

Assessing the Effectiveness of Non-Profit Forestry Organisations: An Ultimate Goal Approach

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This paper is an assessment of what in Finland are referred to as local forest management associations (LFMAs); the local units of a non-profit, forestry-promotion institution. First, the concept of organisational effectiveness is explored and an attempt is made to define it with respect to the LFMAs. The study then seeks to identify the environmental constraints, organisational characteristics and managerial practices differentiating the most effective and least effective associations. Discriminant analysis revealed four determinants of effectiveness: agrarian prosperity in the given area, activeness in marketing services to forest owners, the board of governors' role, and goal setting practices. The results thus indicate that the comparison of managerial policies and practices among LFMAs can provide useful information for improving their effectiveness.

Keywords performance, evaluation, local forest management associations, forest policy

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1 Introduction

The assessment of organisational effectiveness has been a subject of extensive empirical and conceptual research during the last few decades (see Spray 1976, Goodman and Pennings 1977, Steers 1977, Cameron and Whetten 1983, Lewin and Minton 1986). Thus far, however, surprisingly little attention has been paid to evaluating the effectiveness of non-profit, forestry organisations. Nevertheless, they, too, are facing inten-

sive demands for a higher level of accountability. At the same time, they are challenged to adopt more effective approaches in the management of their resources. These demands are being expressed by the users of their services and others who finance their activities. A move towards more effective units, however, is not possible until we are able to provide adequate information about what constitutes the effectiveness of these organisations, and which managerial practices lead to the best performance.

The purpose of this study is to describe and evaluate the effectiveness of local forest management associations (LFMAs); the most important forestry promotion organisations in Finland. After describing the role and purpose of LFMA, the concept of organisational effectiveness is examined, and an attempt is made to define it with respect to the LFMA. Next, the paper goes on to introduce the theoretical aspects of the factors influencing organisational effectiveness in general, as well as the variables specific to the LFMA. Finally, LFMA's effectiveness and its major causes are empirically tested using data from eastern Finland. This is followed by some suggestions how their effectiveness might be improved.

2 The Role of Local Forest Management Associations

Numbering some 280 at the moment, the LFMA function on a non-profit basis, with jurisdictions typically covering a single municipality. Their aim, as stated in the Act concerning Local Forest Management Associations of 1950, is (1) to steer and develop private forestry, (2) to increase the professional skills of individual forest owners, (3) to provide professional assistance to forest owners, and (4) to promote private forestry in other ways in their specific area. Nevertheless, in practice, the LFMA have a dual purpose: while promoting forestry, they also act as the forest owners' organisation. They finance their actions equally by collecting compulsory (tax-like) forestry fees from private forest owners, and fees for service provided to non-industrial private forest (NIPF) owners.

The LFMA work directly with forest owners providing them with technical assistance and financial instructions. They have a wide array of services: consulting in timber sales matters and silvicultural work, marking felling coupes, preparing forest management plans, providing training and courses, and promoting forest improvement by offering professional assistance in the planning and execution of operations. Most of the silvicultural work in private woodlots is or-

ganised by the LFMA, and a significant proportion of the timber felled is sold by the LFMA by proxy on behalf of individual forest owners.

Indeed, Varmola (1989) found that 73 per cent of NIPF owners have been in personal contact with LFMA forestry personnel during the years 1984-89. In addition, according to Järveläinen (1988) forest owners consider LFMA to be their most important source of information regarding timber prices and the roundwood market. Against this background, not surprisingly, the felling and silvicultural behaviour of the NIPF owners have been found to relate to the contacts they have with forestry extension organisations, particularly with the LFMA (Virta 1971, Juslin 1977, Järveläinen 1981, 1988, Tikkanen 1981a).

3 Concept of Organisational Effectiveness

3.1 General Approaches

Researchers have not yet reached consensus on the concept of organisational effectiveness. No doubt, part of this lack of agreement can be traced to the highly diversified field of organisational theory as well as of organisation and management studies. As a result, there are variety of approaches to the definition of organisational effectiveness (see e.g. Steers 1975, Cunningham 1977, Cameron 1980, 1986a, Strasser et al. 1981, Hitt 1988). Most of them, however, fall into one of the four major categories: (1) the goal model, (2) the system-resource model, (3) the process model, and (4) the strategic-constituencies model or the participant-satisfaction model. Each of them has something to recommend it, and yet at the same time each has some distinctive disadvantages, partly inherent and partly owing to the limitations in the state of relevant theory and empirical results (Gaertner and Ramnarayan 1983).

The *goal approach* defines effectiveness in terms of how well an organisation accomplishes its objectives (e.g. Etzioni 1961, 1964, Cameron 1980). Using this perspective, evaluators focus on the outcomes (i.e., results, impacts, and ac-

complishments) of an organisation. This particular model has found most wide usage as the basis for evaluation since it is a practical approach. It is most appropriate when organisational domains are narrowly defined, goals are consensual, and outcomes are easily identifiable. However, if organisations do not have clearly defined goals, the criteria of effectiveness are also bound to be ambiguous. Problems arise also from the fact that, in many cases, the organisation's goals are not static but instead tend to change during the life cycle of the organisation. It has, therefore, been suggested that the goal model would be appropriate for mature, formalised organisations, in which goals are stable and whose activities are shaped by emphasis being placed on outputs (Cameron and Whetten 1981).

Several researchers have rejected the goal approach noting that organisations do not serve just one objective but many different interests with conflicting criteria (e.g. Georgiou 1973, Cameron 1981, Kanter and Brinkerhoff 1981). On the basis of this consideration, Yuchtman and Seashore (1967) have suggested an alternative approach, the *system resource model*. According to it, an organisation's effectiveness is judged on the extent to which it is able to adapt to the environment and acquire resources (see also Lawrence and Lorsch 1974, Pfeffer and Salancik 1978). In other words, inputs replace outputs as the primary consideration. However, defining organisational effectiveness in terms of system resource model is problematic since system model evaluators tend to consider their set of underlying evaluation criteria universally applicable in any organisational setting. Critics also point out that the approach has limited usefulness if the acquired resources have little, if any, direct connection with the organisation's outputs. Indeed, some researchers (e.g. Molnar and Rogers 1976, Cameron 1980) suggest that in non-profit organisations the acquisition of inputs is not tied to organisational outcomes; thus, the system resource approach is inappropriate.

As for the third approach, the *process model* (e.g. Steers 1976, 1977), it focuses on the internal processes and operations of an organisation. That is, effective organisations are those with an absence of internal strain, whose members are highly intergrated into the system, whose internal

functioning is smooth, and where information flows smoothly both vertically and horizontally (Cameron 1980). In practice, measures as job satisfaction, employee absenteeism and client queuing time have been used as criteria of effectiveness. Not surprisingly, the approach has mostly been criticised for its tendency to rely on the means while neglecting the ends (e.g. Campbell 1977, Coulter 1979, Bluedorn 1980).

In the *multiple constituencies model*, effectiveness is defined as the extent to which all the organisation's strategic constituencies (e.g. customers, resource providers, employees) are at least minimally satisfied (Cyert and March 1963, Goodman and Pennings 1977, Bluedorn 1980, Connolly et al. 1980). The closer an organisation is able to fulfil the demands and expectations of the major constituencies, the more effective it is. However, in practice, various internal and external constituency groups with conflicting demands are required to balance their objectives, and major disagreements among stakeholders about the key objectives and their relative importance usually cause significant problems. One may also argue that the approach is of little utility, if the constituencies do not have major influence on organisational functioning. That is, organisations can ignore the demands of many strategic constituencies and still survive.

3.2 The Ultimate Goal Approach

One useful application of the general goal model is the ultimate goal approach (e.g. Bass 1952, Perrow 1961, Rice 1971, Mohr 1973, Coulter 1979). The concept of ultimate goal refers to the purpose for which the organisation was first established and is being maintained. In other words, ultimate goals serve to identify the purpose of the organisation and link it to the groups in society upon which its existence depends.

This particular approach is a good method when the ultimate goals of the organisation are clearly defined and the outcomes are readily identifiable. In the public sector, however, ultimate goals are often intangible and multidimensional. Therefore, as with the other methods, crucial is to recognise who defines the goals and chooses the criteria against which effectiveness is measured.

Some organisational theorists (e.g. Yuchtman and Seashore 1967) have criticised the ultimate goal approach noting that it is the scientist himself who decides *a priori* which goals the organisation is striving to achieve and then he simply refers to these as the “organisational goals” or “public expectations”. Thus, they suggest that the ultimate goal model is less objective than it appears to be and refer to it as the “functionalistic approach”, i.e. the organisational objectives stem from the functional requirements of the organisation. In addition, several researchers (Etzioni 1960, Perrow 1961, Steers 1975, Bluedorn 1980) have suggested that effectiveness criteria should describe what the organisation is *actually* trying to do, not what it *should be doing* according to the researcher, an official statement, policy or different stakeholders. Others (e.g. Ford et al. 1988), on the other hand, point out that in truly effective organisations the actual goals are the same as official goals.

The measurement of effectiveness, however, does not require different people to agree on the goals, criteria, and standards. Consensus may, in fact, be unrealistic to achieve. Van de Ven (1981), for example, points out that an organisation assessment simply requires that the unique and conflicting definitions of effectiveness be made explicit, and that the organisation analyst determine at the outset whose value judgements and criteria will be put into operation and measured. Similarly, it has been emphasised that in every assessment of effectiveness, but particularly in assessments of settings that have some degree of ambiguity regarding the appropriate criteria, the construction of effectiveness must be circumscribed or bounded (Cameron and Whetten 1983, Nord 1983, Seashore 1983, Cameron 1986a). That is, not all possible criteria or perspectives can be taken into account, so researchers must be explicit about what they are measuring.

3.3 Defining Effectiveness in LFMAs

The concept of effectiveness is inextricably related to the underlying conceptualisation of organisation as used by the investigator (Ghorpade 1971, Cameron and Whetten 1983). In this study, the LFMAs are defined as rational social units

oriented towards the realisation of specific goals (e.g. Parsons 1956, 1965, Simon 1957, 1976, Etzioni 1964). The second premise is that since the LFMAs were established in order to accomplish public forest policy goals, and their purpose is stated quite explicitly in official forest policy statements, their effectiveness should be defined principally as achieving the policy objectives (cf. Weiss 1972, Tikkanen 1981b, Rossi and Freeman 1986).

On the basis of the aforementioned *functionalistic* premises, the effectiveness of the LFMAs is defined as the extent to which they, as social systems and given certain resources, fulfil the official objectives established for them by society. Furthermore, it is assumed that the LFMAs are committed to these goals, and their actual goals are, or at least should be, congruent with the official goals in order to justify legitimacy in the long run (see Parsons 1956, 1965, Dowling and Pfeffer 1975, Fremont 1975, Pfeffer and Salancik 1978, Miles and Cameron 1982).

3.4 Operationalisation of Effectiveness

Even if the ultimate goals of an organisation were to be clear and unambiguous, they must be operationalised into specific and measurable criteria. The selection of criteria is probably the most challenging problem in assessing effectiveness because, one way or another, the criteria always represents someone's values and preferences. For example, organisations may have several different vertical and horizontal goals, and problems arise if different goals, and thereafter criteria derived from them, are of conflicting or contradictory kinds. Furthermore, it seems obvious that a multidimensional phenomenon such as effectiveness can hardly be captured by using one or two indicators alone.

In essence, the effectiveness criteria should be valid, reliable, diversified and simple enough to use and interpret. They should also make it possible to compare different organisational units. However, if the ultimate impacts are difficult to measure, the operating objectives often tend to shift from results to the activities that we hope will create the desired results. Therefore, it is of vital significance that the criteria used do not

describe the means, for example the number of NIPF contacts, but the extent to which the desired impacts are reached.

As mentioned, in this study the criteria of effectiveness were derived from the priorities given in the Act concerning LFMA and the aims emphasised in public forest policy at large. Effectiveness was thus conceptualised and measured only in terms of achieving these externally defined policy objectives. The full utilisation of the allowable cut was considered as the first fundamental objective of the public forest policy. It has been among the major policy goals since allowable cut first exceeded actual drain in the beginning of 1970s. Much emphasis has also been laid on the proper silvicultural tending of seedling stands. To encourage the realisation of this objective, the State has, for example, given out tax reductions and other financial support to forest owners.

The third central forest policy goal has been to increase the annual increment of the growing stock and to improve the quality of forest stands (The Forest 2000... 1986). In order to accomplish these goals, the State has annually given out forest improvement funds for forest drainage, construction of forest roads, reforestation and afforestation, tending of seedling stands, forest fertilisation, pruning, and prescribed burning. Since the LFMA have a major role in helping to increase the knowledge of NIPF owners concerning the opportunities and means for obtaining these funds, the amount of funds the local landowners have acquired was considered to demonstrate the LFMA's results in attaining this specific goal. The funds used for forest road construction and drainage were excluded since these measures are usually planned and carried out by Forestry Board Districts.

Finally, considerable attention has been paid to increasing the coverage of individual forest management plans (The Forest 2000... 1986). It is generally assumed that in this way the supply of timber and the use of forest resources can be affected positively. It has been mainly up to the LFMA to market and sell these plans to the NIPF owners.

The above four measures of effectiveness are by no means inclusive of all the dimensions of effectiveness but were considered to form a valid basis

on which to determine it. One could argue, for example, that thinnings have been highly emphasised in the forest policy due to their importance in securing the future supply of quality timber. Thinnings could, however, not be included among the criteria because of lack of reliable data. Similarly, despite the fact that special emphasis has been given to decreasing the area of low-yielding forest stands and improving the silvicultural quality of forest stands, such measures were excluded due to time perspective problem. In other words, it is hardly possible to suggest that the characteristics of the current forest stand could be explained by the present factors.

4 Factors Related to Organisational Effectiveness

4.1 Previous Studies

There is a confusing array of hypotheses relating internal and external characteristics to organisational effectiveness (see e.g. Steers 1977). Some researchers (e.g. Hannan and Freeman 1977) assume that organisations are captives of their environment (e.g. institutional demographics, general economic activity) and these factors, being beyond the control of the organisations, largely determine the behaviour and ultimately the effectiveness of organisations. Others (e.g. Child 1972, Miles and Cameron 1982), on the other hand, share the view that managers go well beyond adapting; they exercise a great deal of choice and can have a major impact on organisational effectiveness.

Coulter (1979) has assumed the position that the extent to which an organisation achieves its goals depends upon the behaviour and attitudes of its members, its internal processes, and its interaction with its environment. Similarly, Steers (1977) divides the major factors affecting organisational effectiveness into four different components: (i) environmental characteristics; (ii) organisational characteristics; (iii) employee characteristics; and (iv) managerial policies and practices.

In empirical research, a large number of organisational and managerial factors have been

identified as being relevant to organisational performance: e.g., organisational size, design and structure (Child 1974, Reimann 1974, Blau 1979, Dalton et al. 1980, Keats and Hitt 1988), organisational culture and climate (Denison 1990, Hofstede et al. 1990, Kopelman et al. 1990, Reichers and Schneider 1990, Siehl and Martin 1990), board functions and role (Pfeffer 1973, Provan 1980, Cook and Brown 1990), organisational and managerial strategies (Dess and Davis 1984, Cameron 1986b), team-work and innovativeness (Dollinger 1984, Kanter and Summers 1988), worker attitudes and monitoring of performance (Marcoulides and Heck 1993), and employee participation and satisfaction (Katzell and Guzzo 1983, Guzzo et al. 1985, Miller and Monge 1986). In addition, there is strong evidence that goal setting is important in motivating people, and that specific, challenging goals result in a better task performance than vague, easy goals (see Locke and Latham 1990).

4.2 *A Priori* Hypotheses of Factors Related to Effectiveness in LFMAs

The main assertion underlying this study's framework is that the effectiveness of the LFMAs, i.e. the impact they have on NIPF owners' forestry behaviour, is determined mainly by four dimensions: (1) regional conditions for practising private forestry; (2) organisational characteristics; (3) employee characteristics; and (4) managerial policies and practices (Fig. 1).

The general socio-economic environment, forest structure and the various local (public and non-public) forestry organisations represent the influence of *regional conditions* on the LFMAs. The hypothesis relies much on Myrdal's (1957) theory of cumulative growth. It suggests that as the modernisation of the rural environment advances, regional differentiation becomes accentuated; expansive growth centres, areas with spread effects, and backwash areas will develop. Concurrently, the relative importance of forestry and primary production as whole in a given area differentiates. Several researchers have found empirical support for this theory in Finland (Riihinen 1963, Hahtola 1967, 1973, Järveläinen 1971, Seppälä 1974).

Some practitioners have suggested that, of the *organisational characteristics*, size is the most central factor influencing effectiveness of the LFMAs. This relationship is supposed to be due to the fact that large LFMAs are capable of offering forest owners better service than smaller ones. Others, on the other hand, have expressed a different view: since forestry experts in small LFMAs have better knowledge of the local forest resources and have more face-to-face contacts with their clientele, these LFMAs should be the most effective ones. It has also been suggested that small organisations could be more flexible in adapting to changing environment. Organisational design and technology, in turn, are very similar among LFMAs.

Yet another hypothesis is that *employee and manager characteristics*, i.e. knowledge, skills and attitudes, have a major effect on their work motivation and commitment, and thereby on organisational effectiveness. However, it was assumed that the knowledge and skill levels among employees and the senior foresters (or heads of the LFMAs) do not vary systematically due to similar training, and hence they were not included in this study. Instead, the focus is on senior foresters' attitudes, because they were presumed to differ significantly.

Managerial policies and practices here refer to goal setting and monitoring, as well as to board and management group functions and role. It can be presumed that the controlling and governing functions of an individual LFMA's board of governors and the managerial group may have a significant impact on organisational performance (Mäkijärvi 1984). In addition, special attention is paid to the LFMAs ability to reach various NIPF owners, and to market services. The possible differences in marketing intensity among the LFMAs should be viewed in the context of the changing forest ownership, i.e. the number of forest owners is increasing, the bulk of landowners have become less dependent on forestry income, and a growing number of them do not reside permanently on their holding or even in the municipality where their woodlot is situated. For this reason, it has been suggested that the LFMAs should increasingly target their marketing effort at non-residents and non-farmers as well as tailor their services and training activities suitable for

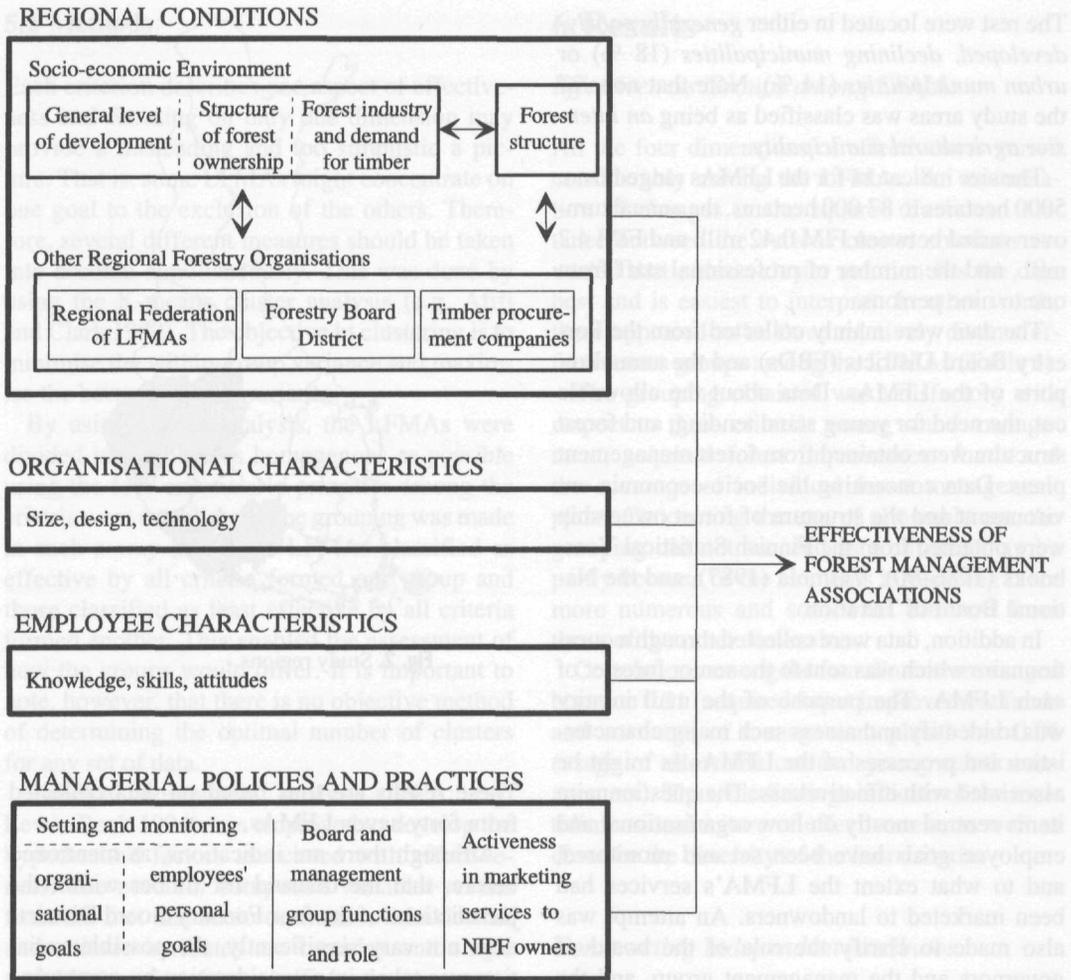


Fig. 1. A framework of the factors related to the effectiveness of LFMA's.

the specific needs of these customer groups. The hypothesis is that there are major differences among the LFMA's regarding this aspect.

5 Material and Methods

5.1 Material

The data used in the study was collected from seventy-six Local Forest Management Associations in the jurisdictions of four Forestry Board Districts in eastern Finland (Fig. 2). These par-

ticular areas were chosen because the general socio-economic environments (Varmola 1987), demand for timber (Ylitalo et al. 1990), and organisational characteristics among the LFMA's can be expected to be similar. Furthermore, in all the four districts the relative importance of forestry is high, and forestry plays an important role in the industrial structure.

According to a socio-economic typology describing the degree of development in Finnish rural municipalities (Varmola 1987), most of the selected LFMA's located in rural settings: 45 % in *strong dairy farming municipalities*, and 16 % in *declining primary production municipalities*.

The rest were located in either *generally poorly-developed, declining municipalities* (18 %) or *urban municipalities* (14 %). Note that none of the study areas was classified as being an *intensive agricultural municipality*.

The size indicators for the LFMAs ranged from 5000 hectares to 87 000 hectares, the annual turnover varied between FIM 0.42 mill. and FIM 4.2 mill., and the number of professional staff from one to nine persons.

The data were mainly collected from the Forestry Board Districts (FBDs) and the annual reports of the LFMAs. Data about the allowable cut, the need for young stand tending, and forest structure were obtained from forest management plans. Data concerning the socio-economic environment and the structure of forest ownership were obtained from the Finnish Statistical Yearbooks (1986–90), Varmola (1987), and the National Board of Taxation.

In addition, data were collected through a questionnaire which was sent to the senior forester of each LFMA. The purpose of the mail inquiry was to identify and assess such major characteristics and processes of the LFMAs as might be associated with effectiveness. The questionnaire items centred mostly on how organisational and employee goals have been set and monitored, and to what extent the LFMA's services had been marketed to landowners. An attempt was also made to clarify the role of the board of governors and the management group, and the attitudes of the senior foresters in charge of the LFMAs. Attitudes here refer mostly to invariables in the senior foresters' responses to twelve statements mainly on the LFMAs' role in private forestry and forestry promotion (on five-point Likert scale). For the sake of brevity, hereafter the term attitudes is used instead of opinions, beliefs and attitudes. All except one senior forester responded to the questionnaire.

The time period studied was 1986–90 because of the stable general economic conditions and the high demand of timber. Five-year averages of each effectiveness criteria were used to smooth the bias due to fluctuations in performance from year to year. If the senior forester had been working less than three years until 1990, the LFMA was excluded from the analysis when searching for the relevant factors affecting effectiveness.

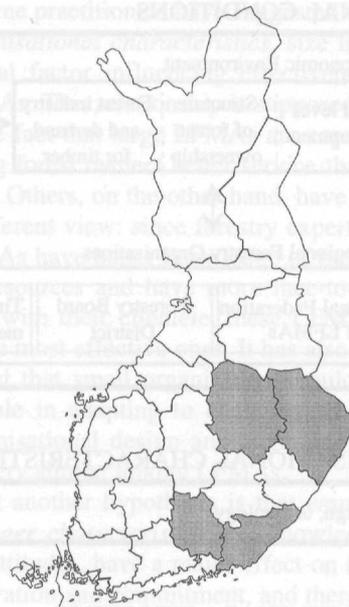


Fig. 2. Study regions.

These results are thus based on data collected from forty-seven LFMAs.

Although there are indications, as mentioned before, that the demand for timber within the jurisdictions of the four Forestry Board Districts does not vary significantly, the possible variation was taken into consideration by comparing the usage of the allowable cut in each LFMA to the average of all LFMAs in that specific district. This ratio was used in further analysis. Hence, the variation of demand among the four FBDs was partly eliminated but not among the LFMAs located in the same district.

A similar procedure was employed regarding the proportion of young stands tended and the coverage of forest management plans in order to eliminate possible variation in contributions of the FBDs and other regional forestry organisations. The forest improvement funds each LFMA had acquired, in turn, were replaced by their ratio to the average acquired sum in that specific funding zone, since each of the four zones had somewhat different funding options. It was thus assumed that the LFMAs in each funding zone had similar opportunities for acquiring funding.

5.2 Methods

Each criterion describes one aspect of effectiveness and focusing on only one dimension may provide a misleading and too simplistic a picture. That is, some LFMAs might concentrate on one goal to the exclusion of the others. Therefore, several different measures should be taken into account simultaneously. This was done by using the K-means cluster analysis (e.g. Afifi and Clark 1992). The objective in clustering is to minimise the within-group variance and maximise the between-group variance.

By using cluster analysis, the LFMAs were divided into groups as homogenous as possible using the four criteria. No priorities among the criteria were established. The grouping was made in such a way that those LFMAs classified as effective by all criteria formed one group and those classified as least effective by all criteria formed another. This enabled the assessment of how the groups would differ. It is important to note, however, that there is no objective method of determining the optimal number of clusters for any set of data.

Principal component analysis (PCA; e.g. Lewis-Beck 1994) was employed to develop the hypothesised factors associated with effectiveness. The need for compound variables results from the fact that socio-economic, behavioural, and attitude attributes are complex and single variables are therefore insufficiently representative. In addition, the problem of multicollinearity was avoided which was important when entering further analysis.

Finally, a discriminant analysis (e.g. Afifi and Clark 1992) was conducted to determine which factors mentioned in the frame of reference would distinguish the groups of effectiveness. The method aims to weigh and linearly combine the discriminating variables in such a fashion that the groups are forced to be as distinct as possible. Discriminant functions were judged by their ability to correctly classify cases into the right group by using the jackknife procedure. Since the study dealt with an entire population, tests for statistical significance were not applied (Blalock 1985, p. 241–242).

6 Results

Effectiveness Groups among LFMAs

All the four dimensions of effectiveness varied considerably among the LFMAs. An examination of changes in the squared Euclidean distance between the various cluster solutions revealed that a three-cluster solution fits the data best and is easiest to interpret. In other words, there appeared to be three relatively distinct effectiveness groups among the LFMAs (Table 1).

The grouping obtained was satisfactory with respect to three criteria: young stand management, acquired forest improvement funds and the coverage of individual forest management plans. Concerning the use of allowable cut, the grouping did not succeed as well; this may be partly because of the elements influencing it are more numerous and somewhat different from those of the other dimensions.

Correlations among the four dimensions ranged between 0.31 (acquired forest improvement funds and coverage of management plans) and 0.06 (usage of allowable cut and young stand management). Thus, the findings indicate of the multidimensional nature of effectiveness, as well as describe the diversity of the four criteria.

Constructing Independent Attributes

The number of independent variables describing environmental, organisational and managerial variables was first reduced on the basis of their correlation matrix. Then PCA was employed on three different occasions to construct most of the independent variables mentioned in the framework.

The interpretation and eigenvalue suggested limiting the number of components describing the *regional conditions* to four (Table 2). The variables describing industrialisation and urbanisation were strongly and positively loaded on the first component. The component was therefore labelled *general level of development*. The highest loadings on the second component lay in the variables measuring the income of farmers, arable land of farms, and proportion of arable land in the municipality. Consequently, it was

Table 1. Effectiveness groups among Local Forest Management Associations based on the four criteria.

A. Cluster means and standard deviations							
Criteria of effectiveness	Most effective (n = 27)		In-between (n = 22)		Least effective (n = 27)		Grand mean
	mean	sd	mean	sd	mean	sd	
Use of allowable cut	99.6	13.4	115.2	11.9	88.0	8.7	100.0
Young stand tending of total proposed amount	132.3	29.1	84.3	25.5	80.5	23.6	100.0
Acquired forest improvement funds	140.7	57.7	71.1	22.2	82.8	32.1	100.0
Coverage of individual forest managem. plans	113.1	16.3	103.7	17.6	83.9	19.6	100.0

B. Mean squares				
	Use of allowable cut	Young stand tending of total proposed amount	Acquired forest improvement funds	Coverage of individual forest management plans
Between-groups	4506.0	21913.0	35578.4	5957.8
Within-groups	131.3	687.6	1695.0	320.5

taken to represent the *agrarian prosperity* of the municipality. The proportion of small forest holdings and the average size of the holdings were highly loaded on the third principal component. The component was therefore called *size distribution of forest holdings*. The fourth component was interpreted as the *relative importance of forestry* in a given area; stumpage income per woodlot and per inhabitant tend to rise as this component strengthens.

A PCA of the *managerial policies and practices* produced four components. The strongest loadings on the first component concerned *setting and monitoring employees' goals* (Table 3). The variables loaded on the second component described the LFMAs involvement in arranging local timber trade, initiative taken in contacts with forest owners, and arranging of special silvicultural (marketing) campaigns. The component was interpreted as *activeness in marketing services to forest owners*. The third dimension was dominated by the reporting frequency of the senior forester to board members, and the board's activeness in monitoring the realisation of organisational accomplishments. The component was taken to represent *board functions and role*. The fourth component was interpreted to describe the *management group functions and role*.

The last PCA was carried out in order to find meaningful groupings of *attitudes among senior foresters*. Their opinions varied mostly in the questions concerning the LFMAs' capability to influence the local level of forest management, the role of the Forestry Board Districts as well as the Central Union of Agricultural Producers and Forest Owners (CUAF), and possible advantages resulting from combining neighbouring LFMAs. On the basis of the PCA results, five components were formed describing managerial *conservativeness, innovativeness, confidence in LFMAs' capability to influence landowners' forestry behaviour, unionism* (attitude towards CUAF), and the *attitude concerning provision of equal service to forest owners* (Table 4).

Factors Affecting Effectiveness

In the discriminant analysis, only the two ends of the cluster solution, the most and least effective LFMAs, were contrasted for analytical clarity. The analysis revealed that in the period 1986–90, one external and three internal variables were the most important factors identifying the above two groups: (1) agrarian prosperity in the municipality; (2) the LFMA's activeness in marketing serv-

Table 2. Regional conditions. Principal component analysis. Varimax rotation (loadings below 0.25 are replaced by *).

Variable	I	II	III	IV
Urban population, % of total population	0.89	*	*	*
Population living off industry, % of economically active population	0.86	*	0.28	*
Population living off primary production, % of econ. active population	-0.85	*	*	*
Value-added in industry, FIM/workplace	0.85	*	*	*
Municipal tax rate, %	0.83	0.27	*	*
Population change during 1960–1980, index (year 1960 = 100)	0.79	0.27	*	*
+65 years population, % of total population	-0.74	*	*	0.43
Average income from farming, FIM/farm	*	0.97	*	*
Average total income of farmers, FIM	*	0.93	*	*
Average arable land of farms, ha	*	0.93	*	*
Arable land in the municipality, % of total land area	*	0.81	0.43	*
Forest holdings with less than 20 ha of forest land, % of forest holdings	0.31	0.25	0.88	*
Average size of forest holdings, ha	*	-0.32	-0.86	*
Average stumpage income per woodlot, FIM	*	*	-0.26	0.87
Average stumpage income per inhabitant, FIM	-0.38	*	*	0.78
Eigenvalue	5.23	3.75	2.07	1.70
Variance explained, %	34.85	24.99	13.82	11.31

Interpretation of the principal components:

I "General level of development" (industrialisation, urbanisation)

II "Agrarian prosperity"

III "Size distribution of forest holdings"

IV "Relative importance of forestry"

ices to forest owners; (3) the board functions and role; and (4) setting and monitoring the realisation of employee personal goals (Table 5). The overall correct prediction rate of the model was 75 per cent, which can be regarded as a moderate result. The classification of the low-performers showed a higher correct-prediction rate (83 %) than that of high-performers (65 %).

"Agrarian prosperity" and "LFMA's activeness in marketing services" proved to be the most significant variables determining organisational effectiveness. The moderate negative correlation (-0.32) between agrarian prosperity and LFMA size suggested that small LFMAs especially, being in agriculturally prosperous municipalities, had greater chance of being classified as high-performers. However, the fact that most of the municipalities of high agrarian prosperity located in southern parts of the study area makes this finding difficult to interpret. The findings also suggested that the municipalities of high

agrarian prosperity were to some degree dichotomous: despite having a high proportion of agricultural land they also possessed some features of urbanisation in terms of population density, urban population, and a population living off industry. Also the low (negative) correlation between agrarian prosperity and the proportion of population living off primary production supported this inference.

It seemed that a rise in the level of marketing intensity among the LFMAs may contribute to a high utilisation of the forest resources, silvicultural works and, ultimately, LFMAs' effectiveness. The forestry experts in the high-performing LFMAs had, for example, carried out half of the initiatives concerning the contacts between forest owners and the LFMAs, whereas in the low-performing group LFMAs had taken substantially less initiative (one-third of the contacts). In addition, the LFMAs in the high-performing cluster tended to be substantially more

Table 3. Managerial policies and practices. Principal component analysis. Varimax rotation (loadings below 0.25 are replaced by *).

Variable	I	II	III	IV
Setting goals for employees ¹⁾	0.94	*	*	*
Specificity of employees' goals ²⁾	0.91	*	*	*
Managerial frequency in monitoring the realisation of employees' goals, times/year	0.88	*	*	*
Contacts between LFMA and forest owners carried out at LFMA forestry experts' initiative, % of all contacts ³⁾	*	0.80	*	*
Arranging silvicultural campaigns aimed at passive (no-contacts-during-past-5-years) forest owners ⁴⁾	*	0.76	*	*
Proportion of timber sold using assistance from local FMA, %	0.29	0.64	*	*
Reporting frequency of senior forester to board of governors, times/year	*	*	0.91	*
Board frequency in monitoring the realisation of organisational goals, times/year	*	*	0.77	0.34
Management group frequency in monitoring the realisation of organisational goals, times/year	*	*	*	0.86
Board interest in developing LFMA operations	*	*	0.41	0.70
Eigenvalue	2.66	1.69	1.64	1.41
Variance explained, %	26.64	16.93	16.37	14.13

Interpretation of the principal components:

- I "Setting and monitoring employees' goals"
- II "Activeness in marketing services to forest owners"
- III "Board functions and role"
- IV "Management group functions and role"

¹⁾ Scale: no goals, only with some forestry experts, with all forestry experts.

²⁾ Scale: no goals, general, specific quantities, specific quantities and costs.

³⁾ Estimated by senior foresters.

⁴⁾ Dummy variable; 1 = campaigns arranged, 0 = no campaigns.

involved in the timber trade and in arranging silvicultural campaigns.

The results also indicate that the employee goals in the high-performing LFMA were more specific than in the low-performing ones; this is in line with the results obtained in numerous management studies. However, the negative relation between the LFMA's effectiveness and the board frequency in monitoring overall organisational accomplishments was unexpected. Indeed, it appears that the relatively low or high performance in the LFMA cannot be attributed to the lack of the board frequently monitoring the realisation of organisational goals. It should be noted, however, that the reporting frequency fails to indicate the quality of and need for follow-up thus limiting the possibilities for drawing conclusions.

A matter of special interest is that the findings

indicate no significant variation in the general level of development, size distribution of forest holdings or relative importance of forestry between the effectiveness groups. The same applies to the variables describing forest structure (average stem volume per hectare, proportion of young stands on forest land, and proportion of mature stands on forest land) as well as the volume proportion of thinnings of all cuttings. Again, neither organisational structure, size (in terms of forest land, number of employees, and revenue), or attitudes of the senior forester proved to be important when explaining differences in effectiveness. However, one should note that managerial *unionism* was not taken into the discriminant analysis since it was positively correlated (0.47) with the LFMA's activeness in marketing services and thus would have caused multicollinearity problems.

Table 4. Attitudes of senior foresters. Principal component analysis. Varimax rotation (loadings below 0.25 are replaced by *).

Variable/proposition	I	II	III	IV	V
Removal of the obligatory fee to LFMAs would danger all their actions	0.73	*	*	*	-0.33
FBDs' obligation to guide LFMAs actions should be removed from the Act concerning LFMAs	-0.66	*	*	*	*
FBDs try to guide LFMAs actions too much	-0.65	*	*	*	*
Importance of information technology in developing LFMAs actions has been exaggerated	*	-0.76	*	*	*
All forest management planning should be carried out only by LFMAs	*	0.76	*	*	*
LFMAs' ability to influence the amount of silvicultural works executed locally by NIPF owners	*	*	0.79	*	*
It is difficult to motivate non-resident forest owners to cuttings and silvicultural work	*	-0.39	-0.60	*	-0.34
LFMAs' ability to influence the amount of local timber cuttings executed locally by NIPF owners	-0.51	*	0.55	*	*
The Central Union of Agricultural Producers and Forest Owners (CUAF) tries to guide LFMAs' actions too much	*	*	*	-0.88	*
Advantages resulting from LFMAs merging together (fostered by CUAF) have been exaggerated	*	-0.41	0.26	-0.69	*
LFMAs should focus more on landowners of large forest holdings	*	*	*	*	-0.76
Promotional work targeted at passive forest owners can be reduced if there is surplus in timber supply	*	*	*	*	-0.72
Eigenvalue	1.84	1.68	1.47	1.40	1.39
Variance explained, %	15.33	13.98	12.26	11.63	11.54

Interpretation of the principal components:

I "Conservativeness"

II "Innovativeness"

III "Confidence on LFMAs capability" (to influence landowners' forestry behaviour)

IV "Unionism" (attitude towards CUAF)

V "Attitude concerning provision of equal service to forest owners"

Table 5. Factors related to effectiveness in Local Forest Management Associations: A discriminant model.

Variable	Coefficients for canonical variables	
	Non-standardized	Standardized
Agrarian prosperity	0.85	0.83
LFMA's activeness in marketing services to forest owners	0.91	0.82
Board functions and role	-0.57	-0.56
Setting and monitoring employees' goals	0.49	0.48
Constant	-0.23	-0.23

Canonical correlation 0.60

Wilks' lambda = 0.62

7 Discussion

This study is an attempt to assess the effectiveness of non-profit forestry promotion organisations; more specifically, the Local Forest Management Associations (LFMAs). Their effectiveness was defined in terms of the ultimate goal approach using four measures of public forest policy goal attainment.

The results of discriminant analysis suggest that the variables included as comprising environmental constraints and managerial actions in the framework did, indeed, have some direct (or indirect) effect on the level of organisational effectiveness observed. Agrarian prosperity in a given area, intensity in marketing services to forest owners, setting of and monitoring the real-

isation of employee goals, and the board's frequency in monitoring organisational accomplishments all seem to make a difference regarding effectiveness.

The influence of agrarian prosperity on effectiveness conforms with the previous results that the prosperity of landowners correlates positively with their utilisation of forest resources (e.g. Kuuluvainen and Salo 1991). However, contrary to *a priori* expectations, it appears that if the boards are to be closely involved in day-to-day management it may have a negative effect on the overall performance of an LFMA. Though unexpected, this finding is in accordance with the results attained by, for example, Cook and Brown (1990). They discovered that in the least effective non-profit organisations the board appears to have taken on the responsibility of day-to-day management. Indeed, it may be the case that in the high-performing LFMA day-to-day management is in the hands of the senior forester, and the board follows the realisation of organisational goals only by routine. Frequent monitoring by the board may then actually reflect dissatisfaction with organisational accomplishments. It is to be noted, however, that the picture of the working ways of the board was based only on the conceptions of the LFMA's senior foresters.

The findings also offer limited support to the view that setting specific goals for employees has a positive effect on performance. This may be due to the fact that the process of goal setting requires substantial meetings focusing on questions about what the organisation ought to be doing, which may then lead to stronger commitment and better performance. Feedback, however, which has proved to be a necessary condition for successful goals setting (Locke and Latham 1990), was lacking from this analysis.

There are several other limitations to be noted. They stem especially from the database and the fact that several theoretical and practical concerns require further elaboration and specification. First, this study relied on somewhat subjective measures of the key forest policy goals, and is therefore subject to the potential weaknesses associated with the use of perceptual criteria. The legitimacy of public forest policy goals was not questioned but taken as granted, and yet we must recognise that forest policy objectives, as

well as the social values and expectations behind them, are often contradictory and evolving. Indeed, the necessity of utilising multiple models should be recognised, and therefore, future efforts should explore effectiveness in the LFMA from alternative perspectives.

Second, as in any management study, the independent variables used do not represent a comprehensive list of the factors that may be related to effectiveness in the LFMA. Instead, they are a limited set of factors that have a conceptual foundation in the literature or have been found in previous research to be important for effectiveness of various organisations. One must bear in mind, however, that some key variables (e.g. forest owners' age structure), proven to be of importance when examining the presuppositions of forestry promotion, were lacking from the analysis due to data restrictions.

Third, it is difficult to single out the causal order among variables that emerged. Therefore, thorough discussion and investigation are required to determine whether performance is the consequence or the cause of the specific features of the environment, organisation and management (Child 1974, Lenz 1981, Tainio et al. 1991).

Fourth, the LFMA used in the study represent only one geographical area at a particular point of time. This concern raises the possibility that the results obtained may not apply to the other parts of the country. Indeed, it would be of considerable interest in subsequent research to investigate the extent to which agrarian prosperity, for example, is associated with the LFMA's performance under a wider range of regional conditions, particularly in the western and south-western areas of more intensive agriculture in Finland.

Fifth, most of the data concerning the socio-economic background of the study regions were collected in 1983–84. Questions may be raised whether this data is now partly obsolete. Since the beginning of the 1980s, hardly any extensive changes have occurred in the regional conditions in eastern Finland, but this is not to suggest that the rate of development could not have been somewhat different among the study municipalities. Unfortunately, no data were available to empirically verify this assumption. Finally, it should be emphasised that although a LFMA

may achieve externally given goals effectively it can happen at an unreasonably high cost. This is to suggest that a clear distinction must be drawn between the concepts of effectiveness and efficiency.

From a forest policy point of view an important finding is that the managerial actions could play an important role in improving LFMAs' effectiveness. It appears, for example, that by setting specific goals organisational effectiveness can be enhanced. Another important point relates to marketing services: the findings suggest that the LFMAs should increasingly tailor their services to meet the specific wants and needs of different NIPF owner groups. Increasing the size of the LFMAs, on the other hand, is not likely to improve their effectiveness, at least not in the short run.

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