreneurial competencies that make him a better decision-maker.

[6] To improve the readability of the paper, , we will use he instead of he/she, and him or his when we mean his/ her. This is also due to the fact that, in the Netherlands, farmers as well as facilitators are still predominantly male.

Formal school education only enables farmers to acquire some of these competencies. The rest, understandably, have to be learned in practice. This 'learning by doing' however can be greatly improved through vocational training and course work. One of the methods that can be used is the agricultural study group. These study groups are a vital part of the Dutch agricultural knowledge and information system. They act as a forum for farmers to exchange experiences on how to deal with issues related to the complex environment with which the farmer is confronted. Farmers use them as a means of generating and acquiring knowledge. Issues addressed in study groups are not only related to the technical part of farming, but also to the macro-economical and political aspects that impact farming (Oerlemans and Assouline, 2004).

For the learning process in study groups to be effective, the role of the facilitator is vital. The facilitator has a threefold task: (1) to facilitate the group process, (2) to teach, and (3) to be an expert on technical aspects of dairy farming. To manage study groups effectively, the facilitator has to be a jack-of-all-trades. He has to have communicative skills as well as specific knowledge of the subject at hand (Vanclay, 2004, Leeuwis and Van den Ban, 2004). Therefore, a facilitator needs to be trained in both agricultural science and communicative processes (Leeuwis and Van den Ban, 2004).

The objective of this paper is to describe and analyse the role that study groups can play in improving the entrepreneurial competencies of farmers. Special emphasis has been placed on the group learning process and the role of the study group facilitator in this process. We reflect upon our experiences related to the theories of adult learning and team learning. These experiences were gained during the 'Innovative Entrepreneurship' project, in which Dutch dairy farmers worked on subjects related to entrepreneurship, in study groups. Because the challenges the farmer faces are comparable with the challenges every other entrepreneur faces, we did not restrict ourselves to agricultural extension literature, but also consulted organisation literature.

The outline of the remainder of the paper is as follows: part 2 describes study groups, different theories on adult learning, the extension paradigms, and the facilitator's role; part 3 is a description of the project on innovative entrepreneurship; part 4 contains a synthesis of the theoretical aspects, which we relate to our experiences in this project; some conclusions and recommendations complete the article (part 5).

5.2 Study groups: adult learning, extension paradigms, and the role of the facilitator.

5.2.1 Study groups

When farmers look for education programmes to follow, they have specific preferences regarding (a) content, (b) approach, and (c) delivery of those education programmes. They need specific knowledge and skills relevant to current and future developments, including learning skills (content). They look for short, modularised courses (approach) that are flexible enough to accommodate seasonal work demands (delivery) ((Beamberry *et al.*, 1997) in (Black, 2000)). In Dutch agricultural education programmes, study groups play a key role. They are becoming increasingly important in acquiring and spreading information,

and as a form of learning based on low costs (Oerlemans and Assouline, 2004). Agricultural study groups have proven to be effective in the sense that these groups enhance collective learning by providing space for members to follow their own rhythm and dynamics in learning (Guijt and Proost, 2002). The meetings take place in the period with the lowest seasonal work demand. For the Dutch dairy farmers this is the winter season.

Participants in agricultural study groups are individual entrepreneurs who see each other as colleagues and not as competitors. Although participants do not wish to pursue mutual commercial interests, they have common interests in subjects related to their farming enterprise. Table 5.1 shows the main reasons that farmers give for participating in study groups. As can be seen from this table, it is especially the non-formal learning aspects of the group meetings that are appreciated.

Individual farmers usually have much expertise—based on experience, on-farm experimentation, and /or training—which could be relevant to other farmers. By participating in study groups, farmers will widen their 'evaluative frame of reference'. Participation affects (a) the perception of the farmers of the manifold consequences of certain practices, (b) the perceived likelihood that these consequences will emerge, and (c) their valuation of such consequences in relation to a set of aspirations (Leeuwis and Van den Ban, 2004).

Table 5.1
Farmers' evaluation of study groups (Guijt, 2002):

Reasons to participate in study groups
Topics are discussed in a practical way
Information is exchanged with colleagues in an informal atmosphere
Experiences can be compared and explained
Information is processed into ideas for action
Prior knowledge is activated
Moral support can be found Ideas and opinions are tested
Experiments are set up and evaluated (which some farmers would not do on their own)
Social control, which helps participants to realise their plans
Group meetings provide an alibi to visit other people's farms and demonstrations

An often forgotten, neglected or underestimated aspect in the process of building, maintaining or expanding a network of farmers (and other actors), their mutual relations, and interactions, is the management of the group process itself (Oerlemans and Assouline, 2004). Changing a group of individuals into a group in which the participants feel safe to express their uncertainty is a process that needs to be carefully managed. When this process fails, this can seriously hamper the learning process of the individuals (Homan, 2001). This especially holds true when the learning process requires sharing of personal information amongst the group members and, as such, requires mutual trust. To manage the group process effectively, the facilitator has to possess communicative skills to intervene effectively when a group-forming process becomes problematic.

5.2.2 Learning and adult education

The process of a farmer's learning can be approached from several perspectives. We will limit ourselves to theories on adult learning and the most prominent extension paradigms. Only those aspects that are related to study groups will be discussed. The role of the facilitator in study groups depends heavily on his vision regarding the farmer's learning process, and on his vision concerning the presented extension paradigms.
Learning arises from the creation and sharing of both explicit and tacit knowledge. Explicit knowledge is knowledge that, for example, can be learned from textbooks, whereas tacit knowledge represents knowledge based on the experience of individuals (Woerkum and Meegeren, 1999). Tacit knowledge expresses itself in human actions in the form of evaluations, attitudes, points of view, commitments, motivation, etc.. Usually, it is difficult to express tacit knowledge directly in words, and often the only way of presenting it is through metaphors, drawings, and various forms of expression not requiring a formal use of language (Koskinen and Vanharanta, 2002, Kakabadse *et al.*, 2001). Tacit knowledge is viewed in organisational literature as (1) unique for an organisation and thus is a potential source for competitive advantage and (2) it is difficult for competitors to copy, due to barriers arising from a competitor's inability to know that the knowledge exists (Sporleder and Peterson, 2003).

Tacit knowledge is acquired by social interaction (Von Hippel, 1994, Kakabadse *et al.*, 2001) and a high degree of similarity between group members leads to an easy horizontal spread of ideas among the group members (Rogers, 2003). By nature, much of the knowledge that farmers possess is of a tacit nature. In their single-person business, besides their own experience, external contacts are the only means that farmers have for acquiring tacit knowledge. Therefore, study groups are an ideal opportunity for farmers to learn since pooling farmers in study groups leads to an easier spread of tacit knowledge. The sharing of tacit knowledge is further facilitated by the fact that farmers in the Netherlands see each other as colleagues rather than as competitors.

To gain insight into the learning process that occurs in study groups, adult learning theories can be helpful. We describe three theories: (a) learning theory of Senge (1995), (b) Kolb's (1984) learning cycle and learning styles, and (c) Pratt's (1998) five perspectives on teaching.

5.2.3 Learning theory of Senge

Senge (1995) distinguishes three types of learning: (a) constructive learning, (b) contextual learning, and (c) reflective learning. In constructive learning, new knowledge is combined with what a person already knows and it is 'glued' into their practice. Before this can take place, the prior knowledge has to be activated. Compared to formal education, farmers' study groups are very effective in activating this prior knowledge since the farm-related topics are mostly based on farmers' perceived problems. Prior knowledge activation supports the knowledge construction processes, resulting in deeper understanding. This deeper understanding results in more specific questions being asked, and, consequently, more details are picked up. In contextual learning, a person not only picks up information but also stores information about the circumstances or context in which it is picked up. The

more contexts that enter the learning situation, the more learning is enhanced. Groups that have been together for some time, like farmers' study groups, create a rich collective context to which they relate. In reflective learning, experiences are evaluated to test the validity of original assumptions or theory. It is an important condition for learning in order to establish change. For some individuals, reflection has become second nature, for others the group can provide a stimulus to reflect on experiences and situations described by fellow group members (Guijt and Proost, 2002).

Participating in study groups enables all three kinds of learning. The farm-related topic (constructive learning), being in the same situation (contextual learning) and the exchange of evaluation of experiences (reflective learning) are all vital parts of study group meetings.

5.2.4 Kolb's learning cycle and learning styles

Another often-used concept of adult learning is Kolb's four-stage learning cycle (Kolb, 1984). The stages are: (a) concrete experience that is followed by (b) observation and reflection, which lead to (c) the formation of abstract concepts and generalisations, which leads to (d) hypotheses to be tested in the future, which lead to new experiences, thus closing the cycle. This learning process is continuously recurring, governed by one's needs and goals.

A person develops his own learning style, putting emphasis on specific parts of the learning cycle. Based on the different stages of the learning cycle, four learning styles are identified. Divergent learning emphasises concrete experience and reflective observation. Persons who have this learning style are good in problem analysis. They view concrete situations from many perspectives. A person with this learning style is motivated to discover the relevancy or 'why' of a situation. He likes to reason from concrete specific information and to explore what a system has to offer, and prefers to have information presented to them in a detailed, systematic, reasoned manner. Assimilation is the process of abstract conceptualisation and reflective observation. Persons with this learning style are good in inductive reasoning and creating theoretical models. However, ideas are judged less on their practical value, it is more important that the theory is logically sound and precise. Convergent learning involves the processes of abstract conceptualisation, experimentation, problem-solving, decision-making, and the practical application of ideas. A person with this style is motivated to discover the relevance or 'how' of a situation. Understanding detailed information about the system's operation increases application and usefulness of information. Accommodative learning gives extra importance to concrete experience and active experimentation. A person with this learning style is motivated by the question, 'what would happen if I did this?' He looks for significance in the learning experience and considers what he can do, as well as what others have done previously. These learners can deal easily with complexity and are able to see relationships among aspects of a system (Kolb, 1984, Kolb *et al.*, 1995).

Farmers in farmers' study groups meet and work with colleagues who may have a different learning style than themselves. Integrating persons with different learning styles in a group enhances the learning process (Senge, 1990). Compared to learning on an individual basis, learning in a group is likely to enhance learning, especially when all learning styles are present and learning involves the closing of the learning cycle. If, in a group, certain learning styles are missing, this can hamper the learning process. The nature of the farmer's

job, involving a lot of hands-on experience, facilitates divergent learning and accommodative learning. The task of the facilitator is to recognise this and create opportunities for reflection to close the learning cycle.

5.2.5 Pratt's five perspectives on adult teaching

Whereas the previous theories are based on general theories on adult learning, the following section places the vision of the teacher (facilitator) in a key position. The facilitator in study groups occupies this key position. His vision on teaching determines to a large extent what is learned and how the farmer learns it. In Pratt's General Model of Teaching (Figure 5.1), which gives his perspectives on higher and adult education, the teacher's notion of learners, content, context, and ideals occupy a central position. These notions both enable and limit what teachers think about their own teaching and the teaching of others (Pratt, 1998). Pratt (1998) gives five perspectives on adult and higher education derived from this. A teaching style is dependent on the emphasis that is placed on the different parts of the model. Central to these perspectives are key beliefs and the role of the teacher. The five perspectives are presented in Table 5.2.

Figure 5.1. A general model of teaching according to Pratt (1998)

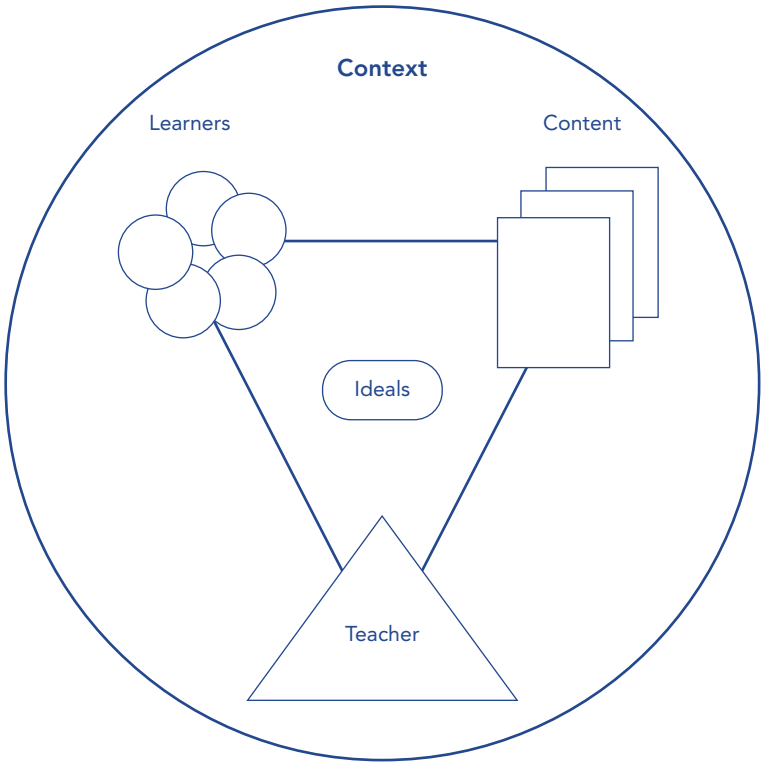

Table 5.2
Major characteristics of learning perspectives according to (Pratt, 1998)

Perspective on teaching	Key beliefs	Role of teacher
Transmission perspective	Stable body of knowledge and/or procedure that must be reproduced by the learners	Content expert and skilled presenter
Apprenticeship perspective	Expert knowledge is best learned in contexts of application and practice. To abstract the knowledge and wisdom from practice is to drain it of its most essential qualities.	Role model and coach
Developmental perspective	The potential emergence of increasingly complex and sophisticated forms of thought related to one's content, discipline, or practice. The key to learning (and teaching) lies in finding effective "bridges" between present and desired ways of thinking.	Guide and co-inquirer
Nurturing perspective	Based on the belief in a critical relationship between learners' self-concept and learning.	Facilitator and friend
Social reform perspective	Dominant feature is an explicit well-articulated ideal. The ideals and ideology have emerged to a position of dominance and centrality.	Advocate of an ideal

In the situation of farmers' study groups, all five perspectives might apply. The key beliefs of the facilitator determine his teaching role in the group and what perspective serves as the basis for his teaching. If the facilitator puts the emphasis on the content (transmission perspective) it is likely that the study group members will act in a passive way, by just absorbing the knowledge. If the existing knowledge of the farmer is used as a starting point (developmental perspective) this knowledge will determine how the learning will proceed. When the needs of the learner are given a central place (nurturing perspective) the most active involvement by the farmers with the content will be achieved. In this last perspective, however, it is unclear initially what the farmer is expected to learn during the process. In this nurturing perspective, participants determine the expected outcomes and evaluate whether these outcomes are satisfactory, whereas in the other perspectives predetermined outcomes can be formulated before the learning process is initiated.

5.2.6 Extension paradigms

Since the start of extension, four prominent paradigms have emerged. These are (1) transfer of technology, (2) problem-solving, (3) education, and (4) human development. Since education has already been discussed in the previous section, we will limit ourselves to the other three paradigms.

5.2.6.1 Transfer of Technology

Transfer of Technology (TOT) is described as a pro-actively changing behaviour in the form of the adoption of new (externally developed, already available and tested) technology or management practice by providing information, opportunity, and persuasion (Coutts, 1994). It is a one-way model from science to practice, in which the user is the passive receiver. Knowledge is, in this view, seen as a product that flows from science to user (Woerkum and Meegeren, 1999). It is a linear model of (1) knowledge development, (2) transmission, and then (3) use.

This TOT model has received considerable criticism (see e.g. Engel, 1997, Röling and Jong, 1998, Woerkum and Meegeren, 1999). The main focus of this criticism is that the technology is not adapted to, or suitable for, the specific situation that an individual farmer is confronted with. It serves the promotion of standardised, prescribed, single-component technologies, and is aimed at straightforward adoption of these technologies. However, it does not serve to facilitate holistic change processes at the levels of farmer, farm, group ecosystem, and institution (van de Fliert, 2003). Another point of criticism is that TOT tends to reinforce social inequalities, since the producers benefiting most from the adoption process have generally been better endowed than others in material, intellectual, and social resources (Röling and Jong, 1998). A third point of criticism is of the top-down approach that ignores the knowledge, skills, and adaptive abilities of farmers themselves (Black, 2000). Despite all these points of criticism, TOT is still an often-used extension paradigm (Coutts, 1994).

5.2.6.2 Problem solving

An important part of extension work is problem-solving. Extension has an advisory/ consultancy function to assist individuals in finding solutions to technological or management problems. Problem-solving is, in farmers' practice, an often-used format for knowledge transfer. Based on their field of expertise, individual advisors (Hogeveen *et al.*, 1992) or groups of advisors (Weinand and Conlin, 2003), Peters *et al.*, (1994a) give advice to the farmer. Since consultants have specific specialist knowledge, the farmer has to be competent enough to decide what type of expertise he needs and which consultant can help him in solving the problem (Weinand and Conlin, 2003).

The effectiveness of consultancy varies. Several studies show that during the consultancy phase, the results of farms participating in consultancy projects outperform the results of non-participating farms. However, once the project is completed and the consultancy stopped, project farms did not continue to outperform other farms (Hogeveen *et al.*, 1992, Peters *et al.*, 1994b). Therefore, Hogeveen *et al* (1992) advise continuing the consultancy relationship. However, if the farmer continues to depend on the same type of advice over time, the internalisation of the knowledge fails, and the organisation experiences a knowledge management problem. For the same kind of information, the organisation stays dependent on external knowledge supply (Kakabadse *et al.*, 2001).

It is of strategic importance for the farmer to decide which knowledge has to be internalised and on for what knowledge to stay dependent on the consultant. Farmers often outsource knowledge on financial, accountancy, and legal matters.

When internalisation of knowledge occurs, the consultant is constantly being challenged to answer new questions the farmer has. The consultant can become the sparring-partner of the farmer. His role is then not only giving advice, but also one of challenging the farmer to formulate other, or new, kinds of questions.

5.2.6.3 Human Development

As situations become more complex, increased emphasis should be placed on empowering people and groups to engage them in on-going processes of experimentation, learning, and development. In human development, extension is a means to facilitate and stimulate individuals or groups to take the initiative in problem definition and in seeking solutions to individual and societal concerns or opportunities (Coutts, 1994). This extension paradigm consists of participatory 'bottom-up' approaches. Many agricultural extension programmes created from the 1970s are based on principles of participation, adult learning, and action learning. The increasing complexity of agricultural and environmental problems, the uncertainty associated with recommendations, and a need for local learning communities were reasons for adopting a participatory approach (Frost, 2000).

Participatory approaches are characterised by experimentation, learning, and action by the participants in the groups. Black (2000) gives an overview of the claimed advantages of, and criticism on, these participatory bottom-up approaches (Black, 2000). Participatory approaches are claimed to have the following advantages: (a) It is a recognition of local ways of knowing and draws upon accumulated knowledge and experience on the farm. (b) It supports local innovation and adaptation. (c) It involves stakeholders in research that has a financial and/or social impact on the farming community. (d) It acknowledges the value of farmers sharing ideas and information among themselves rather than relying on direction or advice from government agencies or other professionals. (e) It encourages producer 'ownership' both of problems and solutions. And, (f) it make use of the group process for learning (Black, 2000, Martin and Sherington, 1997).

Criticisms of participatory approaches focus on a number of aspects. These include: (a) problems may not be recognised by the farmers because they are new to the farmers (e.g. environmental problems). In these situations, approaches other than participation must be added. (b) A 'tyranny' of consensus may prevail, thereby possibly rejecting good ideas. And, (c) dissemination of knowledge developed in these groups may be limited to the group itself (Black, 2000).

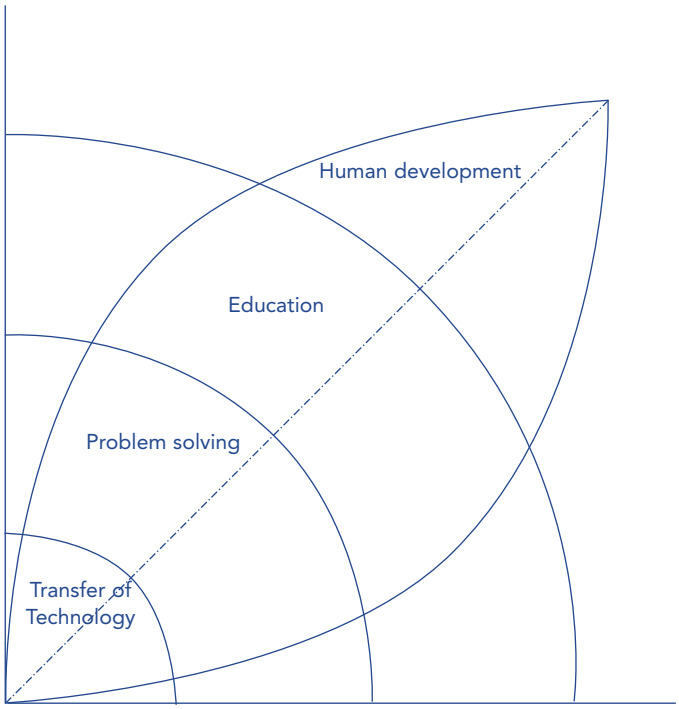

Figure 5.2. The extension spectrum according to Coutts (1994)

In conclusion, top-down approaches and participatory approaches can be seen as two ends of a spectrum. As shown in Figure 5.2, Coutts (1994) sees the described paradigms as complementary. In study groups, all four extension paradigms are used. For each topic that is addressed, the group and the facilitator have to decide which is the most appropriate paradigm to use. For a complex problem, a participatory method can be the most appropriate method. During the participatory process, the problem may be divided into a number of sub-problems that might be solved by one paradigm, or a combination of paradigms.

5.2.7 Group facilitator

The facilitator in a study group plays a key role, in which he has three tasks. The first task is to facilitate the group process, the second is to teach, and the third involves sharing expertise on technical aspects of farming.

The role of the facilitator depends heavily on his vision on farmer's learning and on his vision concerning the presented extension paradigms. A facilitator is someone who brings people together (networking) and acts as a catalyst, and/or directs processes of learning and exchange, either in general or concerning a specific problem. The main task is to empower the participant and to support the peer teaching process. To enable this process to take place, a facilitator has to be able to effectively manage the group process. In the view of Leeuwis

and Van den Ban (2004), the facilitator needs to play a role in three areas. He has to oversee and monitor the learning process. The second function is to intervene in the learning process when certain tasks are overlooked, or conducted in a non-satisfying or non-productive way. And, thirdly, collecting and connecting relevant knowledge and actors (Leeuwis and Van den Ban, 2004). To function adequately, a facilitator has to have some form of seniority and credibility within the group. This credibility builds upon the knowledge of the topic at hand (Vanclay, 2004). Having access to a wider network is very important for the facilitator. It is extremely helpful when the group facilitator has a specific expertise in the subject of discussion.

5.3 Description of the 'Innovative Entrepreneurship' project

As chapter 3 shows, for Dutch dairy farmers, strategic competencies are an important factor contributing to entrepreneurial success. To improve the strategic competencies of a group of Dutch dairy farmers, a project was designed and executed in the period 2001-2004. In study groups, participants made and discussed various issues related to entrepreneurship and the farm's strategic plan. The key parts of the project will be described briefly. Figure 5.1 will serve as a conceptual framework for the description.

5.3.1 Learners

The participants were all full-time farmers who had (at least partial) ownership of the farm they were working at. Participants were members of existing study groups. These study groups typically consisted of six to eight dairy farmers supported by a facilitator. The participants had been involved in these study groups for a longer period of time. The group members meet regularly on each other's farms and openly discuss each other's results. The focus of these groups is on practical aspects of farming in relation to product quality and animal health. Only recently, entrepreneurship has been added to the scope of the meetings. In this project, the participants met six to eight times in a time span of two winter seasons.

For farmers to be able to discuss aspects related to their entrepreneurship effectively, mutual trust has to exist among group members. Members have to be sure that their problems are being taken seriously, that all of the participants are willing to share their knowledge and experience, and that confidential information is not shared with non-group members.

5.3.2 Content

Material was developed to facilitate reflection, testing the farmer's opinion against peers, but also acquiring new skills that enable farmers to analyse and interpret their situation. The Strategic Management Concept of David (2001) served as the conceptual framework (figure 5.3). Assignments were developed for the separate parts of the strategic plan. The farmers were asked to prepare these assignments before coming to the group meetings.

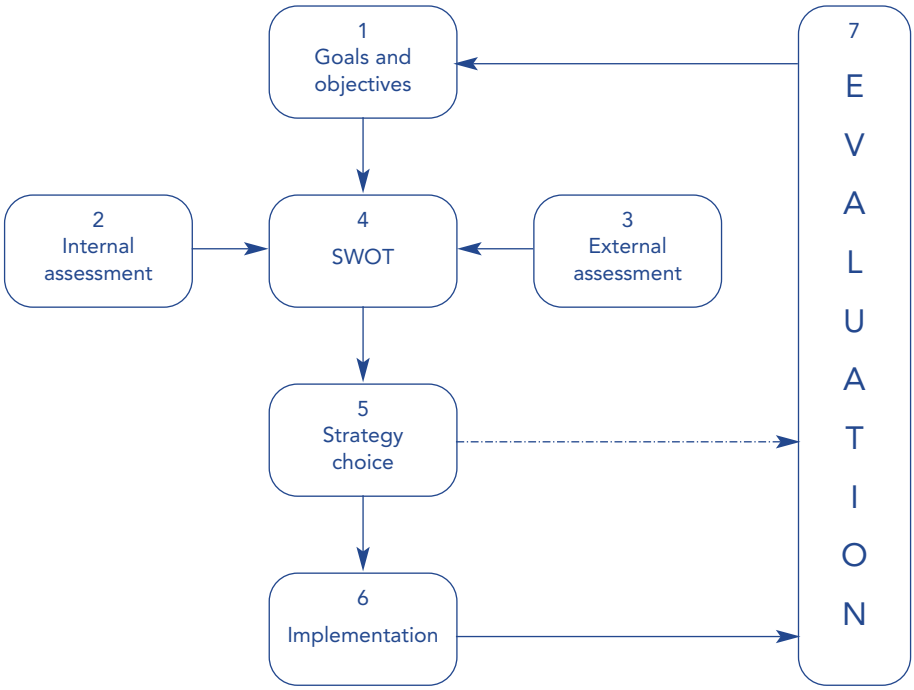

Figure 5.3.The Strategic management process (after David 2001)

The meetings were structured around the following subjects:

1. Goals and objectives. Personal goals and objectives support decisions to change the future of an enterprise (Frost, 2000). In this, the unique purpose and reason for the existence of the firm is described, and it is essential for formulating, implementing, and evaluating strategy [David, 2001 #4]. Therefore, this was the first subject of the group meetings.
2. Internal assessment. An important component of the entrepreneurial competencies of farmers is critical assessment of the farm's situation. The purpose of the internal audit is to identify critical success factors, consisting of both strengths and weaknesses of the firm. Gaining insight into the relation between the financial and technical results of the farm was part of this assessment.
3. External assessment. The purpose of an external audit is to develop a finite list of opportunities that could benefit the firm, and of threats that should be avoided. It is aimed at identifying key variables that offer actionable responses [David, 2001 #4].
4. The SWOT analysis. The SWOT (Strength-Weaknesses-Opportunities-Threats) analysis combines the previous three stages. It is an important matching tool that can be helpful in generating alternative strategies. These strategies can (a) use strengths to take advantage of opportunities, (b) overcome weaknesses by taking advantage of opportunities, (c) use strengths to avoid threats, or (d) minimise weaknesses and avoid threats [David, 2001 #4].

5. Strategy choice. The SWOT analysis gives a number of possible strategies that a farmer could pursue. From these possible strategies, the most appealing strategies should be chosen.
6. Implementation. After the strategies have been chosen, they have to be implemented. This usually involves changing management and daily farming practices. For this implementation, detailed plans have to be made. Based on the principles of the Balanced Score Card (Kaplan and Norton, 2000, Kaplan and Norton, 2001) the strategy is translated into specific topics related to financial perspectives, production perspectives, customer perspectives, and the learning and growth perspectives. For all these four perspectives, the following elements are assessed: objectives that the farmer wants to establish, the measures he wants to use to evaluate progress, the targets he wants to achieve, and the initiatives that have to be undertaken to implement the strategy.
7. Evaluation. Evaluation is something that occurs throughout the whole process. Based on the goals a farmer wants to establish, and the measures defined in stage 6, a constant evaluation of the processes takes place.

Although this may seem a strict curriculum, the purpose of these assignments was to create a framework and to serve as a starting point to guide the discussion.

5.3.3 Teacher

The task of the group facilitator in this project is to present and, if necessary, to clarify the assignments, and to facilitate interaction among the group members. The different roles of a group facilitator are already discussed before. In study groups, two communication strategies can be applied. In advisory communication, the expertise of a study group advisor becomes available for all participants. However, the most important feature of study groups is horizontal knowledge exchange (Leeuwis and Van den Ban, 2004). In this project, the learner was placed in a central position. The role of facilitator has to be maintained as long as possible and the facilitator must switch to the role of teacher or expert only when it is absolutely necessary.

5.3.4 Context

The business environment for farmers in the European Union (EU) is becoming more and more complex. Increased interest by the general public and consumers in the food market, combined with changing legislation, impacts the individual farm. Policy changes in the EU, for example the Common Agricultural Policy (CAP), will change the working conditions of the farmer even more. Dairy farmers will be affected by the changed policy.

Participating in study groups enables farmers to evaluate the impact of a changed business environment for their own farms. Originating from the same region helps to develop, discuss, and evaluate possible strategies for change among peers.

5.3.5 Ideals

The organisations (the Northern Dutch Farmers Organisation and the J. Mesdag Fund) that were funding the project were looking at ways to enable farmers to stay in business. The aim of the project was to empower farmers to develop and implement their own strategic plan as a way of accomplishing personal and business goals. They have to acquire competencies that make them better decision-makers and entrepreneurs.

The intention of the funding organisations was that within the farmers' own set of qualifications, assets, and restrictions, participants have to be able to think about the future of their firm. Reflecting on opinions and discussing them with peers is a vital part of this process. The vision of the funding organisations was that this project contributed to this process.

5.4 Discussion

Being an entrepreneur and gaining strategic competencies are complex issues requiring a high level of skills. Therefore, as Coutts, (1994) suggests, improving a farmer's strategic competencies calls for, using participatory approaches. Study groups offered possibilities for such approaches in the project described. In this discussion, we will reflect upon the learning process in these groups. We will also discuss the possibilities for evaluating the project in which study groups are used.

5.4.1 The learning process in the project

During the group meetings, participants analysed their situation, and developed and evaluated plans. Much emphasis was placed on their sense of reality and the feasibility of implementation. This led to constructive learning (Senge, 1990). New knowledge related to entrepreneurial competencies was glued onto existing practise related to management and craftsmanship. Having to produce in a similar business environment, already having a common history as a group, knowing each other's farms, and having collective experiences helped to facilitate this (contextual learning). However, when a large number of new subjects or a large amount of new knowledge was introduced to the groups, it was difficult for the participants to extensively reflect on the topics discussed. This made it difficult to initiate a reflective learning process during the group discussions. The time intervals (4-6 weeks) between group meetings gave farmers the opportunity to reflect on the issues that had been discussed during the meetings.

The group facilitator regularly fell into the trap of being a teacher or an expert, whereas the facilitator role would have been more appropriate. There are several reasons for this. The first reason has to do with the fact that group facilitators had a background in agricultural science but lacked training in the communicative process. Communicative skills were mainly gained through trial and error. It turned out that it is relatively easier to be a teacher than to be a facilitator. In addition, group facilitators are used to a certain style of working within study groups. This is mainly acting as a teacher and an expert, rather than as a facilitator. A second reason is that several of the groups had a history of working with non-participatory

paradigms. This made it difficult to introduce participatory methods into these groups. The members of the group are more or less primed in a 'consumer mode'. An often-heard remark in these groups was 'You're the expert, just tell us how it should be'. A third reason was that being in the teacher 'mode' makes it easier to control the process in the groups. It is easier to accomplish (external) defined targets and it is easier to keep to the safe teacher's field of expertise. The consequence of this was that not all of the potential benefits of the participatory approach could be used. At the end of the process, farmers were not yet fully capable of internalising the new knowledge.

There is a possible conflict between participatory approaches and the increased concern with monitoring and evaluation (Murray, 2000). In evaluating the project, three stakeholders can be distinguished: the funding organisation, the developers and instructors of the material, and the participants of the study groups. As is the case in many projects, the cascade of events was as follows: a project was designed, funding was arranged, and when this was done, potential participants were approached. It is very important for the funding organisations to have insight into the expected outcomes of a programme. These expected outcomes then form the point of reference for evaluation. Participants, however, might have different reasons for participating in study groups. In evaluating the success of the programme, these reasons serve as a frame of reference for them. For example, the funding organisation and the developers see a need for change and want to use this change as a parameter for the success of the process. However, the need for change varied among the participants. Among other reasons, farm and family life cycle influenced the participants' vision on the subject. For example, if a young farmer has just taken over the farm and is suffering under a heavy financial burden, he will be somewhat reluctant to make innovative plans for the foreseeable future. Or farmers might hold the opinion that their future will be a continuation of their history. They just keep doing the same things they have been doing up till now.

5.5 Conclusions and recommendations

Much of the literature on adult education builds on two conceptions. First the conception of learners as self-directed and autonomous; and second, a conception of the teacher as facilitator of learning rather than presenter of content. Pratt (1998) notices that, in practice, these two conceptions are both heavily challenged. Also, in this project it was difficult to give credit to these conceptions. In the designing and funding phases of participatory projects, enough freedom has to be built into the project design to enable the participants to direct the design and process of the project.

Expected results of participatory approaches can, by definition, not be predetermined by funding organisations. Introducing participatory approaches requires trust by all parties involved in the process. Regular communication with stakeholders on the direction of the project is crucial if unexpected outcomes are to be avoided.

The facilitator's role is vital for a project in which study groups are used as a means of generating and acquiring knowledge by farmers. Training them in communication skills facilitates their role. Effective learning in study groups involves the use of all the extension paradigms. Transfer of technology, problem-solving, and education have to support participatory approaches. Training facilitators in when and how to use these different

paradigms is crucial. In addition to a thorough education in agricultural science, potential study group facilitators need to have some support in the use of participatory approaches.

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CHAPTER 6

Evaluation of a training programme designed to improve the entrepreneurial competencies of Dutch dairy farmers

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Abstract

Due to all kinds of external and internal changes that have taken place on the dairy farm in recent years, entrepreneurial competencies are becoming increasingly important for dairy farmers. Investigating the possibilities for improving these competencies by means of a training programme is therefore an extremely worthwhile exercise. First the relation between the entrepreneurial competencies and farmer and farm characteristics was determined. To improve the entrepreneurial competencies of the farmer, a training programme was designed and given. Based on specific characteristics, the influence of this training programme on farmers' and farm characteristics, entrepreneurial competencies and the possibility to distinguish between farmers who are likely to benefit from them and those who are not was investigated.

A case-control study was designed in which the competencies of participating farmers were measured by means of a questionnaire at the start and at the end of the study. Two groups of full-time Dutch dairy farmers were selected to participate in the study. One group (n= 75) participated in the training programme, which consisted of eight sessions. In these sessions, groups of farmers discussed aspects related to entrepreneurial competencies. The second group (n=180) served as a control group. Results indicate a positive relation between the entrepreneurial competencies and farm size and success perception of the participants. A positive effect of the training programme on entrepreneurial competencies was observed. Especially strategic competencies and opportunity competencies increased. It was not possible to predetermine a target group.

This research indicates that the concept of competencies can provide insights into the entrepreneurial behaviour of farmers, and gives a means to evaluate an intervention programme aimed at developing entrepreneurial competencies. The research method described is a good way of identifying possible effects of an intervention. It also shows that entrepreneurial competencies have a positive relation with the farm size of dairy farmers in the Netherlands. The results of the study presented indicate that it is possible to improve entrepreneurial competencies of dairy farmers through developing and discussing the farmers' strategic plans in study groups. On average, all participants benefited from the programme, irrespective of farmer or farm characteristics or the level of competencies possessed at the start of the programme.

6.1 Introduction

Until recently, dairy farming was an enterprise that was run in reasonably stable surroundings. This situation is expected to in change the very near future due to internal and external changes. One of the external changes is the EU policy with its less direct price support for milk and beef, which is expected to have a negative impact on farmers' income (Burrell, 2004). Additionally, there is a shift of attention to food safety and food quality, environment, landscape, and the rural environment. Internal changes on the farm, like increasing farm size, also set new challenges for the farmer. The farm size of dairy farms has doubled since the quota system was introduced in the Netherlands in 1984 ((LEI-DLO), 2002) and farms are still growing. It is expected that the dairy farmer's traditional skills and competencies

such as craftsman and manager will not suffice to cope with the changed environment, Consequently, the entrepreneurial skills of the farmer need to be enhanced.

Insight into concepts and characteristics that relate to strategic and entrepreneurial behaviour of dairy farmers and successful entrepreneurship can result in tools that can help farmers to establish their long-term targets and be successful (Harling, 1992). In this respect, the concept of entrepreneurial competencies can be useful when trying to understand differences in entrepreneurial behaviour of farmers. Competencies are the ability to perform specific tasks; they are the underlying knowledge, skills, abilities, personality traits, and know-how that result in effective task fulfilment (Langbert, 2000; Mulder, 2001). They are (a) context-bound, (b) subject to change, (c) connected to activities and tasks, (d) and interrelated (Stoof *et al.*, 2002). Improving competencies can be a way to improve entrepreneurial success (Chapter 3). Areas of entrepreneurial competencies that are identified in literature are related to strategic planning and organising the firm, searching for new opportunities, and building and maintaining internal and external relationships (Man *et al.*, 2002). For entrepreneurs working in the primary dairy sector, the entrepreneurial competencies strategic competencies, opportunity competencies and information-seeking competencies, and relationship competencies particularly are related to entrepreneurial success (Chapter 3). A brief description of these competencies now follows.

Strategic competencies relate to setting, evaluating, and implementing the strategies of the enterprise (Man *et al.*, 2002). Such competencies refer to strategic management as described by David (2001) and involve (1) the defining of a farm's mission, (2) transferring this mission into objectives, after conducting an internal and external analysis, (3) formulating a strategy to achieve these objectives, (4) implementing and evaluating the strategy. Harling, (1992) found that this concept was applicable to agriculture.

Opportunity competencies refer to the ability to scan the environment for business opportunities. They are needed to recognise and develop market opportunities through various means. Underlying competencies are general awareness, international orientation, and market orientation (Man *et al*., 2002). Information-seeking competencies are an important part of opportunity competencies. To make timely and adequate decisions, entrepreneurs have to be able to search for and find the relevant information on the important factors related to the decisions (Shanteau, 1992). In the strategy formulation as described by David (2001), these competencies are crucial for making an external assessment.

The third group of competencies, relationship competencies, relate to person-to-person-based interactions or individual-to-group-based interactions, e.g., building a context of co-operation and trust, using contracts and connections, persuasive ability, and communication and interpersonal skills (Man *et al.*, 2002). Social-communicative skills and normative-cultural competencies are vital if persons wish to innovate and change (van Woerkum *et al*., 1999). Relationship competencies are an essential part of—and a prerequisite for—the other entrepreneurial competencies. For example, having a large network of peers, advisers, and other contacts facilitates the discovery of new opportunities. Acquiring additional financial capital to implement a strategy (strategic competencies) is also easier if a good relationship already exists with potential suppliers of financial funds.

Competencies are changeable and learnable, allowing intervention in terms of teaching (Onstenk, 2001; Cheetham and Chivers, 2001; Mulder, 2001). Therefore, once identified, entrepreneurial competencies can be improved, thus enabling farmers to improve their

entrepreneurial behaviour. This can lead to more successful farming. Although the concept of entrepreneurial competencies is gaining widespread attention at the moment (see e.g. (Man *et al.*, 2002) for an overview), the relationship of competencies with entrepreneurial behaviour and enterprise characteristics is as yet unclear.

A two-year training programme has been developed and implemented to investigate the extent to which it is possible to improve entrepreneurial competencies. In this training programme, farmers developed and discussed their entrepreneurial strategy in study groups. The farmers developed, used, and improved their strategic, opportunity and information-seeking competencies by making a strategic management plan. Programmes to improve entrepreneurial competencies are intensive and time-consuming for the participants and facilitators. They involve large investments in time and money on the part of all parties. The effectiveness of such training programmes can be improved if it is possible to pre-select participants who are most likely to benefit from the programme.

Extension and training programmes are often used in agriculture to support farmers. One of the methods of doing this is the agricultural study group. These study groups of farmers are a vital part of the Dutch agricultural knowledge and information system. The focus of this paper is to investigate the possibilities of using training programmes with farmers participating in study groups to strengthen the entrepreneurial skills of the dairy farmer.

The objective of this study is to evaluate the training programme designed to improve the entrepreneurial competencies of farmers. In order to use the concept of competencies in the field of entrepreneurship, it is necessary to measure entrepreneurial competencies and competencies development in a reliable and valid way. Additionally, the relationship of these competencies with entrepreneurial behaviour and firm characteristics has to be clear. Therefore, the first research question in this research is (1) how do entrepreneurial competencies and entrepreneurial success relate to actual observable farmers' and farm characteristics? An insight into the impact of the training programme can be given by answering research questions two and three: (2) Did the training programme influence entrepreneurial competencies and farm characteristics? And, (3) is it possible to distinguish between farmers who are likely to benefit from them and those who are not, on the basis of specific characteristics i.e. would it be useful to define a 'target group' prior to starting such a training programme?

6.2 Materials and methods

6.2.1 Materials

6.2.1.1 Training programme design and participating farmers

To investigate the impact of a 2-year training programme designed to improve entrepreneurial competencies in dairy farmers, two groups of farmers were selected to conduct a case-control analysis. Participants were members of study groups and all living in the north of the Netherlands. Thirteen study groups were asked to participate actively in the training programme (112 farmers), the initial project group (P group). A comparable group of farmers was selected to participate in a control group (C group). The C group consisted of

study-group members also living in the north of the Netherlands (337 farmers). These farmers were selected from the database of the Northern Dutch Farmers' Organisation (NLTO).

Since it was predetermined beforehand which farmers from which study groups were placed in the P group and which in the C group, the study design was a quasi-experimental non-equivalent design (Verstegen *et al.*, 1995). The term "non-equivalent" denotes that no random procedure was used to assign farmers to either the P group or the C group. Figure 6.1 shows the research design.

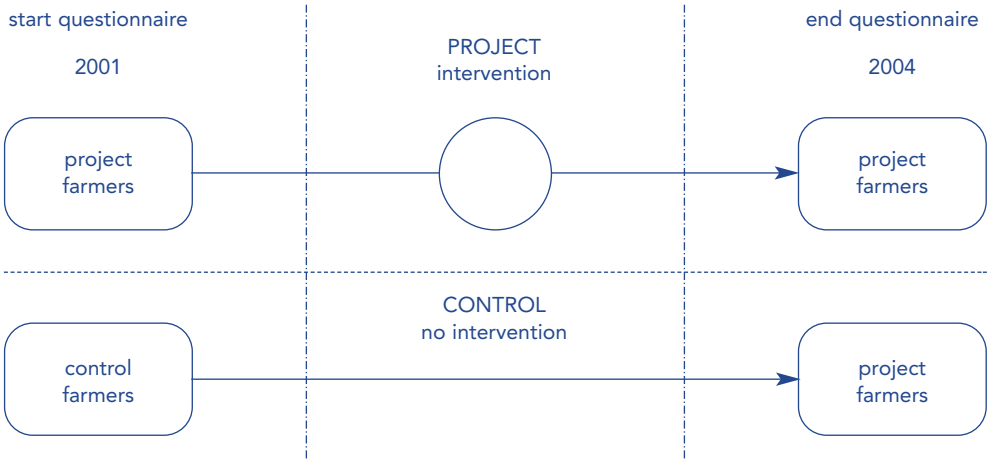

Figure 6.1 The research design

The participants in the P and C groups are all full-time farmers, who either partly or wholly own the farm at which they are working. They farm on family farms (as almost all dairy farmers in the Netherlands do) in which they are the predominant or sole labour force.

The study groups from which the participants of the P and C group were chosen typically consist of six to eight dairy farmers supported by a facilitator. The group members meet regularly (once a month in the winter season) at each other's farms and discuss each other's results. The focus of the meetings is on the management aspect of farming. The participants had been involved in study groups before the training programme started and continued to participate in study groups on the management aspects of farming during the training programme.

Members of the P group participated in the extra training programme meetings related to entrepreneurship, whereas the members of the C group did not. The composition of the original groups remained unchanged for the training programme. For the P group these meetings were additional to the normal study group meetings. The training programme meetings were usually combined with the meetings on management aspects of farming. This combination resulted in all group members attending during the training programme meetings. The participants of the P group met six to eight times in a period spanning two winter seasons to discuss the items related to entrepreneurship.

The strategic management plan served as a general framework (David, 2001) for the meetings. A description of the issues addressed in these meeting is described in chapter 5. Each meeting lasted some four hours, during which time a different part of the strategic plan was discussed. Assignments that the participants prepared beforehand served as a guideline for the discussion.

The impact of the intervention was assessed by means of an identical questionnaire at the start (t=0) and at the end of the study (t=1). Since the programme covered a time span of two years and the second questionnaire was taken six months after the training programme had ended, t=1 is two and a half years after t=0. All the potential participants of the P group (n=112) had to fill out the questionnaire before the start of the training programme. To participate in the C group, 337 farmers were approached, 157 of whom responded to the first questionnaire. The results of 14 of these respondents could not be used, as they were either no longer involved in dairy farming, were not the owner of the farm, or because the questionnaire was not completely filled out or were anonymous. The original C group therefore consisted of 143 persons.

The second questionnaire was taken at least six months after the last meeting. For this questionnaire, the 255 usable respondents to the 1st questionnaire were contacted by mail. Ten groups of the original thirteen study groups actually participated in the P group (75 farmers). Of the three groups that did not participate, one group stopped with all the study group activities (management and entrepreneurial). In two groups, some farmers did not want to participate in the training programme. In these groups the resulting group size was too small to allow participation. The farmers from these three groups were asked to be part of the C group. As a result there were 75 participants in the P group and 180 in the C group.

All the 255 initial respondents (75 P and 180 C) were asked to fill out a questionnaire that was identical to the questionnaire they had filled out the first time. Three weeks later, a reminder was sent to non-respondents. The total number of respondents was 176, giving a response rate of 70 percent, which is relatively high given this type of research (Pennings *et al.*, 2002; Yammarino *et al.*, 1991). Of these responses, 12 could not be used. The reasons were termination of the business, death of the initial respondent, or a different person replying to the first and 2nd questionnaires. This resulted in 164 usable questionnaires, which were used in the further analysis. The number of usable respondents in the P group was 50. The number of usable respondents in the C group was 114.

6.2.1.2 Questionnaire

The questionnaire consisted of two parts. The first part asked for farmers' and farm characteristics and included background demographic information such as the size of the enterprise and the age of the farmer. In the second part, questions were asked relating to entrepreneurial competencies and success. This was done in the form of statements that the respondents were asked to assess. Statements were grouped into different clusters. There were statements about (1) their reasons for becoming a farmer, (2) their general objectives as a farmer, (3) their desired way of farming, (4) their perception of the environment, and (5) their evaluation of the entrepreneurial success. With the exception of the questions for background information, all the statements were closed, Likert-type scaled, statements. Farmers could add comments or other aspects. For a full description of the questionnaire see chapter 2 (App.B).

6.2.2 Methods

6.2.1.2 Indicators

Data from the questionnaires were entered into a database. Variables were selected from the questionnaires to be included in the analysis to serve as indicators for farm and farmer characteristics, and entrepreneurial competencies and success. As indicators of entrepreneurial competencies and indicators of entrepreneurial success, summated scales were used to reduce the number of variables in the analysis. Therefore, conceptually related variables from the questionnaire were combined into summated scales, which were then used in the analysis instead of the original variables.

Table 6.1 gives the variables that were combined into these summated scales.

Table 6.1
Entrepreneurial competencies and variables used to create summated scales.

Description	Variables from the questionnaire	Indicator
Strategic competencies related to:		
setting a strategy	• It is clear to me where my farm has to be within 5 years • The targets to go for on my farm are clear to me	STR_SET
implementing a strategy	• I have sufficient possibilities for monitoring the production process • My objectives are in clear plans that are written on paper	STR_IMP
evaluating a strategy	• I monitor my production targets by analysing my farm results • The success of my business is the result of good planning	STR_EVA
Opportunity competencies related to:		
policy	• Policy towards nature • Policy towards spatial planning • Increasing legislation	OPP_POL
consumers' concern	• Consumers concern for the environment • Consumer's concern for food safety • Consumers concern for animal welfare	OPP_CON
threats of markets	• Image of the product • Ceasing of internal borders within the EU	OPP_MAR
Information-seeking competencies	• I'm thoroughly informed before I make important decisions • I ask for a lot of advice when I need to make important decisions • I use the Internet to find information for my farm	STR_INF
Relationship competencies	• I invite visitors to my farm because contact with the general public is important to me • The way my fellow-farmers think about my farm is very important for me • I regularly negotiate with suppliers on the conditions we do business	STR_REL
Entrepreneurial success	• How much do you like being an entrepreneur? • When you look back over the last 5 years, how successful do you consider yourself?	ENT_SUC

For these variables, the scores on the underlying variables were added up and divided by the number of variables. Cronbach's Alpha was used to test the scale-validity of these

summated scales. For all the summated scales, the Cronbach's Alpha was higher than 0.70, which makes these summated scales appropriate for use in further analysis (Hair *et al*., 1998).

Strategic competencies were split into three sub-groups: (a) competencies related to setting a strategy (STR_SET), (b) competencies related to implementing a strategy (STR_IMP), and (c) competencies related to evaluating a strategy (STR_EVA)(David, 2001). Opportunity competencies were also split into four sub-groups: (a) competencies related to evaluating the impact of policy measures as an opportunity or a threat (OPP_POL), (b) competencies related to evaluating consumers' behaviour (OPP_CON), (c) competencies related to evaluating general market developments (OPP_MAR)(David, 2001), and (d) information seeking (STR_INF)(Man *et al.*, 2002). Relationship (STR_REL) competencies and entrepreneurial success (ENT_SUC) were not sub-divided.

6.2.2.2 Data analysis

Analysis was performed using a statistical analysis programme (SPSS). To investigate the relation between entrepreneurial competencies and farmer and farm characteristics, a two-tailed bi-variate correlation between indicators of entrepreneurial competencies and success perception on the one hand, and indicators for farm and farmer characteristics on the other hand was calculated. Since most of the variables were measured on an ordinal scale, significance was tested using the Spearman's rho Correlation test (SPSS, 1999).

To evaluate the level of the entrepreneurial competencies and success, the independent samples T-test was used to test for differences between P and C group at t=0 (at the start of the training programme) and t=1(after training programme). To determine the impact of the training programme while controlling for the value of the indicators at t=0, the following model (Eq1) was used (Larsen, 2004):

$$y_{ij} = \beta_0 + \beta_1 x_i + \beta_2 z_j + \beta_3 x_i * z_j + \varepsilon_{ij} \qquad \text{(Eq. 1)}$$

Where:
y_{ij} = indicator value of the farmer i in class j after the training programme
x_i = indicator value of the farmer i in class j before the training programme
z_j = class (zj =1 for P group and zj= 0 for C group)
$x_i * z_j$ = interaction term
ε_{ij} = error term

An intervention effect can represent itself by the fact that β_2 and/or β_3 are significantly different from zero. β_1 gives insight into the relation between the value of the indicator at t=0 and value at t=1. β_2 indicates a difference in the intercept of the regression lines of the P and C groups. The intercept for the C group is β_0, whereas the intercept for the P group is $(\beta_0 + \beta_2)$. β_3 indicates a difference in the slope of the regression lines between the P and C groups. The slope for the C group is β_1, whereas for the P group the slope is $\beta_1 + \beta_3$. If the intercept of the two groups is different and the slope of the lines is not different (β_3=0) this indicates that the lines are parallel. If β_3 is significantly different from zero, then the change in the value of the indicator at t=1 per unit of change of the indicator at t=0, is different between P and C group, i.e. the lines are not parallel.

Analysis was performed using SPSS (SPSS, 1999). The assumptions that underlie multiple regression analysis were checked, including (a) linearity of the phenomenon, (b) constant variance of the error term, (c) independence of the error term, and (d) normality of the error term distribution (Hair *et al.*, 1998). To determine whether it is possible to distinguish between farmers who benefit from the programme and those who will not on the basis of specific characteristics, a multiple step-wise regression analysis was performed. It was investigated whether the value of the different indicators at t=0 could predict the value of each indicator at t=1. Because the number of observations is too small to include all the independent indicators at once in each analysis, the independent indicators were pre-selected for each analysis. This was done based on the correlation coefficient of the different independent variables with the dependent variables. A two-tailed bivariate correlation test, on the P and C group separately, was performed. Because of the ordinal scale of most of the indicators significance was tested with the Spearman test (SPSS, 1999). Those indicators that had significant correlations ($p<0.1$) in either P group or the C group were included in the step-wise regression model. To investigate the impact of the intervention z_j, for each indicator x_i in the model, an interaction term xi $*z_j$ was included in the model (Eq 2).The resulting model was:

$$y_{ijk} = \beta_0 + \beta_2 z_j + \sum_{i=1}^{i=m} (\beta_{1i} x_{ik} + \beta_3 x_{ik} * z_j) + \varepsilon_{ijk} \qquad \text{(Eq. 2)}$$

Where:

y_{ijk} = indicator value of the farmer *i* in class *j* after the training programme
x_{ik} = indicator value of the farmer *i* in class *j* before the training programme
z_j = class (z_j =1 for P group and z_j = 0 for C group)
$x_{ik} * z_j$ = interaction term
ε_{ijk} = error term
x_k = indicator value of the farmer *i* at t=0
$\sum_{i=1}^{i=m}$ = sum of indicators *i* at t=0 included in the regression analysis

The interpretation of the model coefficients is similar to model 1.
A list-wise exclusion of missing data was used in all the analysis of the data.

6.3 Results

6.3.1 Relation between entrepreneurial competencies, entrepreneurial success, and farmers' and farm characteristics

Table 6.2 shows the results of a two-tailed bivariate correlation test between the indicators of entrepreneurial competencies and entrepreneurial success, and farmers' and farm characteristics at the start of the training programme.

Table 6.2
Correlation between farmers' and farm characteristics and entrepreneurial competencies at the beginning of the training programme (t=0)

	Strategic competencies			Opportunity competencies			Relation-ship		Success
Farm characteristics	STR_SET[1]	STR_IMP	STR_EVA	OPP_POL	OPP_CON	OPP_MAR	SR_TINF	STR_REL	ENT_SUC
age of the farmer	-0.09	0.09	-0.12	-0.05	0.03	0.06	-0.08	-0.16 *	-0.07
# FTU[2]	0.10	0.13	0.09	-0.09	0.05	0.02	0.10	0.02	0.06
# cows/farm	0.23 **	0.16 *	0.06	0.05	0.18	0.12	0.18	0.01	0.17 *
Milk/cow/year (l.)	0.09	0.03	0.21 **	0.04	0.12	0.07	0.09	-0.09	0.08
Area grass and maize	0.24 **	0.20 **	0.04	0.03	0.20 **	0.16 *	0.01	0.03	0.14
Milk quota (l)	0.26 **	0.16 *	0.11	0.10	0.23 **	0.15	0.15	0.02	0.21 **

* Spearman's rho Correlation is significant at the 0.05 level (2-tailed).

** Spearman's rho Correlation is significant at the 0.01 level (2-tailed).

[1] For abbreviations see table 6.1.

[2] =FTU = fulltime labour units/farm

Most of the indicators for entrepreneurial competencies were positively related to farm size. Of the strategic competencies at t=0, STR_SET and STR_IMP have a positive correlation with farm size. This is shown by number of cows per farm, total area of grass and maize, and milk quota. STR_EVA has a positive correlation with the production per cow. Farmers with the highest scores on strategic competencies at t=0 were farming on larger farms and had a higher production per cow than those with lower scores.

For opportunity competencies, the indicator OPP_CON has a positive correlation ($p<0.05$) with farm size (total area of grass and maize, and milk quota). OPP_MAR has a positive correlation ($p<0.05$) with total area of grass and maize. Farmers seeing opportunities in consumers' behaviour had larger farms than those who perceived them as a threat. OPP_POL and STR_INF had no significant correlation with the investigated farm characteristics.

The indicator for relationship competencies, STR_REL, has a significant negative relation with age. The older the farmers are at the start of the programme the lower their scores on relationship competencies.

Entrepreneurial success perception, ENT_SUC, has a positive correlation with the number of cows per farm and milk quota. Farmers farming on larger farms considered themselves more successful than farmers farming on smaller farms.

6.3.2 The impact of the training programme

The second research question relates to determining the impact of the training programme. As a first step, the indicators for farm and farmers' characteristics and entrepreneurial competencies at t=0 (before training programme) and t=1(after training programme) of the P group and C group were compared. The results are presented in tables 6.3a and 6.3b.

Table 6.3 a
Farmers' and farm characteristics of the participating farms: differences between Project and Control group before and after the project

Participants in:		project (n=50)		control (n=114)		
		Mean	Std. Deviation	Mean	Std. Deviation	Sign[1]
Age of the farmer	t=0	41.84	9.2	38.82	7.63	**
# FTU2	t=0	1.67	0.60	1.71	0.74	
	t=1	1.64	0.54	1.61	0.61	
# cows/farm	t=0	93.40	33.03	76.72	37.08	**
	t=1	101.84	36.95	83.43	37.26	**
Milk/cow/year (l.)	t=0	8441.36	699.68	8426.18	828.68	
	t=1	8510.28	633.26	8477.63	815.63	
Area grass and maize	t=0	58.52	19.51	46.83	20.43	**
	t=1	61.56	21.03	50.39	21.77	**
Milk quota (l)	t=0	742692.12	248413.12	621352.63	304919.64	**
	t=1	833026.96	287271.01	689066.68	329709.72	**

[1] Sign ** P group and C group are sign different (p<0.05) in independent sample T-test

[2] FTU = full-time labour units/farm

As can be seen from table 6.3a, farmers in the P group were older at the start of the training programme and at both the start and end of the training programme their farms were larger than those of the control group. Also, the participants in both the P group and the C group increased their farm size on average during the training programme without changing the number of FTU. A possible effect of the intervention on the increase in farm size cannot be determined from this table.

As can be seen from table 6.3b, the scores on the indicators for strategic competencies at t=0 are high. For example STR_SET at t=0 in the training programme group had an average score of 4.12 (out of a maximum 5.00). These high scores limit the room for improvement and make it more difficult to show an intervention effect.

When looking at the opportunity competencies, a difference in perception of the different indicators can be observed. Issues related to policy (OPP_POL) are on average evaluated as a threat (as indicated by negative signs), whereas issues that are related to the consumer (OPP_CON) and market (OPP_ MAR) are on average evaluated as an opportunity (as indicated by positive signs). Compared to the beginning of the training programme (t=0), an increase both in the P group and the C group can be observed in the scores on the indicators of the strategic, opportunity and information-seeking competencies. Relationship

Table 6.3b
Indicators of entrepreneurial competencies: differences between the P group and C group before and after the project.

			Project (n=50)		Control (n=114)		
			Mean	SD	Mean	SD	Sign*
Strategic competencies [a]	STR_SET	t=0	4.12	0.83	3.94	0.77	
		t=1	4.17	0.69	3.92	0.89	*
	STR_IMP	t=0	3.29	0.89	3.04	0.79	*
		t=1	3.44	0.91	3.07	0.89	**
	STR_EVA	t=0	3.70	0.72	3.63	0.74	*
		t=1	3.80	0.62	3.70	0.79	
Opportunity competencies [b]	OPP_POL	t=0	-1.18	1.08	-1.56	1.12	**
		t=1	-0.61	1.00	-1.09	1.12	**
	OPP_CON	t=0	1.37	1.02	0.49	1.30	**
		t=1	1.38	1.14	0.54	1.13	**
	OPP_MAR	t=0	0.87	1.23	0.77	1.31	
		t=1	1.48	1.11	1.04	1.15	**
	SRT_INF [a]	t=0	3.82	0.72	3.61	0.67	*
		t=1	3.89	0.60	3.74	0.69	
Relationship competencies [a]	STR_REL	t=0	2.97	0.72	3.15	0.69	
		t=1	2.95	0.73	3.15	0.71	*
Entrepreneurial success [c]	ENT_SUC	t=0	1.90	0.80	1.81	0.85	
		t=1	1.68	0.85	1.77	0.91	

Sign: P group and C group are significantly (*=p<0.1 and ** = P<0.05) different in independent samples T-test. [a] scales on a 5-point Likert scale (1= not important to 5= very important), [b] scales on a 7-point Likert scale -3= great threat to +3= great opportunity, [c] scales on a 7-point Likert scale -3= very bad to +3=, very good.

competencies hardly changed while a decrease in entrepreneurial success perception in both the P group and the C group is seen.

Compared to the C group, at t=1 a higher score was found in the P group for the variables STR_IMP, OPP_POL, OPP_CON and OPP_MAR. Also compared to the C group, STR_SET scored higher in the P group. For STR_REL, lower scores were found in the P group. However at t=0 already higher scores in the P group were found for the indicators STR_IMP, OPP_POL, and OPP_CON. STR_INF had higher scores at t=0. These data imply an effect of the intervention.

To further evaluate the impact of the training programme, the value of the indicators at t=0, was taken into account. For the different indicators, the model of equation 1 was tested. Table 6.4 shows the results.

Although the sign of β_1 is positive, the value is smaller than one for all the examined indicators. This indicates that on average a higher increase is seen in the value of the indicator under investigation in participants with initial lower scores at value at t=0 than those with higher scores. However, for the number of cows per farm in the P group there is a β_3 of + 1.65. The slope of the line for the P group is 2.54 (0.89 +1.65): for the P group on

average there is a larger increase in the number of cows on larger farms than on smaller farms. The intervention did not result in a significant influence on the other indicators for farmers' and farm characteristics.
The intervention influenced several indicators of entrepreneurial competencies: STR_IMP, OPP_CON, OPP_MAR, and STR_REL. A larger intercept in the P group, as shown by a significant β_2, was found for STR_IMP and OPP_MAR. This means that the overall level of response was at a higher level in the P group, whereas the slope of the relation was not affected. Compared to the C group, on average all participants in the P group increased their competencies more. For STR_REL in the P group the intercept was smaller, indicating on average a generally lower response level in the P group. In the P –group, the slope of the relation (β_3) differed for the indicator OPP_CON: the slope was steeper compared to the C group. In the P –group, participants with high scores on t=0 had a higher score at t=1 compared to the participants of the C group, whereas the participants with lower scores did not significantly differ.

Table 6.4
The impact of the training programme on the relation between the value at t=1 and the value at t=0 of the indicators related to farmers' and farm characteristics and entrepreneurial competencies and success.[1]

		Standardised coefficients		
		β_1	β_2	β_3
Farm characteristics				
# FTU1		0.84		
# cows/farm		0.89		1.65
#Milk/cow/year (l)		0.75		
Area grass and maize		0.86		
Milk quota (l)			0.90	
Indicators for entrepreneurial competencies				
STR_SET1	Strategic competencies related to setting a strategy	0.51		
STR_IMP	Strategic competencies related to implementing a strategy	0.52	0.38 *	
STR_EVA	Strategic competencies related to evaluating a strategy	0.45		
OPP_POL	Opportunity competencies related to policy	0.43		
OPP_CON	Opportunity competencies related to consumers' concern	0.29		0.27
OPP_MAR	Opportunity competencies related to threats of markets	0.38	0.18	
SRT_INF	Information-seeking competencies	0.57		
STR_REL	Relationship competencies	0.78	-0.26 *	
ENT_SUC	Entrepreneurial success	0.66		

β_1= standardised Beta of the indicator, β_2 = standardised Beta of the class (P=1, C=0), β_3 = standardised Beta of the interaction (indicator* class). Only significant relations are shown. All shown relations are significant at $p< 0.05$ except the * marked coefficient, which is $p<0.10$.
[1] For abbreviations see table 6.1.

Table 6.5
Relation between entrepreneurial competencies and the end of the training programme and farmers' and farm characteristics at the start of the programme.

	Indicator at t=0														
	P/C	Age of the farmer		# FTU		# cows/farm		Milk/cow/year (l.)		Area grass and maize		Milk quota (l)		variable		
Indicator at t=1	β_2	β_1	β_3	β_1	β_3	β_1	β_3	β_1	β_3	β_1	β_3	β_1	β_3	β_1	β_3	R^2 [a]
STR_SET	*	-0.18	0.15					*	*	*	*	*	*	0.44	*	0.24
STR_IMP	0.16											*	*	0.48	*	0.27
STR_EVA	*											*	*	0.42	*	0.17
OPP_POL	*			*										0.45	-1.60	0.17
OPP_CON	*													0.30	0.29	0.25
OPP_MAR	0.21	-0.18		*	*	*	*			*	*	*	*	0.32	*	0.14
STR_INF	*													0.54	*	0.29
STR_REL	-0.10													0.81	*	0.69
ENT_SUC	*													0.64	*	0.41

Results of step-wise regression analysis. *= variables were entered in the analysis based on significant correlations but were non-significant in the step-wise regression model. [a] R^2 = adjusted R^2 of the final step-wise regression model.

6.3.3 Pre-definition of a target group.

In order to distinguish participants so that it was possible to predefine a target-group, the model of equation 2 was tested. Table 6.5 shows the results of the indicators for the farmers' and farm characteristics. Also in this analysis the variables STR_IMP, OPP_MAR and STR_REL had a significant β_2, as expected. An interpretation of this was already discussed in section 6.3.2.

Age was the only indicator that had an effect on entrepreneurial competencies at t=1. The competencies related to age are STR_SET and OPP_MAR. For both indicators, the β_1 of age was –0.18, suggesting a decrease in the level of these competencies, as the respondents were older at the start of the training programme. The older the farmer, the less likely it was that him/her to have high scores on competencies related to setting a strategy. Additionally, the older the farmers, the less likely they were to see the image of the product and opening of the EU as an opportunity The negative relation between the strategic competencies related to setting a strategy and age is almost compensated by the training programme, as indicated by β_3 of + 0.15. As a result, STR_SET almost became age independent in the P group. The other farmers' and farm characteristics did not show a significant relation with the value of the indicators for entrepreneurial competencies at t=1.

Although many of the indicators of entrepreneurial competencies and success at t=0 were significantly correlated with the indicators at t=1, only a few additional indicators had a significant relation in the step-wise regression models. An indication of an intervention effect (significant β_3) in the P group was seen in the relation between STR_IMP at t=1 and ENT_SUC at t=0 and between OPP_POL at t=1 and OPP_MAR at t=0.

6.4 Discussion and conclusions

6.4.1 The relation between entrepreneurial competencies, success perception and farmers' and farms' characteristics

The indicators of entrepreneurial competencies and success perception positively relate to farmers' and farm characteristics at the start of the training programme. The positive relations between entrepreneurial competencies and farm characteristics indicate that the investigated competencies are of importance when farmers want to expand their operation. However, it cannot be determined whether high scores on the indicators for entrepreneurial competencies lead to larger farms or whether farmers who have larger farms need more of these competencies to be successful and therefore experienced a stronger push to develop these competencies.

This research shows that farmers who have larger farms have higher scores on the investigated strategic competencies than their colleagues on smaller farms. These findings support the general idea that when farms become larger, it becomes more important for farmers to be able to set, implement, and evaluate a strategy i.e. the strategic competencies of the farmer become more important. Also, this research shows that farmers with larger farms have a more positive attitude to consumers' concern about agricultural production. This consumers' concern can be directed towards animal welfare, environment, and food

safety. This can mean that (a) these farmers are more aware of the opportunities their business environment offers (not only related to the consumer but probably also related to other aspects of the business environment that were not included in this research) and are able to anticipate on this. Or (b) it could also indicate that because they have larger farms, these farmers are better able to respond to a changed market. For them it pays to look for opportunities, whereas the farmer on a smaller farm does not have the resources to respond adequately. A change of the market possibilities is more likely to be a threat for these farmers on smaller farm, without having the possibilities to respond to it. However, from this research it could not be determined what was the most likely reason for this relation between farm size and a positive attitude to market opportunities.

6.4.2 The influence of the training programme on farmers' and farm characteristics, entrepreneurial competencies

The main topic of interest of the presented research was to determine a possible effect of the meetings aiming at improving entrepreneurial competencies—an intervention effect. In this research, the number of cows per farm in the training programme group increased more than the number of cows per farm in the control group. Participating in the programme enabled farmers to thoroughly evaluate their plans and underlying assumptions. It also enabled them to identify knowledge gaps and provided tools to overcome these gaps. As shown in this study, this led to them strengthening their entrepreneurial competencies.

The participants in the training programme group showed a significant higher increase with regard to a number of entrepreneurial competencies. A significant difference was seen in competencies related to the implementation of a strategy between the P group and the C group. In the meetings of the training programme group, particular emphasis was given on improving strategic and opportunity competencies. Participants learned techniques and tools that helped them to translate long-term plans into operational plans and to monitor the progress of the implementation of the plan. Also, by carrying out the assignments they were in fact writing their own strategic plan. An important part of the programme was dedicated to the assessment of the business environment. The new challenges due to the changing market and stricter regulations were the main stimuli for starting the intervention plan in the first place. The participants on average significantly increased their opportunity competencies related to consumer's concern and threats of markets. Although the scores on opportunity competencies related to policy increased in both the P group and the C group, no significant differences in increase could be observed.

Participants with initial low scores showed a higher increase in scores on the indicators of their competencies when compared to participants with initial high scores. An explanation for this could be that these initial low scoring respondents have more room for improvement of their competencies. However, high scores on the used scales does not necessarily mean that competencies could not be improved further. More differentiated scales at the high end of the indicator value for assessing entrepreneurial competencies could identify a possible increase of these initial high responders.

Whereas the strategic and opportunity competencies of the participants increased, no significant change in entrepreneurial success perception for the farmer can be observed. External factors such as change in agricultural policy or a decrease in sales prices as

observed during the training programme period have an impact as well and influence the overall evaluation of success by the entrepreneur.

Whether increased competencies resulted in increased economic performance could not be determined. The time period between the end of the intervention and the second questionnaire was too short to determine this. First of all, it takes some time to progress from a plan to a fully implemented and effective strategy whose results can be observed. Second, given the selection strategy for the participants it is unlikely that all these participants were able to instantly change a previous plan. The interruption of investment cycles would incur large costs. To investigate the impact on farm performance, an even longer observation period would be needed than for the impact on farm behaviour.

6.4.3 Pre-definition of a target group

It was not possible to pre-define a target group based on the farm characteristics at the start of the training programme. The results show that the negative relation between age and ability to increase competencies as observed in the control group was neutralised in the training programme group. On average, the participants increased their competencies, so it might make it worthwhile for dairy farmers to participate, whatever their competencies are.

6.4.4 Generalisation of the study results

Despite the fact that analysis of the data from the response of the original 269 farmers in the first questionnaire showed no difference in farm size and competencies between the P group and the C group, analysis of the data of the 164 respondents to the second questionnaire showed a difference. Farmers in the training programme group were farming on larger farms compared to farmers in the control group. Although in the analysis on entrepreneurial competencies, a correction was made for farm size when analysing the impact of the intervention, it cannot be excluded that farmers in the training programme group were also different in other aspects.

A random assignment procedure for participants in training programmes like these is difficult, given the time and effort the participants have available for investing in training programmes such as this one. However, selecting existing study groups that had their origin in craftsmanship and managerial aspects of farming, keeping these groups together throughout the process, and not specifically inviting potential participants for a training programme related to entrepreneurship reduced the selection bias due to self-selection.

6.4.5 Concluding remarks

This research indicates that using the concept of competencies can provide insight into the entrepreneurial behaviour of farmers and gives a means to evaluate an intervention programme designed to develop a strategic plan for and by entrepreneurs. The described research method is an effective way to identify a possible effect of an intervention. It also shows that entrepreneurial competencies have a positive relation with the farm size of dairy farmers in the Netherlands.

The results of the presented study indicate that it is possible to improve the entrepreneurial

competencies of dairy farmers through developing and discussing the farmers' strategic plans in study groups. On average, all participants benefited from the programme, irrespective of farmers' and farm characteristics or the level of competencies at the start of the programme.

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CHAPTER 7

General discussion and conclusions

7.1 Introduction

The research presented in this thesis is amongst the first to explore the entrepreneurship of a larger group of dairy farmers. Studying entrepreneurship involves an interdisciplinary approach (Shane, 2003). This thesis makes use of work from several social science disciplines. Insights from the fields of psychology, sociology, and economics were used to create a view on entrepreneurship of dairy farmers. This study on entrepreneurship of Dutch dairy farmers had a two-fold aim: (1) to gain insight into the entrepreneurship of dairy farmers and into what makes a dairy farmer a successful entrepreneur; and (2) to investigate the possibilities for improving entrepreneurial competencies of dairy farmers by means of a training programme. To achieve these aims, a number of research questions have been formulated.

1. Do farmers' goals, objectives and attitudes determine farmers' strategic and entrepreneurial behaviour?
2. What is the importance of psychological characteristics and competencies as predictors of self-reported entrepreneurial success of Dutch dairy farmers?
3. Which items of the strategic process influence the job satisfaction of dairy farmers?
4. Do training programmes that aim at improving entrepreneurial competencies have measurable effects?

These research questions have been addressed one by one in the previous chapters. In this chapter, first a number of data and methodological issues that could have an impact on the observed results have to be addressed. This is done in section 7.2. In section 7.3 an analytical framework is introduced to use the outcomes of the research questions presented in the previous chapters to reflect on the entrepreneurship of dairy farmers in the Dutch context. In section 7.4 the effectiveness of using study groups in a training programme for improving entrepreneurial competencies is discussed. Conclusions are drawn in section 7.5.

7.2 Research issues and implications for results

The research in this thesis is based on data collected during the Innovative Entrepreneurship Project. The objective of this project was to develop tools for farmers to improve their entrepreneurial competencies. The initiator of the programme (NLTO) wanted a training programme aiming at future-oriented dairy farmers. Since research on entrepreneurship in agriculture is scarce, this project offered a unique opportunity to investigate the results of such a training programme with a large group of dairy farmers.

During the two-year time period in which the training programme was conducted, several changes in the environment occurred. There was a Foot –and Mouth Disease outbreak at the start of the project and, as already described in Chapter 1, the Common Agriculture Policy underwent significant changes. Also, entrepreneurship in agriculture was given a lot of attention in policy, media, and extension programmes. These changes probably influenced farmers in this research as well. To separate the impact of the changes in the environment from the impact of the training programme, the chosen research approach was a combination of a Case Control study approach and a before-after analysis. In this research,

the results of one group of farmers who actively participated in the training programme, the initial project group (P group), were compared with those of a comparable group of farmers in a control group (C group). A questionnaire at the start of the training programme and at the end of it provided the data for the analysis.

7.2.1 Representativeness of the participating farmers

This research targeted future-oriented farmers. This can be seen by the fact that the farmers in this research were younger, were farming on larger farms with more cows with a higher production per cow and per farm compared to the average farm in the region (Chapter 2). These characteristics are typical for farms in the growth or consolidation phase of the family farm life cycle (Boehlje and Eidman, 1984). These future-oriented farmers are also more likely to be engaged in learning activities such as study groups. To generalise the results of the present study to a broader group of future-oriented farmers, it has to be investigated whether the farmers were an adequate representation of the intended target group. Two types of selection bias related to self-selection might influence the representativeness of the results. The first type is the possible self-selection of participants in the programme. Often farmers have to sign on to participate in these kinds of programmes. As such, the participants are likely to be more motivated and interested in the subject of the programmes than the average non-participant. This might result in an over-estimation of the possible effects. The chosen selection procedure in this research was designed to minimise or avoid this selection bias based on self-selection. Farmers did not have to sign on to the programme but were participating in study groups for reasons other than for taking part in a training programme on entrepreneurship; the training programme was given next to/as part of these other study group meetings.

The second type of self-selection might be due to a bias in response in answering the questionnaire, the non-response bias. Participants with a positive attitude towards the subject might be more motivated to respond to questionnaires compared to those with a negative attitude towards the subject. In addition, in this research a non-response bias might have occurred. By sending a letter of recommendation from farm leaders and reminders an attempt was made to achieve a high response rate as possible. For this kind of research, this approach produced -high response rates (60% for the first questionnaire and 70% for the second questionnaire). The response rates in P group and C group were comparable to each other. Trying to increase the sample size by putting more effort into getting a higher response rate does not give necessarily produce much additional information (Stoop, 2005).

Because of the two types of selection bias, generalisation of the results can therefore in principle only be made to dairy farmers in the Netherlands, participating in study groups and motivated to respond to questionnaires. However, it is a fairly large group and many of other future-oriented farmers will share similar circumstances. For these farmers, the results of this study might be applicable.

7.2.2 Measuring the entrepreneurial characteristics and competencies by means of a questionnaire

In this research on entrepreneurship it was necessary to identify and measure psychological characteristics, competencies, and competency development of entrepreneurs in a reliable and valid way. Since the entrepreneurship of dairy farmers has only recently become the focus of attention, quantitative tools for gaining insight into entrepreneurial behaviour and competencies are lacking to a large extent. As a result, these tools had to be developed. An important constraint in the choice of tools was that a large number of farmers had to be addressed in a relatively short period. Using mail-sent questionnaires for this research was therefore the most obvious choice. For a valid evaluation of the effect of the training programme, the questionnaire at the end of the training programme had to be identical to that at the beginning; this implied that any changes based on insights gained during the two-year period could not be implemented in the second questionnaire.

The preceding chapters show that strategic and opportunity competencies were identified as the most important competencies that were related to entrepreneurial success (Chapter 3). It was these competencies especially that were addressed and improved during the training programme (Chapter 6). An adequate measurement of these entrepreneurial competencies is of vital importance for the validity of the research outcomes. For the evaluation of the validity of the measurement method used, two aspects are considered to be relevant. Firstly, to what extent do the chosen variables in the questionnaire actually represent the competencies of interest, and secondly, to what extent does the respondent's reaction correspond with the actual state of the respondent's competencies.

Regarding the first aspect, competencies were evaluated by creating summated competency scales in which two or three variables were combined. Summated scales are able to portray complex concepts in a single measure while reducing measurement error. However, there are four important issues that have to be addressed when constructing these scales. These are: (1) conceptual definition; this defines the concept on which the summated scale is based, (2) dimensionality, which means that the variables are strongly associated with each other and represent a single concept, (3) reliability, the consistency of the entire scale and (4) validity, this is the extent to which a scale actually represents the concept of interest (Hair *et al.*, 1998). These issues served also as guidelines for the competency scales in this research. The competency scales in this research were based on only two or three questions. This gave these scales a rather limited discriminative power and made it more difficult to distinguish differences between participants and changes during the training programme. Increasing the number of questions per competency of interest under the restrictions of the above-mentioned issues might improve the discriminative power of the scales used.

Although literature suggests that self-reported competencies can be a valid way of gaining insight into entrepreneurial competencies (Ackerman *et al.*, 2002; Chandler and Jansen, 1992), an attempt to gain further insight into this issue was made in a separate study (Lans *et al.*, 2005). In thisstudy, to test the validity of the variables, a triangulation of assessment procedures was used. The procedure consisted of (1) a self-assessment based on the questionnaire used in this research. A (2) peer-assessment questionnaire was designed based on the self-assessment questionnaire. In the peer assessment, a peer ('professional

colleague') selected by the entrepreneur had to rate this professional colleague based on the same statements that were used in the self-assessment. Finally (3) an expert assessment, in which an expert had to rate the level of competencies of the participants, was developed. The results of the self-assessment procedure, the peer-assessment procedure, and the expert-assessment procedure were compared. The results of 16 entrepreneurs with peers and experts indicate that the different assessors agreed on the entrepreneur's strategic and opportunity competencies (which were also important in this thesis). Less agreement on the competency level amongst the assessors on the level of the participant was found in the other groups of competencies, like conceptual and organising competencies. It was not able to be determined whether this disagreement was caused by lack of self-rating ability on the part of the entrepreneur or because it is difficult to assess these competencies by observing behaviour (as a basis for assessment by the peer and expert).

For the research in this thesis it can be assumed that the collection of data through the given questionnaire is a valid procedure for gaining insight into the characteristics and entrepreneurial competencies of the participants. However, improved parameters for assessing the level of entrepreneurial competencies of large groups of participants are needed to gain further insight into differences between competencies of entrepreneurs and to identify underlying relations.

7.2.3 Concepts and methods used

To gain insight into the entrepreneurship of the dairy farmers, two different concepts were used. The first concept was the Theory of Planned Behaviour (Chapter 2) and the second was the concept of competencies (Chapters 3 and 4). The concept of competencies was also used to evaluate the impact of a training programme (Chapter 6). A brief discussion of the benefits and disadvantages of the theories used with respect to the research on entrepreneurship of dairy farmers now follows.

7.2.3.1 Theory of planned behaviour

The Theory of Planned Behaviour (TPB) developed by Fisbein and Azjen (1975) and further extended by Azjen and Madden (1986) is used in Chapter 2 to gain insight into entrepreneurial behaviour. According to the TPB, people act in accordance with their intentions and perceptions of control over behaviour, subjective norms, and perceptions of behavioural control (Ajzen, 2001). The theory is based on the assumption that human beings are usually quite rational and make systematic use of the information available to them (Ajzen and Fishbein, 1980). Entrepreneurial activity is planned behaviour and reflects, to some degree, cognitive processing (Krueger *et al.*, 2000). For this reason, the TPB was thought to be appropriate for giving insight into the most important goals related to entrepreneurial behaviour and into the coherence of the different aspects related to entrepreneurial behaviour. The components of TPB—attitudes, perceived behavioural control, social norm, and past behaviour—give opportunities to place the entrepreneur's behaviour in a specific context. This theory also gives insight into possible obstructions to expressing intended behaviour.

Although often used, TPB is not considered very suitable for studying intervention effects. After a review of 30 intervention studies explicitly applying the Theory of Planned Behaviour (TPB) to behaviour change interventions, Hardeman, *et al.* (2002) conclude: "The TPB may have potential for developing behaviour change interventions. But more comprehensive studies are needed that compare the utility of the TPB with other social cognition models and behavioural techniques". In many of the studies reviewed by them, effectiveness was unrelated to use of the TPB to develop interventions (Hardeman *et al.*, 2002).

To conclude, the TPB gives good insight into the relations between a person's entrepreneurial attitudes, goals and behaviour, and the factors that influence these relations as presented in Chapter 2. However, the TPB is not intended to be used to study intervention effects and as such is not the preferred method for the remaining part of the thesis.

7.2.3.2 Competencies

As stated earlier, competencies are defined as the ability to perform specific tasks. This specific focus makes it possible for the concept of competencies to be used to study intervention. Since specific tools for measuring competencies were developed, it was possible to address progress in the level of competencies. The entrepreneurial competencies as described in Chapter 3 can be seen as a toolbox for entrepreneurial behaviour. The different competencies can be specified and addressed with training and interventions programmes (Chapter 6). Although studying these competencies can give insight into the state of the art of the toolbox, it does not produce insight into how these tools are used in successful entrepreneurship. Measuring possible progress in the level of competencies of a group of entrepreneurs, as a result of a training programme, is therefore difficult to relate to a potential increase in the level of entrepreneurship.

To conclude, the concept of competencies is a usable approach for gaining insight into the ability of participants to perform entrepreneurial behaviour and study any possible effects of a training programme. Further research is needed to establish how and in what sequence these tools are to be used to be successful as entrepreneur.

Although both the TPB and the concept of competencies are suitable for answering part of the research questions, these two methods measure different aspects of entrepreneurship.

7.3 Entrepreneurship of dairy farmers: towards an integral view

In the remaining part of this chapter, the findings of the previous chapters are integrated. A framework for the role of entrepreneur as dairy farmer is presented (figure 7.1) that includes the components and their relations discussed in the preceding chapters.

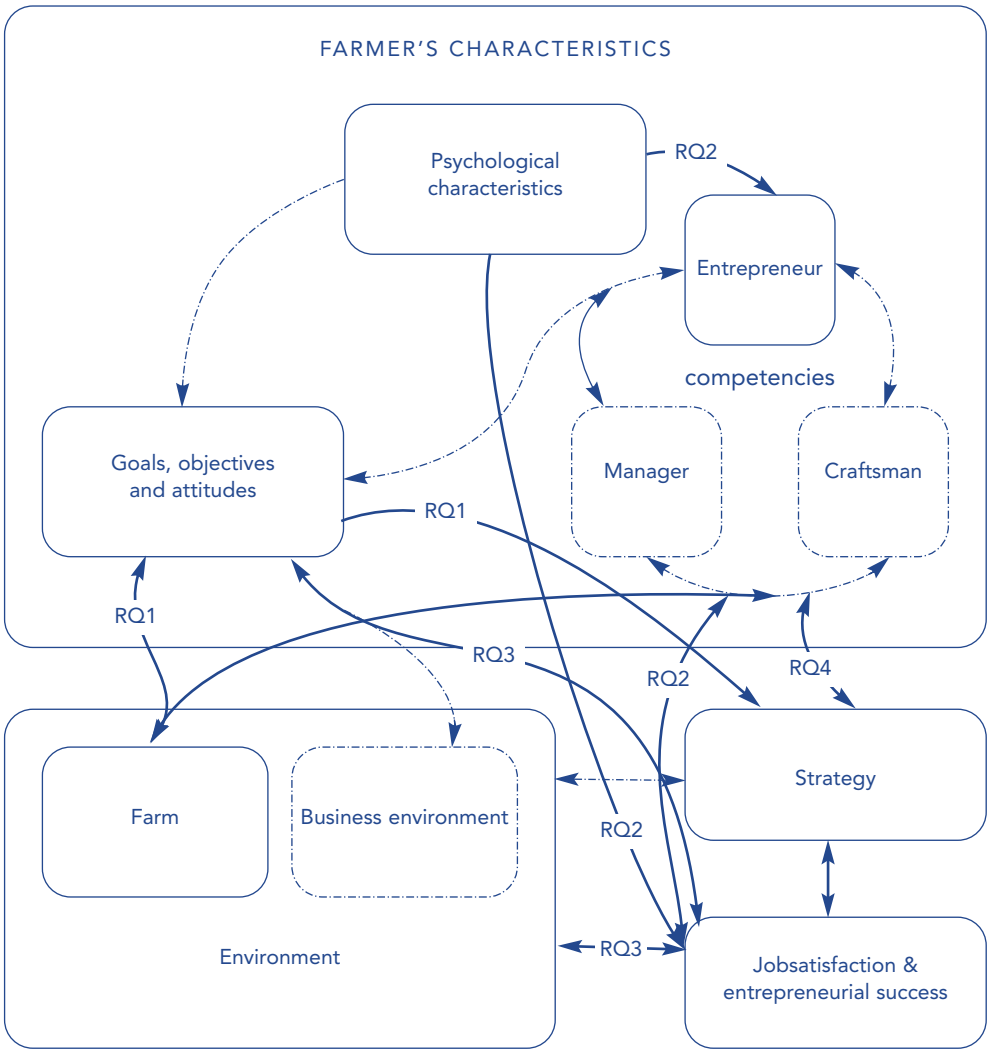

Figure 7.1 A framework to integrate different components and relations relevant for the role of the dairy farmer as entrepreneur. Solid arrows represent relations investigated in this thesis. Dotted arrows represent findings from literature or a hypothesises. RQ1-4 refer to the research questions.

This framework consists of four parts, farmers' characteristics, environment, strategy, and job satisfaction and entrepreneurial success. In figure 7.1, relations represented by solid arrows are based on the results of research in this thesis. In the preceding chapters different parts of the framework have already been discussed extensively.

The first part of the framework consists of the farmers' characteristics. They took up a central position in this thesis and they will also play a central role in the discussion of the

framework. The farmer's characteristics studied in this thesis were (1) the psychological characteristics, (2) the goals, objectives, and attitudes, and (3) the entrepreneurial competencies.

The second part of the framework is the environment that consists of the farm and the business environment from which the farmer has to work. In Chapter 2 it was shown that the goals affect the farm characteristics. As shown in Chapter 4, the business environment influences the goals of the farmers.

The third part is the strategy that the farmer uses to express his entrepreneurial behaviour. In the entrepreneurial process, the strategy takes up a central position. It is the culmination of the farmers' characteristics, his assessment of the business environment, and the possibilities of the farm. The strategy has to be formulated, implemented and evaluated. This process was described in Chapter 5. The strategy is also the road map to success for the farmer. Not only is the strategy the result of the entrepreneurial competencies, but it also has its implications for the competencies needed. In this study, the formulation and implementation of a strategy was the core of the training programme.

The fourth part consists of job satisfaction and entrepreneurial success. These are both the result of an evaluative process (Bono and Judge, 2003). In this process, it is evaluated to what extent the results of the strategy match the initial goals. Some of these results are reflected in, for example, an increase in farm size, others can be more abstract like pleasure in work. Economic performance, initial goals, and the entrepreneur's expectations are, according to Cooper and Artz (1995), aspects that determine the entrepreneur's job satisfaction. Harling (1992) states that a farmer considers himself to be a successful entrepreneur when he is able to achieve the goals he has set for the firm and for his family.

7.3.1 Relation of psychological characteristics with the different parts of the framework

Specific entrepreneurial psychological characteristics are given much attention in general literature on entrepreneurship, since they are considered to be an important predictor of entrepreneurial success (see for example (Shane, 2003) for an overview). Therefore, these psychological characteristics were also studied in this thesis. In Chapter 3, the focus was on locus of control, innovativeness, and risk avoidance. These characteristics were related to the level of entrepreneurial competencies and entrepreneurial success perception of the participating dairy farmers. External locus of control was negatively related to strategic competencies, whereas innovativeness was positively related to strategic competencies. Both these findings were in concordance with the findings from literature. The results on risk avoidance seemed to be in contrast to most research on the risk-taking propensity of entrepreneurs. Although most literature suggests that entrepreneurs are more willing to take risks and entrepreneurs have higher scores on risk-taking propensity than for example managers (Busenitz and Barney, 1997), Miner *et al.* (1994) show that, with respect to entrepreneurial activity, persons with a lower risk-taking propensity outperform persons with a higher risk-taking propensity. Their explanation is that those low risk-taking entrepreneurs will take less risky approaches to, for example, strategy and by doing so will limit the chance of an unfavourable outcome. In this thesis, the results seem to be in concordance with the findings of Miner *et al.* (1994): risk avoidance achieved high scores amongst the participants and was positively related to strategic competencies and success perception (Chapter 4). Farmers

prefer to play it safe and successful dairy farmers are careful planners who adopt less risky approaches in their strategy.

7.3.2 Relation of goals, objectives, and attitudes with the different parts of the framework

As stated in Chapter 2, it can be concluded that each farmer has an individual mixture of multiple goals. Non-economic goals receive higher scores than economic goals. On average, goals related to the craftsmanship of the dairy farmer are highly valued amongst the participants. Both the initial reason for dairy farmers to become involved in farming and their major goals are related to the craftsmanship element of farming. This craftsmanship contributes to the pleasure and to the job satisfaction of the dairy farmers (Chapter 4). It is these craftsmanship competencies that helped make the Dutch dairy sector so successful in the past.

Chapters 2 and 3 show that owning a large and modern farm is the most important goal of the participants. This goal has a positive relation with the farmers' success perception and the farm characteristic, milk quota. For these farmers, striving for a large and modern farm is probably more than just an economic success factor and also contributes to fulfilling non-economic goals. When making plans, sufficient attention has to be given to the economic goals of the farmers as well as the non-economic ones, so that they continue to have pleasure in their work and are able to further exploit their strong points.

Amongst participants in this research there were very few farmers who indicated that they wanted to divert their farm into other directions than simply dairy farming. Amongst the Dutch dairy farmers, however, an increasing number farmers are looking to diversify. To determine whether these farmers differ in their goals, success criteria and success perception of the farmers in this study could be a subject for future research.

7.3.3 Relation of entrepreneurial competencies with the different parts of the framework

Entrepreneurial competencies and the development of these competencies have received a lot of attention in this thesis (Chapter 3, 4 and 6). The main focus was on opportunity and strategic competencies, since these entrepreneurial competencies were related to the success perception of the participants and influenced by a specific training programme. This section discusses the extent to which these competencies can play a distinct role in the entrepreneurial behaviour of the dairy farmer.

Shane (2003) puts the discovery, evaluation, and exploitation of opportunities in the centre of the entrepreneurial activities (Shane, 2003). Opportunity competencies are therefore also considered to be important for dairy farmers. Opportunities can be used to focus the farms' strategy. According to Porter (1985) a successful strategy should aim at either cost-leadership, differentiation or focus (fulfilling the needs of small groups of producers) (Porter, 1985). Most dairy farmers produce a product that can be considered a commodity. For these farmers, cost-leadership is the most important strategy. Organic farmers (focus) or farmers who sell their products directly to the consumers (differentiation strategy) can be

considered an exception. The Dutch dairy chain is characterised by, on the one hand, a lack of concentration (many farmers who are interchangeable commodity producers) and, on the other hand, a high degree of concentration (two large co-operatives dominating the market). Exploiting opportunities outside the farm gate requires the involvement of the different chain partners. Co-operation amongst these partners however requires trust and mutual dependency (Nooteboom *et al.*, 1997). It remains the question whether the chain partners in the dairy chain have the same sense of urgency to explore and exploit market opportunities together .

In this study, special attention was paid to competencies that enabled farmers to discover opportunities outside the farm gate. The lack of possibilities available to dairy farmers for exploiting opportunities in the market is probably also one of the reasons that no relation was found between opportunity competencies and entrepreneurial success in Chapter 3.

For decades now, not only has there been an increase in farm size observed in Dutch dairy farming, but also a shift from family farms towards one-man farms. The involvement of partner, parents, and children in the labour on the farm is not as obvious as it was a generation ago. To get the work done, the farmer can replace labour through capital (mechanisation), but also the necessity to carefully plan, implement and evaluate a strategy increases as the size and complexity of the firm increases. It is therefore to be expected that the strategic competencies will become more important for farmers as farms become larger. Chapters 3 and 6 show that there is a positive relation between strategic competencies and farm size amongst the participants in this study. Chapter 6 also demonstrated that these competencies can be developed.

Farmers' competencies can be sub-divided into entrepreneurial, management, and craftsmanship competencies. The competencies related to the management and craftsmanship of the dairy farmer were not the focus of this study. Most farmers have to combine these competencies with their entrepreneurial competencies and it is likely that they have to carefully balance these three groups of competencies. The potential, limitations, and possibilities for development of each set of competencies determines to a large extent the possibilities of the others. Perhaps even more than is the case with an entrepreneur of a large firm, the challenge for the dairy farmer is to develop a combination of these competencies to find a solution that best serves the goals he wishes to accomplish. Making strategic plans is likely to affect the competencies needed at the craftsmanship and management levels. Where an entrepreneur in a large firm has the possibility to select those persons that are best fitted to do the job required, these possibilities are not available to the dairy farmer on a one-man farm or the small-family firm. To illustrate this distinction, let us consider the introduction of a milking robot as an example. When a farmer wants to introduce a milking robot on his farm to reduce the labour load on his farm (entrepreneurial decision), he also has to change his feed management so that high-quality ration is available 24 hours a day for the freshly milked animals (managerial decision). In addition, the farmer needs to be able to observe the behaviour of his animals in a different way (craftsmanship). Future research investigating the interaction between these entrepreneurial, management, and craftsmanship competencies could provide valuable insights that can improve training programmes.

To summarise then, the dairy farmer in his role as entrepreneur has to take into account all the components and their inter-relations presented in the framework. Specific entrepreneurial psychological characteristics, such as locus of control, can be considered the motor for entrepreneurship, while the competencies are the means of transmission that transform the

energy created by this motor into entrepreneurial behaviour. However, although a powerful motor and efficient transmission are important factors, they are not the only prerequisites for success. A clear destination (goals, objectives, and intentions) and a well-determined strategy for reaching this destination are just as important. The strategy is not only dependent on the efficacy with which the energy can be transformed into speed, but also on the internal environment (farm) in which this motor is placed and in what kind of business environment the entrepreneur has to find his way. To succeed, all parts have to fit together and need to constantly adapt to each other. The presented framework can serve as a guideline for future research on entrepreneurship in agriculture, especially dairy farming.

7.4 Improving entrepreneurial competencies of dairy farmers using a training programme

The training programme as presented in Chapters 5 and 6 was aimed at improving entrepreneurial competencies. This involved the dairy farmer changing focus from craftsmanship and management towards entrepreneurship. The basic assumption in this programme was that improving entrepreneurial competencies by discussing the strategic plan as described in Chapter 5 could support this change of focus. As shown in Chapter 6, the training programme resulted in an increase of strategic and opportunity competencies. In the training programme, farmers were learning in study groups. The impact of the learning environment and the role of implicit knowledge will be discussed below since these two items are considered to be the critical success factors in learning in study groups.

7.4.1 Learning in study groups: the learning environment

The improvement in the farmers' entrepreneurial competencies involved a learning process in which knowledge had to be constructed and/or re-constructed. In this learning process, farmers had to re-evaluate their opinion on the different aspects of their entrepreneurial behaviour. Study groups were chosen to meet the conditions for effective learning. Being involved in a process of evaluation in a group, as in a learning environment created by study groups, has several benefits for the participants, according to Horton et al (2003). This involvement is important because of four aspects. First, it can help the participants to think in a structured way about reality and to generate knowledge (learning to learn). The second aspect is that professional networks can be developed. Thirdly, participants can create a shared understanding. A final aspect is that it is expected that the morale of the participants is boosted (Horton and Mackay, 2003). For successful entrepreneurship "who you know" might be as important as "what you know". The data collection procedure in this research was directed towards the first aspect. As shown in Chapter 6, the training programme resulted in an increase in strategic and opportunity competencies. With respect to the aspects 2 through 4, although no data were collected, observations made during the study group meetings suggest that the other three benefits were also achieved. Further research is needed to explore the role of these aspects for explaining differences in the level of entrepreneurship amongst different farmers.

7.4.2 Learning in study groups: making implicit knowledge explicit and again implicit

Much of the entrepreneurial knowledge and competencies of farmers is rather context-specific. The knowledge involved is gained during experience and is mainly practical and implicit. A training programme, however, implies that the knowledge that is acquired is to some extent explicit. One of the challenges of the training programme in the project therefore was to make this implicit knowledge explicit. The first step is to identify persons with implicit knowledge that is of interest for the rest of the group. The second step is to make the implicit knowledge explicit by converting it into language (Woerkum *et al.*, 1999). The more the participants in the group share the same reference frame the easier it is for them to interpret implicit knowledge. Optimal learning from each other occurs when there are enough shared reference frames amongst the participants to enable them to value each other's implicit knowledge, but also enough difference to enable learning. An observation made during the training programme illustrated this. In some groups, the reference frames of the participants did not vary greatly, thus learning from each other was difficult, as there was not so much to learn from each other. New knowledge had to be brought to the group from outside by the facilitator. The third step is to make the knowledge implicit again by the person who has acquired that new knowledge. This means integrating the newly-acquired knowledge with the existing knowledge and experiences. The more a person already knows, the more likely it is that there is already existing knowledge with which the new knowledge can be combined, thereby making learning possible.

For the dairy farmers in this study, learning in study groups created a stimulating learning environment in which implicit knowledge on entrepreneurship could be shared. However, the underlying mechanism that caused the increase in competencies could not be established. Further research is needed to gain insight into this.

7.5 Main conclusions

The following conclusions can be drawn:

1. The goals, objectives, and attitudes are determinants of strategic and entrepreneurial behaviour of dairy farmers. Differences in the latter will result in differences in farm size, which can be measured as total milk quota. Farm size is mainly explained by farmers' instrumental goals such as striving for a large and modern farm.

2. Dairy farmers who had higher scores on self-reported entrepreneurial success also had higher scores on entrepreneurial competencies.

3. Successful dairy farmers are more careful planners who take less risky approaches in their strategy.

4. The dairy farmers in this study are generally satisfied with their job. The results show that it is especially the non-economic goals of the farmer, like pleasure in

work, that are important for explaining differences in job satisfaction. Dairy farmers who perceive the challenges their business environment poses as opportunities rather than threats are more satisfied with their job.

5. It is possible to improve the entrepreneurial competencies of dairy farmers through developing and discussing the farmers' strategic plans in study groups. In general, all participants benefited from the programme, irrespective of farmers' and farm characteristics or the level of competencies at the start of the programme.

6. Applying the Theory of Planned Behaviour combined with the concept of competencies can help to gain insight into aspects related to the entrepreneurial behaviour of dairy farmers and can be used in empirical research.

7. Training of entrepreneurial competencies, using study groups, creates an environment in which participants are able to learn successfully.

8. Using the concept of competencies provides a means of evaluating an intervention programme designed to develop a strategic plan for and by entrepreneurs and is an effective way to identify a possible effect of an intervention.

9. Entrepreneurial competencies have a positive relation to the farm size of dairy farmers.

10. The research design with the case control study and quantitative approach as presented in the present thesis helped to acquire insight into the entrepreneurship of dairy farmers. It provided insights into the factors that make a dairy farmer a successful entrepreneur and evaluated the possibilities for improving entrepreneurial competencies of dairy farmers using a training programme.

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Summary en samenvatting

Summary

Introduction

Changes in agricultural policy, increasing market pressure and demands, and increased demands from within their own farms are forcing dairy farmers to reconsider their involvement in dairy farming. In the past they were able to manage and control their farms using a mixture of experience and common sense. Although craftsmanship and management are still considered to be important qualities, another facet is increasingly required: entrepreneurship. Policy makers as well as farmers' organisations see entrepreneurship as the panacea that will enable farmers to cope with the challenges they are facing. Farmers are increasingly being called to account for the entrepreneurial element of their farming style and activities. However, research into the entrepreneurship of farmers and insight into the factors that contribute to this entrepreneurship has been lacking up till now. This insight is essential if one wants to evaluate and improve the entrepreneurship of farmers.

Two criteria define the farmer's status as entrepreneur: ownership of the firm and responsibility for decision-making. However, this does not mean that everyone who meets these two criteria, and therefore has the status of entrepreneur, will achieve high scores—as identified by the literature—with respect to the characteristics on entrepreneurship. Nor is it a guarantee that these entrepreneurs have the abilities to effectively fulfil this task (competencies) as entrepreneur. The picture of the typical entrepreneur that emerges from literature is a risk-taker, a provider of capital (from his own resources but also by attracting other resources), an innovator, and a person who identifies possibilities for profit-making. The entrepreneur is seen as the individual responsible for the process of creating new value—an innovation and/or a new organisation.

Since the call for entrepreneurship is a new situation for dairy farmers, it has been unclear whether dairy farmers have the capabilities for the entrepreneurial behaviour needed. Up till now it was unclear how dairy farmers with the status of entrepreneur score on entrepreneurial characteristics, what the relation is between entrepreneurial success and job satisfaction, and whether their entrepreneurial competencies can be improved. Therefore, this study on entrepreneurship of Dutch dairy farmers had a two-fold aim: (1) to gain insight into the entrepreneurship of dairy farmers and into what makes a dairy farmer a successful entrepreneur; and (2) to investigate the possibilities for improving the entrepreneurial competencies of dairy farmers by means of a training programme. To achieve these aims, a number of research questions have been formulated.

1. Do farmers' goals, objectives and attitudes determine farmers' strategic and entrepreneurial behaviour?
2. What is the importance of psychological characteristics and competencies as predictors of self-reported entrepreneurial success of Dutch dairy farmers?
3. Which items of the strategic process influence the job satisfaction of dairy farmers?
4. Do training programmes that aim at improving entrepreneurial competencies have measurable effects?

Study design

Data for this thesis were collected during a large-scale training programme called the Innovative Entrepreneurship Project. The aim of this training programme was to improve the entrepreneurial competencies of dairy farmers. Figure 8.1 presents the study design.

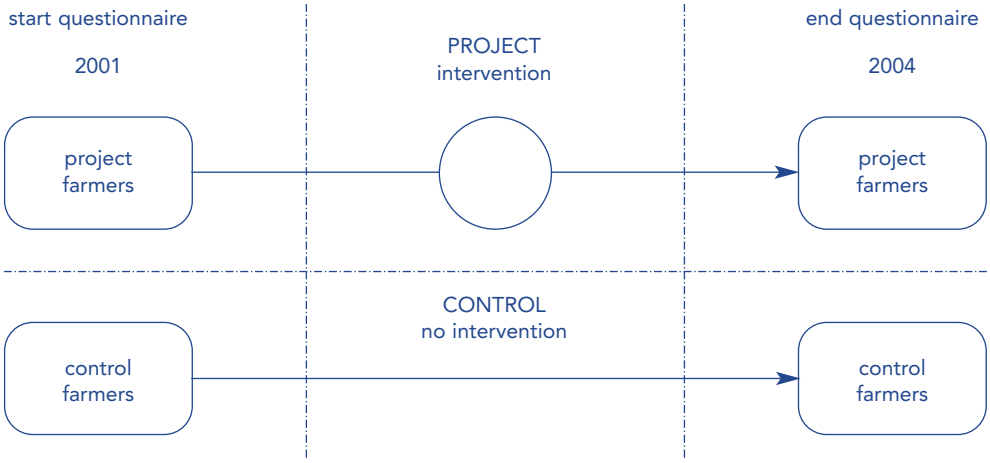


Figure 8.1 The study design.

Two groups of farmers were selected for a case-control analysis. Participants were members of study groups and all living in the north of the Netherlands. Members of the Project group participated in the project meetings related to entrepreneurship, whereas the members of the Control group did not. The participants of the P-group (n= 75) met six to eight times in a time span of two winter seasons to discuss the items related to entrepreneurship and participated in the training programme. In these sessions, groups of farmers discussed aspects related to entrepreneurial competencies. The second group (n=180) served as a control group. At the start and end of the project, data were collected in the P-group and C-group by means of a questionnaire. These were the data that were analysed in this study.

Farmers' goals, objectives and attitudes

Chapter 2 presents the results of a study on the relation between farmers' goals, objectives, and attitudes on the one hand, and their strategy and the relation with entrepreneurial behaviour on the other. An empirical model, based on the Theory of Planned Behaviour, was developed to test the hypothesis that differences in farmers' goals, objectives and attitudes are a determinant of strategic and entrepreneurial behaviour and will, therefore, result in differences in farm size. The Theory of Planned Behaviour states that a person's behaviour

results from his/her goals and intentions, attitudes, perceived behavioural control and social norms. Answers to statements about goals, as well as statements related to attitudes, subjective norms, and perceived behavioural control explained 38% of the variance in farm size as expressed by farmers' milk quota. The goal of having a 'large and modern farm' was positively correlated with farm size, while those goals related to 'having a breeding farm' and 'extra source of income' were significantly negatively correlated with farm size. A significant relationship was found between behaviour (farm size as expressed by a farm's milk quota) and goals and intentions of farmers. This relationship is even stronger when statements on attitudes, social norms, and perceived behavioural control are included. In Chapter 2 it is concluded that farm size is mainly explained by farmers' instrumental goals. This suggests that farm size is not relevant for fulfilling intrinsic, expressive, and social goals. The study showed a consistency with the Theory of Planned Behaviour and this theory can be used in empirical research by applying it to data collected in a questionnaire. Such psychological models on decision-making can help to yield insight into aspects related to the entrepreneurial behaviour of dairy farmers.

Psychological characteristics and competencies

Chapter 3 deals with entrepreneurship from the perspective of psychological characteristics and competencies. The aim of this chapter is to investigate the importance of psychological characteristics and competencies as predictors of self-reported entrepreneurial success of Dutch dairy farmers. Structural equation modelling is used to study the extent to which the entrepreneurial psychological characteristics and competencies mentioned in literature influence the entrepreneurial success perception of dairy farmers. Data from all the 269 Dutch dairy farmers were collected by means of a questionnaire. From the psychological characteristics mentioned in literature, innovativeness, external locus of control and risk avoidance were investigated. The entrepreneurial competencies were limited to strategic, opportunity, and information-seeking competencies, since these were considered most relevant for dairy farmers.

The model fitted the data reasonably well, as shown by the goodness-of-fit statistics. The investigated psychological characteristics influenced the strategic and information-seeking competencies. A positive relation was found between innovativeness and strategic competencies, and a positive relationship between innovativeness and opportunity competencies. Innovativeness enhances the strategic competencies and opportunity competencies, and is required when needing to look for new possibilities and to implement them into the business.

A negative relationship was found between external locus of control and strategic competencies. Individuals with an external locus of control perceive the outcome of an event as being beyond their personal control and understanding. Strategic planning on the other hand assumes that the farmer's daily planning can influence at least part of the future business results. The negative relation found is therefore in concordance with the expectations.

Risk avoidance was positively related to strategic competencies and helps to successfully exploit a strategy. A positive relation was found between risk avoidance and strategic competencies, and between risk avoidance and information-seeking competencies.

This chapter shows that: (1) entrepreneurs who had higher scores on self-reported

entrepreneurial success also had higher scores on entrepreneurial competencies. (2) Risk-avoiding respondents rely on strategic competencies and information-seeking competencies. Respondents with an external locus of control did not rely on these strategies.

Items of the strategic process that influence the job satisfaction of dairy farmers

Chapter 4 explores the entrepreneurial job satisfaction of dairy farmers and tries to link it with the strategic management process by means of path analysis. For farmers, job satisfaction is an important component of their sense of well-being with regard to work. To study the items relevant to the job satisfaction of dairy farmers, a conceptual framework has been developed and tested. Two data sets—one of Dutch farmers and one of Pennsylvanian farmers—were used to test the framework. Results show that despite regional differences, the farmers in this study share common objectives and perceptions that can explain differences in job satisfaction. The dairy farmers in this study—both in the Netherlands and in Pennsylvania—are satisfied with their job It is especially the non-economic objectives such as pleasure in the work of farming that are important for explaining differences in job satisfaction. Perceiving the challenges their business environment poses as opportunities rather than threats increases job satisfaction. It can be concluded that using the conceptual model that has been developed provides insight into the items of the strategic management plan that determine the job satisfaction of dairy farmers. Taking the identified factors into consideration when formulating strategic plans can help to improve future job satisfaction of dairy farmers.

Improving entrepreneurial competencies - learning in study groups

The second aim of this thesis is to test whether entrepreneurial competencies of dairy farmers can be developed by means of a training programme. To this end, Chapter 5 describes the learning process of farmers, and the process and content of the training programme. This chapter describes and analyses the role that study groups might play in improving the entrepreneurial competencies of farmers. The emphasis is placed on the group learning process and the role of the study group facilitator in this process. Learning arises from the creation and sharing of both explicit and tacit knowledge. Explicit knowledge is knowledge that, for example, can be learned from textbooks, whereas tacit knowledge represents knowledge based on the experience of individuals. The following theories of adult learning and team learning in relation to our experiences in the Innovative Entrepreneurship Project were addressed: (a) the learning theory of Senge (1995), (b) Kolb's (1984) learning cycle and learning styles, and (c) Pratt's (1998) five perspectives on teaching.

The different parts of the training programme based on the Strategic Management Model are described in detail in this chapter. Special attention is given to the role of the facilitator. The facilitator's role is vital for a project in which study groups are used as a means of generating and acquiring knowledge by farmers. The facilitator has three tasks. The first task is to facilitate the group process, the second is to teach, and the third involves sharing expertise on technical aspects of farming.

Effective learning in study groups involves using all the extension paradigms (i.e. transfer of technology, problem solving, education, and participatory approaches). Training facilitators in when and how to use these different paradigms is crucial. In addition to having a thorough education in agricultural science, potential study group facilitators require support in using participatory approaches.

Evaluation of a training programme designed to improve the entrepreneurial competencies of a dairy farmer

In Chapter 6 the possibilities for improving these competencies by means of a training programme were investigated. The results of the training programme and the effect on entrepreneurial competencies are evaluated by means of multiple linear regression. First the relation between the entrepreneurial competencies and farmer and farm characteristics was determined. To improve the entrepreneurial competencies of the farmer, a training programme was designed and executed. Based on specific characteristics, the influence of this training programme on farmers' and farm characteristics, entrepreneurial competencies, and the possibility to distinguish farmers likely to benefit from them from those who are not was investigated.

Results from the analysis of the case-control analysis indicate a positive relation of the entrepreneurial competencies with farm size and success perception of all participants. A positive effect of the training programme on entrepreneurial competencies was observed. In particular, strategic competencies and opportunity competencies increased. It was not possible to predetermine a target group. This study indicates that the concept of competencies can provide insights into the entrepreneurial behaviour of farmers, and provides a means to evaluate an intervention programme aimed at developing entrepreneurial competencies. The research method of a case-control study as described is an effective way of identifying possible effects of an intervention. The results of the study presented indicate that it is possible to improve the entrepreneurial competencies of dairy farmers through developing and discussing the farmers' strategic plans in study groups. On average, all participants benefited from the programme, irrespective of farmer or farm characteristics or the level of competencies possessed at the start of the programme.

Discussion

Chapter 7 integrates the results of the various chapters into a general discussion and provides the main conclusions of this thesis. In this chapter a number of data and methodological issues that could have an impact on the observed results are addressed. Two types of selection bias—the possible self-selection of participants in the programme and the non-response bias—are identified. Because of these two types of selection bias, generalisation of the results can, in principle, only be made to dairy farmers in the Netherlands who are participating in study groups and are motivated to respond to questionnaires. However, it is a fairly large group and many other future-oriented farmers will be in similar situations. For these farmers, the results of this study might be applicable. The data collection by means of the described questionnaire is a valid procedure for gaining insight into the characteristics and entrepreneurial competencies of the participants.

An analytical framework is introduced to use the outcomes of the research questions presented in the previous chapters to reflect on entrepreneurship of dairy farmers in the Dutch context. This framework consists of four parts: farmers' characteristics, environment, strategy, and job satisfaction and entrepreneurial success. The farmer's characteristics in this framework were (1) the psychological characteristics, (2) the goals, objectives, and attitudes, and (3) the entrepreneurial competencies. The relations of the different parts of the framework are described. The dairy farmer in his role as entrepreneur has to take into account all the components and their inter-relations presented in the framework. Specific entrepreneurial psychological characteristics, for example locus of control, can be considered the motor for entrepreneurship, while the competencies are the means of transmission that transform the energy created by this motor into entrepreneurial behaviour. However, although a powerful motor and an efficient means of transmission are important, they are not the only prerequisites for success. A clear destination (goals, objectives, and intentions) and a well-determined strategy to reach this destination are just as important. The strategy is not only dependent on the efficacy with which the energy can be transformed into speed but it is also determined by internal environment (farm) this motor is placed in, and in the kind of business environment the entrepreneur has to find his way in. To succeed, all parts have to fit together and need to adapt to each other constantly.

In the last part of Chapter 7, the effectiveness of using study groups in a training programme for improving entrepreneurial competencies is discussed. Much of the entrepreneurial knowledge and competencies of farmers is rather context-specific. The knowledge involved is gained during experience and is mainly practical and implicit. A training programme, however, implies that the knowledge that is acquired is to some extent explicit. The first step is to identify individuals with implicit knowledge that is of interest for the rest of the group. The second step is to make the implicit knowledge explicit by converting it into language. Optimal learning from each other occurs when there are enough shared reference frames amongst the participants for the participants to value each other's implicit knowledge, but there also needs to be a sufficient amount of difference to enable learning. The third step is for the individual acquiring the knowledge to make this knowledge implicit again.

Conclusions

The following conclusions can be drawn:

1. The goals, objectives, and attitudes are determinants of strategic and entrepreneurial behaviour of dairy farmers. Differences in the latter will result in differences in farm size, which can be measured as total milk quota. Farm size is mainly explained by farmers' instrumental goals, such as striving for a large and modern farm.

2. Dairy farmers who had higher scores on self-reported entrepreneurial success also had higher scores on entrepreneurial competencies.

3. Successful dairy farmers are more careful planners who take less risky approaches in their strategy.

4 The dairy farmers in this study are generally satisfied with their job. The results show that it is especially the non-economic goals of the farmer, like pleasure in work, that are important for explaining differences in job satisfaction. Dairy farmers who perceive the challenges their business environment poses as opportunities rather than threats are more satisfied with their job.

5. It is possible to improve the entrepreneurial competencies of dairy farmers through developing and discussing the farmers' strategic plans in study groups. In general, all participants benefited from the programme, irrespective of farmers' and farm characteristics or the level of competencies at the start of the programme.

6. Applying the Theory of Planned Behaviour combined with the concept of competencies can help to gain insight into aspects related to the entrepreneurial behaviour of dairy farmers and can be used in empirical research.

7. Training of entrepreneurial competencies, using study groups, creates an environment in which participants are able to learn successfully.

8. Using the concept of competencies provides a means of evaluating an intervention programme designed to develop a strategic plan for and by entrepreneurs, and is an effective way to identify a possible effect of an intervention.

9. Entrepreneurial competencies have a positive relation to the farm size of dairy farmers.

10 The study design with the case control study and quantitative approach as presented in the present thesis helped to acquire insight into the entrepreneurship of dairy farmers. It provided insights into the factors that make a dairy farmer a successful entrepreneur and evaluated the possibilities for improving the entrepreneurial competencies of dairy farmers by means of a training programme.

Samenvatting

Inleiding

De Nederlandse melkveehouderij gaat een periode van belangrijke kansen en uitdagingen tegemoet. De omgeving is veel meer in beweging dan zo'n 10 tot 15 jaar geleden. Hieraan dragen onder meer bij een dalende melkprijs en (mogelijk) grondprijs, en een sterk toegenomen belangstelling voor milieu, productiewijze en voedselveiligheid. De randvoorwaarden van markt en samenleving zijn veranderd. Bovendien gaat de technologische ontwikkeling binnen de melkveesector ook continu verder. Analyse en inpassing van deze veranderingen vinden op het ogenblik vooral op beleidsniveau plaats. Ze staan in de meeste gevallen ver van de boer af en het is voor de hem onduidelijk hoe en wat hij met deze veranderingen aanmoet.

Er zijn verschillende ontwikkelingen in Nederland, net zoals als in andere landen binnen de EU die op de melkveehouder afkomen. Op de eerste plaats is er het veranderende landbouwbeleid van de EU. Deze heeft directe invloed op het inkomen van de melkveehouder. Agenda 2000, de Mid-term review en hervormingen in 2003 hebben een daling van de melkprijs voor de melkveehouder tot gevolg. De resulterende inkomensdaling wordt maar gedeeltelijk gecompenseerd door directe inkomenssteun. Deze inkomenssteun is daarbij gebaseerd op de rol van het landbouwbedrijf als multifunctionele aanbieder van diensten in het landelijk gebied.

Een tweede ontwikkeling betreft het gedrag van de consument. Dit wordt als steeds minder voorspelbaar, minder consistent en meer gefragmenteerd ervaren. Om aan deze consument tegemoet te komen is er een uitgebreid en gedifferentieerd product aanbod. Alhoewel nog steeds veel van deze productdifferentiatie in de verwerkende industrie gerealiseerd wordt, wordt verwacht dat een gedeelte hiervan al op het melkveebedrijf gerealiseerd moet worden. Een van de manieren waarop de veehouders hun inkomen op peil zouden kunnen houden is dan ook het realiseren van toegevoegde waarde voor hun product door tegemoet te komen aan deze wens tot differentiatie. Maar de stevige concurrentie onder de retail en daardoor aan de uiteindelijke leveranciers heeft een drukkend effect op de prijs.

Een derde ontwikkeling waar de melkveehouderij mee geconfronteerd wordt is de toenemende en neer kritisch belangstelling van burger en consument voor de manier waarop de agrarische productie plaatsvindt. Dit is onder meer gebleken tijdens de BSE en Mond-en-Klauwzeer crises. Een meer transparante manier van productie is noodzakelijk ter behoud van de 'licence to produce'.

Een vierde ontwikkeling is de toenemende aandacht bij de samenleving voor voedselveiligheid, dierenwelzijn en de eventuele gezondheidsbevorderende aspecten van zuivelproducten (bijvoorbeeld CLA's). Voedselveiligheid en dierenwelzijn zijn op de agenda gezet door consumentenorganisaties en de politiek. De EU-commissie streeft naar een hoog niveau van voedselveiligheid, diergezondheid, en dierenwelzijn terwijl toch de interne mark effectief functioneert. De introductie van de General Food Law is hier een voorbeeld van.

Ofschoon een proces dat alle decennia doorgaat, confronteert de toenemende bedrijfsgrootte melkveehouders ook met nieuwe uitdagingen. Hogere investeringen en een andere vaardigheden zijn nodig om het bedrijf goed te kunnen voeren.

Deze veranderingen hebben voor individuele melkveehouderijbedrijven verschillende

consequenties en maken specifieke aanpassingen in de individuele bedrijfsvoering noodzakelijk. Enkele jaren geleden leken 'standaardoplossingen' voor veel bedrijven de meest geschikte oplossing. Het lijkt er nu op dat een oplossing die voor het ene bedrijf heel geschikt is voor een andere bedrijf volstrekt verkeerd kan zijn.

Al deze veranderingen noodzaken de melkveehouder om zich te beraden op zijn rol binnen de landbouw. Vroeger kon hij zijn bedrijf voeren met een combinatie van ervaring en gezond 'boerenverstand'. En hoewel vakmanschap en management nog steeds erg belangrijk zijn moet hier nog wat aan worden toegevoegd: ondernemerschap.

Zowel beleidsmakers als standsorganisaties zien ondernemerschap als de Haarlemmer olie die het de melkveehouders mogelijk maakt de uitdagingen van de toekomst tegemoet te treden. Melkveehouders worden dan ook steeds meer op hun ondernemerschap aangesproken. Echter tot nu toe ontbrak grotendeels het onderzoek dat inzicht geeft in de kenmerken die bijdragen aan dit ondernemerschap. Dit inzicht is hard nodig als we het ondernemerschap van agrarisch ondernemers willen beoordelen dan wel verbeteren.

Een melkveehouder vervult op zijn (familie)bedrijf in één persoon vakmatige, management- en ondernemerstaken. Dit is typisch voor het agrarisch gezinsbedrijf in Nederland. Om deze taken goed te kunnen uitvoeren heeft hij specifieke vaardigheden, competenties, op al deze drie gebieden nodig. In een groter bedrijf worden deze drie competentiegebieden door verschillende personen uitgeoefend, die hiervoor vaak speciaal opgeleid zijn. Het is typisch voor familiebedrijf dat deze drie taken door een en de dezelfde persoon worden uitgevoerd. Is er in het verleden vooral aandacht geweest voor het vakmanschap en management, het ondernemersdeel bleef vaak onderbelicht. Dit proefschrift probeert daar verandering in te brengen.

Wat is een ondernemer? De status van de ondernemer wordt bepaald door twee kenmerken: eigendom van het bedrijf en verantwoordelijkheid voor beslissingen. Echter dit betekent nog niet dat iedereen die aan deze twee kenmerken voldoet, en daardoor de status van ondernemer heeft, ook hoog scoort op de eigenschappen die in de literatuur worden toegekend aan ondernemers. Eigenschappen die hem in staat stellen effectief te ondernemen. De recente literatuur over ondernemerschep begint met Schumpeter. Deze beschreef in 1949 de ondernemer als een "ideeën man" en "man van acties". De ondernemer bezit de vaardigheid om anderen te inspireren en hij verlegt de grenzen van bestaande situaties. Hij is de katalysator voor verandering, en continue op zoek naar nieuwe kansen. Deze beschrijving is door anderen verder uitgebreid. De literatuur meldt de volgende eigenschappen van de typische ondernemer: risiconemer, verstrekker van kapitaal (uit eigen bron of door het aantrekken van kapitaal door anderen), innovator, en een persoon die in staat is mogelijkheden tot het maken van winst te identificeren. De ondernemer is diegene die verantwoordelijk is voor het proces van verandering, voor het creëren van nieuwe waarde – een innovatie en/of een nieuwe organisatie.

Het hebben van de juiste ondernemerskarakteristieken is nog geen een garantie dat de taak van ondernemer ook adequaat uitgeoefend kan worden. Hiervoor zijn ook specifieke vaardigheden nodig, competenties genaamd. Competenties zijn de vaardigheden om specifieke taken uit te oefenen. Het is een combinatie van de kennis, vaardigheden, mogelijkheden en persoonlijkheidskenmerken die resulteren in een effectieve taak uitoefening

Doel en onderzoeksvragen van het proefschrift

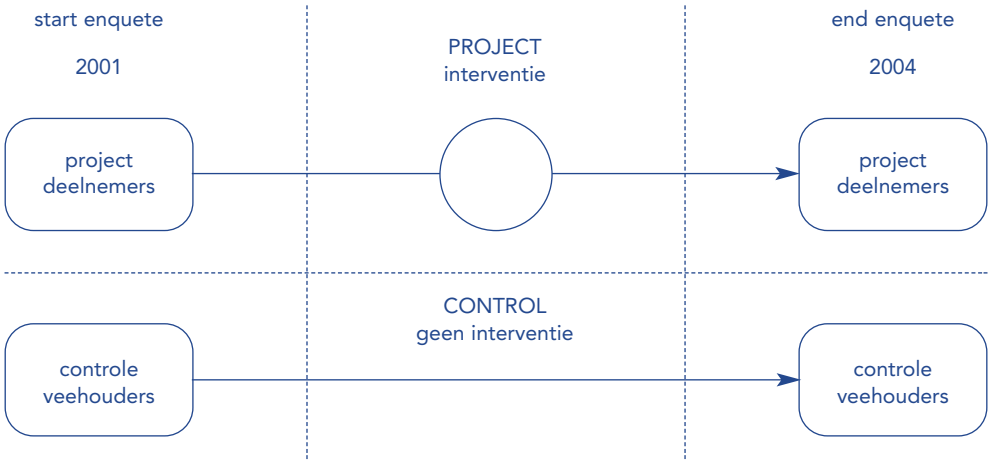
Dit proefschrift heeft een tweeledig doel: op de eerste plaats, het bestuderen het ondernemerschap van melkveehouders en op de tweede plaats onderzoeken of het mogelijk is de ondernemerscompetenties van een groep van melkveehouders te verbeteren door middel van een trainingsprogramma. Om deze doelen te realiseren zijn de volgende onderzoeksvragen gesteld:

1. Bepalen de doelstellingen intenties en attitudes van de melkveehouder zijn strategie en ondernemersgedrag?
2. Wat is het belang van psychologische kenmerken en competenties als voorspeller van “self-reported” ondernemerssucces van Nederlandse melkveehouders?
3. Welke onderdelen van het strategisch proces beïnvloeden de arbeidsvreugde van melkveehouders?
4. Kan het effect van een trainingsprogramma, gericht op het verbeteren van ondernemerscompetenties, gemeten worden?

Opzet van het onderzoek

De gegevens voor dit proefschrift zijn verzameld tijdens een ‘case-control study’, een opzet waarbij gebruik gemaakt is van een proef- en controle groep. Deze ‘case-control study’ is uitgevoerd tijdens een grootschalig trainingsprogramma ‘het Project Veranderingsgericht Ondernemerschap’. Doel van dit project was het versterken van de ondernemerscompetenties van een groep melkveehouders in het noorden van het land.

Twee groepen melkveehouders hebben mee gedaan aan dit onderzoek. Beide groepen waren lid van studiegroepen die regelmatig bij elkaar kwamen in bijeenkomsten over (vakmatige en management) onderwerpen van de melkveehouderij. In de proefgroep zaten de deelnemers (75 melkveehouders) aan het project. Zij namen deel aan zes tot acht groepsbijeenkomsten. Gedurende twee winterseizoenen bespraken ze onderwerpen gerelateerd aan ondernemerschap en ondernemerscompetenties en maakten gebruik van de hulpmiddelen die hen ondersteunden bij het ontwikkelen van een strategisch plan. In de controle groep (180 melkveehouders) zaten vergelijkbare veehouders echter deze namen niet deel aan de projectbijeenkomsten. In figuur 1 staat de projectaanpak weergegeven



Figuur 1 De onderzoeksaanpak

Om inzicht te krijgen in de ondernemerscompetenties en in een eventueel effect van het trainingsprogramma werd twee keer een enquête verstuurd. De eerste werd aan het begin van het onderzoek verstuurd aan zowel deelnemers als aan controlegroep. De tweede aan einde van het project twee en een half jaar na het begin van het onderzoek. Doordat deze gelijk was aan begin en eind en er gewerkt werd met een proef- en controlegroep, kon onderzocht worden of veranderingen die we waarnamen bij de deelnemers in relatie staan met het project of dat ze door een andere reden veroorzaakt werden. Deze gegevens zijn in dit onderzoek geanalyseerd.

Doelstellingen, intenties en attitudes van de melkveehouders

In Hoofdstuk 2 worden de resultaten van het onderzoek naar de relatie tussen doelstellingen, intenties en attitudes van de melkveehouder en zijn strategie en ondernemersgedrag beschreven. Getoetst werd of verschillen in doelstellingen intenties en attitudes een voorspeller zijn van strategisch en ondernemersgedrag van melkveehouders en daaruit volgend bedrijfsgrootte. Hiervoor werd een empirisch model, gebaseerd op de Theory of Planned Behaviour gebruikt. De Theory of Planned behaviour veronderstelt dat het gedrag van een persoon het resultaat is van zijn/haar doelstellingen en intenties, attitudes, subjectieve norm en waargenomen gedragscontrole. Antwoorden op stellingen over de doelstellingen van de melkveehouders verklaarden 38% van de verschillen in bedrijfsgrootte (uitgedrukt in bedrijfsmelkquotum). Het doel om te streven naar een “groot en modern bedrijf” was positief gecorreleerd met bedrijfsgrootte, terwijl doelen die gerelateerd waren met ‘het hebben van een fokbedrijf’ en het streven naar een tweede bron van inkomsten significant negatief gecorreleerd waren met bedrijfsgrootte. Tussen gedrag (bedrijfsgrootte uitgedrukt in bedrijfsmelkquotum) en doelen en intenties van de melkveehouder werd een significante relatie gevonden. Deze relatie werd nog sterker indien stellingen over attitudes, subjectieve normen

waargenomen gedragscontrole werden meegenomen in de analyse. In Hoofdstuk 2 wordt geconcludeerd dat bedrijfsgrootte vooral wordt verklaard door instrumentele doelen van de melkveehouder. Dit suggereert dat de omvang van het bedrijf niet relevant is voor het vervullen van de intrinsieke, expressieve of sociale doelen van de melkveehouder. Dit onderzoek was consistent met de verwachtingen op grond van de Theory of Planned Behaviour. Het gebruik van dit soort psychologische modellen kan helpen inzicht te krijgen in aspecten gerelateerd aan ondernemersgedrag van melkveehouders.

Psychologische kenmerken en competenties

Het doel van Hoofdstuk 3 is het belang van psychologische eigenschappen en competenties als voorspellers van zelf waargenomen ondernemerssucces te onderzoeken. De psychologische eigenschappen die vanuit de literatuur relevant worden geacht voor het ondernemerschap van melkveehouders en die zijn onderzocht: “locus of control” risico-vermijdend gedrag, en innovativiteit. “Locus of control” bepaalt in hoeverre een persoon beoordeelt dat iets binnen of buiten zijn invloedssfeer ligt. Een persoon met een interne locus of control vindt dat meer van de omgeving waarin hij verkeert door hem te beïnvloeden is dan een persoon met een externe locus of control. Deze heeft meer het gevoel dat hem dingen overkomen die toch niet door hem te beïnvloeden zijn. Risicomijdend gedrag wordt bepaald door de eigenschap van individuen om meer of minder risico te lopen. De innovativiteit bepaalt in hoeverre een persoon al dan niet continu op zoek is naar vernieuwing.

Voor ondernemers werkzaam in de melkveehouderij blijken de volgende ondernemerscompetenties van belang te zijn: (1) Strategische competenties, (2) opportunity competenties en (3) competenties gericht op het verzamelen van informatie.

Strategische competenties zijn nodig voor het ontwikkelen, implementeren en evalueren van de strategie van een onderneming. Deze competenties refereren aan het adequaat kunnen ontwikkelen, uitvoeren en evalueren van een strategie op het bedrijf. Opportunity competenties zijn competenties die helpen kansen te zien en informatie te verzamelen en slaan op het vermogen om de omgeving te scannen op nieuwe kansen. Deze competenties zijn nodig om marktkansen te zien en te ontwikkelen. Hierbij zijn een algemene nieuwsgierigheid, een (internationale) marktoriëntatie van belang. De derde groep van competenties zijn gericht op het verzamelen van informatie. Een belangrijk onderdeel hiervan is het zoeken naar en vinden van de juiste informatie op het juiste moment. Deze competenties betreffen zowel het kunnen vinden van de juiste informatie maar ook het besluiten wanneer genoeg informatie verzameld is om een goede beslissing te kunnen nemen..

Stuctural Equation Modellering is gebruikt om psychologische eigenschappen en competenties als voorspellers van zelf-waargenomen ondernemerssucces te onderzoeken. Gegevens van 269 melkveehouders die verzameld zijn door middel van de startenquête zijn geanalyseerd. Van de psychologische eigenschappen die genoemd worden in de literatuur zijn in dit onderzoek de innovativiteit, de externe locus of control en een risico mijdende houding onderzocht. De onderzochte ondernemerscompetenties zijn beperkt tot strategische, opportunity en informatiezoekende competenties.

De onderzochte psychologische eigenschappen beïnvloedden de strategische en informatiezoekende competenties. Een positief verband werd gevonden tussen innovativiteit en strategische competenties en opportunity competenties. Deze zijn nodig om te zoeken naar

nieuwe kansen en naar manieren om deze kansen te implementeren in het bedrijf.

Een negatief verband werd gevonden tussen externe locus of control en strategische competenties. Personen met een externe locus of control achten de uitkomst van een gebeurtenis buiten hun eigen controle. Strategische planning daarentegen veronderstelt dat de melkveehouder met zijn planning op zijn minst gedeeltelijk de toekomstige bedrijfsresultaten kan beïnvloeden.

Een risicomijdende houding had een positief verband met strategische competenties en helpt om een strategie succesvol uit te voeren. Een positieve relatie werd gevonden tussen een risicomijdende houding en strategische en informatie zoekende competenties.

De relatie van de onderzochte kenmerken met ondernemerschap: in dit hoofdstuk is aangetoond dat (1) ondernemers met hoge scores op zelf waargenomen ondernemerssucces hadden ook hogere scores hebben op ondernemerscompetenties en (2) risicomijdende respondenten vertrouwen op strategische en informatie zoekende competenties. Respondenten met een externe locus of control vertrouwen minder op deze strategieën. Er wordt geconcludeerd dat het verbeteren van de strategische competenties een manier kan zijn om de succesperceptie van ondernemers te verbeteren.

Onderdelen van het strategisch proces die de arbeidsvreugde van melkveehouders beïnvloeden

Hoofdstuk 4 verkent de arbeidsvreugde die melkveehouders ontlenen aan hun ondernemerschap. Arbeidsvreugde is een belangrijk onderdeel van het gevoel van welbevinden dat melkveehouders ontlenen aan hun werk. Om de onderdelen die relevant zijn voor de arbeidsvreugde van melkveehouders te kunnen onderzoeken is een conceptueel raamwerk ontwikkeld en getest. In dit conceptueel raamwerk wordt geprobeerd wordt om arbeidsvreugde te verbinden met het strategisch-managementproces door middel van Path Analysis. Twee datasets — een met gegevens van Nederlandse melkveehouders uit de startenquête en een met gegevens van melkveehouders uit Pennsylvania — zijn gebruikt om het raamwerk te testen. De resultaten tonen aan dat ondanks regionale verschillen, de melkveehouders in dit onderzoek gemeenschappelijke doelen en percepties delen, die verschillen in arbeidsvreugde kunnen verklaren. De melkveehouders in dit onderzoek — zowel in Nederland als Pennsylvania — zijn over het algemeen tevreden met hun werk. Het zijn met name de niet-economische motieven als plezier in het werk die belangrijk zijn als verklaring voor de verschillen in arbeidsvreugde van de ondernemers. Veehouders die de uitdagingen waar de onderneming voor staat als kans zien in plaats van als bedreiging geven aan meer tevreden te zijn met hun rol als ondernemer dan hun collega's waarbij het omgekeerde het geval was. Voldoende aandacht voor de genoemde aspecten die bijdragen aan de arbeidsvreugde van de ondernemer, kan helpen naast economische doelen de arbeidsvreugde van melkveehouders te verhogen.

Bevorderen van ondernemerscompetenties — leren in studiegroepen

Het tweede doel van dit proefschrift is de mogelijkheden te onderzoeken of ondernemerscompetenties verbeterd kunnen worden door een trainingsprogramma. Hoofdstuk 5 beschrijft het leerproces van melkveehouders en het trainingsprogramma. Het beschrijft en analyseert de rol die studiegroepen kunnen spelen bij het verwerven van ondernemerscompetenties van melkveehouders. In dit hoofdstuk ligt de nadruk op het groepsleren en de rol van de studiegroepbegeleider in dit proces.

Leren gebeurt in groepen door het met elkaar delen van expliciete en verborgen kennis. Expliciete kennis is kennis die bijvoorbeeld kan worden geleerd uit tekstboeken, terwijl verborgen kennis vooral gebaseerd is de ervaringen van individuen. Inzichten afkomstig uit een aantal theorieën over volwassenen educatie en teamleren zijn gebruikt om ervaringen opgedaan tijdens het project 'Veranderingsgericht Ondernemerschap' te kunnen plaatsen. Dit zijn (1) de leertheorie van Senge, (2) de leercyclus en de leerstijlen van Kolb en (3) de vijf perspectieven op leren van Pratt.

Ook in dit hoofdstuk zijn de verschillenden onderdelen van het trainingsprogramma, gebaseerd op het Strategisch Management Model, beschreven. Bijzondere aandacht is gegeven aan de rol ven de studiegroepbegeleider. De rol van deze studiegroepbegeleider is van groot belang in een project waarbij studiegroepen worden gebruikt als een middel om kennis te verwerven en te genereren. In dit proces heeft de begeleider een drievoudige taak: de eerste taak is het faciliteren van het groepsproces, de tweede taak is het optreden als leraar en de derde taak is het delen van de expertkennis op technische aspecten van de melkveehouderij.

Effectief leren in studiegroepen maakt gebruik van alle voorlichtingsparadigma's te weten: 'transfer of technology', probleem oplossen, educatie en participatieve aanpakken. Het is van groot belang dat studiegroepbegeleiders getraind worden wanneer en hoe deze verschillende paradigma's gebruikt moeten worden. Naast een gedegen opleiding in agrarische wetenschappen moeten potentiële studiegroepbegeleiders ook ondersteund worden in het gebruik van participatieve methodieken,

Evaluatie van een trainingsprogramma gericht op het versterken van ondernemerscompetenties van melkveehouders

Hoofdstuk 6 beschrijft de resultaten van het onderzoek naar de mogelijkheden om ondernemerscompetenties te beïnvloeden met een trainingsprogramma. De resultaten van het programma en het effect van dit programma zijn onderzocht met behulp van Multiple Lineaire Regressie. De relatie tussen ondernemersvaardigheden gerelateerd met bedrijfskenmerken van de ondernemers zijn onderzocht voor de aanvang van het trainingsprogramma.

Tabel 1
De relatie tussen de belangrijkste ondernemerscompetenties en bedrijfskenmerken

	Strategische competenties			Opportunity competenties			
Bedrijfskenmerken	vaststellen	implementeren	evalueren	beleid	consument	markt	Informatie zoeken
# koeien/bedrijf	++	+					
Productie/koe/jaar			++				
Ha gras en mais	++	++			++	+	
Melk quotum	++	+			++		

+ or - Spearman's rho Correlation is significant at the 0.05 level (2-tailed). ++ Spearman's rho Correlation is significant at the 0.01 level (2-tailed).

Uit tabel 1 blijkt dat voor het begin van het trainingsprogramma ondernemers op grotere bedrijven gemiddeld meer strategische competenties en opportunity competenties hebben dan ondernemers op kleiner bedrijven. Uit de analyse blijkt niet of de ondernemers doordat ze betere ondernemerscompetenties hadden ook grotere bedrijven konden ontwikkelen of dat ze doordat ze grotere bedrijven hadden betere competenties moesten verwerven om het bedrijf in stand te houden. Wat we in ieder geval kunnen concluderen is dat ondernemerscompetenties belangrijker worden naarmate de bedrijven groter worden. Deze bevindingen ondersteunen de keuze om het trainingsprogramma te richten op met name deze twee competenties. Het maken van het strategisch plan ondersteunt de strategische competenties en opportunity competenties worden ontwikkeld tijdens de discussies met betrekking tot de externe analyse.

Het trainingsprogramma heeft invloed op een aantal bedrijfskenmerken en ondernemerscompetenties. Het aantal koeien stijgt sneller op de bedrijven in de groep die aan de training heeft deelgenomen. Van de strategische competenties is door de training met name de vaardigheid om een strategie te implementeren verbeterd bij de deelnemers. Ook zijn de deelnemers positiever gaan aankijken naar de veranderingen die optreden in consumenten wensen en kijken ze positiever aan tegen de veranderingen in de markten vergeleken met de controlegroep. De score met betrekking tot relatie competenties is in vergelijking met de controle groep minder sterk vooruitgegaan.

Discussie

In Hoofdstuk 7 worden de resultaten van de voorgaande hoofdstukken met elkaar in verband gebracht. Een aantal zaken met betrekking tot methodologie en gebruikte gegevens worden besproken. Op grond van mogelijk twee types van “selectie bias” — mogelijke zelfselectie bij de deelnemers aan het programma en zelfselectie bij het beantwoorden van enquêtes— kunnen de resultaten in principe alleen worden gegeneraliseerd naar melkveehouders die deelnemen aan studiegroepen en die gemotiveerd zijn om aan enquêtes mee te doen. Echter er is een relatief grote groep onderzocht en de verwachting is dat een grote groep op de toekomst georiënteerde melkveehouders in vergelijkbare omstandigheden verkeert: de uitkomsten zijn ook voor hun van belang. De gegevensverzameling met behulp van de gebruikte enquête blijkt een valide methode te zijn om inzicht te krijgen in de kenmerken en ondernemerscompetenties van de deelnemers aan het onderzoek.

De uitkomsten van de onderzoeksvragen die aan het begin van het proefschrift gesteld zijn, zijn met elkaar in verband gebracht in een conceptueel raamwerk. Dit raamwerk bestaat uit vier onderdelen: (1) kenmerken van melkveehouders, (2) omgeving, (3) strategie en (4) arbeidsvreugde en ondernemerssucces. De kenmerken van melkveehouders zijn verder uitgesplitst. Specifieke aandacht hadden (1) psychologische ondernemerskenmerken, (2) doelstellingen, intenties en attitudes en (3) ondernemerscompetenties. De relaties tussen de verschillende onderdelen van dit raamwerk zijn beschreven. De melkveehouder, in zijn rol als ondernemer, combineert al deze componenten en hun onderlinge relaties zoals aangegeven in dit raamwerk. De specifieke ondernemerskenmerken, zoals de “locus of control”, kunnen worden beschouwd als de motor van het ondernemerschap. De competenties zetten de energie die hierdoor gegenereerd wordt om in ondernemersgedrag. Maar ondanks dat dit twee belangrijke onderdelen zijn van het ondernemerschap, zijn dit niet de enige voorwaarden voor succes als ondernemer. Duidelijke doelen (doelstellingen en intenties) en een nauwkeurig geformuleerde strategie om deze doelen te bereiken zijn zeker zo belangrijk. Deze strategie wordt niet alleen bepaald door de efficiëntie waarmee de energie kan worden omgevormd door middel van de ondernemerscompetenties maar ook door de interne omgeving (het bedrijf) en het soort omgeving waarin de ondernemer zijn weg moet vinden. Om succesvol te kunnen zijn moeten alle onderdelen nauwkeurig in elkaar passen en continue geüpdate worden.

In het laatste deel van Hoofdstuk 7 wordt de effectiviteit van het gebruik van studiegroepen in een trainingsprogramma dat gericht is op het versterken van ondernemingscompetenties besproken. Veel van de kennis en competenties van de ondernemer is context specifiek. Deze is opgedaan is door ervaring en voornamelijk praktisch en impliciet. Een trainingsprogramma veronderstelt echter dat expliciete kennis wordt verworven. De eerste stap is om deelnemers die kennis hebben die ook van belang is voor de andere deelnemers te identificeren. De tweede stap is het expliciet maken van deze impliciete kennis door deze kennis te veranderen in taal. Optimaal leren van elkaar treedt op als het referentiekader van de deelnemers genoeg gemeenschappelijke onderdelen heeft, zodat het mogelijk wordt de impliciete kennis van elkaar te kunnen waarderen, maar genoeg van elkaar verschilt zodat van elkaar leren mogelijk is. De derde stap is dat het individu die nieuwe kennis verwerft deze weer impliciet maakt.

Conclusies

De volgende conclusies kunnen worden getrokken:

1. De doelen, intenties en attitudes zijn bepalende elementen van het strategisch en ondernemersgedrag van melkveehouders. Verschillen in deze elementen zullen resulteren in verschillen in bedrijfsgrootte. Bedrijfsgrootte wordt voornamelijk bepaald door instrumentele doelen als het streven naar een groot en modern bedrijf.

2. Melkveehouders die hoog scoren op door henzelf gerapporteerd ondernemerssucces scoren ook hoog op ondernemerscompetenties.

3. Succesvolle melkveehouders zijn zorgvuldige planners die kiezen voor een minder risicovolle aanpak in hun strategie.

4. De melkveehouders in deze studie vinden over het algemeen hun beroep bevredigend. De resultaten tonen aan dat met name de niet-economische doelstellingen zoals plezier in werk belangrijk zijn voor het verklaren van verschillen in arbeidsvreugde tussen melkveehouders. Veehouders die de uitdagingen van de onderneming als kans zien in plaats van bedreiging geven aan meer tevreden te zijn met hun rol als ondernemer dan hun collega's waarbij het omgekeerde het geval was.

5. Het is mogelijk om ondernemerscompetenties te bevorderen door in studiegroepen een strategisch plan te ontwikkelen en te bediscussiëren. Over het algemeen hadden alle deelnemers voordeel van het training onafhankelijk van de ondernemers- en bedrijfskenmerken aan het begin van het training.

6. Zowel The Theory of Planned Behaviour als ook het concept van competenties kunnen helpen inzicht te krijgen in ondernemersgedrag van melkveehouders en kunnen worden gebruik bij empirisch onderzoek naar dit ondernemersgedrag.

7. Het gebruik van studiegroepen bij het trainen van ondernemerscompetenties creëert een omgeving waarin succesvol leren mogelijk is.

8. Het gebruik van het competentieconcept geeft mogelijkheden om een interventie programma dat gericht is op het ontwikkelen van een strategisch plan te beoordelen en is effectief bij het identificeren van een mogelijk effect.

9. Ondernemerscompetenties bij de onderzochte melkveehouders zijn positief gerelateerd aan de grootte van hun bedrijf.

10. De onderzoeksopzet met een case-control study en kwantitatieve aanpak zoals in dit onderzoek toegepast helpt bij het verkrijgen van inzicht in het ondernemerschap van melkveehouders. Deze opzet geeft inzicht in de factoren die een melkveehouder een succesvolle ondernemer maken en hielp bij het evalueren van mogelijkheden om ondernemerscompetenties te stimuleren door middel van een trainingsprogramma.

Curriculum Vitea

Ronald Hubert Marie (Ron) Bergevoet werd op 2 februari 1960 geboren te Urmond. In 1979 behaalt hij het VWO-B diploma aan de Scholengemeenschap Groenewald te Stein. In dat zelfde jaar werd aangevangen met de studie Diergeneeskunde aan de Faculteit der Diergeneeskunde van Universiteit Utrecht. In 1986 werd het dierenartsexamen 'met genoegen' afgelegd. Na diverse waarnemingen was hij van 1987 tot en met 1998 praktiserend dierenarts in de Dierenartsenpraktijk Ravenstein, Schaijk en omstreken. Hier hield hij zich naast de algemene praktijk vooral bezig met de diergeneeskundige begeleiding van varkens- en rundveebedrijven. In deze tijd werden naast de praktijk (bestuurlijke) activiteiten op het gebied van informatisering van varkensbedrijven en de veterinaire praktijk uitgevoerd. Ook werd in deze tijd samen met anderen het bedrijf InterAct Agrimangement BV opgericht. Binnen dit bedrijf was hij actief in het postacademisch onderwijs "bedrijfseconomie" aan veterinaire beroepsgroep mee verzorgd. In de periode 1999-2000 werd bij NEDAP NV als veterinair en technisch adviseur een bijdrage geleverd aan de ontwikkeling en introductie van groepshuisvesting met voerstations op varkensbedrijven. Vanaf december 2000 werd bij InterAct Agrimanagement BV gestart met het project 'Veranderingsgericht Ondernemerschap in de melkveehouderij'. Dit project, in opdracht van en gefinancierd door NLTO en het J. Mesdagfonds, was gericht op het versterken van de ondernemerscompetenties van melkveehouders uit het Noorden van het land. Van dit project maakte het promotietraject, dat geresulteerd heeft in dit proefschrift, deel uit. Sinds januari 2005 is hij werkzaam als wetenschappelijk onderzoeker bij het LEI BV te Den Haag. Hier is zijn aandachtsgebied onder meer de economische aspecten van diergezondheid, voedselveiligheid als ook het ondernemerschap van ondernemers op primaire bedrijven.

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