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Measuring the Marketing Performances of State Nurseries in Turkey: Examples of Eastern Anatolia and Black Sea Region Nurseries

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Abstract: Today, any enterprise has to consider marketing as important as production. Production and marketing are 2 complementary activities in enterprises. An increase in marketing effectiveness is achieved through measuring the activity outcomes that can be described as marketing performance. Because marketing is a social science and, therefore, determining the marketing performance system concretely, examining it and determining its principles may not be possible, a need for a new model was felt to represent the real system, and, consequently, a Multi-Dimensional Purpose-System Model was developed. The above-mentioned model was applied in the 12 Nursery Directorates in the Eastern Anatolia and Black Sea regions, which are branches of the General Directorate of Afforestation and Erosion Control and which are run on the principles of business enterprise. This study covers a limited period of time (1996-2000), and 41 variables were developed in order to measure the marketing performances of these enterprises. Multi-variable statistical analyses (correlation analyses and factor analyses) were used to determine the most important variables to be used in this model and their weights. As a result of the statistical analyses, the TSS (Total Seedling Sales), PP (Profit Productivity), PT (Production per Technician), AE (Area of Enterprise), SIFA (Selling Income per Fixed Asset), RITPPSP (Rate of Increase in Technical Personnel Profit per Seedling Produced), SIAE (Selling Income per Advertisement Expense), PPE (Percentage of Production Expenses) and MS (Market Share) were found to be the most important marketing variables in nursery enterprises. It was also found that the marketing performance could explain 96.3% with the 9 variables that were used in this model. In accordance with the model, all variables were first converted into values between 0 and 100 through a linear normalization method and then the marketing performance levels of the nursery enterprises were calculated in terms of the averages of 5 years, and finally the enterprises were enumerated according to these levels.

Key Words: Marketing Performance, Performance, Performance Measurement, State Nurseries

Türkiye'de Devlete Ait Fidanlıklarda Pazarlama Performans Ölçümü: Doğu Anadolu ve Karadeniz Bölgesi Örneği

Özet: Günümüzde her işletme, pazarlamaya en az üretim kadar önem vermek zorundadır. Zira üretim ve pazarlama işletmelerde birbirini tamamlayıcı nitelikte iki fonksiyondur. Pazarlama etkinliğinin artması, pazarlama performansı olarak nitelendirilebilecek faaliyet sonuçlarının ölçülmesi işlemi ile yapılmaktadır. Pazarlamanın sosyal bilim olması nedeniyle pazarlama performans sisteminin somut olarak ortaya konması, incelenmesi ve ilkelerinin belirlenmesi mümkün olmayabileceğinden gerçek sistemi temsil etmek üzere bir modele ihtiyaç duyulmuş ve Çok Boyutlu Amaç-Sistem Modeli geliştirilmiştir. Söz konusu model, Doğu Anadolu ve Karadeniz Bölgesi'nde Ağaçlandırma ve Erozyon Kontrolü Genel Müdürlüğü'ne (AGM) bağlı ve işletmecilik esaslarına göre faaliyet gösteren on iki adet Fidanlık Müdürlüğü'ne yönelik olarak uygulanmıştır. Belli bir zaman dilimi (1996-2000) ile sınırlandırılan bu araştırmada, işletmelerin pazarlama performans düzeylerini ölçmek amacıyla 41 değişken geliştirilmiştir. Modelde kullanılacak en önemli değişkenleri ve bunların ağırlıklarını belirlemek amacıyla çok değişkenli istatistik analizlerden (korelasyon ve faktör analizi) yararlanılmıştır. Uygulanan istatistik analizler sonucunda, fidanlık işletmelerinde en önemli pazarlama performans değişkenlerinin TSS (Toplam Fidan Satışları), PP (Kar Verimliliği), PT (Teknik Eleman Başına Üretim), AE (İşletme Alanı), SIFA (Birim Sabit Varlık Başına Satış Geliri), RITPPSP (Üretim Başına Teknik Eleman Karı Artış Oranı), SIAE (Reklam Gideri Başına Satış Geliri), PPE (Üretim Giderleri Yüzdesi) ve MS (Pazar Payı Oranı) olduğu belirlenmiş ve modelde kullanılan 9 değişken ile pazarlama performansının % 96.3 oranında açıklanabileceği anlaşılmıştır. Model gereği bütün değişkenler doğrusal normalizasyon işlemiyle 0-100 arasında değişen yeni değerlere dönüştürüldükten sonra beş yılın ortalama verilerine göre fidanlık işletmelerinin pazarlama performans düzeyleri hesaplanmış ve bu düzeylere göre işletmeler sıralanmıştır.

Anahtar Sözcükler: Pazarlama Performansı, Performans, Performans Ölçümü, Devlet Fidanlıkları

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Introduction

Ninety-nine percent of Turkish forests belong to the state. The afforestation of 18 billion ha., including non-productive areas, is given great priority in forestry policy. Due to the state monopoly on forestland, almost all forestry activities are carried out by the public sector. One of these activities is reforestation, which is guided by the Ministry of Forestry, under the auspices of the General Directorate of Afforestation and Erosion Control (AGM). Seedling production is carried out by the AGM in 145 nurseries. The seedling production capacity of the state nurseries is 616 million per year (DPT, 2001). However, due to inadequate reforestation programs and a lack of adequate funding, seedling production was only 250-300 million per year from 1991 to 1998. As a result, only 30-40% of the productive capacity was being utilized, although the necessary infrastructure was in place (Girgin, 1997).

Although the state nurseries, producing commercial products and services, are obliged to follow the rules of a public enterprise, they must also be involved in marketing activities. Production and marketing activities cannot be separated within any economic activity. The sectoral structure of the country is formed as agricultural, industrial and service sectors, and in this sense, seedling-marketing activities are considered agricultural marketing activities (AGM, 1996).

Until recently, the state-operated forest nurseries had a monopoly on the production and marketing of seedlings. As a result, no problems were encountered in selling the seedlings to the public, and as the sole alternative the consumers had to meet their demands from these nurseries. The development of an environmental consciousness in recent years made possible the establishment of private nurseries. Consequently, the removal of restrictions in the import and export of seedlings has added new dimensions to the seedling market. Because of the extensive demand, especially in large urban areas, the numbers of private nurseries have increased, as have the variety of products, leading to a significant share of the seedling market (Güneş, 1996).

The increase in the number of private nurseries has led to intense competition. Because the tall, leafed and coniferous forest trees in particular are produced in state nurseries, and because of the reliability of the state, it has been possible to sell the seedlings produced in state nurseries. However, this does not mean that state nurseries do not need to renew themselves in parallel with demands.

Enterprises with Revolving Funds were established within the nurseries in 1995. Under this system, proceeds from seedlings sold to both public institutions and organizations and private and juristic persons, have been put into a revolving fund. In 1996, income from seedling sales totaled $12.1 million while the expenses from the revolving fund and general budget subsidies for seedling production services amounted to $20.2 million, excluding personnel expenses (Girgin, 1997).

In 1997, the Ministry of Forestry initiated a project for the privatization of seedling production in forest nurseries in order to transform the nurseries into profit-yielding businesses (Girgin, 1997). Under this program the actual productive capacity would be brought online and would completely privatize seedling production. Based on this project, marketing performances of the nurseries in the Eastern Anatolia and Eastern Black Sea zones were determined and priorities for the privatization of seedling production were established. Furthermore, it was also decided to make performance measurement a continuous activity within the enterprises.

Because seedling nurseries are in public possession, they have to operate in accordance with the structural aspects, aims and strategies of the national economy, the production sector, and the regional location. Therefore, it may be said that the aims of the nurseries are a derivative of macroeconomic and sectoral aims in the light of regional characteristics. “Marketing performance may be calculated by measuring the extent of the realization of the aims depending on the outcomes of an individual nursery” (Baş and Artar, 1991). In the seedling nurseries, each having different combinations of aims, many multi-faced activities take place; therefore, many profits are in question. In summary, eliminating the problems and crises in the sector as a system depends primarily on defining performance, because each benefit depends on defining and evaluating performance.

Although in profit-yielding private enterprises, marketing performance can be evaluated by considering several profit variables, in non-profit organizations,

seedling nurseries in particular, evaluation is not easy. Due to the reasons stated about nursery enterprises, marketing performance is influenced by many factors and a multi-dimensional structure forms itself in it. It is insufficient, illogical and inconsistent to evaluate marketing performance by considering only a few factors out of many.

Then there is a need to develop, in line with the idea of a multi-dimensional system, many variables that reflect the dimensions and branches of the enterprise and to combine them in a model of multi-dimensional marketing performance evaluation. Thus rather than considering each variable about the marketing performance of the business on its own, the performance created by the many variables can be normalized. In this way, it will be possible to measure total marketing performance in a single dimension.

In light of the macroeconomic structure of the region in which these nurseries are located, this study attempts to measure the marketing performance levels in terms of a Multi-dimensional Purpose-System Model to determine performance variables objectively and to compare the marketing performance of each nursery.

The marketing performance measurement model should be perceived as a tool developed to evaluate the real system. The aims, elements and relations of this model are an imitation of the real situation. First, based on the data from environmental factors and the marketing information system, the executive marketing decisions will be taken. Then the marketing activities will be determined in terms of the marketing mix. Therefore, both standards will be set and the performance dimensions will be determined in terms of these components. If the system operates properly, it will be seen from the system outputs that the marketing performance is increased. If the performance is found to be lower than that in the previous term, the system will be re-evaluated to investigate what went wrong and where, consequently, the process would begin again. If the performance is found to be greater than that in the previous term, the system will also be evaluated periodically, as necessary, for continuous improvements. It would be difficult to form a system of balance unless the enterprise is flexible, and unless it properly evaluates the performance measurement, control and administrative systems.

Materials and Methods

The model was put in its present form by applying it in the nurseries operated by the AGM, and, to do this, variables affecting the marketing and sales activities directly or indirectly were determined through a questionnaire. The questionnaire was administered to 22 of the 40 technical personnel working in the 12 state nursery directorates (Bayburt, Ordu, Samsun, Trabzon, Bolu, Devrek, Düzce, Hendek, Kastamonu, Ağrı, Erzincan and Erzurum) in the 2 regions included in the study, to 14 of the other related personnel, and to 4 academics related to the topic, making a total of 40.

The names, units of measurement, and acronyms of the 41 marketing performance variables, which were determined to serve the aims of this study, are shown in Table 1 below.

A multi-dimensional measurement model was used in this study to analyze simultaneously the many variables that affect marketing performance. In order to determine the most important performance variables and to measure the marketing performance as a single scale value, the following were taken into consideration:

1. The model consists of variables that represent the many performance dimensions of marketing activities of the enterprise (Eccles, 1991; Bonoma and Clark, 1992). In other words, special importance was given to using a lower internal correlation among the variables to be included in the model, and, therefore, it was ensured that each variable reflects a different aspect of marketing activities of the enterprise.
2. Special importance was given to the inclusion and weighting of consistent and easily quantified variables.
3. It was assumed that there was a linear correlation between the increasing levels of the variables and marketing performance, and that the variables showed a normal distribution.
4. The model was developed so that it would enable the measurement of marketing performance with a value between 0 and 100.

The Multi-dimensional Purpose-System Model (Bolak, 1987; Daşdemir, 1996; Ayyıldız, 2000), which was developed to serve and to be suitable for the above-mentioned aims, can be summarized as:

Table 1. Marketing performance variables used in the study.

Number	Variable Type / Variable Name	Description	Units
	General		
1	DFCC	Distance from city center	km.
2	NNE	Number of nursery engineering departments	No.
3	NTN	Number of temporary nurseries	No.
4	NSS	Number of seedling species	No.
5	AE	Area of enterprise	m^2
6	AP	Area of production	m^2
7	PC	Production capacity	No.
8	NSP	Number of seedlings produced	No.
	Marketings and Sales		
9	SPE	Seedling production expenses	TL
10	TSS	Total seedling sales	TL
11	PSS	Planned seedling sales	TL
12	PPSR	Proportion of planned sales realized	%
13	TPPPSP	Technical personnel profit per seedling produced	TL
14	RITPPSP	Rate of increase in technical personnel profit per seedling produced	%
15	PM	Profit margin	%
16	PP	Profit productivity	%
17	P	Profitability	%
18	ECP	Enterprise capital productivity	%
19	EF	Economic feasibility	%
20	PPE	Percentage of production expenses	%
21	SIPSP	Sales income per seedling produced	TL
22	TEPSP	Total expenses per seedling produced	TL
23	CSPS	Change in selling price per seedling	%
24	SIPA	Sales income per asset	TL
25	SIFA	Sales income per fixed asset	TL
26	SIPAI	Sales income per amount invested	TL
27	SIPE	Sales income per employee	TL
28	MS	Market share	%
29	SIAE	Sales income per advertisement expense	TL
30	PESI	Personnel expenses per unit sales income	%
	Technique		
31	ESM	Efficiency of selling method	%
32	NAPSP	Nursery area per seedling produced	ha.
33	PE	Production efficiency	%
34	NAPT	Nursery area per technician	ha.
35	PT	Production per technician	ha.
36	LRN	Length of roads in the nursery	km.
37	NMP	Number of machine parks	No.
	Socio-economic		
38	TTP	Turnover of technical personel	%
39	NSTS	Number of in-service training seminars	No.
40	SFDS	Sum of freely distributed seedlings	TL
41	PI	Population intensity	No.

$$MP = a_1X_1 + \ldots a_jX_j + \ldots a_nX_n = \sum_{J=1}^{n} a_j X_j$$

where,

MP = marketing performance of enterprise (dependent variable)

a_j = variable coefficients

X_j = independent variables in the model

n = number of variables

In order for the marketing performance (MP) to be measured as a value between 0 and 100:

The variable values must be (X_j), $0 \leq X_j \leq 100$

The variable weightings must be (a_j), $0 \leq a_j \leq 1$

The sum of all variable weightings in the model must be 1.

The need to measure the marketing performance between 0 and 100 requires the independent variables in the model to have the same characteristics. Therefore, the variables, which are measured by different units (TL, ha, %, m^2, etc) and in different intervals, must be converted into new values varying between 0 and 100 before they are used in this model. Furthermore, the variables used in the model need to be suitably weighted. Then, step-by-step, answers are needed to the following questions: 1. Which independent variables will be used in the model? 2. How will the conversion of the variable values be achieved? 3. How will the variable weights be calculated?

Once these questions are answered, the marketing performance measurement model in this study can be shown as:

$$MP = \sum_{J=1}^{n} a_j DX_j$$

where,

DX_j = Converted (normalized) variables.

In order to determine the levels and directions of the correlation among the 41 variables and to check the significance of the correlation between the variables to be used in the MP model, correlation analyses were conducted and the significance of the calculated correlation coefficients was checked using a t-test* (Kalıpsız, 1981). The critical r value was found to be 0.5763 at the 0.95 level of significance and *df* = 10 ($t_{0.05:10}$ = 2.23). Therefore, the correlation coefficients, which are higher than the critical r-value, are significant and meaningful. The correlation coefficients were evaluated together with the results of factor analyses, and therefore the variable groups that will be represented by the most important variables to be used in the MP model were determined, and the correlations among the variables were evaluated (Table 2).

Factor analyses were carried out to determine the most important performance variables to be used in the MP model. In doing so, it was decided to measure the same dimension of the enterprise with the most important variable instead of with more than one variable (Bennet and Bowers, 1977; Mucuk, 1978).

Finally, the model was applied to test the hypothesis of whether the marketing performances of nursery enterprises differ in terms of the variables chosen.

The analyses were made in terms of 5 years' (1996-2000) average values in order to eliminate the possible effects of any given year on the choice of the variables to be used in the model.

Results and Discussion

Since in the factor analysis to reduce the variables the variables were standardized, the variance of each variable is equal to 1 and the total variance is equal to 41, the number of variables. The first 9 factors, whose eigenvalues are higher than 1, were taken as the basic factors by considering the contribution of each basic factor to the total variance. The unconverted factor matrix obtained from the factor analysis is shown in Table 3.

* The checking was done using a t-test ($tp = r \sqrt{N-2}/\sqrt{(1-r)^2}$), where N is the sample size, p is the level of significance and N-2 is the df. For the calculation of critical correlation coefficients at a given level of significance, the following formula was used: $r = \sqrt{(tp)^2}/(tp)^2 + (N-2)$. For more information see Orhunbilge's, Gürtan's, Churchill's and Spiegel's works the references.
For all the statistical analysis, SPSS Release 9.0.0 was used.

Table 2. Correlation matrix of variables.

Variables	SFDS	SIPAI	CSPS	PESI	SIFA	SIPA	SIPE	LRN	NNE	NSS	SPE	NTN	EF	AE	ECP	P	PM	PP	NSTS	NMP	PI
SFDS	1	0.8305	0.76	0.4036	-0.176	-0.176	0.5892	-0.159	0.0527	0.3844	0.5175	0.4709	0.1596	-0.006	0.65511	0.1424	-0.064	-0.109	0.4281	0.0787	0.561
SIPAI		1	0.53	0.09805	-0.321	-0.321	0.796	-0.126	0.1544	0.3959	0.6816	0.1933	0.3302	-0.149	0.58262	0.1713	-0.081	0.007	0.1922	-0.059	0.6848
CSPS			1	0.3456	-0.225	-0.225	0.1277	0.0006	0.3991	0.394	0.5336	0.3695	-0.135	0.1018	0.7423	-0.172	-0.254	-0.34	0.3171	-0.039	0.4195
PESI				1	0.405	0.4046	-0.236	-0.091	0.0119	0.1544	0.215	0.6343	-0.172	0.2358	0.32597	-0.353	-0.322	-0.273	0.1542	-0.027	-0.039
SIFA					1	1	-0.16	-0.261	-0.284	-0.382	-0.364	-0.082	0.0925	-0.052	-0.3933	0.055	-0.023	0.2418	-0.336	-0.19	-0.528
SIPA						1	-0.16	-0.261	-0.284	-0.382	-0.364	-0.082	0.0926	-0.051	-0.3935	0.0553	-0.023	0.2421	-0.336	-0.19	-0.529
SIPE							1	-0.077	-0.293	0.2643	0.2203	-0.057	0.685	-0.201	0.13017	0.5785	0.2323	0.381	0.0867	0.0789	0.4365
LRN								1	0.1602	0.7026	-0.147	0.0838	0.1492	0.835	0.1044	0.012	-0.175	-0.14	0.0823	0.4412	-0.35
NNE									1	0.0293	0.5909	-0.062	-0.615	0.1925	0.44683	-0.614	-0.669	-0.707	0.0446	-0.044	0.1319
NSS										1	0.1078	0.3049	0.3838	0.6007	0.43816	0.2762	0.1108	0.1024	0.0751	0.1831	-0.008
SPE											1	0.154	-0.324	-0.247	0.75194	-0.571	-0.641	-0.593	0.2839	-0.276	0.722
NTN												1	-0.019	0.353	0.57014	-0.148	-0.109	-0.23	0.6823	0.5731	0.1523
EF													1	0.0683	-0.2717	0.7501	0.549	0.7813	-0.278	0.169	-0.024
AE														1	0.06538	0.0086	-0.118	-0.122	0.0997	0.6068	-0.393
ECP															1	-0.348	-0.436	-0.54	0.641	0.0763	0.4789
P																1	0.8441	0.8407	-0.21	0.1429	-0.208
PM																	1	0.8838	-0.289	-0.008	-0.116
PP																		1	-0.517	-0.105	-0.16
NSTS																			1	0.5757	0.2933
NMP																				1	-0.15
PI																					1
PSS																					
MS																					
PPSR																					
SIAE																					
DFCC																					
ESM																					
NAPT																					
PT																					
TSS																					
TTP																					
AP																					
NAPSP																					
SIPSP																					
TPPPSP																					
RITPPSP																					
TEPSP																					
PE																					
NSP																					
PPE																					
PC																					

Table 2. continued.

Variables	PSS	MS	PPSR	SIAE	DFCC	ESM	NAPT	PT	TSS	TTP	AP	NAPSP	SIPSP	TPPPSP	RITPPSP	TEPSP	PE	NSP	PPE	PC
SFDS	0.5624	-0.157	0.24	0.19947	-0.102	0.6255	-0.597	0.0234	0.7132	-0.438	0.0923	-0.322	0.0713	-0.271	-0.3846	-0.183	-0.184	0.6049	0.3162	0.1096
SIPAI	0.9137	-0.367	-0.1	0.37816	-0.215	0.7884	-0.461	0.0395	0.955	-0.287	-0.097	-0.569	0.2838	-0.241	-0.0265	-0.04	0.0687	0.5825	0.2072	0.2084
CSPS	0.3552	-0.204	-0.1	0.57953	-0.111	0.3466	-0.315	0.0654	0.3692	-0.497	0.2432	-0.293	-0.183	-0.411	-0.3701	-0.121	-0.386	0.6435	0.4969	0.3985
PESI	-0.154	0.7878	0.28	0.00111	-0.067	0.0041	-0.281	-0.318	-0.075	-0.354	0.3891	0.0763	-0.241	-0.254	-0.5914	-0.183	-0.586	0.1574	-0.277	-0.102
SIFA	-0.346	0.4984	0.25	-0.3257	-0.101	-0.389	0.2417	-0.283	-0.32	0.1858	0.1201	0.4247	0.0105	0.1753	-0.3578	-0.102	-0.678	-0.466	-0.436	-0.225
SIPA	-0.346	0.4981	0.25	-0.3258	-0.101	-0.389	0.2419	-0.283	-0.32	0.186	0.1201	0.4247	0.0106	0.1754	-0.3578	-0.102	-0.678	-0.467	-0.436	-0.225
SIPE	0.773	-0.543	0.19	-0.0222	-0.056	0.5867	-0.315	0.1918	0.9116	-0.029	-0.213	-0.388	0.5003	0.1087	0.09689	-0.16	0.1739	0.2738	0.1866	0.1438
LRN	-0.042	0.0213	0.01	0.09413	0.3477	-0.027	0.5183	0.3558	-0.066	-0.447	0.7459	-0.262	-0.412	-0.333	0.17669	-0.554	-0.04	0.248	0.1968	0.7272
NNE	0.2197	-0.07	-0.6	0.47247	-0.214	0.4443	0.2529	-0.119	-0.018	-0.527	0.2888	-0.364	-0.357	-0.708	0.08839	0.2482	0.0841	0.3283	0.1035	0.2162
NSS	0.3319	-0.084	0.05	0.39313	0.112	0.2324	-0.12	0.186	0.4012	-0.291	0.5526	-0.456	-0.123	-0.17	-0.1724	-0.56	-0.214	0.4844	0.2321	0.7274
SPE	0.6722	-0.105	-0.5	0.59625	-0.356	0.5856	-0.214	-0.02	0.5347	-0.494	-0.16	-0.543	-0.131	-0.607	0.27215	0.1994	0.1815	0.6667	0.3156	0.2122
NTN	-0.071	0.3946	0.34	0.06568	0.6079	0.2451	-0.202	0.3949	0.0503	-0.264	0.3603	-0.276	-0.474	-0.406	-0.4519	-0.523	-0.158	0.563	-0.19	-0.103
EF	0.4015	-0.293	0.31	-0.0398	0.2268	0.0571	-0.058	0.2145	0.5434	0.3316	0.0169	-0.155	0.5719	0.4893	-0.1014	-0.327	-0.182	-0.092	-0.18	0.2393
AE	-0.19	0.3246	0.13	-0.0826	0.4465	0.0198	0.4301	0.1581	-0.183	-0.502	0.956	-0.028	-0.424	-0.327	-0.224	-0.478	-0.279	0.1138	-0.121	0.4056
ECP	0.4199	-0.103	-0.2	0.62085	0.0657	0.5308	-0.239	0.3542	0.3962	-0.482	0.1338	-0.659	-0.523	-0.725	-0.0598	-0.354	-0.004	0.9456	0.4101	0.3636
P	0.123	-0.416	0.42	-0.2861	0.1299	0.0453	-0.263	0.0825	0.3297	0.4923	-0.07	0.0525	0.4944	0.602	-0.2796	-0.277	-0.066	-0.241	-0.08	-0.013
PM	-0.11	-0.242	0.25	-0.2186	0.1237	-0.272	-0.347	-0.044	0.0393	0.7422	-0.258	0.3293	0.4918	0.8198	-0.2451	-0.007	-0.026	-0.411	-0.182	-0.237
PP	0.0801	-0.184	0.17	-0.1552	0.0552	-0.284	-0.14	-0.076	0.1812	0.7377	-0.209	0.2786	0.6233	0.832	-0.1597	-0.033	-0.218	-0.484	-0.322	-0.098
NSTS	-0.039	-0.049	0.32	-0.0725	0.5306	0.3633	-0.116	0.6499	0.0823	-0.426	0.0672	-0.362	-0.629	-0.601	0.01947	-0.48	0.3378	0.7288	0.3535	-0.06
NMP	-0.154	-0.004	0.42	-0.3377	0.8848	0.2839	0.3092	0.635	-0.043	-0.292	0.5167	-0.211	-0.365	-0.336	-0.1496	-0.531	0.1942	0.2633	-0.173	-0.053
PI	0.6743	-0.297	-0.3	0.37297	-0.165	0.4149	-0.405	0.0656	0.6225	-0.193	-0.437	-0.199	0.221	-0.105	0.34598	0.3875	0.3562	0.4575	0.3414	-0.057
PSS	1	-0.485	-0.4	0.50014	-0.246	0.6817	-0.195	0.0721	0.935	-0.181	-0.169	-0.581	0.378	-0.172	0.25733	0.0901	0.1458	0.4626	0.1777	0.3326
MS		1	0.14	-0.2792	0.0119	-0.344	0.0686	-0.388	-0.489	-0.153	0.373	0.3996	-0.3	-0.077	-0.2928	-0.025	-0.397	-0.253	-0.518	-0.288
PPSR			1	-0.6587	0.305	-0.048	-0.317	0.1223	-0.043	-0.05	0.1589	0.1515	0.0649	0.1948	-0.5183	-0.463	-0.135	-0.086	-0.003	-0.202
SIAE				1	-0.15	0.1474	0.0166	0.1597	0.3031	-0.034	-0.026	-0.53	-0.132	-0.297	0.11708	-0.014	-0.192	0.5513	0.2559	0.5817
DFCC					1	0.0002	0.3905	0.7936	-0.177	0.021	0.3357	-0.182	-0.426	-0.195	-0.0713	-0.589	0.106	0.2572	-0.224	-0.036
ESM						1	-0.271	0.1299	0.71	-0.404	0.0693	-0.702	0.0493	-0.531	-0.089	-0.088	0.3298	0.5555	0.0144	0.0068
NAPT							1	0.3669	-0.397	-0.149	0.4115	0.0254	-0.413	-0.295	0.41229	-0.183	-0.075	-0.114	-0.131	0.3078
PT								1	0.1051	-0.046	0.0682	-0.502	-0.474	-0.362	0.27065	-0.659	0.2659	0.5962	0.2519	0.2997
TSS									1	-0.17	-0.163	-0.559	0.4442	-0.072	0.0767	-0.066	0.1281	0.4703	0.2133	0.2678
TTP										1	-0.584	0.2135	0.4143	0.7338	-0.0369	0.1506	0.0395	-0.488	-0.393	-0.37
AP											1	-0.06	-0.437	-0.423	-0.3701	-0.483	-0.465	0.1418	-0.128	0.4271
NAPSP												1	0.2055	0.5932	-0.0871	0.4573	-0.252	-0.764	-0.129	-0.444
SIPSP													1	0.7363	-0.0501	0.525	0.0399	-0.513	-0.182	-0.212
TPPPSP														1	-0.0833	0.3455	-0.088	-0.725	-0.201	-0.294
RITPPSP															1	0.2371	0.616	0.0735	0.3467	0.2071
TEPSP																1	0.2351	-0.506	-0.087	-0.448
PE																	1	0.1223	0.1693	-0.262
NSP																		1	0.4705	0.4597
PPE																			1	0.5272
PC																				1

Table 3. Unrotated factor-loading matrix.

Variables	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9
SFDS	0.64524	0.30307	0.26204	0.57654	-0.12928	-0.04777	-0.13602	-0.1359	-0.0135
SIPAI	0.68862	0.58889	0.16416	0.30152	0.04905	0.21201	0.03277	-0.0039	0.04731
CSPS	0.68427	0.02325	0.00000	0.43024	0.15521	-0.37137	-0.09029	-0.0323	-0.19095
PESI	0.12999	-0.41368	-0.00379	0.84505	-0.03999	-0.00983	0.01818	0.08229	0.25213
SIFA	-0.55498	-0.26754	0.03084	0.49367	0.13583	0.16289	0.46958	-0.3121	-0.04737
SIPA	-0.55516	-0.26747	0.031	0.4934	0.13599	0.16296	0.46955	-0.3121	-0.04766
SIPE	0.31862	0.70049	0.47225	0.03769	-0.01548	0.29351	0.06628	-0.2893	0.05669
LRN	0.28009	-0.49371	0.38915	-0.42183	0.49334	0.05847	-0.24787	-0.0335	0.14916
NNE	0.53185	-0.24657	-0.56934	-0.05886	0.25586	0.23442	-0.0966	0.2004	-0.38116
NSS	0.49239	-0.04666	0.5534	0.02622	0.49242	-0.184	-0.24918	0.18774	0.12389
SPE	0.79117	0.22426	-0.49079	0.18454	0.01633	0.09211	0.12556	0.02156	0.14159
NTN	0.42787	-0.4109	0.38504	0.37195	-0.44334	-0.09181	0.08432	0.32766	0.19648
EF	-0.14003	0.45139	0.76846	-0.01679	0.24283	0.15239	0.17951	-0.0073	0.18318
AE	0.17246	-0.6585	0.43759	-0.05368	0.3554	0.20122	-0.34897	0.1509	0.08708
ECP	0.90813	-0.08421	-0.04595	0.19579	-0.08703	-0.26225	0.14393	0.09469	-0.02862
P	-0.31676	0.46768	0.75658	-0.04338	0.05747	-0.03474	-0.08376	-0.0355	-0.22655
PM	-0.5243	0.44635	0.5331	-0.06074	-0.06507	-0.29344	-0.13226	0.27954	-0.06163
PP	-0.57265	0.49594	0.5582	0.00309	0.18358	-0.06531	0.13697	0.17016	0.07188
NSTS	0.59905	-0.29855	0.17571	-0.07218	-0.67389	-0.14962	0.00618	-0.1653	0.03988
NMP	0.21852	-0.45095	0.58892	-0.2597	-0.38132	0.31584	-0.12173	0.09478	-0.04354
PI	0.54716	0.56394	-0.25936	0.05778	-0.25507	-0.03882	-0.04846	0.09331	0.3853
PSS	0.60413	0.65955	0.0496	0.03598	0.25063	0.30003	0.15649	0.03458	0.11277
MS	-0.28002	-0.60364	-0.14741	0.51301	-0.04099	0.13538	-0.01668	0.16955	0.42269
PPSR	-0.21112	-0.15496	0.61255	0.2894	-0.40498	-0.05216	-0.2312	-0.4028	-0.06965
SIAE	0.55835	0.15769	-0.21641	-0.02442	0.45579	-0.362	0.34657	0.37157	-0.03064
DFCC	0.09095	-0.44933	0.58417	-0.34331	-0.38883	0.05169	0.20332	0.22892	0.06886
ESM	0.69971	0.28563	0.10235	0.11451	-0.17146	0.50618	-0.07485	0.07609	-0.31038
NAPT	-0.10609	-0.54391	-0.05092	-0.5301	0.33534	0.30478	0.33897	-0.1042	0.05287
PT	0.40739	-0.19744	0.4555	-0.54386	-0.29068	-0.1443	0.39671	-0.069	0.02739
TSS	0.56714	0.69617	0.28697	0.14979	0.10264	0.24457	0.05173	-0.0829	0.09324
TTP	-0.65335	0.40732	0.12041	-0.15045	-0.1132	-0.25463	0.36023	0.36208	-0.11688
AP	0.2113	-0.69695	0.36949	0.14511	0.41887	0.2229	-0.25404	0.05725	-0.03261
NAPSP	-0.75459	-0.10866	-0.18628	0.1758	-0.04154	-0.13993	-0.30715	-0.1443	0.23256
SIPSP	-0.38265	0.79886	0.07834	0.14617	0.1469	0.21451	-0.17671	0.03301	0.03499
TPPPSP	-0.77038	0.50623	0.20129	0.01777	0.05827	-0.21668	-0.13969	0.09046	0.15249
RITPPSP	0.11999	0.19169	-0.37648	-0.73033	0.04462	0.10014	0.12293	-0.2069	0.43451
TEPSP	-0.29681	0.42447	-0.72746	0.04512	-0.01043	0.14956	-0.27951	0.15847	0.05053
PE	0.17437	0.28286	-0.20138	-0.65232	-0.51291	0.20365	-0.24011	0.05131	0.04196
NSP	0.93851	-0.07043	0.13429	-0.01599	-0.12641	-0.20055	0.18593	-0.0106	0.01851
PPE	0.46764	0.15395	-0.10946	-0.25086	0.08281	-0.53699	-0.245	-0.5652	0.00121
PC	0.4781	-0.10217	0.215	-0.23933	0.72886	-0.24781	0.0483	-0.1952	0.07358
Eigenvalue	10.8276	7.53401	5.99933	4.54539	3.58736	2.1468	1.9718	1.67795	1.20855
Pct. of. Var.	26.4	18.4	14.6	11.1	8.7	5.2	4.8	4.1	2.9
Cum. Pct.	26.4	44.8	59.4	70.5	79.3	84.5	89.3	93.4	96.3

According to the unconverted factor matrix, the first factor defines 26.4% of the total variance, and the remaining 8 factors define 18.4%, 14.6%, 11.1%, 8.7%, 5.2%, 4.8%, 4.4% and 2.9% of the total variance, respectively. Some 96.3% of the variance in MP is defined by the 9 factors. Because there was both an excessive accumulation in the first factor and each value showed a significant correlation with more than one factor (for example, the PP, PM and NNE variables have a significant correlation with factors 1 and 3) the varimax method of orthogonal rotation was performed. The results obtained from the varimax rotation are presented in Table 4.

Table 4. Factor-loading matrix after orthogonal rotation using varimax.

Variables	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9
SFDS	0.71348	-0.11321	0.11256	0.00892	0.01907	0.58502	-0.06319	0.23099	0.17552
SIPAI	0.95005	-0.05199	-0.00509	-0.02441	0.11651	0.2111	0.14528	0.05446	0.0374
CSPS	0.33439	-0.31609	0.05451	0.13663	0.01931	0.6168	0.32541	0.37525	0.02563
PESI	0.0235	-0.28584	0.01577	0.11926	-0.41484	0.51039	-0.02578	-0.1138	0.65695
SIFA	-0.20184	0.07728	-0.10642	-0.11105	-0.93102	-0.00909	-0.16266	-0.1311	0.09213
SIPA	-0.20192	0.07749	-0.10646	-0.11092	-0.931	-0.00918	-0.16267	-0.1312	0.09172
SIPE	0.88915	0.33626	0.07511	-0.04096	0.01037	-0.06998	-0.19171	0.13683	-0.15116
LRN	-0.08491	-0.0627	0.22356	0.90462	0.12161	-0.24535	0.04709	0.15075	-0.06172
NNE	0.05052	-0.79173	-0.20005	0.18361	0.17653	0.0751	0.34388	-0.1993	-0.29759
NSS	0.30702	0.19082	0.14986	0.7487	0.17258	0.25094	0.29041	0.20519	0.08778
SPE	0.58018	-0.6318	-0.07175	-0.18608	0.17395	0.02644	0.38117	0.11356	0.17747
NTN	0.09158	-0.13968	0.67671	0.11703	0.0338	0.46147	0.00362	-0.1971	0.49407
EF	0.47893	0.7779	0.12249	0.235	-0.18699	-0.13897	-0.03298	-0.0394	-0.02318
AE	-0.14549	-0.10507	0.19119	0.92456	0.01352	0.06569	-0.10818	-0.1588	0.10803
ECP	0.3913	-0.49246	0.41108	0.03215	0.15557	0.37437	0.42164	0.23843	0.12017
P	0.22264	0.83789	0.05907	0.10884	-0.03512	0.16276	-0.22564	0.01024	-0.33431
PM	-0.10936	0.92206	-0.02604	-0.08941	0.16998	0.1951	-0.0521	-0.0634	-0.08528
PP	0.07866	0.95557	-0.10759	-0.02115	-0.15631	-0.04967	0.02533	-0.1247	-0.0437
NSTS	0.11496	-0.38906	0.7682	-0.11258	0.26092	0.19347	-0.23478	0.21597	0.12195
NMP	0.012	-0.03467	0.69713	0.39355	0.18568	0.00559	-0.40744	-0.3001	-0.05874
PI	0.59409	-0.14825	-0.04374	-0.37241	0.4731	-0.02429	0.18098	0.16258	0.33908
PSS	0.92254	-0.00895	-0.1099	0.00212	0.12946	-0.12423	0.30954	0.01124	-0.05988
MS	-0.36944	-0.21935	-0.07716	0.14485	-0.34889	0.1002	-0.13404	-0.3122	0.70475
PPSR	-0.03342	0.2895	0.3196	0.06924	-0.20836	0.36919	-0.71515	0.16929	0.05616
SIAE	0.22353	-0.15791	0.01301	0.05935	0.08595	0.08302	0.93107	0.14522	-0.03325
DFCC	-0.16107	0.14496	0.8516	0.22047	0.0976	-0.09521	-0.11541	-0.2604	0.03392
ESM	0.76774	-0.34259	0.14422	0.03207	0.2278	0.22547	-0.08104	-0.2764	-0.27168
NAPT	-0.31071	-0.22686	0.19462	0.37799	-0.27325	-0.66973	0.10775	-0.1423	-0.20196
PT	0.07945	0.0327	0.90209	0.06949	0.12314	-0.25655	0.1009	0.1666	-0.17757
TSS	0.97337	0.14035	-0.01015	0.0029	0.1111	0.04468	0.08496	0.09762	-0.03656
TTP	-0.27441	0.73021	-0.02013	-0.47847	-0.04528	-0.06976	0.24174	-0.2375	-0.14998
AP	-0.0953	-0.22926	0.13517	0.89291	-0.19907	0.18305	-0.08124	-0.1437	0.06631
NAPSP	-0.55221	0.23997	-0.44855	-0.12546	-0.12636	-0.02638	-0.37571	0.06774	0.30903
SIPSP	0.38307	0.57669	-0.58696	-0.21451	0.05763	-0.03433	-0.13892	-0.1242	-0.06433
TPPPSP	-0.18825	0.85137	-0.39912	-0.22191	0.01897	-0.03662	-0.12031	0.01536	0.08157
RITPPSP	0.067	-0.1515	-0.02659	-0.13793	0.33794	-0.86474	0.11719	0.24918	-0.00386
TEPSP	-0.0613	-0.11648	-0.76166	-0.43888	0.29262	-0.12414	0.00411	-0.1798	0.06584
PE	0.10266	-0.12242	0.14306	-0.30558	0.74256	-0.38742	-0.24101	-0.0773	-0.19534
NSP	0.45873	-0.4018	0.58597	0.09986	0.19212	0.19723	0.32829	0.29156	0.03838
PPE	0.11649	-0.19833	0.02376	0.02193	0.27739	0.01406	0.0326	0.91114	-0.17226
PC	0.19601	-0.04596	0.06025	0.64475	-0.06908	-0.14957	0.45369	0.51497	-0.15162

Based on the results of the rotated factor analysis, the variables chosen to represent each factor are shown in Table 5.

Table 5. The chosen variables concerning each solution in the MP model.

FACTORS	VARIMAX
Factor 1	TSS
Factor 2	PP
Factor 3	PT
Factor 4	AE
Factor 5	SIFA
Factor 6	RITPPSP
Factor 7	SIAE
Factor 8	PPE
Factor 9	MS

Whichever solution set (varimax, quartimax, etc) can be used to measure the marketing performance, because the level of effect or weight of each variable on the performance is not the same, it is necessary to determine these weights according to the aims of the enterprises. The priority levels of the aims of the enterprises are determined as follows:

Seedling nurseries in Turkey were established for several reasons. However, the importance and priorities of these reasons have yet to be determined. That the importance and priorities of these reasons have not been determined and weighted are important obstacles in measuring the performances of the enterprises. Therefore, the aims and priorities of the nurseries need to be determined. For this purpose, an additional questionnaire was administered to 40 people working within these nurseries.

Based on the questionnaire results, the marketing—sale-oriented objectives of the seedling nurseries were determined with regard to the percentage of preference according to order of importance: 1. Productivity, 2. Cost minimization, 3. Profitability, 4. Sales volume, 5. Market share and 6. Provision of employment.

However, because the objectives do not have the same importance and weight, the variables to be used in the MP model will not have the same importance and weight. For this reason, the variables to be used in the MP model should be weighted.

At this stage, in order to determine the aims served by the 9 variables, further information was needed. The necessary information was obtained from technical personnel working in forest nurseries. The following

Table 6. The normalization values of the variables according to the average values.

Name of Enterprise	Variables								
	TSS	PP	PT	AE	SIFA	RITPPSP	SIAE	MS	PPE
Ağrı	0.000	67.297	0.000	27.770	0.000	70.730	0.000	58.545	43.430
Bayburt	4.081	73.636	6.4290	36.950	100.0	23.320	6.4200	100.0	100.0
Bolu	100.0	77.410	38.495	11.040	3.3700	67.396	22.460	0.000	36.750
Devrek	15.404	53.650	100.0	49.750	0.8930	68.470	33.710	39.040	71.620
Düzce	34.020	64.190	10.910	0.000	1.3100	35.680	43.820	19.500	82.160
Erzincan	21.685	66.820	29.030	31.290	0.4310	62.980	50.190	47.267	69.160
Erzurum	35.344	8.5940	23.340	29.320	0.7440	100.0	100.0	40.100	67.700
Hendek	52.972	100.0	35.860	59.450	1.1300	85.890	91.570	36.420	54.240
Kastamonu	15.042	0.000	40.292	72.320	0.3770	79.960	0.9570	40.100	19.580
Ordu	37.476	33.561	44.620	35.970	0.8720	27.880	64.130	11.145	0.000
Samsun	40.593	51.210	13.770	100.0	0.0990	0.000	36.180	79.276	98.630
Trabzon	40.670	1.3550	22.298	26.840	0.8760	60.010	64.120	100.0	50.270

conclusions were made: TSS incorporates cost minimization, profitability, sales volume, and market share; PP incorporates profitability and productivity; PT incorporates cost minimization, productivity, and profitability; AE incorporates profitability, sales volume, and employment provision; SIFA incorporates profitability, sales volume, and market share; RITPPSP incorporates the level of effect on profitability, productivity, and need for employment; SIAE incorporates productivity, profitability, and cost minimization; PPE incorporates cost minimization and profitability; and MS incorporates the market share, sales volume, and profitability.

The 9 variables that would be used in the MP model are required to have the same scale, such that the marketing performance of the different enterprises could be measured in a scale between 0 and 100. Therefore, variables measured in different enterprises by using different scales and units required conversion derived by a linear normalization procedure. Table 6 shows the normalized values of the variables that affect enterprise performance.

The weighting of the variables was performed by a logical method in terms of the characteristics of the study and in parallel to the project objectives. First, the aims assigned to the 9 variables were listed in order of importance (1-6). Second, the ordered aims were graded in descending value (6-1) (Table 7).

For statistical validity, the total of weights must equal 1. In this context, the least important aim becomes 0.04762 (1/21 = 0.04762) as a result of the weighting of the above-mentioned aims out of 1. According to this calculation, the weighting of other aims is as follows:

Table 7. The weighting of variables according to objectives.

Aim Order No.	Name of Aim	Points
1	Productivity	6
2	Cost minimization	5
3	Profitability	4
4	Sales volume	3
5	Market share	2
6	Provision of employment	1
TOTAL		21

Productivity 0.28570; Cost minimization 0.23810; Profitability 0.19048; Sales volume 0.14286; Market share 0.09524; Provision of employment 0.04762.

Upon the completion of the weighting of the aims in this way, the number of repetitions of each aim in each line is counted carefully. The score of each aim is divided by the number of repetitions and, therefore, the amount of weight of each line is determined; and these amounts in each line are added to determine the weights of each variable. For example, profitability is counted in 9 places. If 0.19048, the point of profitability, is divided by 9, 0.021164 is obtained. Similarly, for productivity this value is 0.2857/4 = 0.071425. As the whole aims to which the PP variable serves are calculated, the weight of the PP variable becomes 0.092589 (0.021164 + 0.071425). Similar calculations were carried out for the other variables and the variable weights (variable coefficients) obtained out of 1 were found to be as follows: TSS = 0.035715 + 0.021164 + 0.059525 + 0.031747 = 0.148151; PP = 0.021164 + 0.071425 = 0.092589; PT = 0.059525 + 0.021164 + 0.071425 = 0.152114; AE = 0.021164 + 0.035715 + 0.02381 = 0.080689; SIFA = 0.021164 + 0.035715 + 0.031747 = 0.088626; RITPPSP = 0.021164 + 0.071425 + 0.02381 = 0.116399; SIAE = 0.059525 + 0.021164 + 0.071425 = 0.152114; PPE = 0.021164 + 0.059525 = 0.080689; MS = 0.031747 + 0.035715 + 0.021164 = 0.088626.

Based on these calculations, the MP model can be formed as follows:

MP = 0.148151 x TSS + 0.092589 x PP + 0.152114 x PT + 0.080689 x AE + 0.088626 x SIFA + 0.116399 x RITPPSP + 0.152114 x SIAE + 0.080689 x PPE + 0.088626 x MS

If the normalized variable values in Table 6 are placed in the formula, the marketing performance of, for example, the seedling nursery in the city of Ağrı can be calculated as follows:

$MP_{Ağrı}$ = 0.148151 x 0 + 0.092589 x 67.297 + 0.152114 x 0 + 0.080689 x 27.77 + 0.088626 x 0 + 0.116399 x 70.73 + 0.152114 x 0 + 0.080689 x 43.43 + 0.088626 x 58.445 = 25.389

Similar calculations were performed for the enterprises in the other cities, and the levels of marketing performances out of 100 were as shown in Table 8.

Table 8. The levels of marketing performances of nursery enterprises in terms of the varimax method.

No	Name of Enterprise	Level of Marketing Performance
1	Hendek	60.001
2	Devrek	49.975
3	Erzurum	47.882
4	Bolu	43.254
5	Trabzon	41.443
6	Samsun	41.415
7	Erzincan	41.113
8	Bayburt	40.867
9	Ordu	32.724
10	Düzce	32.477
11	Kastamonu	29.927
12	Ağrı	25.389

The MP model aims to measure the marketing performance of an enterprise on a scale between 0 and 100. This allows us to compare the enterprises in the same time period, to see how good or bad a condition an enterprise is in compared with the others, to know how far one enterprise is from the ideal level of marketing performance (100), and to observe the development of each enterprise over time.

Sensitivity analysis was carried out to test the results, and it was found that the ordering of aims determined for the nursery enterprises has an effect on the marketing performances of the nursery enterprises.

Hulbert and Toy (1977) developed a strategic model for marketing control and analyzed it extensively. In their study, sales, sale prices, total marketing volume, market share, cost and the added values (additional values) were planned and the differences among the values were analyzed. They used price for the marketing control, market share, and market volume as strategic key variables. In short, they tried to analyze performance by using an organization plan.

Buzzell and Chussil (1985) tried to determine performance through measuring firms' capital market value by means of ROI, instead of long-term cash requirements or transaction volume. In a study of 178 businesses, they predicted the cash flow for 5 years by using ROI and they compared it with the real cost flow of the businesses they sampled. Finally, according to them, measuring performance becomes possible through considering performance as one part of potential. Thus, performance is equal to cash flow and market value, potential cash flow and potential market value. In the end, they found out that only 12% of the firms sampled exceeded their potentials.

Sharma and Alchabal (1982) emphasized the necessity of marketing control and tried to model it with an administrative approach. Within the framework of the model, marketing units were grouped as "successful", "average", and "unsuccessful" with the values of the past 4 years. Their performance trends were also determined. The index of performance was developed and compared with the section index and thus the limitations for each type were given.

Bonoma (1992) developed a marketing performance scale to measure the result of the firms' marketing activities as follows: MP = (SAT/EFF) x EXT, where;

MP: Marketing performance

SAT: The administration's satisfaction with the marketing program results, explained as (RES/EXP).

EFF: The effort made to get the results, explained as the efficiency of the administration (SKL/STR).

EXT: The outside influence on the marketing activities, and namely the reaction quality of the rival firms and marketing members, and environmental factors (legal, demographic and technological factors).

Bolak (1987) proposes a multi-variable model for the evaluation of firms' progress. Various financial rates may give us different ideas about the success of the firms. Therefore, rather than relying on a single rate value, the degree of the firms, obtained from various criteria, must be weighted and the general evaluation must be made according to a single dimensional scale. Thus, it will be possible both to know the firms' present conditions and to have a scale suitable for comparisons. Bolak applied this model to the textile industry, and the cement, metal, and machine sectors. As a result, with this model, it is possible to compare the firms after determining the performance function of each sector and it will also be possible to rank the firms correctly. Thus, it will also be possible to inform credit organizations, investors and firm executives about the relative positions of the firms.

Conclusions

Being in the public ownership, nursery enterprises operate in terms of the structural characteristics of their national economy, sector and region and in terms of their main aim and strategies. In this context, seedling enterprises, which operate on the basis of commercial principles, are enterprises that produce goods to sell, and carry out marketing activities. Considering the importance of marketing for the enterprises, it is obvious that the determination of the performance levels of these activities is necessary. On the other hand, performance can be determined by measuring how many of the specified aims have been realized based on the figures obtained within an enterprise.

This study determines the marketing performance levels of several seedling nurseries in Turkey. The marketing performance measurements were based on an understanding of a multi-dimensional system and by considering the country-sector-region-enterprise aims. Using correlation and factor analysis techniques, the most important variables were determined from among the 41 variables that were determined by the technical personnel in the nursery enterprises studied, and then by weighting these variables in terms of country-sector-region-enterprise aims, their marketing performance levels were measured by using the Multi-Dimensional System Model (the MP model).

In order to eliminate the possible effects of data of any given year, the average values of the variables in 5 years (1996-2000) were used. By using factor analysis and rotation techniques, the TSS, PP, PT, AE, SIFA, RITPPSP, SIAE, PPE and MS were found to be the most important marketing performance variables, which could represent more than one variable. The 41 variables can be represented by the 9 variables above with a loss of data of as little as 3.7%.

With the help of the technical personnel in the seedling enterprises, the marketing—selling-oriented aims of the seedling enterprises, which were considered in the scope of national and sectoral aims and of the general and socio-economic characteristics of the region, were determined in order of importance as follows: 1. Productivity, 2. Cost Minimization, 3. Profitability, 4. Sales Volume, 5. Market Share, and 6. Provision of Employment.

The aims that the variables, which were reduced to 9 by using correlation and factor analysis, serve were determined with the help of the technical personnel in the seedling enterprises as follows: TSS involves the aims of cost minimization, profitability, sales volume and market share; PP involves the aims of profitability and productivity; PT involves the aims of cost minimization, productivity and profitability; AE involves the aims of profitability, sales volume and provision of employment; SIFA involves the aims of profitability, sales volume and market share; RITPPSP involves the aims of level of effect on profitability, productivity and aims of necessary employment; SIAE involves the aims of productivity, profitability and cost minimization; PPE involves the aims of cost minimization and profitability; and MS involves the aims of market share, sales volume and profitability.

In order to measure the marketing performance of the enterprise on a 0 and 100 scale using the MP model, the variables, which were based on ha, m^2, %, TL etc., had to be converted into the same scale. In order to do this, the linear normalization method was used. This allows us to compare the enterprises in the same time period, to see how good or bad a condition an enterprise is in compared with others, to know how far one enterprise is from the ideal level of marketing performance (100), and to observe the development of each enterprise over time.

According to the results obtained through the varimax method and based on the data above, the enterprises were listed from the highest to the lowest in terms of their levels of marketing performance as follows: Hendek (60.001), Devrek (49.975), Erzurum (47.882), Bolu (43.254), Trabzon (41.443), Samsun (41.415), Erzincan (41.113), Bayburt (40.867), Ordu (32.724), Düzce (32.477), Kastamonu (29.927) and Ağrı (25.389). If we consider that enterprises that have a performance level of 50 or above have a high level of performance, there is only one enterprise whose marketing performance can be considered high, Hendek (60.001). The other enterprises have been considered unsuccessful.

In order to test the results sensitivity analysis was performed, and the results showed that the ordering of aims that were determined for the seedling enterprises affected the marketing performances of the seedling enterprises. Therefore, in the enterprises where ordering of aims has not been performed yet, the aims and order

of the aims should be determined very carefully when determining and ordering the aims and when measuring the performance. Obtaining a lower performance indicates that the enterprises do not operate according to their main aims and strategies. This indicates that the enterprises do not engage in productive marketing activities, and this has a negative effect on the interests of the enterprises, interest groups and the public.

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