

# Croatian farm manager entrepreneurship assessment based on personality traits

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## Bewertung der unternehmerInnenrelevanten Persönlichkeitseigenschaften der LandwirtInnen in Kroatien

### 1 Introduction

The Croatian family farm adaptation to and survival in the competitive environment of the new Europe will primarily depend on capabilities of the farm managers. They will have to tailor their business operations to the open market conditions and be capable of grasping new business opportunities for development of their farms. That is behaviour characteristic for persons who have an enterprising spirit, so

entrepreneurship of the Croatian farmers is one of the basic conditions for development of the Croatian agriculture and its rural areas.

Results of several psychological and sociological studies in entrepreneurship indicate that the enterprising persons have specific traits that differentiate them from an average population (MESCON and MESCON, 1996; SCHIEBEL, 1997; IMMINK and O'KANE, 2001). The most frequently used differentiation characteristics are specific personality traits,

### Zusammenfassung

Mit Hilfe einer Stichprobe von 415 Personen wurden die unternehmerInnenrelevanten Persönlichkeitseigenschaften (der Unternehmungsgeist) der Landwirte an landwirtschaftlichen Familienbetrieben in Kroatien erforscht. Zur Bewertung der unternehmerInnenrelevanten Persönlichkeitseigenschaften wurden Tests bezüglich der Kontrollüberzeugung und für bestimmte Persönlichkeitseigenschaften angewandt. Nur 6,7 % der getesteten Landwirte konnten der Gruppe der Personen mit einem unternehmerischen Denken zugeteilt werden.

Der niedrige Anteil der Unternehmer kann dadurch erklärt werden, dass eine grosse Anzahl der Landwirte diese Rolle nicht durch ihre eigene Entscheidung übernommen hat, sondern dazu durch äußere Umstände gezwungen (ökonomische und soziale Faktoren) wurde.

Die geringe Motivation zum Unternehmertum verlangt nach einer Politik, beziehungsweise nach Bedingungen, die den Personen mit wenig Tatkraft die Entscheidung, sich unternehmerisch zu verhalten, erleichtern würden. Dabei darf die ungünstige soziodemographische Struktur der Landwirtschaft in Kroatien dabei nicht außer Acht gelassen.

**Schlagerworte:** Unternehmer, Landwirte, Kontrollüberzeugung, Persönlichkeitseigenschaften, Kroatien.

### Summary

A sample comprising 415 Croatian family farm managers was used in a study on their entrepreneurial characteristics. The locus of control tests and selected personality factors test were used to assess their entrepreneurial traits.

Based on the test results, the respondents were divided into entrepreneurial and non-entrepreneurial persons. Only 6.7 % of tested farm managers entered the group of enterprising persons. Such low percentage of enterprising persons could be attributed to the fact that most of them became managers by a combination of different circumstances (economic and social factors) rather than by their own choice.

Low entrepreneurship level asks from the entrepreneurship promotion policy to focus on creation of such conditions that will make it easier for less enterprising persons to decide to get involved into a business activity. However, an unfavourable sociodemographic structure of farm managers must also be borne in mind.

**Key words:** Entrepreneurship, farm manager, locus of control, personality factor, Croatia.

cognitive capacity, motivation, knowledge, life history, etc. (BURNS and DEWHURST, 1996; CHEN et al., 1998; DEŽELJIN et al., 1999).

This paper studies farm managers from the Croatian family farms considering personality traits which should make them more enterprising than population in average (SCHIEBEL, 2001). Our aim is to make contribution to understanding of farmers behaviour and thus to improve quality of the entrepreneurship support measures in rural areas of Croatia.

## 2 Research problem and goals

When there was socialistic political system in Croatia, development of the so-called socially owned (i.e. state owned) sector<sup>1</sup> was favoured over the family farms which were neglected. Since the country gained its independence and the socioeconomic system changed, the social and political status of family farms improved significantly. Moreover, what was once considered as undesirable and “dangerous” form of agricultural production organisation became the “basic factor and actor of the Croatian agricultural growth” (TANIĆ, 1995). The subsidies have been channelled towards the family farms and a number of different programs for family farm development initiated. However, despite all the available support the majority of family farms have remained at the same production and economic level as before the new measures had been introduced.

It is believed that one of the most important reasons for the current situation is a poorly developed sense of entrepreneurship in the Croatian rural areas. Unless the entrepreneurship flourished among the farmers, no growth should be expected of other rural sectors directly tapping in farming and family farms, such as rural tourism, organic agriculture, primary processing and production of added value products. Encouraging of entrepreneurship is an important task of the agricultural policy which demands, among other inputs, good knowledge of entrepreneurial dispositions of the farm manager population.

The aim of the present paper is to study and assess entrepreneurial capability of the farm managers in Croatia. The initial assumption the paper relies on is that the enterprising persons have more pronounced personality traits relevant for entrepreneurship. To check this hypothesis we tested locus of control of reinforcement by means of an IPC-questionnaire and the ability to solve problems by means of an IPC-PS questionnaire. On the basis of the 16-personal-

ity-factors-test (16PF) the social initiative of farmers was identified by above-average values for *dominance*, *surgency*, *parmia* and *autia*.

Although the results of these tests alone are not a perfect predictor of entrepreneurial behaviour of an individual (RAE, 2000), the said personality traits make entrepreneurial behaviour more probable in a favourable environment (MCGRATH et al., 1992; SCHIEBEL 1997; CHEN et al., 1998).

This study, as one of rare studies in the field, also intends to draw attention to importance the human factor has for the agricultural entrepreneurship.

## 3 Theoretical background

Majority of publications concerned with starting a business or with entrepreneurs themselves can be found in the English language literature, particularly in that originating from the USA (LUTHANS et al., 1995). In terms of results-oriented research, there have been a relatively large number of US studies on the person or character of the entrepreneur.

Essentially, two research approaches have emerged, both of which seek to explain the character or nature of the process of starting a new business. The first and older approach includes the work done in the field of entrepreneurship research. This approach seeks to identify the personality traits, characteristics and behavioural patterns of those setting up a business and then to compare these with those of non-entrepreneurs, at the same time taking account of the context within which this entrepreneurial activity takes place.

The second approach draws on biological concepts and works within an evolutionary-ecological framework. This approach seeks to explain differences in the rate of business start-ups within a population of organizations (such as a particular branch of industry, e.g. agriculture) in terms of the relevant operating environment – social, economic and political factors – and across a relatively long period of time. Although promising, this new ecological perspective is still in early development and a number of relevant issues still need to be resolved.

The academic literature underpinning the empirical parts of the study presented here is dominated by English-speaking, predominately US, research. This material has been supplemented more recently by a range of German-language empirical studies which have concentrated almost exclusively on aspects of the business foundation act itself.

The core thesis of the German-language research is that entrepreneurs are much more convinced of their ability to

influence those outcomes that are important to them than are the general population. Entrepreneurs are also much more likely to have a father who was himself self-employed.

The work by KLANDT (1984) is not suitable in this context, particularly the following observations:

- Dynamic aspects: entrepreneurs are more ambitious than other people, are more prepared to take risks, have a clear tendency to seek independence, but are average in terms of the desire to yield power (a politician is a typical example of a power-oriented individual).
- Personality traits: entrepreneurs show social initiative, are easily enthused, are flexible and distinctly individualistic, show a clear desire to dominate, are less cunning and more spontaneous.
- Skills and abilities: entrepreneurs tend to be complex, uncertain and obscure personalities, with a network of personal contacts; these characteristics do not reflect the dimensions normally measured in intelligence tests and similar.

KLANDT (1984) therefore recommends using the approaches taken in more recent psychological research when measuring individual problem-solving skills in the context of a complex and unclear task.

### 3.1 The current position regarding psychology-oriented decision research

In a semi-scientific sense, there are numerous dimensions which could be used to describe the human character. It would seem sensible to systematically reduce this number to a small group of important and more useful dimensions. This need has been addressed in research on the fundamental psychology of personality, through approaches

based on factor analysis. CATTELL'S (1973) 16 PF personality inventory is an example of the factor analysis approach. This sixteen personality factor questionnaire is a self-report assessment instrument that measures the sixteen normal adult personality dimensions discovered by R. B. CATTELL in his landmark research over 40 years ago.

The empirical work undertaken by KLANDT (1984) and SZYPERSKI and KLANDT (1981) confirms the importance of factors Dominance (vs. Submissiveness), Desurgency or Liveliness (vs. Surgency), Threctia or Social Boldness (vs. Parmia) and Praxernia (vs. Autia or Abstractedness). Entrepreneurs score above average for Dominance, Liveliness, Social boldness and Abstractedness.

The 'Locus of Control of Reinforcement' (LOC) construct has much in common with MCCLELLAND'S (1975) achievement motive approach. Such work was unable to find any significant correlation between the intensity of the achievement motive and the attitude to control of later supported reinforcement by SHAPERO and SOKOL'S (1984) supposition that the control of reinforcement is a better indicator of character.

The Austrian study carried out in 1975 by ZOIHSL (the first and only European study of LOC, until the research by SCHIEBEL (1988)) showed that entrepreneurs were much more convinced of their ability to control events than were the control group.

### 3.2 The success factors

A number of conclusions can be drawn from the publications and studies dealing with success factor research. These publications cover research from European research groups, particularly those of SZYPERSKI et al. (1983) and KLANDT (SZYPERSKI and KLANDT, 1988; KLANDT, 1984); from the

Table 1: Primary personality factors tested in the study – summary explanation

Tabelle 1: Kurze Beschreibung der Persönlichkeitseigenschaften der Testpersonen

Factor label	<i>Names and attributes</i>	
	–	+
E	Submissiveness <i>Submissive, humble, mild, easily led, accommodating</i>	Dominance <i>Dominant, assertive, aggressive, stubborn, competitive, bossy</i>
F	Desurgency <i>Sober, restrained, prudent taciturn, serious</i>	Surgency <i>Enthusiastic, spontaneous, heedless, expressive, cheerful</i>
H	Threctia <i>Shy, threat sensitive, timid, hesitant, intimidated</i>	Parmia <i>Bold, venturesome, uninhibited, can take stress</i>
M	Praxernia <i>Practical, concerned with 'down to earth' issues, steady</i>	Autia <i>Imaginative, absent-minded, absorbed in thought, impractical</i>

Source: Psychology: A ConnecText, Fourth Edition by Terry F. Pettijohn, Internet address: <http://www.dushkin.com/connectext/psy/>.

Anglo-American world (in particular the work of the research group around McCLELLAND, ROTTER and CATTELL), and also the current author's own work (SCHIEBEL, 1988).

Successful entrepreneurs differ in terms of three personality traits (success factors):

1. Locus of control of reinforcement
2. Problem-solving abilities, and
3. Social initiative.

Ad 1. 'Belief in the ability to control events' is understood in terms of a person's general expectations, where we can differentiate between:

- those people who believe that they can have a strong influence on the events going on around them ("Internality"),
- those who believe that the events going on around them are strongly influenced by other people ("Powerful Others"), and
- those who believe that the events going on around them are determined by luck or chance ("Chance Control").

Ad 2. 'Problem-solving ability' is an expectation specific to a particular field of action and relates to possible future forms of co-operation.

As indicated in the research carried out by KRAMPEN et al. (1987), it would seem to make sense to differentiate between an individual's LOC for activities and situations where problems need to be solved (1), and his or her more generalised LOCUS of control (2).

HOFMANN and PREISER (1987) have verified that the extent of the internal LOC rises until early adolescence, after which it remains more or less constant. The external LOC can intensify in adulthood.

Ad 3. 'Social initiative' is expressed through a person's dominance, liveliness, social boldness and abstractedness. The construct is a measure of the socialisation process undergone by a male or female farmer, and acts as a second estimate of control of reinforcement.

### 3.3 Comparable international results

There are no comparable international research results available which deal with the measurement of entrepreneurial personality traits in the agricultural sector.

But there are some research studies which deal with rural entrepreneurship and entrepreneurial traits more generally.

A detailed study of West German entrepreneurs was published by KLANDT in 1984. The Senate for Economy and Employment in Berlin commissioned a review of the situation for women regarding business start-ups (ASSIG et al., 1985). This study also included the first overview of global empirical research into female entrepreneurs. Only two of the reviewed studies (one from Belgium, one from England) mentioned the individual, her characteristics or her performance, factors which also, of course, contribute to business success. The results from the two studies which did mention these issues are somewhat meagre: women plan for the short term and don't have enough self-confidence.

In Austria, a few surveys have dealt with the public image of entrepreneurs. Other surveys were conceived as detailed studies of specific issues, such as stress or expectations (FESSEL and GFK, 1983; AUSTRIAN CHAMBER OF COMMERCE, 1984, 1985).

SCHIEBEL (1988) studied the dynamics and decision-making strengths of 4320 female entrepreneurs in Austria, in research commissioned by the AUSTRIAN CHAMBER OF COMMERCE (Table 16.1). Women classified as 'self-responsible' were seen to twice the proportion for the sample as a whole. To overcome perceptions of helplessness, Austrian women have since demanded that the organisations which represent their interests establish appropriate encounter groups.

### 3.4 Describing the personalities of entrepreneurs

The insights gained through empirical success factor research allow us to define the following typology, based on the different expression of expectations (see also KRAMPEN, 1981):

- Type A: characterised as self-responsible,
- Type B: powerless,
- Type C: helpless,
- Type D: socially active,
- Type E: indifferent.

*Self-responsible type (A)* – socially active and psychologically stable. Self-confident, not dogmatic, fast learner. Influences others but more prone to participating style of management. Manages stress and ready to take risks. Asks for expert assistance only in emergency.

*Powerless type (B)* – easily agrees with a person of higher social rank: prone to persuasion and control. Imposes his/her convictions on the weaker. Suffers from stress and not ready to take risks.

*Helpless type (C)* – believes that his/her behaviour does not affect the events important for him/her. Usually expresses apathy, fear and passivity. One of symptoms is decreased learning capacity and poor adjustment of attitudes to changes in the environment.

*Socially active type (D)* – characterised by social engagement. Independent, but feels inferior to those dominant at work. A “follower” rather than “actor”. Shows above-average internal and external belief in control, which impedes persistent and purposeful action and behaviour.

*Indifferent type (E)* – inclines to neither direction, “average” according to all the scales.

#### 4 Research hypothesis

1. Study of this type, with locus of control and the 16-PF tests, were conducted on family farms in Croatia for the first time on national level. The obtained results should *confirm our hypothesis that the used tests enable differentiation of farm managers according to the studied personality traits*, and, based on that, according to the entrepreneurial potential derived from these traits.
2. A lot of Croatian *farm managers* have found themselves in the present role by combination of circumstances rather than by their own choice. Some have inherited a farm, some could not earn more in other economic sectors, and a large number had no chance of getting a non-agricultural job. This means that farm managers are mostly average persons forced into the role of managers. Consequently, *it is assumed that proportion of individuals with high entrepreneurial potential in the farm managers' population is rather low*, which stands for an average population.
3. Since female family members of family farms significantly participate both in farming and decision-making, it is assumed that there are no significant differences in studied personality traits according to the respondent sex. Therefore, *proportion of females and males in potentially enterprising persons should not significantly differ*.
4. According to most authors, no causal relation between age and entrepreneurial behaviour has been confirmed. The primary personality factors do not significantly change during the lifetime, and the environment is uniform for all age groups. Thus, *no significant differences according to age should be expected*. A correlation between the managers' entrepreneurial potential and their age will therefore be tested.

5. Since most authors consider permanent learning as one of significant characteristics of entrepreneurs, we shall check *whether the number of persons with high entrepreneurial potential is higher among the population with higher education*. Considering the fact that adult education in agricultural sector is very poorly developed, learning as considered here generally means formal education of the respondents.

#### 5 Data sources and methodology

Data on psychological characteristics of the farm managers were collected by a survey using a questionnaire. The survey was based on interviews with the farm managers.

The locus of control (LOC) was determined by IPC (LOC of reinforcement) and IPC-PL (LOC of solving problems) questionnaires. The personality-factor test was based on the 16-PF test according to CATTELL from which the scales for four factors, i.e. E, F, H and M, were used (SCHNEEWIND et al., 1986). The questionnaire was developed and prepared at the Institute of Agricultural Economics of the University of Agricultural Sciences (IAÖ BOKU) in Vienna, in collaboration with the Institute for Empirical Social Research (IFES), also from Vienna. The questionnaire was translated into the Croatian and adapted for the local use at the Faculty of Agriculture, University of Zagreb.

The used scales and data collected were validated both logically and methodologically at the IAÖ BOKU. The same institution also carried out primary data processing by using adequate and required psychographic tests.

According to their age, the respondents were grouped in four categories (18–30 years of age, 30–40 years of age, 40–50 years of age, and 50 years of age and over), as well as according to their education level (no formal education, elementary school, secondary school graduates, higher/high school graduates).

The results were described by univariate analysis method: frequency analysis and graphical presentations. For testing of hypotheses regarding respondent homogeneity for the selected variables, the inferential statistics methods were used: *single-factor ANOVA* and *non-parametric tests*. Nominal and ordinal category variables were cross-tabulated. *Chi-square* test was used for testing of correlations along with the following indicators: *Phi* and *Cramer's V* for nominal variables, and *Gamma*, *Somer's D* and *Spearman's* coefficient for ordinal variables.

## 6 Population and sample design

For this study, 415 farms from a sample used for the Family Farms Survey Project were selected. The Project sample of 892 farms was used to monitor the situation at some 100,000 stronger farms in Croatia. The farms used in our study came from all the three agricultural regions of Croatia, as follows: (1) Pannonian region 83.52 %, (2) Mountainous region 9.19 %, and (3) Adriatic region 7.29 %.

## 7 Results

### 7.1 Demographic and socioeconomic characteristics of respondents

Out of 415 carried out surveys, 414 paired data were obtained on respondent age group and sex. Small percentage of female farm managers (18.6 %) reflects the actual situation, with almost no variations in sex structure with regard to age. The fact that most of the surveyed managers (as much as 56.3 %) are over 50 years of age is striking.

Table 2: Age structure of farm managers by sex  
Tabelle 2: Altersstruktur der befragten Landwirte nach Geschlecht

Age category	Number of farm managers			Cumulative
	Total	Males	Females	
18–29	22	18	4	5.3 %
30–39	52	43	9	12.6 %
40–49	107	87	20	25.8 %
50 and over	233	189	44	56.3 %
Total – by sex	414	81.40 %	18.60 %	100.0 %

Source: Authors' research results.

As regards level of education, most of the surveyed managers (48.4 %) have finished only elementary school. When this figure is added the percentage of managers that have not completed the elementary education (17.8 %), it means that altogether 66.6 % of farm managers have at most completed the elementary school.

Next group includes the farm managers that finished secondary education (29.4 %), and the last group includes the farm managers with the education level higher than the secondary school (only 3.9 %).

A significant negative correlation of weaker intensity was found between the age and level of education, i.e. the level of education decreases with increase in age (*Somer's D* = -0.344, *p* = 0.000).

Table 3: Respondents educational structure  
Tabelle 3: Ausbildungsstand der Testpersonen

Education level	Frequency	Percentage	Cumulative
No education	74	17.8	17.9
Elementary school	201	48.4	66.6
Secondary school	122	29.4	96.1
Higher school or university	16	3.9	100.0
Total recorded	413	99.5	
No data	2	0.5	
Total	415	100.0	

Source: Authors' research results.

Number of persons at the farms living off agriculture varies from one to five, on average 3 (or more accurately: 3.32). One household has on average 4.44 members, so the share of family members living off agriculture is rather high. This only confirms that agriculture is a significant source of income and jobs at the farms included in the survey. On 41.6 % of the farms share of agricultural income in total household income is rather high, i.e. 75 % or more<sup>2</sup>. Furthermore, on 42 % of the farms agricultural income makes between 25 % and 74 %, and finally, on 16.4 % farms it makes less than 25 % of the household income.

As regards the production type<sup>3</sup>, share of livestock farms is the highest (50.9 %). These are followed by diversified farms (27.5 %), the farms with prevailing plant production (16.1 %), and those with home processing (5.6 %).

Table 4: Family farms by prevalent production  
Tabelle 4: Familienbetriebe nach Produktionsgrößenklassen

Main production	Frequency	Percentage
Livestock production	209	50.9
Plant production	66	16.1
Primary processing	23	5.6
Diversified farms	113	27.5
Total valid	411	100.0

Source: Authors' research results.

### 7.2 Classification of Farm Managers by Locus of Control

Two scales with 24 items each according to KRAMPEN's IPC and IPC-PL questionnaire were used to determine two LOC constructs: general control certainty and problem control certainty. These scales enable three LOC aspects to be singled out: I, P and C. The "I" scale is used to determine person's own, internal belief in control. The "P" scale is used to determine belief in powerful control of others over person's life, and "C" scale determines belief in chance causing

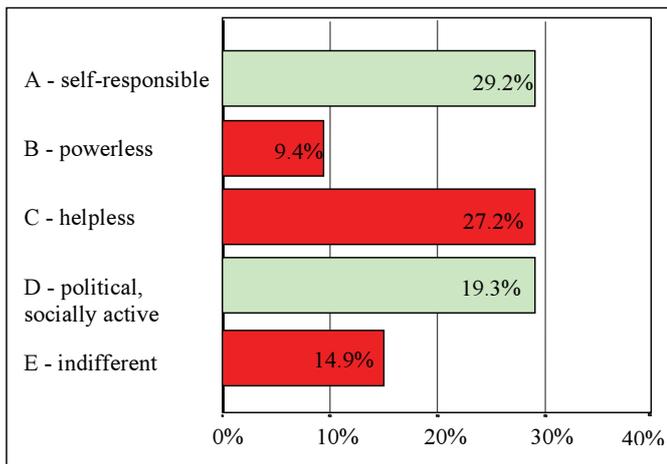
Table 5: Classification of respondents according to the locus of control  
Tabelle 5: Zuordnung der Testpersonen in Bezug auf deren Kontrollüberzeugung

Type		Result on scale (compared to average)		
		Scale I	Scale P	Scale C
A	Self-responsible	<i>above</i>	average, <i>below</i>	all possibilities
B	Powerless	average, <i>below</i>	<i>above</i>	<i>below</i> , average
C	Helpless	average, <i>below</i>	all possibilities	<i>above</i>
D	Political or Socially Active	<i>above</i>	<i>above</i>	all possibilities
E	Indifferent	average, <i>below</i>	average, <i>below</i>	average, <i>below</i>

Source: Authors' research results.

events in person's life. According to the results per each scale, the respondents are grouped according to a particular personality type, as in the following table (see above for detailed explanation of the types).

Large portion of individuals belonging to the *self-responsible* type is desirable for development of business entrepreneurship, since such persons will more probably enter into a business activity under suitable conditions. If the proportion of *helpless* and *indifferent* individuals is high, entrepreneurship on a larger scale is less likely. A rather high proportion of *self-responsible* individuals was determined in the analysed sample according to the general control certainty, but the share of *helpless* individuals was also high (type A 29.2 %, type C 27.2 %). The result reveals polarisation of respondents according to this criterion, because almost 50 % respondents belong to a group with either good or bad entrepreneurship results since types A



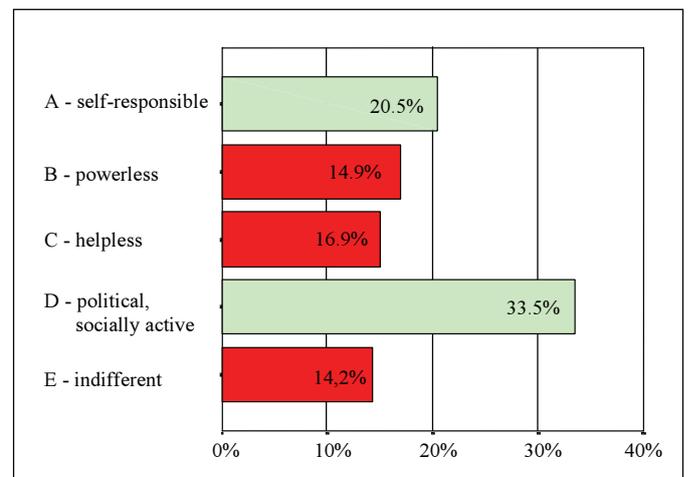
Source: Results of the research

Figure 1: Structure of farm managers according to general control certainty

Abbildung 1: Verteilung der Landwirte nach deren generalisierter Kontrollüberzeugung

and D account for 48.5 %, and types B, C and E for 51.5 % of tested sample.

If the problem control certainty were applied, proportion of manager types showing more entrepreneurial characteristics is somewhat higher than for general control certainty. The group with types A and D has 54 %, and the group with types B, C and E 46 % of respondents with such characteristics. Therefore, polarisation is present again with slight tilt towards the favourable results.



Source: Results of the research

Figure 2: Structure of farm managers according to problem control certainty

Abbildung 2: Verteilung der Landwirte nach deren bereichsspezifischer Kontrollüberzeugung

Compared to the results on Austrian farmers, proportion of "*helpless*", "*politically or socially active*" and "*self-responsible*" types is higher in Croatia. Proportion of "*powerless*" type is almost equal in both samples, and share of "*indifferent*" type is considerably lower in Croatia.

### 7.3 Personality Factor Analysis Results

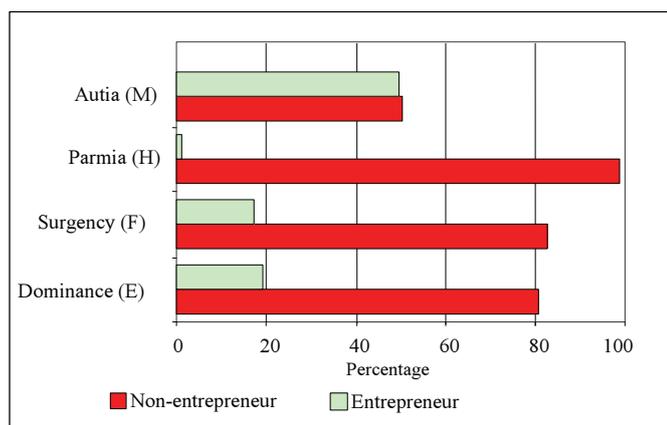
Four primary personality factors from Cattell's personality inventory were used (SCHNEEWIND et al., 1986), i.e.:

1. Submissiveness – Dominance (E),
2. Desurgency – Surgency (F),
3. Threctia – Parmia (H) and
4. Praxernia – Autia (M).

According to KLANDT (1984) and SZYPERSKI and KLANDT (1988), successful entrepreneurs achieve results that are very close to the poles on the right side of these four personality dimensions. This means that the results are rather close to the poles of Dominance, Surgency, Parmia, and Autia, which makes such persons both individually and socially more active (SCHIEBEL, 1997). The position or result of an individual for each factor is determined by *S-ten* score ranging from 1 to 10. The above-average individuals are those with *S-ten* score equal to or above 7.5. As a rule, number of individuals with high *S-ten* scores in general population is small, since most people are near the average.

The study determined above-average results for *M* factor (*autia* or *imaginative, impractical*) in most respondents (somewhat less than 50 %). Factors *F* and *E* (*surgency* and *dominance*) were determined above-average in much lower percentage (nearly 20 %) of individuals, while factor *H* (*parmia*) was found above average in only 1.2 % of the sample.

The *parmia* factor description shows that it comprises attributes usually given to enterprising persons, so such small percentage is not encouraging.

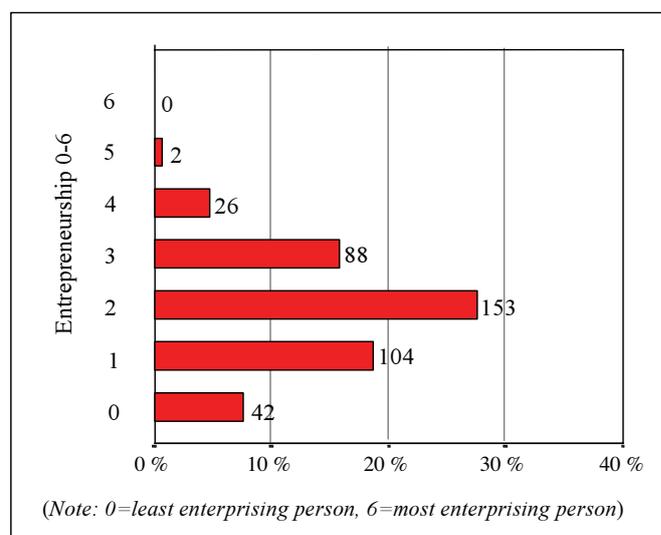


Source: Results of the research

Figure 3: Structure of sample by personality factors  
Abbildung 3: Beschreibung der Stichprobe nach den Persönlichkeitseigenschaften

### 7.4 Farm Manager enterprising assessment

Combination of results on the LOC (general control and problem control certainty) and on four personality factors (E, F, H and M) gave an entrepreneurship potential assessment for each farm manager. Since six variables were tested, for each of which either favourable (1) or unfavourable (0) result could be obtained, possible result ranges from 0 to 6 scores. The result closer to score 6 means higher entrepreneurship assessment. The variable score on the scale from 0 to 6 is referred to as “entrepreneurship 0–6”.



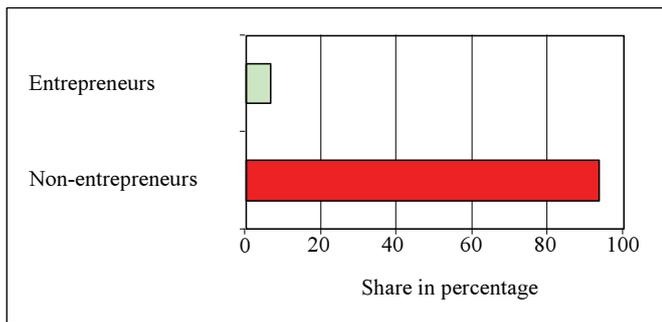
Source: Results of the research

Figure 4: Frequency distribution for entrepreneurship 0–6 variable  
Abbildung 4: Verteilung der Variablen „Tatkraft 0-6“

No respondent from 414 valid surveys reached the top score. Most respondents scored 2, than 1, 3 etc. The average score was 1.9.

Transformation of the “entrepreneurship 0–6” variable into a dichotomic variable gave final distribution of respondents into two groups by entrepreneurship potential. The respondents that scored less than 4 on “entrepreneurship 0–6” variable got 0 scores, and those who had 4 and over scored 1 on a new variable. The new variable with possible scores 0 and 1 was referred to as “entrepreneurship 0/1”, and the farm managers that scored 1 were referred to as “entrepreneurial”, while those that scored zero were referred to as “non-entrepreneurial”.

Two groups of farm managers were obtained, one with 6.7 % entrepreneurial individuals and the other with 93.3 % of non-entrepreneurial. The percentage of entre-



Source: Results of the research

Figure 5: Structure of farm managers by entrepreneurship  
Abbildung 5: Verteilung der Landwirte nach ihrem „Unternehmungsgeist“

preneurial persons is lower than in Austrian study where it was almost 10 %.

## 8 Statistic analysis results

One of purposes of the study was to check whether the farm manager classification by selected personality traits and assessment of their entrepreneurship was applicable in Croatia. It is clear that the obtained results enabled their classification according to the entrepreneurship, and the obtained frequency distribution is just slightly more asymmetrical than normal (*Kolmogorov-Smirnov*  $Z = 3.783$ ,  $p = 0.000$ ).

Only 6.7 % respondents fell into the entrepreneurial group, which is in agreement with expectations since only a small number of individuals are *enterprising above average*. The result corresponds with our assumption that we were dealing with population of average individuals that found themselves in a farm manager role for different reasons.

Just in line with our assumptions, no statistically significant relation was found between the scores for *enterprising* and *sex*. This means that, according to their personality traits, the male and female farm managers are equally enterprising. The fact that female farm managers are so scarce is attributable to the factors of environment (such as family, community, education and the like). It is interesting that on one personality factor – *dominance (E)* – women have higher scores (*Eta* = 0.301, chi-square  $p = 0.000$ ).

Testing has revealed a *statistically significant difference in enterprising by age categories* (*Gamma* = 0.210,  $p = 0.001$ ), which means that the hypothesis that these two variables are unrelated is not acceptable. It was evident that the farm

managers coming from the two top age categories have better entrepreneurial scores, which is primarily attributable to the personality factors *surgency (F)* and *autia (M)*.

In *testing differences in enterprising according to the education level*, chi-square test and corresponding non-parametric tests were used. The results have shown that there is no statistically significant relation between the level of education and most of the psychological variables. A very poor negative relation was found between the level of education and personality factors *dominance (E)* and *autia (M)* ( $r_s = -0.107$  and  $p = 0,030$ , and  $r_s = -0.152$  and  $p = 0.020$  respectively).

## 9 Conclusions and Recommendations

Considering the results, it could be said that as regards entrepreneurship the farm manager population does not differ from an average population. This means that the proportion of enterprising farm managers which should be the baseline of enhancement of the agricultural entrepreneurship is very small, and that by their personality traits the Croatian farm managers do not differ from average population. This means that strengthening of entrepreneurship at the family farms asks for higher investment into creating favourable conditions and infrastructure for entrepreneurship growth which would be encouraging even for the less enterprising persons. Otherwise, the degree of entrepreneurship will not be sufficient for sustainable development of economic system in the rural areas.

Below, the obtained results will be used as recommendations on what we find the most important for development of entrepreneurship on family farms.

1. Creating favourable social and economic climate is the most important task in development of entrepreneurship, including:
  - strong information support to (the rare) entrepreneurial initiatives,
  - simplification of procedures for organisation and registration of enterprises,
  - instructions on procedures for foundation of businesses
  - instructions methods and possibilities of financing enterprises
  - ensuring that business operations are performed smoothly and in compliance with the laws and regulations.
2. Entrepreneurial and development centres, fast growing in number in Croatia, must respect demographic, socio-

logical and psychological characteristics of the target population, which are briefly described in the results of this study.

3. Since proportion of potentially enterprising farm managers is small, it is necessary to subsidise such business forms that will include co-operation of individuals and mandatory professional guidance in the initial business operation stages (e.g. co-operatives which need subsidies for financing of professional management).
4. Training programs and all information related to business kick-off and management should be offered through the existing professional agricultural associations, in form and way acceptable for "conservative" population with low education level.
5. Adult training (including workshops, courses and lectures) must include know-how and skills in business management, as should be recommended to all those who offer such training (especially state administration and local self-government bodies, educational institutions and the like).
6. The transfer of know-how and skills needed for founding and management of businesses should primarily be based on case studies, with possibility of communication with those whose cases were used as examples.
7. The existing mass media, the dominant source of information for the rural population, should also be harnessed in dissemination of the entrepreneurship and management information.
8. The national and local institutions in charge of entrepreneurship encouragement should make maximum use of the end-user feedback. This will make it possible for them to identify the major obstacles to entrepreneurship and assist in their removal, since the farmers are still socially and politically inadequately organised.

Influencing the psychological profile of farm managers aimed at strengthening of their entrepreneurship could be an alternative and supplement to development of the entrepreneurial infrastructure. However, the rural infrastructure presently available in Croatia will certainly not facilitate conducting of such activities.

## Notes

- <sup>1</sup> Research was carried out within the project "Entrepreneurial Potential of the Croatian Family Farms" initiated by the Agricultural Research Council of the Ministry of Agriculture and Forestry of the Republic of Croatia.

<sup>2</sup> Agricultural combinats, state cooperatives, processing industry and trade.

<sup>3</sup> Based on assessment of respondents.

<sup>4</sup> Based on proportion in sales value.

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