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# Success factors for farming collectives

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**Abstract—** As the most intensive form of partnership in agriculture, farming collectives (FCs) place high demands on their participants. Based on a census of Swiss farming collectives, three success indicators are formed. The first and second describe interpersonal and economic success respectively, whilst the third encompasses overall success. Factors influencing success are determined by means of multiple regressions. Five predictor variables (compatibility with co-operation partner, trust, information quality, attitude of social environment, and relationship/kinship circle of the co-operation partner) accounted for 44 per cent of the variance in interpersonal success. Economic success was far more difficult to explain ( $R^2 = 0.11$ ). Even so, the influence of “soft” factors, even on the economic success of a farming collective, is striking. Above all, trust and the human and structural compatibility of the co-operation partners play an important role for all three types of success. The co-operation agreement, agricultural consultation, the number of participating people on the farm, and the investments made may be ranked as less important than previously assumed.

**Keywords—** farming collective, economic satisfaction, interpersonal conflicts

## I. INTRODUCTION

In Switzerland the growth of individual farms is kept in tight check. For this reason, ways of improving work productivity, and consequently cost-effectiveness, are sought [1]. One option is working together with a co-operation partner.

The question therefore arises as to which influencing factors are important for interpersonal and economic success. That in addition to business factors [1] “soft” factors should also play a role, is assumed in (agro-) economic literature to be self-evident [2], [3], [4]. Just which business and personal suitability criteria are imperative for an FC to be successful, however, has to date remained largely a mystery.

Since according to the literature [5] both economic and social aspects play an important role, it would hardly be illuminating to use just one success criterion. For this

reason, a purely economic and a purely interpersonal as well as a mixed success indicator are defined.

## II. METHOD

### A. Written Survey

In late January 2006, for each of the 871 FCs, a randomly selected co-operation partner was sent an eight-page questionnaire to complete on behalf of their FC. The questionnaire was designed such that largely closed questions and preassigned answer categories made a quantitative evaluation possible. The verbal response scale (five-point Likert scale) was one-dimensional and odd. The sequence of questions obeyed content-related criteria. For the “Communication” and “Conflict” subject areas, two validated survey instruments were used (see “Communication Measurement” and “Conflict-Level Measurement” subsections).

A “clinical pretest” with three participants (concurrent think-aloud technique) was followed by a postal pretest with 24 questionnaires sent out.

A total of 462 assessable questionnaires were returned, corresponding to a response rate of 53 per cent.

### B. Communication Measurement

In order to assess the quality of communication, we used a verified measuring instrument in the form of the “Questionnaire for the assessment of communication in organizations (KomminO)” from the University of Applied Sciences Heidelberg [6]. Consisting of 26 individual items, the questionnaire permits a statement on information quality in general. Information quality depends on access to information, the extent and accuracy of the information, and the satisfaction of the participants.

### C. Conflict-Level Measurement

Just as with communication, a validated question instrument was employed to measure how high the potential for interpersonal conflict is in the FC. The “Questionnaire on Work-Related Conflicts in Teams” (FAKT, [7]) contains 18 types of conflict in its original version. The conflict

types are classified according to external co-ordination problems, internal regulation problems, and social incompatibility.

#### D. Indicators for Measuring Success

Since a purely quantitative comparison of hard factors (e.g. income, growth) as an indicator of success is not possible with FCs, owing to their different operational organisation [8], [5], a combination with “soft” factors is used, especially as no account is taken of the multiple-interest approach with purely economic indicators of success. Three types of success are therefore distinguished: Economic success (2/6) of an FC, the interpersonal success (1/3), and the overall success (1-6) (see Figure 1).

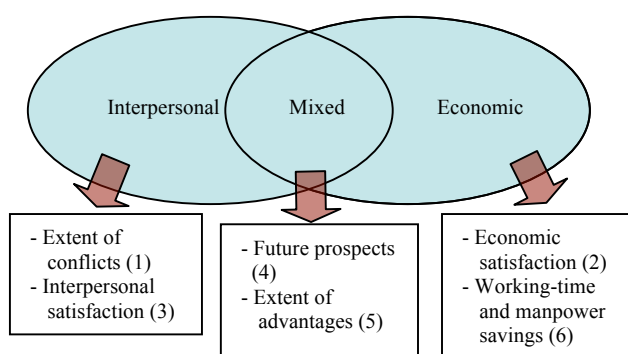


Fig. 1 Definition of the Success Indicators in Farming Collectives

The six indicators used to measure the three types of success are in accordance with the economic and social objectives in an FC as described by Mann und Muziol [6]:

1. The complex construct of *interpersonal conflicts* has been quantified via an existing measuring instrument (see subsection “Conflict-Level Measurement”).

2./3. The *economic* and *interpersonal satisfaction* was measured on a five-point Likert scale (from 1 for “not at all applicable” to 5 for “very applicable”) with the question of how satisfied the participants were with the economic and interpersonal situation in the FC.

4. The *future prospects* of the farm were measured such that a graduated agreement would have to ensue to the question of whether a disbanding of the farming collective was being considered. The same Likert scale as with point b/c was applied.

5. The *extent of the advantages* in the FC was a further success indicator. Relating for the most part to working

time, this was also measured with the same Likert scale as for point b/c.

6. A final success indicator encompasses the *working time effectively saved*, as well as the *manpower saved*.

The six indicators are measured on a standardized scale, and therefore carry the same weight. For the three types of success, the median value of the two indicators in each case is determined.

### III. STATISTICAL PROCEDURE

A factor analysis (principal component analysis) of all the items on the questionnaire representing possible success factors did not yield any nameable factors. In terms of content, they were not consistent enough. For this reason, the questionnaire items (some of which were consolidated) were treated directly as success factors.

Since regression-analysis methods represent successfully applied methods for examining content-analysis and exploratory questions, the possible predictor variables were subjected to a multiple regression. Using the multiple regression equation, several predictor variables may be used to predict a criterion variable (in the current instance, various success indicators for an FC). By means of the stepwise exclusion of predictor variables whose predictive potential scarcely exceeds that of the remaining predictor variables (via an F-Test), these redundant variables can be excluded.

### IV. RESULTS

#### A. Factors Influencing Interpersonal Success

In a first step, the success factors influencing interpersonal success (see Figure 1; 1/3) were determined. Five predictor variables together explain 44 per cent of the variance in interpersonal success (Table 1). Compatibility with co-operation partners has the greatest influence on the criterion variable. Trust in the communication partner and information quality are also important influencing factors for interpersonal success. These three predictor variables are all highly significant. The positive attitude of the social environment vis-à-vis the FC during the preparation period has a slightly negative influence on interpersonal success. The further the co-operation partners are from each other's relationship/kinship circle, the better the FC functions interpersonally.

Table 1: Multiple Regression of Interpersonal Success onto Possible Success Factors

	Beta	T-Value	p
Constant	1.161	5.547	.000
Compatibility with co-operation partner	.279	10.408	.000
KomminO: Trust	.258	5.006	.000
KomminO: Quality of Information	.231	4.465	.000
Positive attitude of social environment during set-up phase	-.068	-2.461	.014
Relationship/kinship circle of co-operation partner	-.036	-2.019	.044

Remarks:  $N=462$ ,  $R=0.66$ ,  $R^2=0.44$ ,  $F=71.95$ ,  $df=5/456$ ,  $P=0.001$

### B. Factors Influencing Economic Success

The economic success of an FC (see Figure 1; 2/6) is a good deal more difficult to account for than its interpersonal success. Even so, here too there are five explanatory variables significantly influencing the variance of the economic success (Table 2). Trust in one's communication partner from the KomminO instrument explains the most. In addition, as with interpersonal success, the compatibility of the co-operation partners significantly influences economic success.

The proportion of working time spent on communication explains economic, but not interpersonal success. This variable shows what per cent of the daily working hours are spent absorbing and passing on information. The larger this percentage, the greater the economic success. Other explanatory variables are the relationship/kinship circle and the extent of equality. The more equal the partners see their co-operation as and the less close the connection between the partners before the FC was set up, the more favourably this affects economic success.

Table 2 Multiple Regression of Economic Success onto Possible Success Factors

	Beta	T-Value	p
Constant	2.278	8.825	.000
Compatibility with co-operation partner	.106	3.060	.002
KomminO: Trust	.166	2.984	.003
Proportion of working time spent on communication	.019	3.207	.001
Relationship/kinship circle of co-operation partner	-.058	-2.536	.012
Relationship with co-operation partner – equality	.058	2.065	.040

Remarks:  $N=462$ ,  $R=0.33$ ,  $R^2=0.11$ ,  $F=11.38$ ,  $df=5/456$ ,  $P=0.001$

### C. Factors Influencing the Overall Success of a Farming Collective

If we assume an overall success indicator comprising economic and interpersonal success, and now, also comprising future prospects and the given extent of advantages in terms of working time (see subsection "Indicators for measuring success" and Figure 1; 1-6), a somewhat different picture emerges than for economic or interpersonal success alone. The overall multiple regression shows that six variables account for 34 per cent of the variance in overall success (Table 3). Mutual compatibility of the co-operation partners counts for a great deal. The more compatible the co-operation partners, the greater the overall success of the FC. A recent addition is the aspect that the more farm managers work a majority of their working hours on the farm, the greater the overall success. Previously, this variable contributed nothing to either economic or interpersonal success. The remaining predictor variables were also already important either for economic or interpersonal success.

Table 3 Multiple Regression of Overall Success onto Possible Success Factors

	Beta	T-Value	p
Constant	1.673	8.051	.000
Compatibility with co-operation partner	.231	8.838	.000
KomminO: Trust	.167	3.392	.001
Relationship/kinship circle of co-operation partner	-.063	-3.672	.000
Proportion of working time spent on communication	.013	3.018	.003
KomminO: Information quality	.123	2.484	.013
No. of farm managers employed over three-quarters time on the farm	.054	2.387	.017

Remarks:  $N=416$ ,  $R=0.59$ ,  $R^2=0.34$ ,  $F=35.62$ ,  $df=6/409$ ,  $P=0.001$

## V. DISCUSSION AND CONCLUSIONS

All in all, it can be said that a surprisingly large proportion of the variance in interpersonal and overall success (44 per cent and 34 per cent, respectively) can be predicted with relatively few explanatory variables (5 and 6, respectively). Only economic success is less easily predictable (11 per cent).

Since this success-factor study represents a partial investigation (FCs only), a homogeneous basis of investigation was achieved. The identified success factors may thus be viewed as highly meaningful, and have great relevance for working farms [9].

### A. “Soft” Success Factors and their Impact

With interpersonal success in particular, mainly “soft” factors were of decisive importance, as was to be expected. The success factors emerging from a qualitative study carried out by Mann and Muziol [5] and Doluschitz [10] coincide only in part with those of this study (see “Unresolved Research Questions”).

The critical importance of trust, however, is a main point of agreement of these studies. This is shown in the present study for all three types of success in the trust in the communication partner (KomminO), and with Mann and Muziol [5] in the statement that knowing one another and common work experience are important. Doluschitz [10] stresses that trust is important. Balling [2] also highlights mutual trust as a basis for co-operation: A friendly relationship is not essential, but trust saves checking costs. Furthermore, he refers to various studies [11], [12], [13].

Compatibility of the co-operation partners has proven to be an important factor not only for interpersonal success, but also for the other two types of success, as noted also by Schaudt [14]. It is to be assumed that those questioned took this to mean compatibility on the human level, as well as on the structural or business level. That is why it has also proven to be an important factor for economic success. Doluschitz [10] confirms this, as farms setting up an FC must also be compatible on the structural level (with similar capacities and production structures).

The variable “Relationship with co-operation partner – equality” has the same outcome as the “Compatibility” variable: if the co-operation partners feel equal, this has a positive impact on economic success. Relationship Level and Role Consensus also appear to have an important influence on success. This is evident on the one hand from the variable “relationship/kinship circle of co-operation partner”. The closer the individuals involved (e.g. relatives), the lower success is on all three levels. In the interpersonal sphere, this means that there are more conflicts, and the co-operation partners are more dissatisfied with the interpersonal situation.

Surprisingly, the attitude of the social environment towards the FC has an impact on the interpersonal success of the FC. The more negative the attitude, the more successful the FC is rated in interpersonal terms. This result is not easy to interpret. On the one hand, it may be that the farmers in question are not open to social influences, and thus have a low self-monitoring tendency [15]. Another possible explanation is that motivational structure is adapted by the social frame of reference. The purely psychological features of the farm manager interact with the ideas and mode of behaviour of the environment [16]. Put simply, this means that external pressure binds individuals together.

In the literature, there is agreement with regard to the crucial importance of communication as an essential feature of a functioning FC. A direct connection between the quality of communication and the conflict level is taken for granted in a number of ways [17]. Steffenhagen [18] postulates that with decreasing formal, temporal and content-related restriction of operative communication, the likelihood of conflict increases. A connection between communication and conflict is also described by Ehlerding [19] and Habermann [20]. In the present study, quality of information goes a significant way towards explaining interpersonal success, and hence frequency of conflict. Apart from this, the proportion of working time spent on communication has an impact on overall success. What is striking is that it also has a positive effect on economic success. It would thus seem certain that in addition to the quality of information exchange, meeting frequency has an impact. This is repeatedly borne out by the literature, e.g.: “Success requires frequent, rapport-building meetings at [different] organisational levels” [21], cf. [22].

### B. The Role of “Hard” Factors

It is fairly surprising how little “hard” factors such as duration of FC, extent of expansion investments, education of the co-operation partners, or size of utilized agricultural area contribute to an explanation of economic success.

Only the predictor variable “Number of farm managers intensively occupied on the farm” contributes somewhat to the prediction of overall success. The more farm managers are intensively involved on the farm, the greater success is. This is primarily because the advantages in terms of working time are higher for those farms having many hard-working farm managers. Contrary to statements made in the literature, more conflicts do not arise owing to the presence of more people on the farm [2], [20].

The role of the written agreement is viewed almost exclusively as important in the literature [19], [14]. In the present study, the degree of detail of the agreement was measured, but contributed nothing to economic and interpersonal success. This variable also contributed nothing to overall success, but only just missed doing so. In this study, the high degree of detail of the agreement was of no use in conflict prevention, although Bowersox [23] viewed *ex ante* arrangements as prevention. Likewise, Balling [2] writes that power imbalances and any possible dysfunctional effects on weaker participants can be kept in check if the agreement is good and tailored to the individual farm, and if barriers to withdrawal are pointed out. The effectiveness of agreements must not be overestimated, however – a point this study also confirms.

The level of expansion investments at the time of set-up did not significantly explain economic success. Doluschitz [10], however, describes fairly large investments and a comparable level of education as success factors (cf. also [2], [24]). Similar knowledge and skills are also identified as important by Mann and Muziol [5], but did not emerge as a success factor in the present study. The impact on success of the age difference between the co-operation partners is only easily determined for overall success. The trend here is that a fairly large age difference has a negative impact on success.

### C. Unresolved Research Questions

The ability to deal with conflict and the willingness to compromise, the possession of mutual respect and the same moral concepts, which are viewed by Doluschitz [10] as important, were not measured directly in the present study. A further important aspect for follow-up studies are personality traits which are necessary for co-operation. An “entrepreneurial personality” or a “co-operative personality” [25], [26], for example, might be advantageous for a good partnership. Additional important personality traits and skills such as e.g. sociability, assertiveness, negotiating skill and the ability to view things from an objective distance are viewed as important [27]. It is interesting to see the extent to which success can be predicted by certain personality traits.

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