



*Macedonian farmer's
decision making with focus
on investing*

Blagoja Tosevski

*SLU, Department of Economics
Degree Thesis in Business Administration
D-level, 30 ECTS credits*

*Thesis No 562
Uppsala, 2009*

ISSN 1401-4084
ISRN SLU-EKON-EX-NoXX--SE

*Macedonian farmer's decision making with
Focus on investing*

Blagoja Tosevski

*Supervisor: Bo Öhlmer
Co – supervisor: Dragan Gjosevski*

© Blagoja Tosevski

Sveriges lantbruksuniversitet
Institutionen för ekonomi
Box 7013
750 07 UPPSALA

ISSN 1401-4084
ISRN SLU-EKON-EX-No.XX –SE

Tryck: SLU, Institutionen för ekonomi, Uppsala, 2009

Abstract

This paper gives insights of decision-making process of the Macedonian farmers and the problems they face in the decision process. In addition, there are possible solutions for the problem in the decision process. The paper also, introduces the problems on the market, lack of available sources for acquiring information, huge interest rates, problem with land property rights, piles of administrative paper work.

The data was collected using survey and for this purpose, a questionnaire was composed. Further, for the theoretical part was used model “Revised conceptual model of the decision making process” (B. Ohlmer at al, *Agricultural Economics* 18(1998), 273-293) and plus two additional illustration, concerning intuitive decision-making and environment surrounding the farmer. As analysing tool for the data, it was used the T- test where the farmers were split in two groups: farmers who are using financial services and farmer who did not use.

For the analysing part, collected data from the survey was implemented in the models and conclusions were stated. This issue is interesting, since this topic is not studied before especially in the agriculture

Key terms: Investments, decision-making, intuition, financial institutions, credit lines, information search, bearing responsibility

Abbreviations

MAFWE – Ministry of Agriculture, Forestry and Water Economy

Table of Contents

1	INTRODUCTION.....	1
1.1	PROBLEM BACKGROUND.....	1
1.2	PROBLEM.....	2
1.3	AIM.....	3
1.4	DEMARCATIONS.....	4
1.5	OUTLINE.....	5
2	METHOD.....	6
3	A THEORETICAL PERSPECTIVE.....	8
3.1	THEORETICAL BACKGROUND OF THE DECISION-MAKING PROCESS	8
3.2	DECISION-MAKING PROCESS	8
3.3	INTUITIVE DECISION MAKING PROCESS	12
4	THE EMPIRICAL STUDY	14
4.1	BACKGROUND FOR THE EMPIRICAL STUDY	14
4.2	RESULTS FROM THE EMPIRICAL STUDY	16
4.3	FINANCIAL INSTITUTION’S POINT OF VIEW	27
5.	ANALYSIS AND DISCUSSION.....	29
5.1	INTRODUCTION TO THE CHAPTER ANALYSIS AND DISCUSSION.....	29
5.2	DISCUSSION OVER THE DECISION-MAKING PROCESS FOR INVESTING IN THE CASE OF THE MACEDONIAN FARMERS.....	29
5.3	INTUITIVE DECISION-MAKING PROCESS IN THE CASE OF THE MACEDONIAN FARMERS	33
5.4	RESULTS FROM THE T – TEST, REGARDING THE SURVEY	35
6.	CONCLUSIONS.....	36
6.1	POSSIBLE SOLUTIONS REGARDING THE INVESTING IN FARM	37
	BIBLIOGRAPHY	39

1 Introduction

1.1 Problem background

How immense is the decision for the Macedonian farmers to acquire money from financial institutions for investing? What triggers them to obtain money for investing in their business? These questions are extremely interesting since the conditions for any kind of acquiring money from financial institutions with so many uncertainties, with unstable and fragile market could prove to be a huge obstacle for investing in their farm. Few problems are going to be analysed, that influenced the farmers not to invest in their farms, or at least not to invest with borrowed sourced money from financial institutions.

In the transition period and the years that followed the period, acquiring a credit of any kind, from financial institution was not financially possible. Especially, for the agricultural sector, since the banks are characterise the farmers as a risky clients. Therefore, the available credits have rather big interest rates, and of course any kind of capital as a security. Most of entanglements were the big interest rates, slow administrations work and the piles of documents that were necessary for the bank or any financial institution to approve the loan. Some of the mentioned obstacles are difficult argued, such as too much paper work or slow administration, since the financial institutions can argue the need to secure their loaned means and on the other hand, the farmers can argue that they ask for too much documentation. However, some of the facts such as high interest rates are undeniable. The interest rates are varying from 6 % to 15 % (Agrobusiness financial dictionary 2008), which is a percentage too high to work in the agrobusiness sector, where the climate have huge impact. Even though there is trend of lowring the interest rate in the agriculture, they are still high. (ELS in Romania, Bulgaria and Macedonia 2006)

Hence, these obstacles were characteristic for the financial institutions, as for chance of reinvesting in their farms, the farmers were also not interested, since most of the farmers were trying to survive the year and surplus of money for reinvesting was a rare opportunity. This problem emerged within the unstable market, a market that could not guarantied the price for the sale of the products. This lack of interest in investing is also clearly seen from the lowering rate of -1.6% on yearly bases for the period from 2002 – 2005, of the agriculture contribution in the national GDP and even lower rate of -6,9% contribution in the total investments(Analyse of the agricultural sector in R. Macedonia, 2008). Therefore, investing or reinvesting their money, with such unorganised market was a difficult process. This was the most crucial obstacle for the farmers to overcome in the process of investing.

In the recent years, there were some large changes on the field of investments in the agriculture. The banks started to lower their interest rates, some of the land ownership issue were straighten up and the banks allowed mortgages. Few credit lines like IFAD¹ and IFAD 2 from EU were acceptable for the farmers. There is also a program by the Ministry of Agriculture called "Program for Rural Development 2006", which will cover half of the money that the farmers are going invest in their previously planned investment (MZSV 2008). There is still space for adjusting the loans for investments in Macedonia, lowering the interest rates and quicker and easier way for the farmers to obtain capital.

In these past eighteen years organizational, institutional and market, problems are bothering the Macedonian farmers and most of these problems are persisting with same intensity.

¹ IFAD - International Fund for Rural Development

1.2 Problem

The crucial problems that hindered the farmers in their decision-making for investing in their farms, as mentioned in the background problem, were the unstable market, huge interest rates accompanied with too much administrative papers and the waiting period for granting the credit. These problems in some way shaped the pattern of the decision-making process for investing. Since these means had to come from somewhere, the farmers in Macedonia tried to find solutions in obtaining capital from two available sources: (i) private financial companies (banks, companies formed by private funds) and (ii) government grants.

Even though Macedonia has the necessary conditions to produce many of the products that are scarce on the foreign markets, the agricultural sector could not take advantage of this opportunity. Yet, with this opportunity the agricultural sector in the last ten years have constant unsatisfactory growth rate in the economical growth as a whole in Republic of Macedonia (Food prices and the inflation in Republic of Macedonia 2008)

There are few examples that clearly show the problems the farmers have in the agricultural sector. Well first, the market in EU² is limited for the Macedonian farming production. Namely, the production is not fulfilling the necessary standards and the product sort varieties are not attractive for the EU market. As a strategic product and product with top quality, e.g. the wine is mainly exported as bulk 60 million litres and not as bottled wine with only 5,6 million litres (Agrobusiness financial dictionary 2008). Of course, the bulk wine gets lower price, then the bottled one. Such kind of problems follow many of others strategic products, thus, as expected brings uncertainties for the farmers. Therefore, the decision for investing money of any kind becomes impossible and demoralising for the farmer. These problems could come either form low quality of the products or the lack of farmer organization, which would ultimately lead to low prices and low profits.

In addition, there is trend of lowering the share of the agriculture in the GDP in the last 10 years. Hence, from 11.4% in 1997 to 8.7% in 2007, where also the percentage of work force in the agriculture have declined, from 25% in 2001 to 20% in 2006 (Food prices and the inflation in Republic of Macedonia 2008), which reflects the lack of organization between the farmers. These statistics again present the farmer's reluctance of investing in higher production or farms that are more efficient.

The importance of the insurance lies in the fact that with insured crops, mechanization or land he can make more risky decision and it will easy the responsibility of the outcome. In this case, the insurance companies are not interested in the more risky agricultural sector.

As summary to the problem, we can separate the problem as:

- Organizational and
- Market

²EU – European Union

Therefore, it seems that two main problems emerge in the process of investing by the Macedonian farmers. The farmers cannot utilize the market the fullest, because of the low quality of the products and selling them, where as the organizational problem arises from the inability to utilize the foreign and domestic markets.

1.3 Aim

The main aim in the thesis is presenting picture of the path that farmers has used in make a decision for investing in their farms. This will show where the farmers or in which phase they face their problems. Most emphasis is set on the following questions:

- What are the farmer's options, regarding information search, planning, and evaluation and choosing, bearing responsibility?
- How the decision process for the Macedonian farmers flows and how they approach to the problems?
- In which part of the decision-making, the farmers are facing difficulties while solving the problem.

The chosen topic elaborated in this thesis is the decision-making process in investing, which is part from the broader picture of farm managing and this topic comes in very important moment. Hence, Macedonia is slowly preparing to enter in EU and by that fact; more of the European funds are going to be open, especially for the agriculture.

The thesis will focus on all the phases from the model and it will show how the farmers are making the unique decision for investing in their farms. The first two phases, problem detection and definition will show how and where the farmers are getting the information's regarding possibilities for investing in their farms. In addition to searching information, focus will put on the seeking for information's about external and internal possibilities or problems that affect their farms. Analysis and choice will seek how the farmers are planning the investments, if they do how they are choosing which of the option the right one is. Do they have options to choose? The implementation phase will give answers to the responsibility the farmers are taking for the farm (insurance for the farm, consulting experts of different kind) and evaluating the consequences (accounting).

After answering on these questions, following conclusions are to be drawn:

- How can government agencies or other state institutions help the farmers make right decision? Help is especially needed in the segments of market, searching information, organizing etc.
- What are the solutions for the farmers, to the problems previously stated in the problem chapter?
- How should the private financial institutions (banks, other credit companies) accommodate their credit lines to the farmers, so they can use them more easily?

The results from these questions should help government, different information services, organizations, private financial institutions, who are working with investments and management. To give hints what the farmers need and how to get more closely to the problems that the farmers are facing.

1.4 Demarcations

This thesis aims to give the insights to the decision-making process for the Macedonian farmers, but boundaries have to be put to what extent this thesis will go with the research.

First, in this thesis were interviewed only the farmers and the financial institutions, where as government agencies were not included in the survey. Therefore, the results will not be bias in favour of the financial institutions. Furthermore, the survey was intended for the private financial institutions and the conditions that they offer. The sources, such as government grants, reinvesting farmer's own profit, inheritable capital, or capital from friends and close family, I mentioned them only as potential sources.

The model of decision-making process, that is used in this thesis is influenced by factors such as farmer's characteristics or factors that are surrounding the farmer, such as farm's and institutional characteristics. The influence of these factors is not going to be analysed and the analysis is solely intended for the decision process itself.

In this paper, I did not divide the farmers by regions, which means there was no separate analysis of the regions in Republic of Macedonia. The survey shows the intensity of investments in Macedonia as a whole.

1.5 Outline

The figure below depicts the skeleton of the thesis. As can be seen it starts with the introduction, where the first chapter presents the problem background and the problem formulation. After the formulation of the problem, aim and the demarcations follow. The second chapter or is all about the method and how the data is collected and the tool used for analysing the data. Further, the third chapter presents the theoretical part, herein the model that is used for the research and two additional illustrations, regarding intuitive decision making and the environment that affects the decision process. In the fourth chapter or empirical study the questions and the results from the survey are presented. The fifth chapter provides analyse and discussion, regarding the collected empirical data from the survey. The last chapter gives summary of the whole thesis and some suggestions and solutions, concerning the problem.

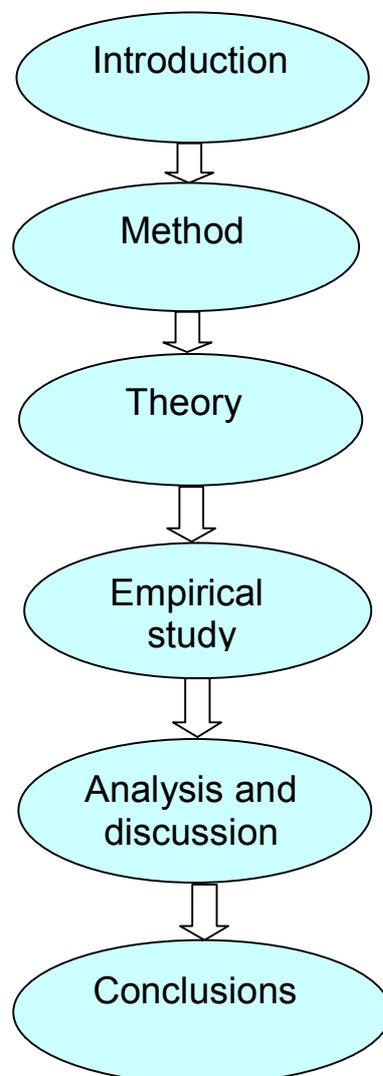


Figure 1. Illustration of the thesis outline

2 Method

2.1 Sources for the theoretical part and the structure of the survey

The research that took part in writing this thesis consists of two parts. The first part is theoretical, which comprise materials from articles, textbooks etc. The main part from the theory focuses on the “Revised conceptual model of the decision making process” (B. Ohlmer at al, *Agricultural Economics* 18(1998), 273-293). This thesis lies on the foundation of this model, where I am going to accommodate the model on the conditions in Macedonia. In addition, I am going to introduce the intuitive model by Hogarth (2001) and Klein at al. (2005). This model will show the unconscious and conscious systems used by the farmers, while making a decision. Second part of the research was the practical work. This part included the interviews with the farmers.

The research is based on structured questionnaire interviews comprised of 20 questions, regarding the investing process and eight general questions about the farmer, the questions were closed. For every question, there were multiple-choice answers. The number of answers varied between two given answers, e.g. if a farmer answered No on a question, then the answer was designated with 0 and if he answered YES then it was 1, and maximum of five given answers, as example is the second question presented in the results of the empirical study. The designation of the qualitative answers with numbers was for calculating the T – test. Most of the interviews I conducted in depth face-to-face method, but I send some of the questionnaires through mail. Namely, 36 out of 41 farmers were interviewed personally and five farmers were contacted and participated by sending their answers via mail. The farmers were chosen by the people of the extension agency, because they are contacting with them more regularly. The only request from my side was that the survey should include farmers and farms with different characteristics (size of the farmer, type of production, registered or not farmer, different age, etc). The survey data were classified and recorded in one main table. Further, questions were separately presented by using excel pivot tables. The data in the pivot tables will be presented in percentages.

The questions in the survey were made following the model by Öhlmer at al. (1998). For every phase, there are questions and different questions are affecting different phase of the model. The questionnaire covers all the aspects of the decision process by the Macedonian farmers and the results from the questionnaire implemented in the model should show the possible path of the decision – making process. For the research, I used non-random sample and the sample is too small, so I cannot draw conclusions for all the farmers in Macedonia. Therefore, the path of the decision-making presented in this thesis is just a hypothesis of how the farmers make their decisions

In addition, to the main survey and for showing more insights on the credit conditions in Macedonia, it was conducted additional survey, where were included the private financial institutions. The intention of this survey is to give more complete analyse to the issue in the paper, i.e. a chance for the involved sides on this matter to be heard.

2.2 Statistical model

As key statistical model, I used the T-test. Before calculating the T- test, I divided the farmers in two groups of farmers that did not take credits and farmers that did. Dividing the farmers in two groups, calculating the t – test values and explaining the statistical significance of the answers for each question between the two groups from the t- test values, were the basic assumptions of the t- test model in this case. All of the assumptions from the t- test were fulfilled. However, before calculating the t – test I calculated the mean of the numbers for both groups independently and for every question. Based on the numbers of the mean, I computed the standard deviation. The used formula for calculating the mean is the following:

$$Mx = \frac{\sum xi}{N}$$

Mx – the mean

$\sum Xi$ – the sum of all the values in the series

N – total number of values

Figure 2. Formula for the mean (Statistical handbook, 2005)

After calculating the mean, I calculated the standard deviation with the following formula:

$$s = \sqrt{\frac{\sum (x_i - M_x)_2}{N - 1}}$$

s – standard deviation

X_i - all the values in the series

M_x – the calculated mean of the series

N – total number of values

Figure 3. Formula for the standard deviation (Statistical handbook, 2005)

Additionally, I am going to use the t- test statistical model for the results. For the aim of this test, the farmers were divided into to groups: (i) farmers that have acquired capital from financial institutions and (ii) famers that haven used the services of these institutions. The answers of every question, form both groups were tested. The T - test presents ratio of the difference between the averages of the two means and the statistical error, which emerges because of the variation within the group and not between the two groups. The T – test gives results with 95% confidence or where $P=0.05$.

The T – test was computed with the following formula:

$$t = \frac{x_t - x_c}{\sqrt{\frac{\text{var } t}{n_t} + \frac{\text{var } c}{n_c}}}, \quad \text{var} = \delta^2$$

X_t – the larger average mean

X_c – the smaller average mean

Var t – variance of the mean t

Var c – variance of the mean c

nt - number of mean t
nc – number of mean t

Figure 4. T- Test formula (Trochim 2006)

The survey method was chosen, because it was assumed the most appropriate way of getting the necessary information from the farmers. As strongest point of this method was, the fact that the issues that characterize the farmers' decision-making process in a best way can be explained if the farmers are used as a direct source. All information concerning the decision making process is specific to the decision making unit, that in this case is the farmer it self. Weaknesses that appeared by using of this method are the time consuming and farmers' reservation to answer on some of the questions with full honesty or the doubt in why these questions are asked. However, face-to-face contact allows solving of all misunderstandings on time, and the answers' validity to be higher.

3 A theoretical perspective

3.1 Theoretical background of the decision-making process

Most of the models involving decision-making process are consisted of several phases and sub phases. All economists that further worked on this subject used the same phases, but in the process of studying them, they named them differently. What is important that all of them agreed on the arrangement of the phases i.e. of how the decision-making process flows?

First part of the theoretical perspective will give summarization of how decision-making process was presented or revised by different economists. In addition, I will present the revised conceptual model of decision-making process by Öhlmer at all (1998), which I will use later in analyse and discussion chapter. Hence, also attention will be put on the external and internal factors that influence the decision makers in this case the farmers.

Additionally, a model of the intuitive decision-making will be also used for showing how the farmers deal with repeated decisions and decision they are making for the first time i.e. unique decisions. For this intention, the intuitive model 'The tacit and deliberate systems of human information processing' (Hogarth, 2001 and Klein et al., 2005) will be used. This model also elaborates the learning process and updating the previous knowledge with new information.

Further, in the theoretical perspective focus will be put on the process of information search and learning of the information search. These two processes, information search and the learning, are always going together, since decision maker is always learning deliberately or tacitly. This study is not going to go too deep into these two processes and it will give the meaning of the information search to the decision-making process and learning from previous decisions.

3.2 Decision-making process

All the time people are making decisions and in most of the situations, they are focusing on the event not on the process. They probably never ask themselves, what the problem that triggered was or if they had more time and information's how would they react in the same

situation. Unconsciously they all are going thru the process of making a decision, but consciously decision makers never analyse the steps to the final decision.

As we said all the models that were presented by different researchers, most of them are consisted of identical steps, but named differently. In addition, Johnson at al. (1961) presents six steps: problem definition, observation, analysis, decision, action and responsibility bearing. Further, Simon (1965) explains the process in just three steps: intelligence, design and choice, and Mintzberg at al. also introduce three steps: identification, development and selection. Hogarth (1987) distinct the decision-making process in five phases: acquisition of information, processing, output, action and outcome.

For a study a model is used, which has influences from previous models and derives as a product from them. This model comprises for phases, which phases are going together with four sub phases. The model is best described by the authors as “a combination of the phases and the sub phases” and “is best viewed as matrix, not as a list of functions” (Öhlmer at al., 1998, p. 285)

	Sub phases			
Phases	Searching and paying attention	Planning	Evaluating and choosing	Bearing responsibility
Problem detection	Information scanning Paying attention		Consequence evaluation, Problem?	Checking the choice
Option finding	Information searching Finding options		Consequence evaluation, Choose options to study	Checking the choice
Analysis and choice	Information searching	Planning	Consequence evaluation, Choice of option	Checking the choice
Implementing	Information searching Clues to outcomes		Consequence evaluation, Choice of corrective action(s)	Bearing responsibility for the final outcome Feed forward information

Figure 5. A revised conceptual model of the decision making process (Öhlmer at al., 1998, p.285)

This matrix gives more or less the picture of what every farmer goes thru, while making decision for his farm. This process involves making decisions for every department in the farm. Making no exception it can involve decision, in borrowing money from financial institutions for investing, reinvesting in the farm, buying seeds or food for the animals, finding the needed labour, etc. Hence, this model for decision-making can be applied by managers from different professions.

The discussed model by Öhlmer at al. is to present the model of decision-making process as a matrix and not as a list of steps. Both of the authors found disorder in their studies and a conclusion that the farmers do not stick to predetermined steps. This disorder is usually

created by factors like interrupts, scheduling delays, speedups and other causes that affect the agriculture especially.

From the authors of the matrix presented in (Fig. 5), eight elements were identified: values and goals, problem detection, option finding, observation, analysis, development of intention, implementation, and responsibility bearing. The authors are presenting the values as situations or results, which are affecting the decision process, e.g. the farmer’s decision to invest in the farm will be directly influenced by the profitability of the farm or situation on the market. Hence, if they are positive or negative they will have forward affect on the motive of the farmer and will have direct influence on the decision. On the contrary, the goals or objectives are also depending on values, especially if the feedback from the values is positive. This mutual dependence will later have influence on the farmer’s process of decision-making; it will give direction to the decision process.

In addition to the previous model, Öhlmer at al. separately explained the first two functions: problem detection and problem definition. These functions give the introduction of how the actual problem becomes a problem. They argue that problem detection is the process of scanning the internal and external information, after which the farmer is aware of a problem. They also mention Johnson’s definition where he argues that “problem exists when a condition, situation, or thing is conceived to be less good or more bad than it might be given the recourses and power at the disposal of the decision maker who is conceiving the problem” (Johnson, 1978, p.124).

Option finding is the phase where the decision maker specificities the problem and searches option to solve the problem. For this phase in Öhlmer at al. article is presented a sub model:

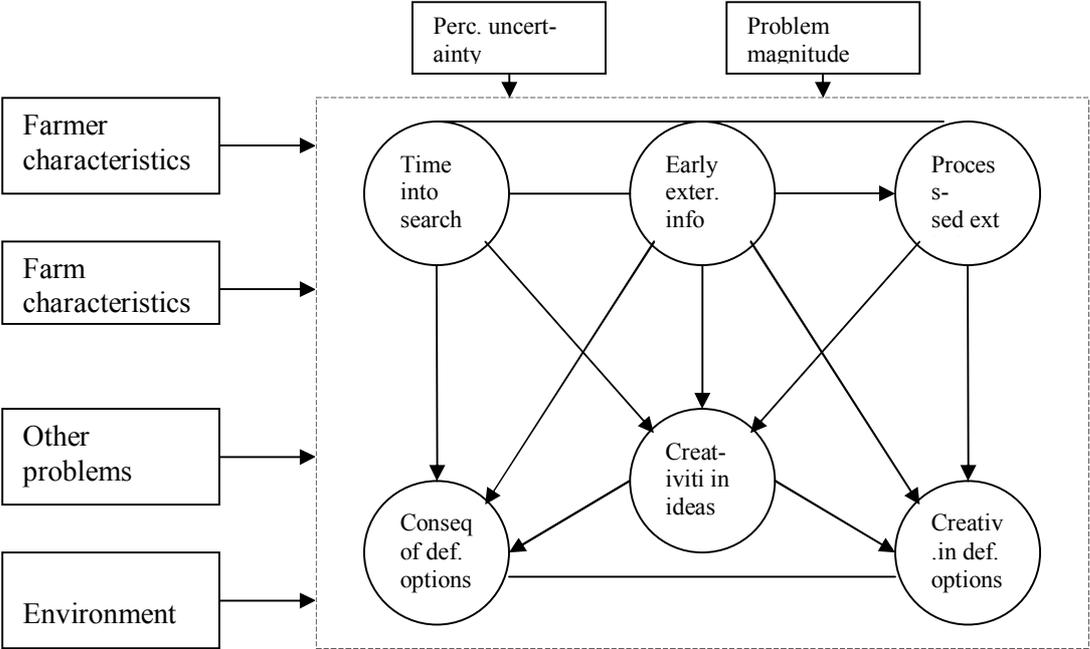


Figure 6. Conceptual sub model of option finding (Öhlmer at al., 1998)

In the sum model, the Option finding is presented thru information searching, inventiveness in ideas, consequences of different options and inventiveness for options for further

examination. What is also interesting is the influence on the process of option finding by different factors. From the given factors in Fig. 6, two of them are separated since the authors argue that the perceived uncertainty and the problem magnitude are differently perceived by the farmers. (Öhlmer at al., 1998) The other two factors are directly connected with the farmer.

If the first two phases were about searching for the problem and finding options, the later two are analyzing and making a choice for the decision or the so called “decision event” and the phase where the decision is ready to be implemented. In the analysis and choice phase the decision-maker is searching for information that affects the problem, here also is made the plan of the actions, evaluating the consequences of the options. The implementing phase is where the plan should be put in action, but first the acquired resources should be obtained. In this phase the outcome is the main point, here the outcome is evaluated and controlled. This phase also, can obtain learning that can affect the decision process for future.

The model by Ölmner at al. does not finish here, as the decision-making process illustrated in the model is influenced by different factors. These factors are farmer’s characteristics, farm’ characteristics and the institutional characteristics.

In the farmer’s characteristics is included information about the farmer himself, information such as age of the farmer, formal farmer’s education, size of household, experience on other fields, except agriculture, if the farmer has part time job.

The farm’s characteristics or the characteristics regarding the farm are factors, which influence the business, and here can be included: size of the farm in acreages, what does the farmer produces, number of employees, number of life stock etc. Institutional (environmental) factors or the surrounding factors can be nearest population centre, geographical position, existence of financial institution in the place of living, distance to the nearest market, availability of information. The final group of characteristics that can influence the decision process are the social characteristics such as availability of advisors (agricultural advisors, economical etc.)

Lee, Newman, and Price also mention the environment as a factor that influences the decision process. Hence, they are dividing the environment into two groups, external and internal influencing factors. A very interesting example of these factors is presented in (Lee, Newman and Price, 1999).

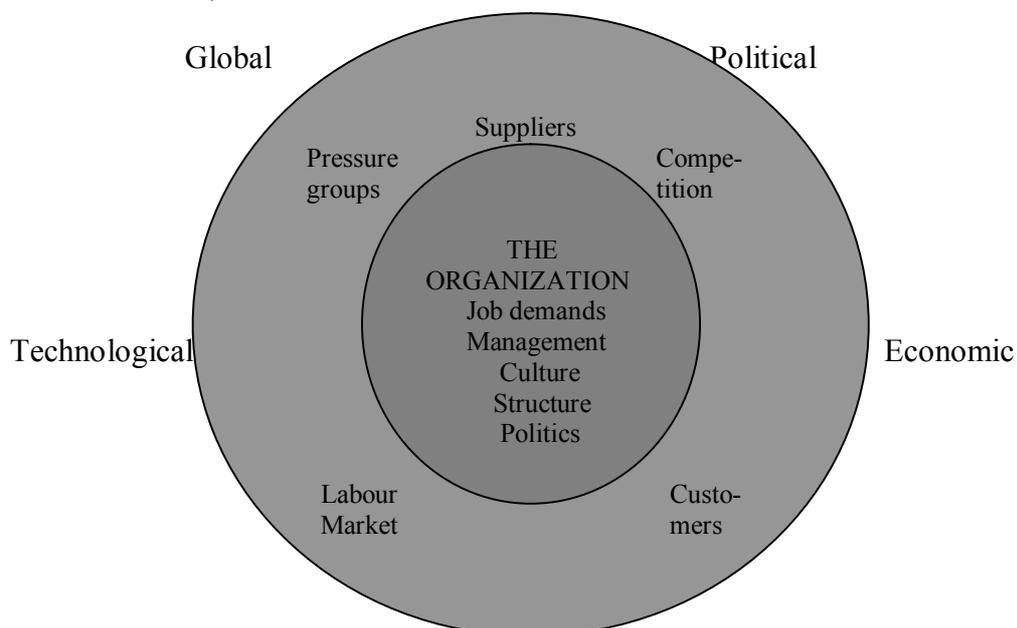


Figure 7. Organizational and external factors that affect decision making (Lee, Newman and Price, 1999)

Even though, the authors in Fig. 7 are arguing over factors that influence organizations, these factors more or less are influencing the farmers. The magnitude of the pressure from these factors will depend on how big is the farm and how big is the farm's share on the market. The small farmers are going to be influenced by few of these factors and they will feel less pressure, while the big farms will be influenced by all factors and the pressure will be immense. Hence, most of these farmers are working part time job or their production is neglectable.

They are differentiating the external environment on general and specific. Under general external environment, they include factors such as economic conditions, political conditions, legal requirements, social influence, globalization, and technology. Further, by specific they comprise factors such as suppliers, competition, customers, labour resources, and pressure groups.

The internal environment covers organizing, planning, controlling and influencing. All of these factors will affect the decision maker to concentrate on making, communicating and implementing decisions. Therefore, the internal environment is in correlation with the values and goals of the farmer, which were introduced in the model by Öhlmer et al., 1998. It has to be pointed out again that Lee, Newman and Price are explaining these internal factors for organizations, where the management style, organizational politics, the prevailing culture and how the organization is structured are influencing on how decisions are made by the decision maker.

3.3 Intuitive decision making process

Decision makers often are using the conscious or unconscious path of solving a problem. These two systems are separated, but in some situations, they can be connected for more effective problem solving. Further, if they know the answer or if they were in this kind of situation before, they try to solve it with the long-term memory, knowledge that they learned from the previous situations. Hence, if they are faced with unique decisions, they are sending these problems through the proper channel of analyzing or trying to solve it through separating the problem in more phases, and dealing it systematically.

The decision of which path, conscious (analyzing) or unconscious (previous knowledge), will be used for solving a problem, also depends if the decision maker faces with unique or repetitive decisions. Therefore, the unique decisions correspond to taking conscious way of solving a problem, and of course the repetitive with the unconscious. Other difference between unique and repetitive decisions is the methods, which are used to solve them. For the repetitive decisions methods are always similar i.e. methods that are used before, on the other hand for unique decisions are different i.e. they are not used previously. Lunneryd (2003) argues that repetitive decisions is repeating several times and they do not have major influence on the economic results on the farm, but not less important in respect to the unique decisions.

A model with a conscious and unconscious way of decision making is presented by Hogarth, (2001) and Klein et al., (2005), where they called it the tacit and deliberate system.

This model starts with stimulus, which is defined by Hogarth as internal (something that is seen, felt or heard) or external (something that can trigger other thoughts). Before it is decided with which system the stimulus will be processed, the stimulus is intercepted by the PCS (preconscious screen) and as an automatic mechanism. This mechanism decides if the stimulus will be processed with the tacit or deliberate system. This model also includes automatically taking an action, where the person takes an action and is aware only after the action has been taken.

From the model, it can be seen that these two systems are collaborating between each other. This collaboration begins while processing information in deliberate system, when patterns are found in the long-term memory, information is immediately searched into the tacit system, where the answer is found.

Hence, after the information is processed there is feedback to the stimulus. If next time the decision maker faces with familiar situation, the deliberate system can make a decision more quickly if it finds clues in the tacit system or the decision will be solved directly thru the tacit system, where in the long-term memory previous knowledge can be used.

Thee model by (Hogarth, 2001 and Klein at al. 2005) is depicted in Fig. 8.

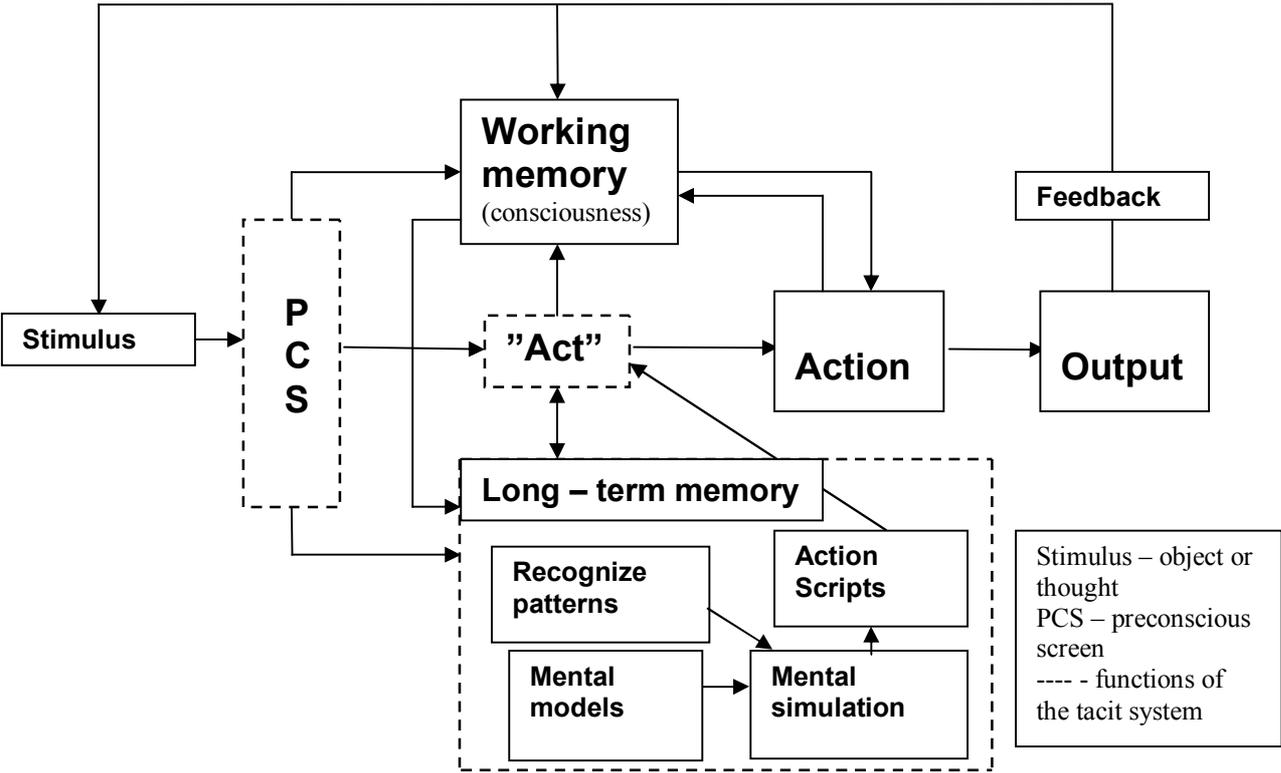


Figure 8. The tacit and deliberate system of human information processing (Hogarth, 2001 and Klein at al., 2005)

This system is explained by the author as a learning process, which system has evolved thru centuries and that intuition has to be incorporated in this system. Hogarth argues that intuition “cannot be treated in isolation”.

The intuitive decision-making in simple words can be explained as “hunch” or instinct and even thought intuition comes within the experience and knowledge of the decision maker. Isenburg (1984) argue that most of the senior managers are basing their decisions on intuition. Hence, his research showed that 80 per cent of the managers brought important decisions by exploiting the intuition. Further, Lee, Newman, and Price argue that decision-making should not be only based on intuition, but it should be a mix of intuition and logic.

There is a very interesting statement from Einstein, ‘The intellect has little to do on the road to discovery. There comes leap in consciousness – call it intuition or what you will – the solution comes to you and you don’t know how and why’. The intuitive decision-making has a risky side and that is why is used in balance with the analytical approach.

4 The empirical study

4.1 Background for the empirical study

Before presenting the results of the survey, through few tables it will be illustrated the conditions of some of the credit lines and the size of the used land.

The next table will illustrate what kind of credit lines were offered through the financial institutions. Most of the credit lines offered from these financial institutions are from foreign capital and there are different categories of loan offered. The categories of loan are ranging as follows:

- Micro loans - for working capital and investment on small farms allowed amount up to 2000 euro,
- Primary production loans - for primary production for individuals and legal entities allowed amount up to 25.000 euro
- Agro – processing loans – small and medium enterprises for processing agricultural products allowed amount up to 75.000 euro
- Rural trade loans - for companies trading with agricultural products allowed amount up to 75.000 euro

Table 1. Review of credit line The Southern and Eastern Regions Rural Rehabilitation Project – IFAD 1 and Agricultural Financial Services Project - IFAD 2 offered thru the Macedonian financial institutions (source: MAFWE³)

Name of the financial institution	Annual interest rate	Repayment period	Grace period	Allowed amount
<i>Tutunska banka A.D. Skopje</i>	6-7%	3-7 years	From 6 months to 2 years	5.000-75.000 euro
<i>Komercijalna banka A.D. Skopje</i>	6-7%	1-7 years	From 6 months to 3 years	5.000-75.000 euro
<i>Investbanka A.D. Skopje</i>	6-7%	1-7 years	From 6 months to 3 years	5.000-75.000 euro
<i>Komercijalno-investiciona banka A.D. Kumanovo</i>	6-7%	1-7 years	From 3 months to 1 year	500–75.000 euro
<i>Saving house "FULM" Skopje</i>	16-18%	1- 5 years	From 3 months to 1 year	1.000-2000 euro

This credit line was one of many foreign financial sources for the agriculture, this line started in 1997 with IFAD 1 and lasted until 2002 when the second project started and ended on 2007. Both financed projects received around 15 million USD. Hence, for IFAD 2, The Kingdom of Sweden provided a grant of USD 854.740 through SIDA.

Mentioning this is important, since the farmers questioned in the survey, were users of this credit line. In this table, additional expenses i.e. landing charges are not included. These expenses are including: administrative papers, mortgage papers etc.⁷

Beside the problem of the ownership of the land, there is also a problem with the size of the land. Most of the arable land in Macedonia is fragmented in small parcels. In the table bellow is presented, size of the private used land by the farmers:

Table 2. The size of the private used land in Macedonia

Land	Size
<i>until 2 ha</i>	67,6%
<i>2 to 5 ha</i>	24,1%
<i>5 to 10 ha</i>	8,3%
<i>over 10 ha</i>	

The results in Tab. 2 are from 1989, but the results have not change too much from then. Namely, results from the MAFWE show that 80 per cent of the total cultivated land is in the range of 2.5 – 2.8 ha.

³ MAFWE - Ministry of Agriculture, Forestry and Water Economy

4.2 Results from the empirical study

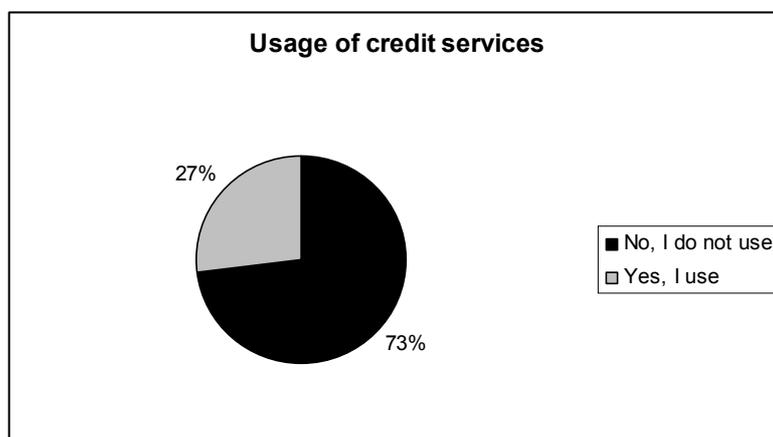
In this section, the results collected from the field survey are going to be presented and elaborated later in the analysis and discussion. These results will help in better adaptation of the model “Revised conceptual model of the decision making process” (B. Ohlmer at al, Agricultural Economics 18(1998), p.273-293) to the decision-making process of the Macedonian farmers. The results will also show where the farmers have problems regarding the process itself and after implementing in the model, the questions in the aim will answered.

Hence, these results will be statement for the accuracy and reliability of the conclusions drawn from the analysis and discussion. These results should present the decision-making process how it is in reality, since they are given by the farmers themselves. As stated previously the results will be presented in pivot tables and per cents. Some of the questions demanded longer answers and some were with YES/NO answers. In addition, the results will be presented visually with charts.

1. The first question is Do you use any credit services of the financial institutions for investing in your farm?

Table 3. Usage of credit services between the surveyed farmers (Survey, 2007)

No	73,17% of 41 farmers
Yes	26,83% of 41 farmers



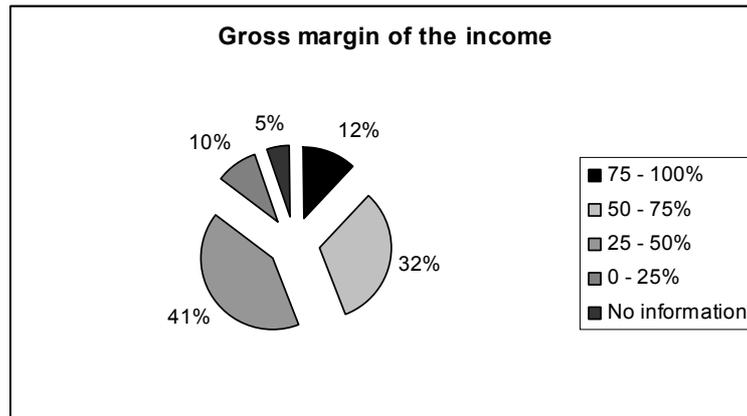
Source: Survey, 2007

The data taken for the gross margin should show how much money lefts for the farmers so they can acquire credit. Is there any room for them to go for landing money from the financial institutions?

2. How much is the gross margin from the gross income in one productive year (in percentage)?

Table 4. Gross margin of income in per cent (Survey, 2007)

100 – 75%	12,20% of 41 farmers
75 – 50%	31,71% of 41 farmers
50 – 25%	41,46% of 41 farmers
0 – 25%	9,76% of 41 farmers
No information	4,88% of 41 farmers



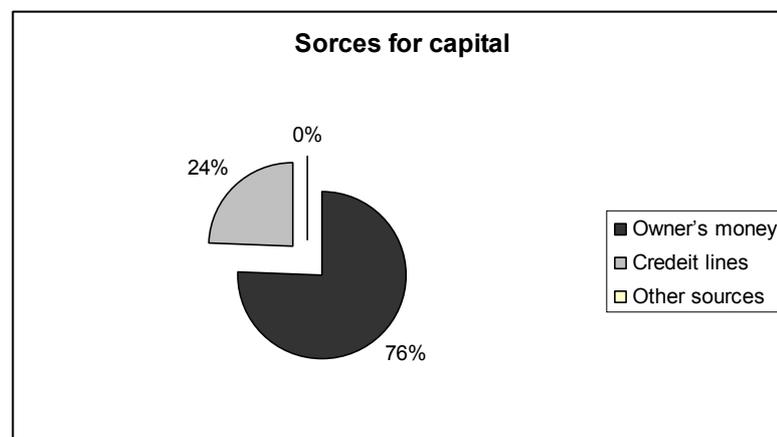
Source: Survey 2007

3. How do you provide your financial means for the farm?

- Owner's money (reinvestment)
- Credit lines
- Other sources

Table 5. Sources of capital for investment (Survey, 2007)

Owner's money	75,61% of 41 farmers
Credit lines	24,39% of 41 farmers
Other sources	00,00% of 41 farmers

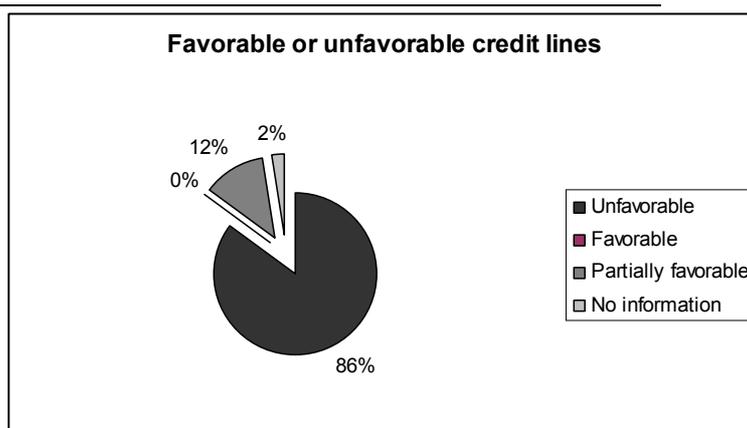


Source: Survey, 2007

4. What do you think of the credit lines that the financial institutions are offering? (banks, grants from the government, etc).

Table 6. Farmer's opinion about the positivity or negativity of the credit lines (Survey, 2007)

Unfavourable (high interest rates, too much administrative papers)	85,37% of 41 farmers
Favourable	00,00% of 41 farmers
Partially favourable	12,20% of 41 farmers
No information	2,44% of 41 farmers

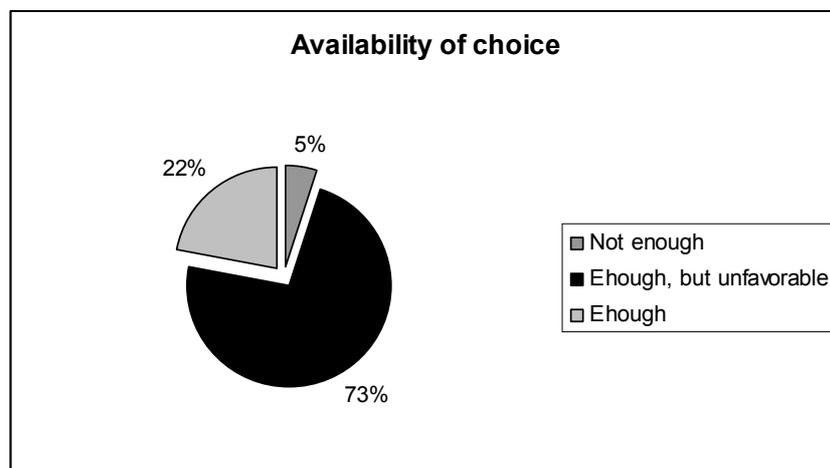


Source: Survey 2007

5. Is the variety for hiring financial means sufficient?

Table 7. Availability of choice for acquiring capital (Survey, 2007)

Not enough	4,88% of 41 farmers
Enough, but unfavourable	73,17% of 41 farmers
Enough	21,95% of 41 farmers

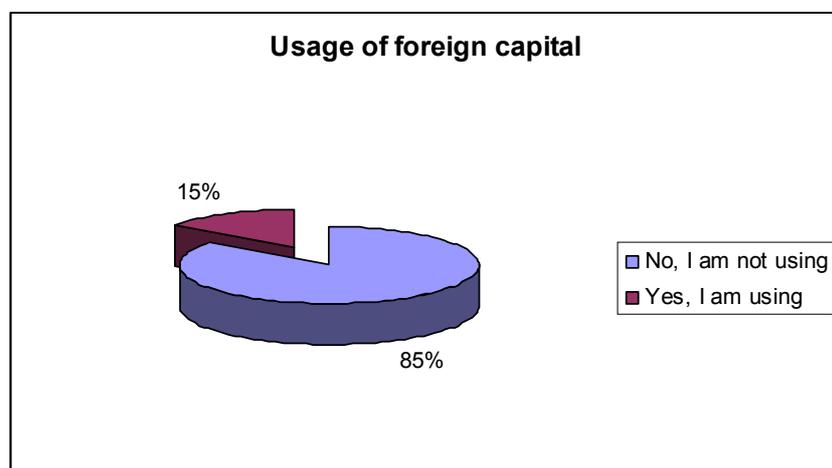


Source: Survey, 2007

6. Have you ever used any of funds from EU or country outside EU?

Table 8. Farmer's usage of foreign capital (Survey, 2007)

No, I am not using	85,37% of 41 farmers
Yes, I am using	14,63% of 41 farmers

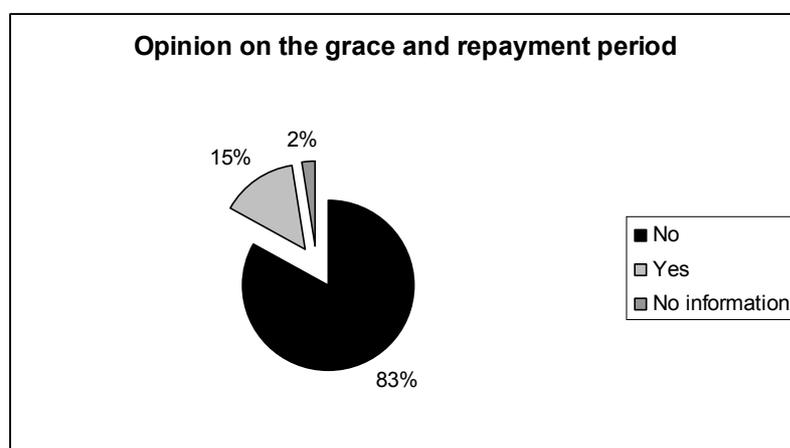


Source: Survey, 2007

7. Is the grace period or the repayment period of the financial institutions enough?

Table 9. Farmer's opinion on the favourability of the grace and repayment period for the credit lines (Survey, 2007)

No	82,93% of 41 farmers
Yes	14,63% of 41 farmers
No information	2,44% of 41 farmers

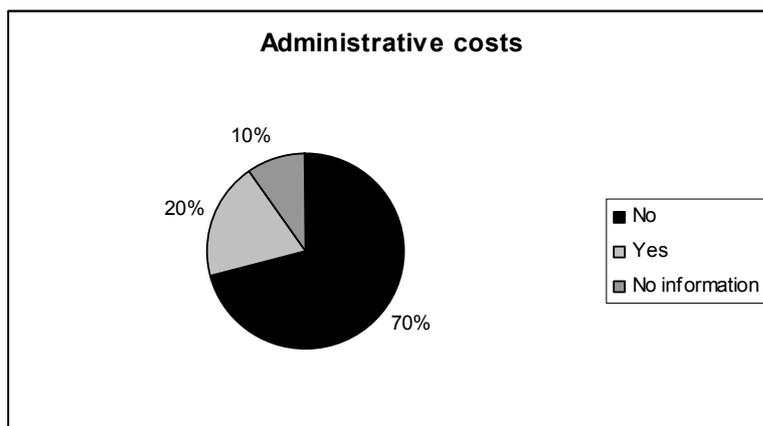


Source: Survey, 2007

8. *Are the financial institutions looking for too many administrative paper works?*

Table 10. Farmer's opinion the costs that the financial institutions are asking (Survey, 2007)

Yes, they do	70,73% of 41 farmers
No, they do not	19,51% of 41 farmers
No information	9,76% of 41 farmers

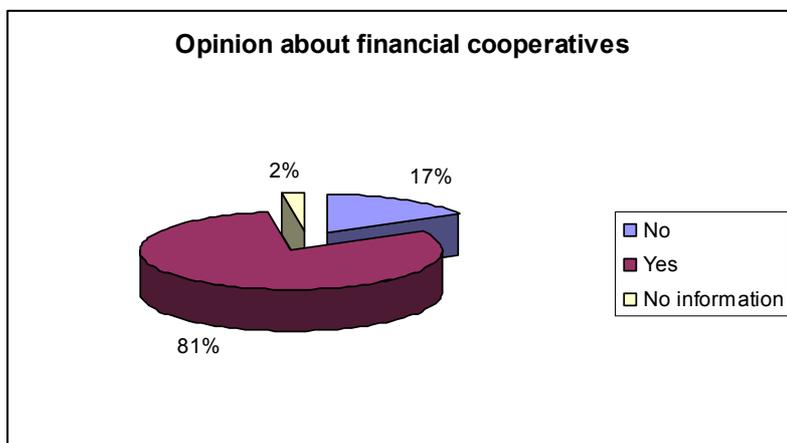


Source: Survey, 2007

9. *Would you be interested in participating of establishing any kind of credit cooperative or join in already established one?*

Table 11. Farmer's opinion on credit cooperatives (Survey, 2007)

No	17,07% of 41 farmers
Yes	80,49% of 41 farmers
No information	2,44% of 41 farmers

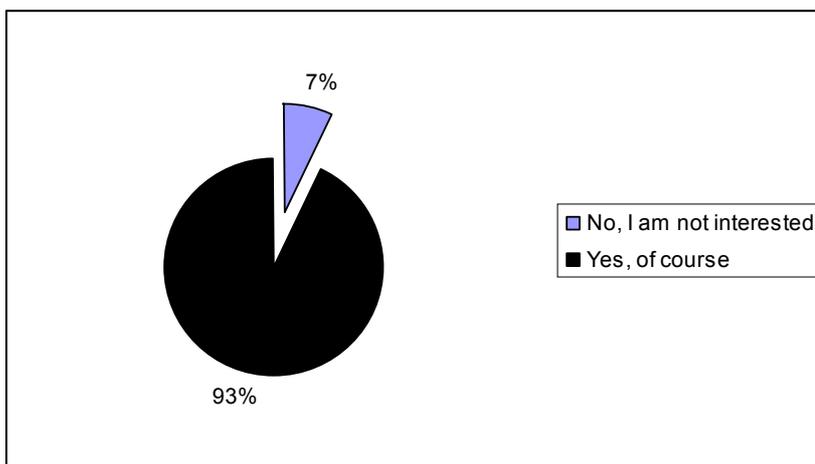


Source: Survey, 2007

10. *If the conditions of the credit lines are going to improve, would you be interested in expanding your farm?*

Table 12. Farmer's opinion on expanding the farm with better credit lines (Survey, 2007)

No, I am not interested	7,32% of 41 farmers
Yes, of course	92,68% of 41 farmers

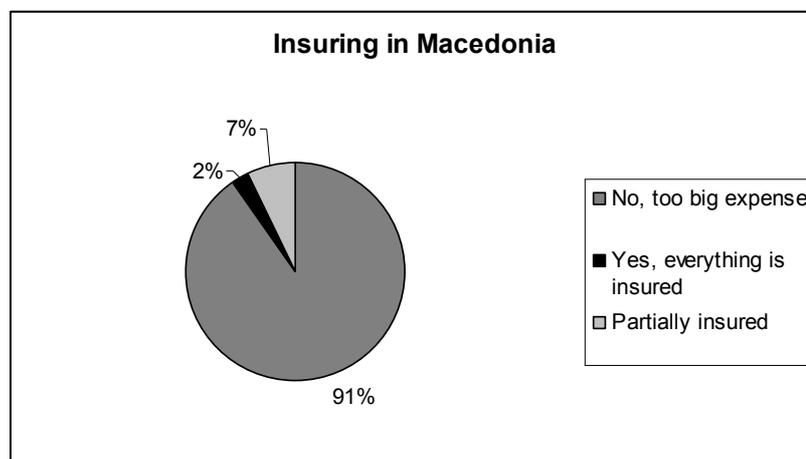


Source: Survey, 2007

11. *Do you insure your farm or your production?*

Table 13. Farm insuring in Macedonia (Survey, 2007)

No, too big expense	90,24% of 41 farmers
Yes, everything is insured	2,44% of 41 farmers
Partially insured	7,32% of 41 farmers

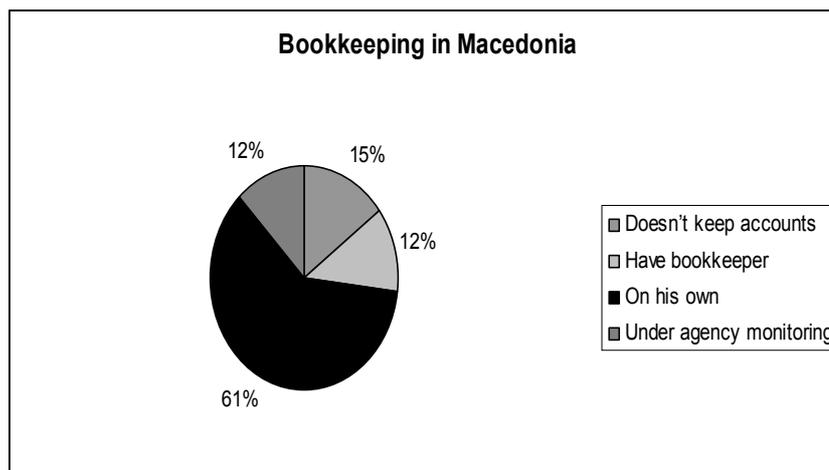


Source: Survey, 2007

12. Do you keep accounts in the farm?

Table 14. Keeping accounts between Macedonian farmers (Survey, 2007)

Doesn't keep accounts	14,63% of 41 farmers
Have bookkeeper	12,20% of 41 farmers
On his own	60,98% of 41 farmers
Under agency monitoring	12,20% of 41 farmers

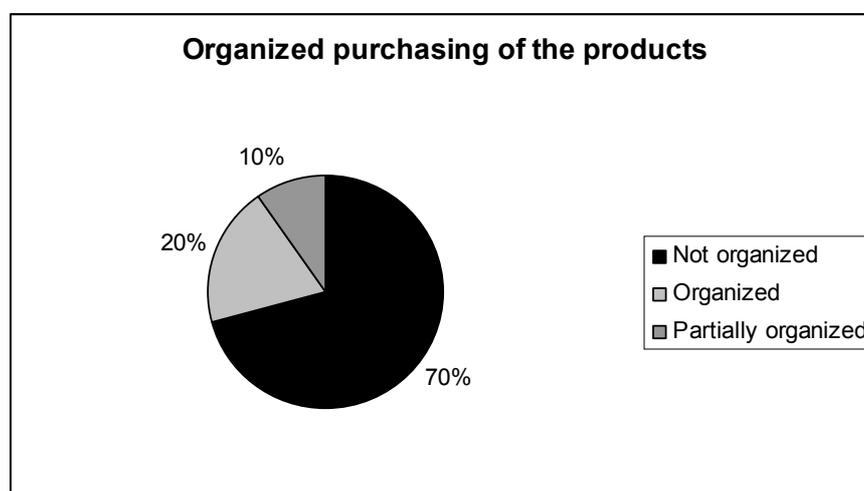


Source: Survey, 2007

13. Is there organized purchase of your products?

Table 15. Farmer's opinion on organized purchase of their products (Survey, 2007)

It is not organized	70,73% of 41 farmers
It is organized	19,51% of 41 farmers
Partially organized	9,76% of 41 farmers

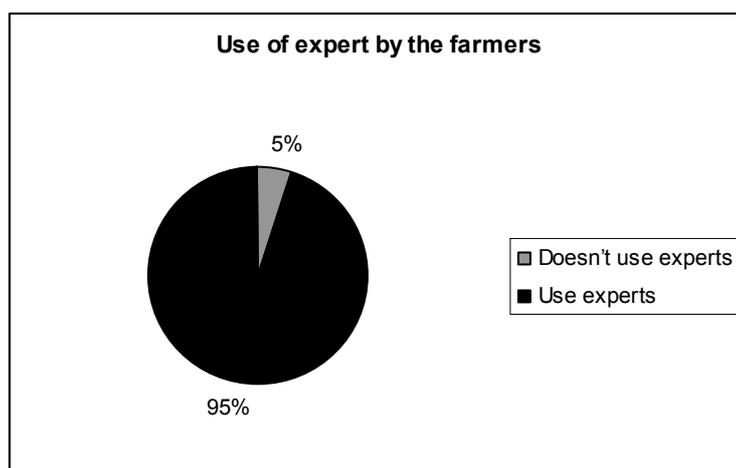


Source: Survey, 2007

14. Do you consult experts in running of your farm? (economic advisers, veterinarians, agricultural experts)

Table 16. Consulting experts for organizing their farm (Survey, 2007)

Doesn't use experts	4,88% of 41 farmers
Use experts	95,12% of 41 farmers

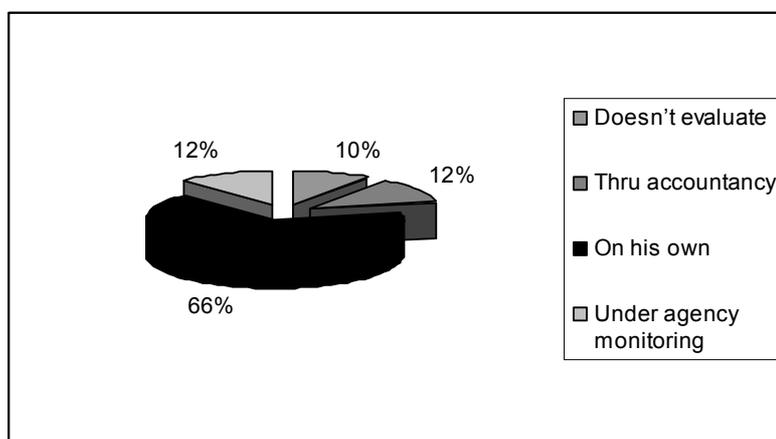


Source: Survey, 2007

15. How do you evaluate your productivity and profitability?

Table 17. Accountancy on the farm by the Macedonian farmers (Survey, 2007)

Doesn't evaluate	9,76% of 41 farmers
Thru accountancy	12,20% of 41 farmers
His own assessment	65,85% of 41 farmers
Under agency monitoring	12,20% of 41 farmers

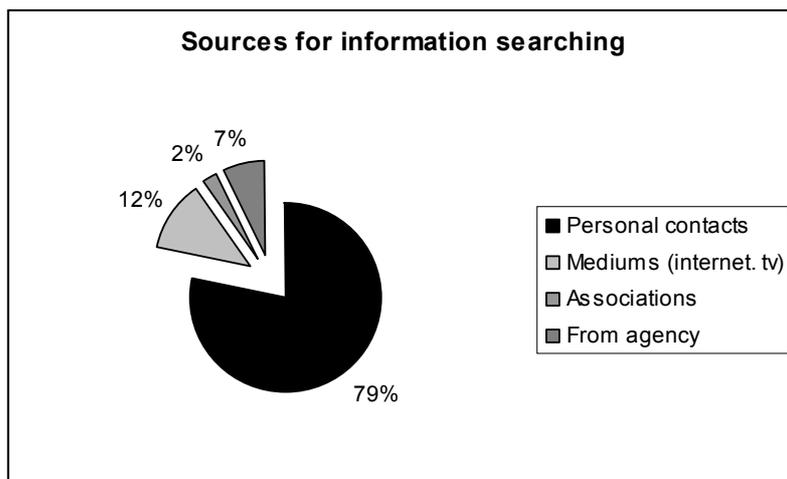


Source: Survey, 2007

16. *Where do you get your information's in sense of external or internal possibilities (market, sources for capital, etc.?)*

Table 18. The usage of sources for information by the farmers (Survey, 2007)

Personal contacts	78,05% of 41 farmers
Mediums (internet. TV)	12,20% of 41 farmers
Farmers associations	2,44% of 41 farmers
From agency	7,32% of 41 farmers

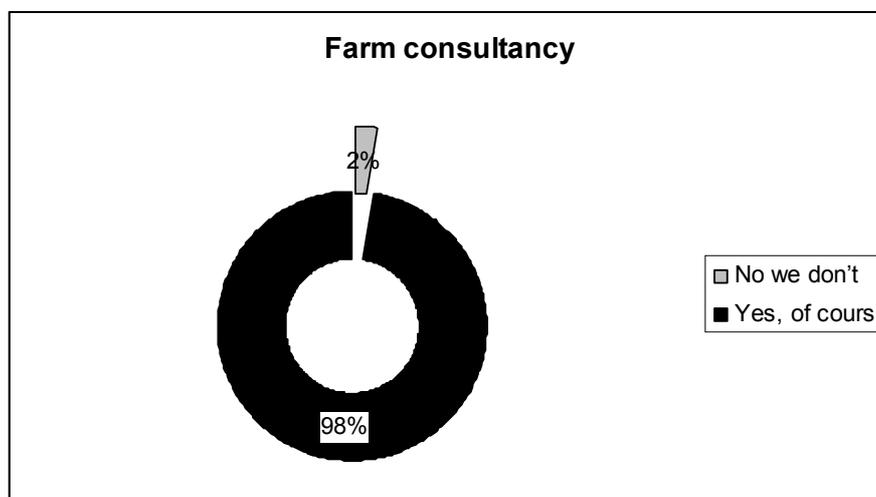


Source: Survey, 2007

17. *Do you think that a consultation with different institutions (faculties, institutes, banks, agencies for development etc.) is necessity?*

Table 19. Needing of consultancy (Survey, 2007)

No, we don't	2,44% of 41 farmers
Yes, of course	97,56% of 41 farmers

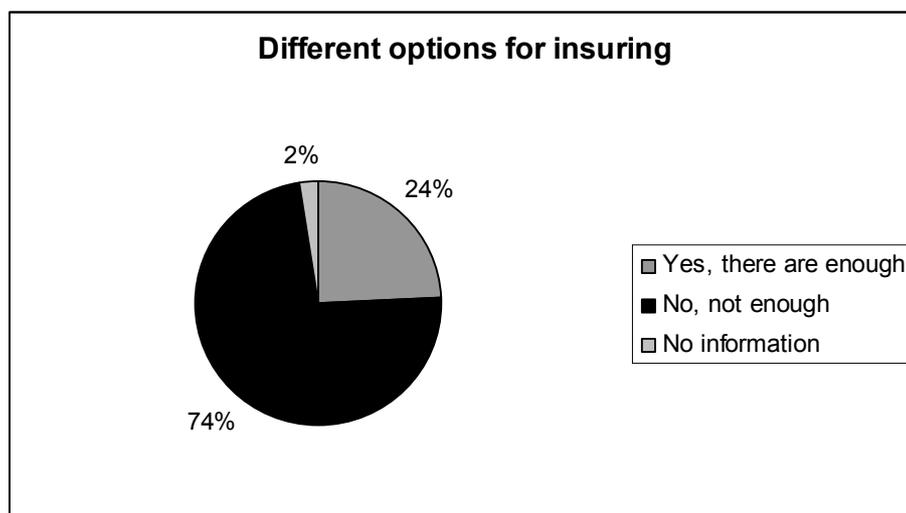


Source: Survey, 2007

18. Are there enough insurance companies that are offering this kind of services?

Table 20. Different options for insuring (Survey, 2007)

Yes, there are enough	24,39% of 41 farmers
No, not enough	73,17% of 41 farmers
No information	2,44% of 41 farmers



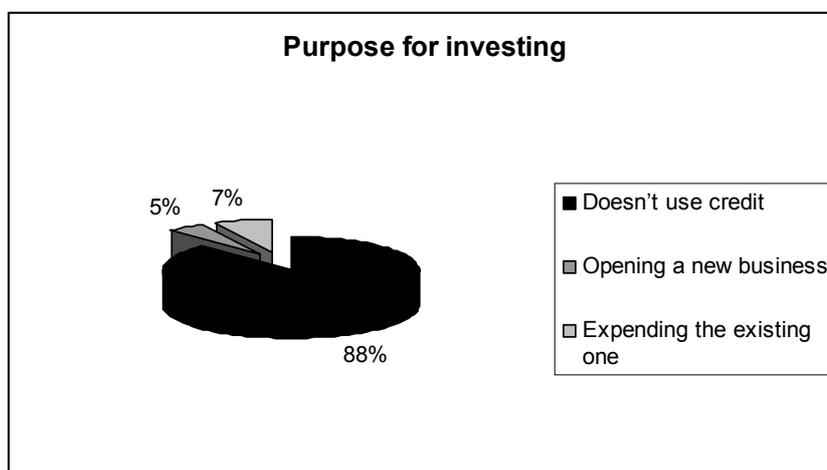
Source: Survey, 2007

19. For which purpose do you use the hired financial means?

- Opening a new business
- Expanding the existing one

Table 21. Purpose for using the capital (Survey, 2007)

Doesn't use credit	87,80% of 41 farmers
Opening a new business	4,88% of 41 farmers
Expending the existing one	7,32% of 41 farmers

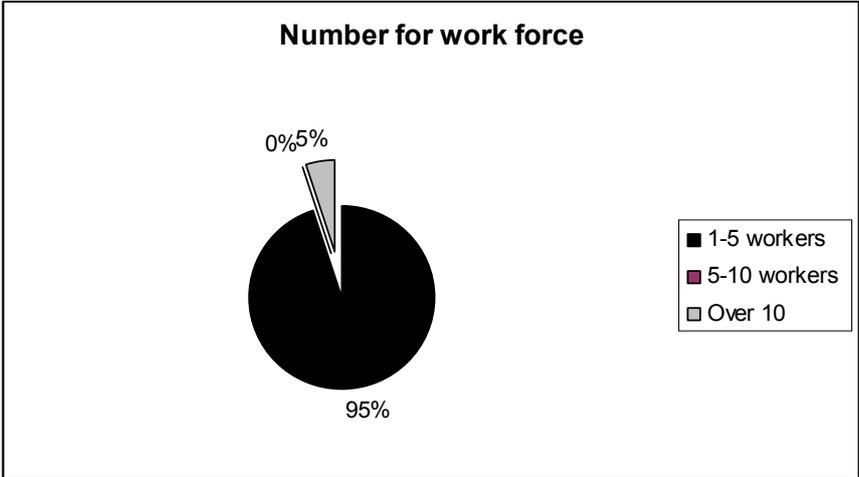


Source: Survey, 2007

20. How many employs do you have in your farm?

Table 22. Number of work force (Survey, 2007)

1-5	95,12% of 41 farmers
5-10	00,00% of 41 farmers
Over 10	4,88% of 41 farmers



Source: Survey, 2007

4.3 Financial institution's point of view

For removing any kind of bias in this paper, was conducted additional survey. However, this time the interviewed side were the financial institutions. Through several questions, there was chance for them to give their opinion on the matter of the crediting in the agriculture. The focus will stay on the farmer's survey, but the views given in this survey will be analysed and included, as confirmation or against the answers given by the farmers. Hence, all of the means are going through the financial institutions. There will be summary of the answers given by the interviewed financial institutions after every question.

1. Is your institution offers landed capital for the farmers?

All of the interviewed financial institutions are offering credit lines for the primary and the secondary agriculture.

2. How do you inform farmers about your offer?

The answers on this question were more or less the same, where for the foreign credit lines the farmers were getting the information from the state institutions. As for their own financial means the farmers are informing through, their branches spread all over the country, different media, etc.

3. What kind of agricultural capital do you offer? (In terms of time of repaying)

In terms of time of repaying, most of the long-term means have option of repaying up to 7 years with grace period up to 2 - 3 years and short-term means max to 1 year and grace period of 6 months. Only one of the banks stated that they are offering means with repaying time up to 10 years.

4. Do you offer your own commercial landed capital?

On this question, only one bank said that almost 100% of the landed means are their own; the rest of the interviewed banks stated, that small partial of the landed capital is from their own sources.

5. Which are the problems that the farmers are facing in the process of applying for capital?

Three banks agreed that the biggest problem is finding the required asset, which is demanded by the banks as a security. The other mentioned problems are unresolved land ownership and the lack of knowledge how to write investment program.

6. Are the farmers repaying their liabilities on time?

"Always on time"- Was the answer from the interviewed parties. All of them agreed that they do not have any problems with delaying of the payments.

7. Do you conduct records if the farmers are repaying their liabilities successfully?

The interviewed parties run credit history for the farmers that have landed capital from them.

8. What requirements the farmers have to fulfil to grant a loan?

The most important process for getting the wanted information for the bank is to go to the premises of the farmer and assess the situation before allowing the credit. The banks requirements are more or less the following ones: to be registered farmer, to make investment program, to show that he does not have liabilities toward third parties, to acquire mortgage as security and that, the asset is in his ownership, etc.

9. How do you solve the problems with the real estate as a condition for loaning the capital?

The answer by all of the interviewed parties is that they cannot help the farmer on this issue, because the legal issues are still not resolved but the state.

10. Does your institution follow the process of the whole investment?

They constantly closely are following the investment process, with all the details regarding the purpose of the credit.

11. If the farmer has problems trough the year (low yields, bad weather), do you offer help for the farmer?

They can allow delaying of the payment up to 3 months or they can prolong the grace period of the investment.

12. Does your company try to make the private capital more accessible for the farmers?

They try to make the capital as accessible as possible for the farmers and in this moment, the conditions are at the optimal level.

13. Do you offer any facilitates for the problem with the land ownership that the farmers are facing in the country?

The banks answered that the conditions are optimal and they cannot make any more liabilities. Only one bank said that they allow mutual guaranteeing between the farmers for the payments.

5. Analysis and Discussion

5.1 Introduction to the chapter analysis and discussion

This chapter presents a summary of the theoretical and empirical chapters. It combines the model presented by Öhlmer et al. (1998) and the results from the empirical. Hence, the final model should illustrate and give answers to the aims of this thesis, previously stated:

- Lack of enough information in some of the phases and checking the choices
- Lack of options as solutions for the problem or opportunities
- They are planning and analyzing the situation before implementing phase
- And finally bearing responsibility for the final outcome of the decision

Even though the model from Lee, Newman, and Price intends for much bigger organizations, the same more or less are influencing on the farmers. This model shows the internal and external factors, which are influencing the decision-making process. Through this model it will be analysed the external influence that the financial institutions have on the farmers. For this purpose, I will use information from the interview made with the financial institutions. Further, I will present an intuitive model, where it I will show the unconscious and conscious process of decision making.

5.2 Discussion over the decision-making process for investing in the case of the Macedonian farmers

The results from the survey show lack of interest for acquiring, from the 41 interviewed farmers approximately 27 per cent of the farmers decided to go for credit. This by itself shows that only two things can be factors for this situation, or the credits have unfavourable conditions or the situation on the market does not allow them to obtain credit for investing.

I will provide analyse of the decision-making process through the Öhlmer et al. (1998), although with more detail information of how that is done by the Macedonian farmers. In this case, decision will be investing in their farms and only the farmers that acquired capital, were included for analyse. Furthermore, in consideration will be taken farmers that used capital from all the financial institutions, here are included credit lines provided by the banks, capital provided by NGO's, grants provided by the government, etc, albeit almost all of the surveyed farmers have used capital from the IFAD 1 and IFAD 2 projects.

From the farmers that have already obtain capital from financial institutions, only one farmer continuously is renewing his credit and for the others, this was first time that they have taken credit. Hence, for most of them, this was a unique decision and through the conversation with the farmers on the question if they would take credit again if the conditions were going to improve, all of them answered positively. This answer brings positive mood for the agricultural sector and bringing fresh capital with reasonable interest rates in the agriculture is the right move.

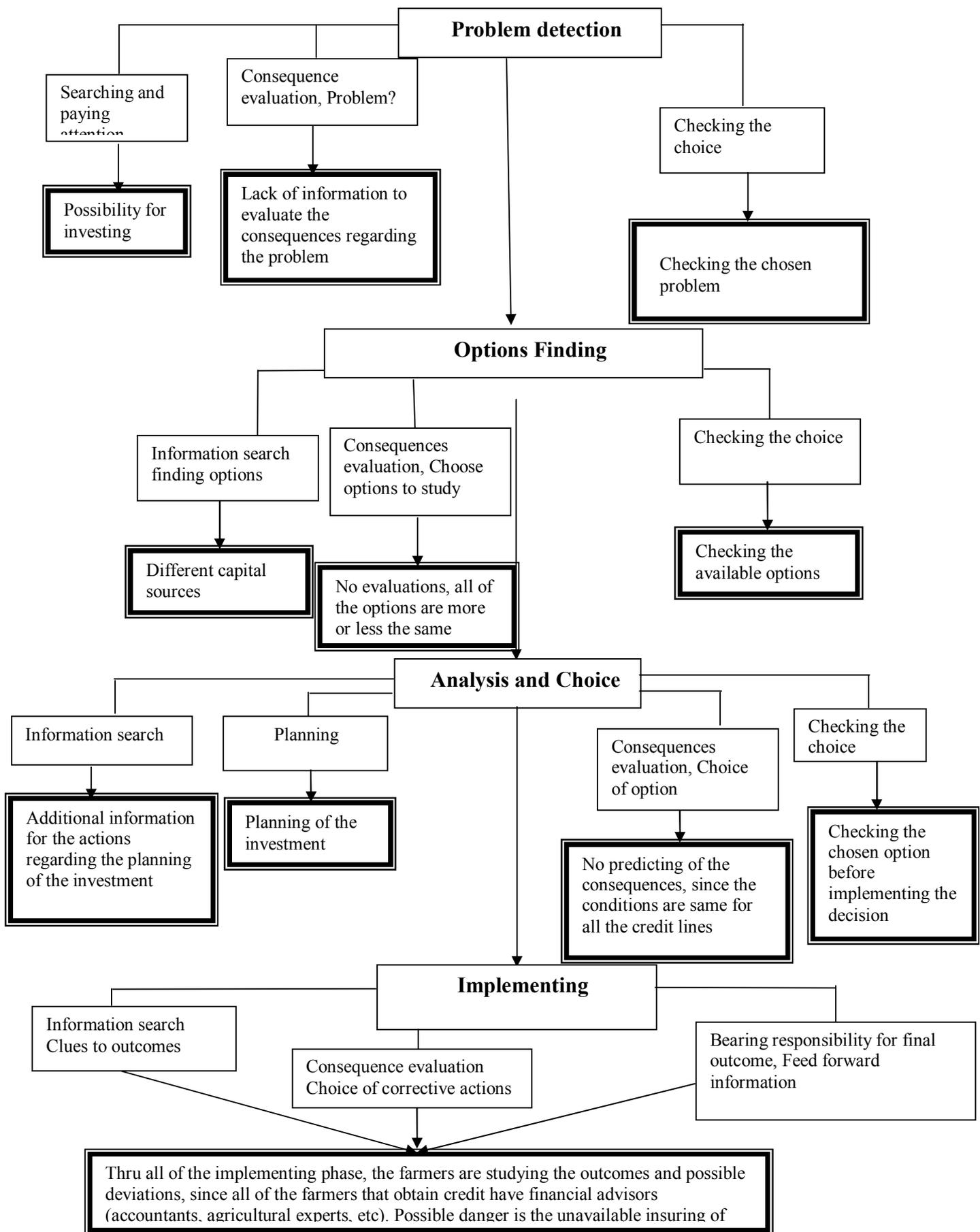


Figure 9. Flow of the decision process by the Macedonian farmers in the Öhlmer et al. (1998) model

Following Fig. 9, the model presented in the boxes with single line is the model by Ohlmer et al and double lined boxes depicts the decision process of the Macedonian farmers. Even though it was stated by the authors, that the farmers are not making decisions in linear way and they decided that the model should be presented in matrix, not linearly. Keeping in mind the fact that this model should not be understood as a linear model, I decided that it would be simpler if the phases should be presented linearly.

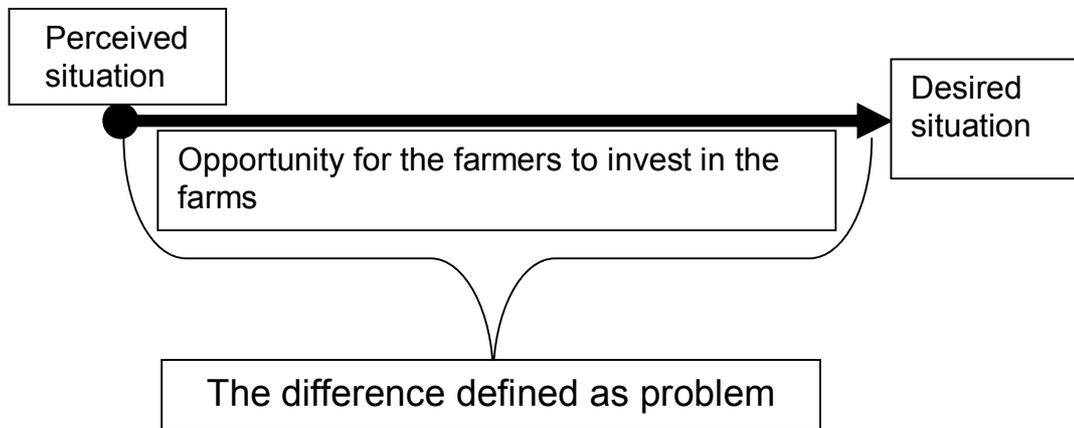


Figure 10. Macedonian farmers' problem regarding investments

Since, previously stated in the theory part, that problem exists when there is difference between the perceived situation and the desired situation, in this situation the farmers are seeing opportunity to invest through acquiring credits, grants, reinvest their profit, or obtain capital from different sources. This is their opportunity to achieve the desired goal as illustrated in Fig 10.

With the problem defined, the first sub phase is where the farmers are evaluating the consequences. However, the farmer skips this phase in most of the cases, because they cannot get the right information regarding the riskiness of the investment. Even though, the farmers that had acquired capital are using advisors, the sources for information are scarce or available but not used. From the total number of surveyed farmers 78 per cent said that they are using personal contacts, which is a source with narrow possibilities and the rest of the per cent is on the media, agencies, or farmers associations, which are much wider sources for information. In the last sub phase, the farmer is checking the choice that he made concerning the problem.

The second phase or the options finding, is the phase where in this case the farmers in Macedonia are searching for the different available sources for capital. Hence, the farmers are getting this kind of information from people, which are coming in their villages where representing different financial institutions. Again, here we can see the same situation, where internet as media is rarely used. In addition, media sources like TV and radio are rarely used. Some of the possibilities like government grants, the farmers are getting from the state agencies. The farmers are evaluating the offered options for borrowing capital, but the problem with the choice emerges from the scarcity of options. Hence, all of the credit lines offer the same conditions (high interest rates, high costs for acquiring paper work, and problem with mortgages). On the question if there are enough available options, the farmers answered that there are enough options, but they cannot use them because of the bad conditions. Other sources for capital are the government sourced means or borrowing money from friends and relatives. The first source requires registration of the farmer in the farmer's association, which condition none of the surveyed farmers had already met. Borrowing money

from friends or relatives also requires signing agreement, which requires repaying the money with higher interest rate. There is checking of the available options in the sub phase of bearing responsibility.

The next phase of the decision process is the analyses and choice or the “decision event” phase. In this phase, the farmers are planning the investment and the main role is for the advisors (accountants, agricultural experts). Well, all of the Macedonian farmers that have already obtained private capital are using the services of advisors. In the process of investing, especially the financial advisors are needed so the planning can be more accurate. All the financial situation of the farm is controlled by them. They are taking care, if there is financial possibilities for the investments to take place, if the situation on the market allows for this kind of action or they can help in choosing the best solution for the source of the capital.

This phase also includes predicting of the consequences of the choice, as mentioned in options finding most of the credit lines are with same conditions or the turbulent market forbids them to predict the consequences from the investment. The phase ends with checking the choice again before implementing.

The last phase or the implementation phase, contains the choice, which is the source for the farmer and his investment. This choice or the final decision is the guide for the investment. This phase is all about finding the right information and bearing responsibility. Even though the Macedonian farmers do not have the needed information, they always try to find on one or another way to back their decision. They use the available state advisors, use the available information sources, although some of them do not offer broad range of information, to bear responsibility and use this information for future experience in farm investing.

The decision process is not linear and the farmers can always return to the previous phase, e.g. if there is found possible better options for investing, the farmer can always return to the phase of problem detection and get more information for the problem. The same applies for the rest of the phases. In the last sub phase, the bearing of responsibility, the farmers are responsible for the resources. The Macedonian farmers, the ones that use landed capital are partially taking responsibilities to prevent possible deviations, since they are using advisors to control the finance in the farm, but they do not insure their farm.

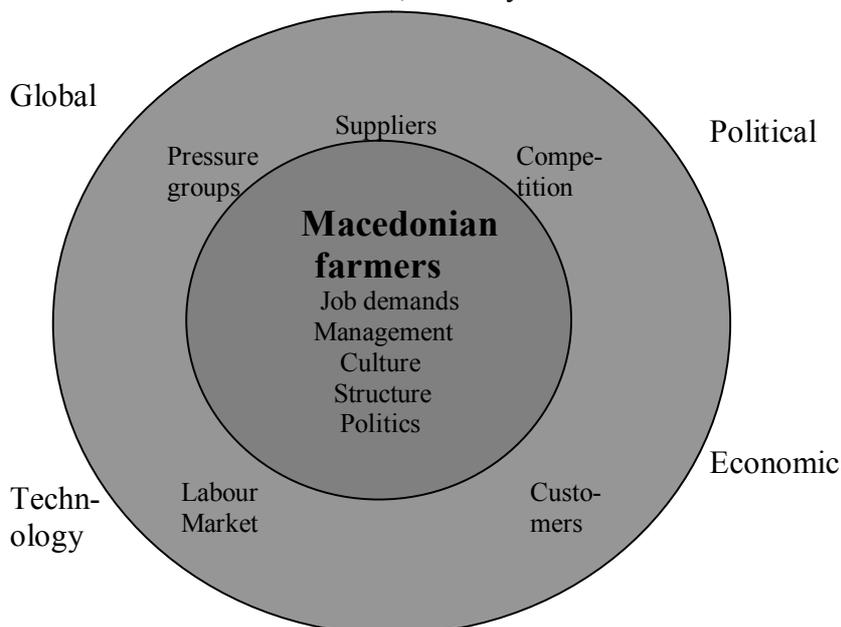


Figure 11. Influence of external and internal factors to the Macedonian Farmers presented in (Lee, Newman and Price, 1999)

This illustration from (Lee, Newman and Price, 1999) was presented in this thesis, since comprises external and internal factors that influence the decision process of the Macedonian farmers. From the internal factors mentioned in the Fig 7, most influential for the Macedonian farmers are the politics and the structure of the farm. The first factor is especially interesting, since the politics still has a lot of influence in the whole business community, not just the agriculture.

In the case of decision process to invest, the politics can influence from which bank the farmer will acquire credit or the chances to get grant from the government are getting higher if the farmers is from the political party that runs the government. In addition, obtaining better piece of land or better chance for obtaining license for his products to be exported i.e. superior position on the market. The later factor will be viewed as the structure of the farm i.e. the size of the farm, type of production, etc. The size of the structure (number of acreages, size of herd) will decide the possibilities of the farm to make profit or the needed resources for the investment to take place. The demand of the products has an obvious influence on the decision process, the demand will decide if there is need of investing in expansion of the farm.

The external factors have also big influence on the farmers, especially the specific external factors mentioned in Lee, Newman and Price, (1999). These factors are important, because they are part of the market (suppliers, costumers, competition), a part where the farmers have many problems. In this group of factors, the farmers have fewer problems with the labour market, because the labour work in Macedonia is cheap and is easy to find.

From the general external factors, economical factors have the biggest influence, given that they can influence the costs; price of the materials and with that the price of the products. As for the technology, this factor does not have influence, because the labour is cheap and mechanization is less used.

5.3 Intuitive decision-making process in the case of the Macedonian farmers

In the case of the Macedonian farmers, it is interesting to be seen, how they use the intuitive decision process in the process of investing. As argued before by Lunneryd, (2003) that even though repetitive decisions, such in this case are operations like buying food for the animals, deciding which seed should be used, are not to be perceived as unimportant the do not have great influence on the financial situation. In this survey for most of the farmers, it was first time to obtain credit to invest in their farm. Therefore, this strategic decision has huge influence on their financial situation, so this decision characterizes the unique decision of the Macedonian farmers.

Fig. 11 shows, that the trigger for acquiring financial capital for expanding the farm or opening a new business can be opening a potential profitable market, this information goes to the PCS (preconscious screen) where the process of deciding takes place if this information will be processed with the deliberate or the tacit system. In the case of the Macedonian farmers, this information goes through the deliberate system (working memory); since almost all of the interviewed farmers have no experience with obtaining financial means and cannot decide on previous knowledge. Furthermore, they have to put their full attention on the problem, consequently the investment will meant better position on the market or it can bring more debts for the farmer.

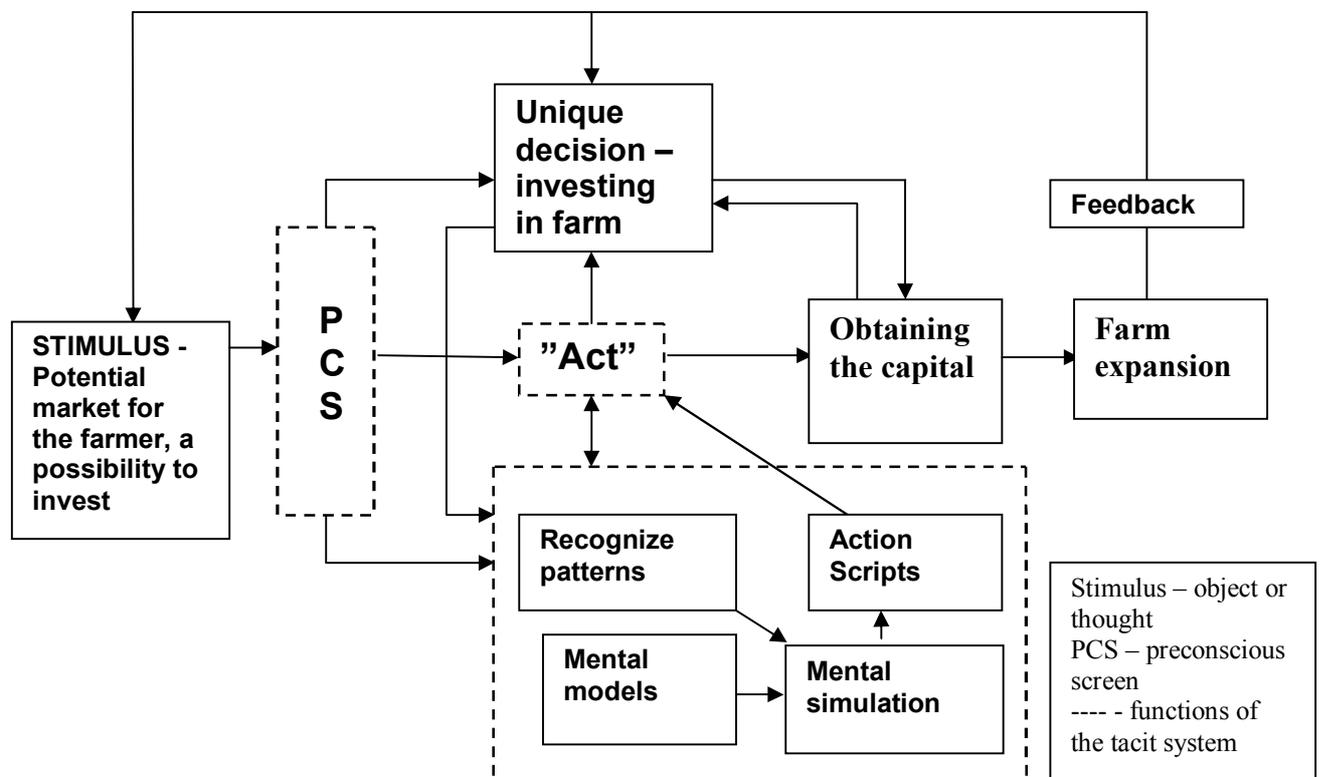


Figure 11. Hogarth's and Klien's tacit and deliberate system of human information processing viewed from the investment case of the Macedonian farmers

Only one farmer can be separated from the group the have already taken credits, he “uses” the tacit system to make decision to obtain capital. He was using credit form the bank that allowed him to acquire means on daily basis. It seems that all of the functions stated in the tacit system in Fig. 8 were all in his head. He has had a lot of previous experience with obtaining capital form financial institutions and he had all the models and simulations of how the investment should flow. That means with his previous attempts he had positive feedback.

Further, the farmers that have not obtain financial means, also are going through the process of decision to invest, but somewhere in the middle of decision process, they are cancelling the decision. For these farmers the decision is also unique and they are processing the decision with the working memory. Hence, the problem arose when the tacit system interferes in the decision. The functions of tacit system, the patterns, mental models and simulations, are blocking the decision process, because the farmer's experience with the market, offered conditions for the landed capital does not promise good results from the investment.

5.4 Results from the T – test, regarding the survey

The conducted T – test showed interesting results from the two groups of farmers, albeit expected results. The first question was not tested, because it was a control question, whether the farmers uses/used before financial services and vice versa. Hence, this question separated the farmers into two groups: users or not users.

Most of the questions in the t – test showed no significance between the two groups of farmers. Only four questions showed statistical significance. The values of the t – test are the following:

Table 22. T – test values for the questions with statistical significance

Questions with statistical significance	T-test values
Question 3	10
Question 6	3.464102
Question 9	2.970873
Question 19	2.666667

These three questions are the only questions, where the two groups show difference in their answers. In the third question the farmers that used credits were using mix (their own and borrowed) capital and the group that did not used capital were using own sourced capital. While, in the sixth question the farmers that were using capital, found that the EU sourced capita. The ninth question was the most interesting, where both groups agree that the existence of financial cooperative is good idea. However, in the group of farmers, which did not use credits, there is significant number of farmers, which thought that this is not a good idea. Because of this reason the t – test showed value, that there is statistical significance.

The rest of the questions did not have statistical significance, which means both groups agreed on the sixteen questions. The following table shows the values of the t – test:

Table 23. T – test values for questions with statistical insignificance

Questions with statistical insignificance	T-test values
Question 2	0.358372
Question 4	1.429336
Question 5	1.002152
Question 7	0.646389
Question 8	0.829393
Question 10	0.237602
Question 11	0.174712
Question 12	1.150565
Question 13	1.439246
Question 14	0.63063
Question 15	0.273239
Question 16	1
Question 17	0.645738
Question 18	0
Question 20	0.594622

Most of the questions with no statistical significance were connected with the conditions that the financial institutions were lending the credits, number of work force they need etc. On these questions, the farmers were unanimous.

6. Conclusions

The last chapter will give the summary of the problems and options that the farmers have during decision-making. Hence, will give answer to the questions state in the aim:

- What are the farmer's options, regarding information search, planning, and evaluation and choosing, bearing responsibility?
- How the decision process for the Macedonian farmers flows and how they approach to the problems?
- In which part of the decision-making, the farmers are facing difficulties while solving the problem.

The problems that the farmers are facing more or less are persisting through the whole period from independence of Macedonia until now. Uncertainty on the market, unfavourable credit lines, organizational problems,

The market as a biggest problem for the farmers and is constantly making them uncertain if they should make decision to invest in their farms. Further, this uncertainty comes from the lack of possibilities to sell their products on the market. In most of the situations the farmers are selling their products to a third party buyers that are paying them low prices, since they know that the farmers have to sell the products. In addition, there are obstacles regarding, exporting their products in EU. The unveilings to change the variety of the sorts (vegetables, fruits) of products, low quality package, etc. Therefore, there are not many options for selling their products on the market.

The credit lines offered from the financial institutions are not obtainable by the farmers, since there are few problems, too high interest rates, unsolved land property rights, administrative paper work. Thus all of these problems are not giving them too much alternatives to choose, even though are enough available credit lines.

Even though there are different farmer's organizations in Macedonia, their influence is very low. The farmers themselves also do not trust them and most of them are not members of these organizations.

Information as the most important part of a good decision is not available in many options. Most of the farmers are receiving the information from their personal contact. As regarding the rest of the options, such as internet, TV, radio or extension agencies are modestly used. Especially, the internet as a source where are available the world markets, prices are available. The government agencies are not providing enough information, because the paper that state statistical office was published stopped issuing it.

The farmers are limited with many of the options, which are part of a good decision. These problems are making more difficult situation on the field of investing. Therefore, the farmer’s biggest problems are arriving from lack of sources for information and the market.

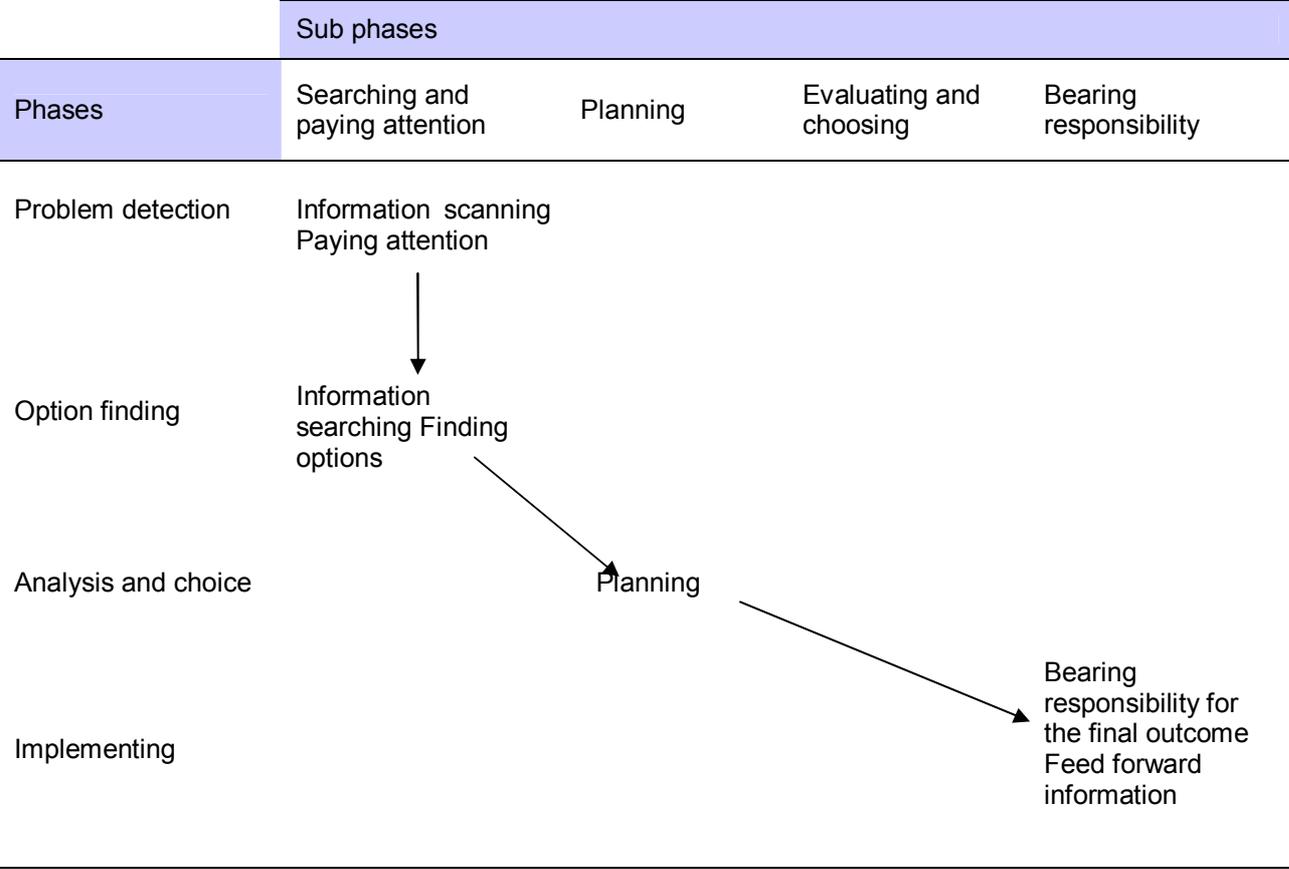


Figure 10. The decision path of the Macedonian farmers

The decision process more simply flows from information searching from the available sources, searching for the available solutions, planning the investment and at the end bearing responsibility for the whole process by taking care of the resources, controlling the investment process using financial advisors and possibly insuring the farm. So to be more clear, because this research does not involves sample biggest enough to represent every farmer in Macedonia, the figure 10 above depicts the possible pathway of the decision making process of the farmers in Macedonia

6.1 Possible solutions regarding the investing in farm

In the bottom of aim chapter, I mentioned three questions and I am going to examine possible solutions for them. The questions are the following:

- How can government agencies or other state institutions help the farmers make the right decision, especially in the market segment and organizing the farmers?
- What are the solutions for the farmers, to the problems previously stated in the problem chapter?

- How should the private financial institutions (banks, other credit companies) accommodate their credit lines to the farmers, so they can use them more easily?

The first two questions seek solutions for the market and organizational problems. Market as a primary problem have to be solved before any other problem, because there were more farmers that did not use financial services and their biggest problem is not organized purchasing of their products. Namely, possible solutions can be attracting foreign agricultural companies, investing in the rural places by forming small companies, which will purchase the farmers products. Additional, they incentive the farmers to organize themselves in cooperatives by investing half of the money to start the cooperative, the farmers have to make their farmer organizations to be more influential, when the government makes the agricultural policies.

In addition, organizing seminars where the farmers can be acquainted with the possibilities of the internet as source for information should be on a regular base. More state published paper, regarding the markets in the neighbour countries and rest of Europe. Furthermore, more regular visit by the extension agencies, where they can also acquire information.

In addition, government agencies and the banks should examine possible solution concerning the interest rates. Namely, interesting solution for the interest rates is the so “called open market operations”, it is a monetary policy involving the government and the institutional agencies. In this case, the government issues additional money in the banks, which the banks can offer them with lower interest rates.

Last year the government announced agreement with the banks, where the offered capital by the banks will be with halved interest rates. This decrease of the interest rates will be paid by the government. This and the solving of the land property rights can provide more incentive for the farmers to invest in their farms.

Bibliography

Literature

Filipovski Dj, Mitrikevski J. 1987. Stanje i uredjenje zemljista SR, Makedonije. Studii i problemi Uredjenja zemljista SFRJ. Poljoprivredni Fakultet, Beograd p.30-44

Gjosevski, D. 2008. Analyse of the agricultural sector in R. Macedonia. Department of agroecology materials. Faculty of agricultural science and food, Skopje

Gjosevski, D. 2005. Statistics handbook. Alfa 94, Skopje

Hogarth R. M. 2001. Educating intuition. The University of Chicago Press, Chicago

Klein G., Pliske R., Crandall B., and Woods D., 2005. Problem detection. Cognition, Technology & Work 7: 14-28.

Lunneryd, D. & Öhlmér, B. 2006. The influence of values on decision making: the case of farmers' choice of organic milk production. 26th Conference IAAE, Australia

Lunneryd, D. 2003. Unique decision making with focus on information use: The case of converting to organic milk production. Swedish University of Agricultural Sciences, Uppsala

Ohlmer, B. 1998. Models of Farmers' Decision making. Swedish Journal of Agriculture, Res. 28, 17-27

Lee, D, Newman, P. & Price, R.1999. Decision making in organizations. Financial Times Management, Prentice hall

Ohlmer, B. at al.1998. Understanding farmers' decision making processes and improving managerial assistance. Agricultural Economics, 18, 273-293

Internet

Agrobusiness financial dictionary 2008, USAID,
<http://www.agbiz.com.mk/doc/Agrobiznis%20finansiski%20priracnik%20mk.pdf>.

ELS in Romania, Bulgaria and Macedonia 2006, CEA – Center for Economic Analyses,
http://www.cea.org.mk/Documents/Press_release/zadolzhvanje%20na%20ELS.pdf.

Food prices and the inflation in Republic of Macedonia 2008, NBRM,
http://www.nbrm.gov.mk/WBStorage/Files/rabotilnica_24-04-2008_cenihanainflacija.pdf.

Trochim, William M 2006, The Research Methods Knowledge Base 2nd Edition, Atomic Dog Publishing,
http://www.socialresearchmethods.net/kb/stat_t.php.

MZSV 2008, MZSV,
<http://www.mzsv.gov.mk>.

ris: 100:- (exkl moms)

Tryck: SLU, Institutionen för ekonomi, Uppsala 2009.

Distribution:

Sveriges lantbruksuniversitet
Institutionen för ekonomi
Box 7013
750 07 Uppsala
Tel 018-67 2165

Swedish University of Agricultural Sciences
Department of Economics
P.O. Box 7013
SE-750 07 Uppsala, Sweden
Fax + 46 18 673502