

*Full Length Research Paper*

# Production and marketing structure of large scale forestry products industry enterprises in Turkey

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In Turkey, a country with 21.2 million ha of forest land, it is evident that the processed forest products have not been able to be developed to realize their potential with regards to the exports possibilities. It is obvious that the situation is to the disadvantage of Turkey in terms of the trading equilibrium when the exports and imports figures are examined. According to the results of the research carried out locally with respect to the Turkish Forest Products Industry, the emphasized problems emerge as the misapplication of incentives, the disability to catch up with the technological innovations, problems regarding raw material quality, undercapitalization, lack of qualified personnel, etc. By the help of this study which had been planned to cover the whole Turkish Forest Products Industry; the target is to reveal the structural situations of the large scale businesses in Turkey in the first few years of the 20th century, where modern management principles are assumed to be applied. The research had been finalized with the comments made upon the results of the questionnaires gathered through mostly face-to-face interviews with 415 large scale forest product firms where it was assumed that contemporary management principles and technological developments were applied relatively easier. As the questionnaire study was applied by the researchers themselves directly, it was also supported through observations.

**Key words:** Forest products, large scale enterprises, industry, marketing, production, technology.

## INTRODUCTION AND GENERAL INFORMATION

The characteristic that forestry products' are renewable natural sources does not require their unconscious utilization. Forestry products that have over 6000 (Gavcar et al., 1999) usage areas after being processed must be presented to the service of human kind at the right usage place and on the right time. While there are exactly 96 timber and 2000 furniture enterprises in South Africa, having 1.3 million hectare forest area, there are 43.794 (Rice, 1998; Kurtoğlu, 2001; TURKSTAT, 1992) enterprises processing forestry products in Turkey. When this number is taken into consideration, the importance of the raw material of wood is obvious. Therefore, the

enterprises must process the raw material of wood in accordance with the quality and productivity requirements through the approach required for modern operations. On the other hand, the performed researches and observations indicate that 10.621.221 ha (OGM, 2010 Internet Sources) productive forest areas have lost their qualities as a result of both fires and unconscious utilization. In order to meet the essential service and goods expected from the forests, a country must have 30% productive forest area. However, this rate for Turkey is around 11.5% (İlter, 1993).

There are some researches examining the forestry products industry as general or its sub-industries. Among these researches, especially the ones published after 1990 are given briefly in this study.

With a research performed by İlter in 1990, source usage in forestry products industry and developments at

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productivity level have been studied and actual problems have been determined.

The raw material resources and the problems faced by ORUS in Turkey had been determined by the studies by Gavcar et al. (1996, 1997). First research is based on the evaluations of timber, plate, plywood, furniture, cutting plate, fiber plate and paper industry. And the second research has been carried out in 55 wood companies with yearly processing capacities over 5000 m<sup>3</sup>. As the result of both researches, the main problems was emphasized as; insufficient quality of raw material, not being in compliance with the standards, defectiveness, lack of capital and technology.

In the master thesis by Ozkul, completed in 1997, the production policies in wood products industrial plants and the factors effecting production especially in furniture had been investigated in hardwood and parquet sectors.

By the study done by Mistepe in 1998, titled as "Education, Technology and Production in Wood Products Industry", how the productivity values of ORUS had been improved by education and technology in the period of 1943 to 1997 was examined.

Researchers such as Kurtoğlu et al. (1998), Aksu and Koç (2001), Aksu et al. (2009), published their study on analyzing the forests products industry in general and sub-industries such as furniture, fiber plate, cutting plate and woodwork industry.

In his master thesis, Çiçek compared the Turkish wood products industry and EU countries wood products industry. Also, in the study, accomplished by Karademir (2000), the foreign trade values of Turkish wood products have been examined. This study was designed to determine the production technologies of large scale organizations and the difficulties they face in following-up technology and implementing, the product standards, the production quantities and their values, the current capacities and utilization rate, foreign trade status and the opinions of the organizations for the future.

A research performed by Akyüz et al. (2004), direct the preferences of private sector investments in the forest products industry in the Black Sea region, which lags behind the other regions from the point of view of economic development and has an unstable development situation. With this aim, cities with advantages and investment priorities were determined. This study deals with all the 18 provinces (Amasya, Artvin, Bartın, Bayburt, Bolu, Çorum, Giresun, Gümüşhane, Karabük, Kastamonu, Ordu, Rize, Samsun, Sinop, Tokat, Trabzon, Zonguldak and Düzce) in the region. Another study realized in 2004 with the same team investigated export problems of forest product industry companies located in the Western Mediterranean Region of Turkey

By the study done by Karayılmazlar et al. (2008), a survey was carried out in order to determine the production and technological characteristics of small and medium sized forest products enterprises in Bartın province. The production and technological problems

were explored and suggestions were given based on analyses of the data of the study. Another study conducted in 2006 with the same team was carried out to determine the social and economical characteristics of 328 small and medium sized forest products enterprises in the vicinity of Bartın.

With a research performed by Top and Akyüz in 2009, the situations of the foreign direct investments in the forest products industry (FPI) and its rank in the manufacturing sector were examined. It was found out that cellulose, paper and cardboard sector was selected more than other subdivision in the FPI for foreign investment and the foreign direct investments in the FPI settled in the city where the foreign direct investments in the manufacturing sector were situated.

## MATERIALS AND METHODS

The research covers all Turkey-wide large-scale forestry products (except for the paper industry). In classifying the businesses, parameters such as the number of employees, total capacity of power equipment, capital, value added and turnover may be utilized. As a reliable response cannot usually be obtained from the criterions such as capital, turnover etc. in Turkey, in such studies, the scale of the business is classified usually according to number of employees. Furthermore, it is reported that number of employees, total capacity of power equipment and value added are proportionate to each other in the studies conducted therefore number of employees can be applied as the main criterion in classification process (Kurtoğlu, 2001). Number of employees in classifying the businesses may show variation in consideration by different organizations. For instance, Minor Industry Development Organization considers that a business with a number of employees of 1 to 9 is low-scale, 10 to 49 is medium-scale and over 50 is large-scale, whereas the Istanbul Chamber of Industry assesses that 1 to 49 is low-scale, 50 to 150 medium-scale and over 150 is large-scale (Kurtoğlu, 2001). On the other hand, in Turkish Statistical Institute (TURKSTAT) view, a business employing above 100 employees is large-scale (TURKSTAT, 1991). However this approach may again show variation among industries. In some industries, businesses employing above 10 employees can even be considered as large-scale. In the present research, it was found appropriate, taking the structure of the Turkish Forestry Products Industry into consideration, to assess any business with the number of employees of above 25 as large-scale. Because most of the businesses employ fewer than 50 employees in Turkey, such a classification was adopted to include more businesses in the study.

The economical and technical scope of the research is required to exclude the small and medium-scale businesses from the research. Furthermore, at the first stage, the accessibility of businesses and possibility to pick up data in a reliable and proper manner made essential to choose the large-scale businesses which reckoned to have fundamentally completed its corporate evolution. However these studies should be considered as a major stage in putting forth the structural situation of small and medium-scale businesses that make major contributions to the industrial development, thanks in particular to their flexible structures, and new researches should be planned within this scope.

The occupational magazines, Internet, exhibition booklets and brochures along with the official bodies such as TURKSTAT, Ministry of Industry, State Planning Organization, Turkish Union of Chambers of Commerce and Industry and Commodity Exchanges, Small and Medium-Scale Industry Development Association, Turkish Standards Institute; the records of the Chambers of

Commerce and Industry together with the Organized Industrial Zones in the provinces visited as well as the supplementary recommendations and information provided by businesses accessed have been the utilized sources in determining large-scale businesses.

Survey method was employed in the research. 90% of the businesses have been included in the questionnaire through face-to-face negotiations placed at the business site. Postal services were used to access the remaining 10% of the businesses due to the impossibility to visit for face-to-face negotiations, lack of accurate information regarding the presence and address of the business and the need to identify new businesses within the limited time. Answers to the systematically prepared data collection forms were received from the business owners or top-level directors of the business.

The participation for the questionnaire was rated as 72% in the whole of Turkey. Demands of some of businesses for completing and returning the questionnaire at a later time after the face-to-face negotiation were accepted, however no feedback could be received from some businesses, and some businesses did not show willingness to respond to the questionnaire although relevant reminders and requests were frequently delivered through mailing or phone calling, and some did not return their responses within the period of evaluation.

The results of the questionnaire have been transferred to the SPSS (Statistical Package for the Social Sciences) and subject to statistical evaluation. The reason for choosing the SPSS program for statistical evaluation is that SPSS is a commonly used package under Windows environment, the reliability of the questionnaire as well as its giving the opportunity to conduct plenty of different necessary tests based on the same data (Özdamar, 1999).

The consistency of the questions (test F), whether the questions in each group were prepared on only on social scale, and the reliability of the questionnaire have been surveyed by means of the Alpha Management (Cronbach Alpha Coefficient) and "Tukey's test of addivity" methods. Furthermore, cluster analysis and the analysis of relationships between the variables established by frequency and distribution percentages have been made. In the evaluation of data provided on the data collection forms, qualitative assessments have been digitized by means of dual or multiple sequential evaluations.

## FINDINGS

The findings that was determined as the result of the questionnaires conducted at the large size enterprises in forest products industry (LSFPI), was reviewed under four headings namely: Technological structure; production structure; marketing concepts; prospects for the future.

### The technological structure of the LSFPI

The level of quality is of foremost importance in the forest products. With the impact of technology, quality is gradually increasing in production. The enterprises in this sector are obliged to keep in pace with the technological developments and employ the latest developments into their production, in order to improve their competitive edge. Today, the conventional machines used in the production are rapidly replaced by NC, CNC (Numeric Controlled – Computer Controlled) machinery. This

technology, which allows the control of the machinery through special digital numbers and codes during the operation process without the need for any intervention by the machine operator, is currently undergoing a process of development, through the optimum utilization of computer technology. The employment of NC or CNC type machinery in production, offer certain important advantages such as ensuring the safety of the operating personnel, reduction of the period for work preparation, reduction in inventory costs, opportunity for optimization and flexibility (Ergün, 1997). In spite of certain disadvantages that arise during the initial stages of the implementation of the new technology in forest products such as the high costs of investment, need for personnel with special training, etc.; doubtlessly, the employment of NC/CNC machine tools in the manufacturing of forest products provides substantial advantages.

The answers of the questions which were concerned with the existing technological structure used in the production process by the large size enterprises in forest products industry (LSFPI), the justifications provided by those who continue their production operations with the old technology, regarding their inability for upgrading their existing technology, the quantitative data relating to the sizes of the existing conventional machinery and the currently used machinery that operate with NC/CNC technology; and the plans of those enterprises who have not updated their technological infrastructure about the future, as follows.

According to the data shown in Table 1, of the 300 enterprises who responded to the questionnaire, only 13% maintain their production activities with the old technology; in other words, with the conventional machine tools which they have not upgraded at all; while 63.3% are performing their production activities with a machine park consisting of conventional machine tools, that are supported by NC or CNC machine tools; and 23.7% of the enterprises employ the latest NC or CNC technology in most of their machine tools.

Enterprises that continue their production with conventional technology, have indicated that the main (43.1%) reason for their inability to upgrade their machine tools was due to the fact that their enterprises lack the adequate financial resources that were necessary for the implementation of the new technology. The inadequacy of the state support is also among the major reasons for the inability of the enterprises in updating their machine tools (22.4%).

Quantifying the number of the machinery in certain subsidiary industries is easy. However, in certain sub-industries such as plywood, fiber plates, chipped wood plates, it is only possible to mention a machinery park that consists of a number of machines. The distribution of 4.800 pieces of countable machinery available in the LSFPI, are shown in the Table 2.

According to Table 2, among 245 enterprises participating in the questionnaire, that use conventional

**Table 1.** Technological structure of enterprises in the LSFPI.

Questions	Answers	Frequency	%
Status of the technology used in production	Old technology	39	13.0
	Relatively new technology	190	63.3
	State-of-art technology	71	23.7
	Total	300	100
Reason for the employment of old technology	Difficulties in keeping in pace with the new technology	4	6.9
	Lack of funds required for new technology	25	43.1
	State support for upgrading to new technology is inadequate	13	22.4
	Upgrading to new technology is not necessary for the time being	5	8.6
	Other	11	19.0
Total	58	100	
The desire to purchase NC or CNC machines	Yes	17	60.7
	No	11	39.3
	Total	28	100
The envisaged period for the purchase of NC or CNC machinery	1 year	3	17.6
	Up to 3 years	8	47.1
	Up to 5 years	4	23.5
	More than 5 years	2	11.8
	Total	17	100

**Table 2.** Principal machinery used in the production activities.

Type	Quantity	Share in total (%)
Conventional machinery	3,796	79.1
NC machines	628	13.1
CNC machines	376	7.8
Total	4,800	100

machinery, the average number of conventional machinery per enterprise is 15; among 145 enterprises that use NC type machinery, the average number of NC type machinery per enterprise is 4; and among 133 enterprises that use CNC type machinery, the average number of CNC type machinery per enterprise is 2.8. According to the answers provided by the management level of the enterprises regarding their technological structures (Table 1) 63.3% of such enterprises have relatively new machinery; and although 23.7% stated that they have the latest machinery in respect of machine parks, the forest products industry in Turkey is considerably behind the level that had been achieved by the developed countries. For example, in the USA, 27% of the enterprises that are particularly engaged in the processing of hard wood employ monitoring and optimization technology (Scott et al., 2001).

### Production structure of the LSFPI

Findings relating to the production structure of the enterprises in LSFPI have been outlined in Table 3. According to the data provided in Table 3, of 299 enterprises who have participated in the questionnaire, only 13.7% are operating in full capacity, while the remaining 86.3% are unable to work at full capacity. According to the information provided by the management of the enterprises in the Forest Products industry, the average rate of capacity utilization is 68%. Based on the responses of the enterprises, the rate of capacity utilization of about 53% of the enterprises are below 60%. The rate of capacity utilization among the majority of the enterprises varies between 31.1% and the range of 40 to 59% at maximum. Regarding the reasons for the inability of the enterprises to work at full capacity, 38.1% of the respondents have indicated that their inability to work at full capacity is due to lack of demands. The majority of the respondents have indicated that main reason for the lack of demands was because of the economic crisis. Other reasons for lack of demands were explained as follows: Inadequacy of financing (19.8%); problems with personnel (11.6%); inadequacy of technology (8.8%); inadequacy of raw materials (7.7%), and inadequacy of energy resources (3.9%).

According to the data provided in Table 3, the foremost

**Table 3.** Findings relating to the production structure of LSFPI enterprises.

Questions	Answers	Frequency	%
Reasons for inability to operate at full capacity	Lack of demand	204	38.1
	Lack of adequate finance	106	19.8
	Problems with personnel	62	11.6
	Lack of technological means	47	8.8
	Lack of raw materials	41	7.7
	Lack of energy resources	21	3.9
	Other	54	10.1
	Total	535	100
The basic problems experienced by the LSFPI enterprises	Market limitations	195	19.2
	Lack of financial resources	139	13.7
	High cost of energy sources	130	12.8
	Lack of qualified personnel	122	12.0
	High rates of loan interests	118	11.6
	Problems arising from raw materials and subsidiary materials	80	7.9
	Technological inadequacies based on machinery and equipment	80	7.9
	Lack of adequate development of the auxiliary industry	73	7.2
	High labor costs	57	5.6
	No apparent problems	3	0.3
	Other	18	1.8
	Total	1015	100
	Applicable techniques for the improvement of efficiency	On-the-Job training	148
Quality control		145	13.1
Production planning		134	12.1
Use of computers		125	11.3
Stock control		118	10.7
Motivating awards to the employees		97	8.8
Financial analysis		84	7.6
Protective maintenance		68	6.2
Job survey		54	4.9
Work performance evaluation		53	4.8
Field training		43	3.9
Wage policies with incentives		33	2.9
Other		4	0.4
Total	1106	100	
Reasons for not deriving of benefits from techniques that improve efficiency	Financial problems	40	24.4
	Low quality of the available raw materials and subsidiary materials	36	22.0
	Lack of adequate demand	31	18.9
	Lack of qualified personnel	26	15.9
	Technological inadequacy	12	7.3
	Marketing problems	11	6.7
	Other	8	4.9
Total	164	100	

problem in production experienced by 19.2% of the enterprises is “market limitations”, which implies the inadequacy of potential market opportunities for the enterprises. Market limitation is one of the most important problems that have emerged concurrently with the economic crisis experienced in Turkey. Particularly, the enterprises operating in the provinces of Bursa and Istanbul, have attempted to overcome this problems posed by market limitation through offering their products to international markets, and were relatively successful in their endeavors. This problem is followed by limitation of financial resources (13.7%); high energy costs (12.8%); lack of qualified personnel (12%); high rates of loan interests (11.6%); problems relating to scarcity of raw materials and auxiliary materials and the inadequacy of technological means (7.9%); lack of a developed sub-industry (7.2%); and high labor costs (5.5%). Of all the respondents, only 3% have indicated that they do not have any problems.

The data provided in Table 3 shows that 69.3% of the enterprises adopt measures that increase efficiency. Based on the responses provided by the enterprises to the questionnaire, these measures could be listed as follows: On-the-job and field training, quality control, financial analysis, production planning, wage policies with incentives; job performance evaluation, job surveys, stock control, computer training, protective maintenance, tangible and intangible awards granted to personnel for motivating their performance. From the responses regarding this application, it was noted that the three measures that were most frequently applied for this purpose consisted of on-the-job training (13.4%); quality control (13.1%) and production planning (12.1%). From the responses given by 296 enterprises responding to this question of the questionnaire, it was noted that 30.8% of the enterprises did not have implement any measures with the objective of increasing the efficiency. The reasons indicated by the enterprises for the absence of any measures for the increase of efficiency were as follows: Financial problems (24.4%); the low quality of the available raw materials and subsidiary materials (22 %). Other reasons are lack of adequate demand; lack of qualified personnel; lack of adequate technological means and marketing related problems.

### **Marketing concept of the LSFPI**

It must be acknowledged that the marketing concept of whose priority is rapidly increasing in modern management, and which refers to the development, pricing, maintenance and distribution of goods, services and ideas that meet human needs for the realization of changes that will ensure the accomplishment of the objectives of the enterprise, is more than just a sales transaction and that it involves different dimensions. (Mucuk, 1993). For example, while 61% of the

enterprises located in the western United States engaged in the production and trading of forest products have their own web sites, 18% of these enterprises use electronic commerce in the marketing of their products. (Vlosky et al., 2002). Meanwhile in Turkey, while it is noted that the number of enterprises engaged in similar operations that have their own web sites are rapidly increasing, a definite progress had not yet been achieved with respect to e-commerce.

Forest products industry currently supplies products to three different types of markets: To the consumers market (end consumers), to industrial markets (industrial users or the intermediary consumers) and to international markets. Each market has its own specific characteristics. Accordingly, each market type should compete within its own category, due consideration of its characteristics. Enterprises endeavor to introduce the products that they have manufactured in the above mentioned markets.

The methods applied by the LSFPI enterprises in introducing their products in the markets, the existing marketing problems and the problems experienced by the enterprises in the marketing of their products, have been outlined in Table 4.

A review of Table 4 show that 23% of the LSFPI enterprises introduce their products through brochures, catalogues and other similar types of documents; 22.7% have direct access to their customers and 17.6% advertise and promote their products through the internet. In fact, a number of firms have begun to use e-commerce in their marketing activities. The percentage of those enterprises that introduce their products through advertising in various media, primarily professional journals and local audio-visual media, are around 11.4%. While participation in domestic fairs is preferred by 15.5% of the enterprises, about 3.3% of the enterprises display their products in international markets. As could be noted from the table, enterprises can employ more than one promotional method at the same time.

From the answers of the respondents, it is understood that in spite of all their efforts regarding the increase of sales, the enterprises are still having difficulties in the marketing of the products. Of 296 enterprises who have responded to this question of the questionnaire, 77% (228 enterprises) have indicated that they have problems. An inquiry on the nature of the existing problems reveals that the highest priority goes to economic recession by 32.5%.

The economic recession which is considered to have occurred as a natural outcome of the recent economic crisis, is followed by the current credit sales system by 17%. Enterprises are exerting efforts to increase their sales profiles that have declined, through the launching of various campaigns; however, the credit sales system as a problem. The managers of the large size enterprises complain that small and medium sized enterprises are occasionally engaged in aggressive competition in the

**Table 4.** The existence of promotion activities and marketing problems in LSFPI enterprises.

Questions	Answers	Frequency	%
How do you perform the promotion of your enterprise and your products?	Through documents such as brochures, catalogues, etc.	204	23.0
	Through direct access to the consumers	202	22.7
	Through a web page in the internet	156	17.6
	Through participating in local fairs	138	15.5
	Through publishing of advertisements in newspapers and journals	101	11.4
	Through participating in international fairs	58	6.5
	Other	29	3.3
	Total	888	100
Do you experience problems in the marketing of your products	Yes we do	228	77.0
	No, we do not	68	23.0
	Total	296	100
What is your major problem in the marketing of your products?	Recession in the market	190	32.5
	Credit sale system	99	17.0
	Competitive conditions	95	16.3
	Limited opportunities for international markets	93	15.9
	Cash deficit	73	12.5
	Effective marketing techniques implemented by the importers	17	2.9
	Other	17	2.9
	Total	584	100
Can you realize export sales?	Yes	184	62.4
	No	111	37.6
	Total	295	100
What is the share (percent) of exports in your total sales	1-9	39	23.2
	10-19	54	32.1
	20-39	32	19.0
	40-59	23	13.7
	60-79	9	5.4
	80-100	11	6.5
	Total	168	100
List the group of countries to which you export your products	European Union countries	89	26.5
	Arab countries	77	22.9
	Turkic Republics	64	19.0
	Balkan countries	60	17.9
	Other	46	13.7
	Total	336	100
What are the reasons for your inability to make exports; or, what are the major difficulties that you experience during your exports?	Lack of familiarity with foreign markets	121	17.1
	Inability to compete in terms of prices and quality	100	14.2
	Lack of adequate demands from other countries	91	12.9
	Lack of adequate personnel and organization	74	10.5
	Lack of adequate financing for exports	72	10.2
	Technological inadequacies	55	7.8
	Difficulties in transportation	37	5.2
	Production potential can only meet the domestic demands	30	4.2
	Problems relating to design	29	4.1
Difficulties in adaptation to products	28	4.0	

Table 4. Contd.

Inadequate capacity		29	4.1
	Other	42	5.9
	Total	706	100
Do you have partners with foreign trade firms active in the same industry?	Yes	33	11.7
	No	248	88.3
	Total	281	100
Chances for competing with the EU countries	We can compete in terms of fair competition	65	23.4
	We have difficulty in competing with the EU countries	64	23.0
	We cannot compete	75	27.0
	We do not yet have a clear idea on this subject matter.	74	26.6

markets, which puts the large sized enterprises in a very difficult position. However, it can also be asserted that in such remarks, the managers of the large sized enterprises overlook the fact that small and medium sized enterprises have the advantage of acting more flexible, and that they enhance their competitiveness by using this advantage. The limited scope of opportunities offered by foreign markets, shortage of cash and the effective marketing techniques offered by the foreign buyers, are among the problems experienced by the large size enterprises operating in the sector of forest products.

Indubitably, the LSFPI enterprises can overcome most of the problems that they are currently facing through offering their products to foreign markets. A substantial portion of the exportation of forest products is realized by the enterprises that we have included within the scope of our survey.

From the data provided in Table 4, it is understood that of the 295 enterprises who have responded to the question, 62.4% perform direct or indirect export sales, and 37.6% are not engaged in exports. The export volume of the enterprises who realize export sales, vary from 1 to 100% of their total production. The percentage of the exports was grouped on the basis of certain ranges and the proportion of the export sales to the total production volume was determined. Accordingly, 32.1% of the enterprises export 1 to 19% of their total production. The distribution of export sales among country groups is as follows: 26.5% of the exports are made to the EU countries; 22.9% is exported to the Arab countries; 19% of the exports are made to the Turkic Republics, and 17.9% is exported to the Balkan countries. The share of the other countries in the distribution of the exports is 13.7%. These countries include, North Africa, Russia, Israel, Nigeria, Algeria, USA, Kenya, Dubai, Far East countries (Singapore, China, and Japan), Georgia, etc.

An examination on the problems experienced by enterprises who currently export their products and who are not yet able to export, reveal that the biggest

problem is lack of familiarity with the foreign markets (17.1%), which is followed by inability to compete in terms of price and quality (14.2%). From the answers provided by some of the managers of the enterprises, it is noted that the concept of "quality" is particularly highlighted. The respondents agree that price is an important factor in their inability to achieve a competitive power, but disagree on the issue of quality. Accordingly, the major problems experienced by the LSFPI enterprises relating to exports, can be listed as follows in respective order: Lack of familiarity with the foreign markets, lack of specialized personnel and appropriate organization, lack of financial resources for exports, technological inadequacies, difficulties in transportation, the fact that production potential can only meet domestic demands, problems relating to designing, difficulties in the adaptation of products and inadequate capacity.

The sectoral foreign trade companies which are an organizational structure based on the realization of exports and the small and medium sized enterprises may overcome the difficulties that they might experienced during their individual efforts for exportation, and may acquire stronger marketing opportunities on the basis of their individual marketing activities. From the results of the survey, it is understood that company structures that enable certain export related activities such as customs procedures, transportation and insurance transactions, and that offer more effective marketing opportunities for export purposes, do not appear as an attractive option to the enterprises operating in large size forest products industry. As a matter of fact, about 88% of the enterprises do not have affiliations with such a company structure.

The chances for competitiveness of the large size enterprises operating in the forest products industry have been questioned. According to the answers provided by the respondents, 27% of the enterprises indicate that they lacked competitive edge, 23% indicate that they have difficulty in competition, and 27.6% indicate that they do not yet have a clear idea regarding this subject matter. The percentage of those enterprises who assert



that they can compete with the enterprises operating in the EU countries in terms of fair competition is 23.4%; which is by no means an insignificant value.

### **Reliability of the survey and a statistical appraisal**

With the help of the SPSS program, in addition to the consistency of the method, the existence of meaningful correlations was questioned through the analyses of the correlation between certain questions and the answers received. Some to the results that need further elaboration are thus outlined.

A meaningful correlation particularly between the size of the enterprise and the level of utilization of advanced technology, with 99% reliability, was achieved. These results can be construed as evidence to the fact that a change occurs in the management structure of the enterprises concurrent with the level of growth of the concerned enterprise. It is also noted that the impacts of the economic crisis that were experienced during the recent years are still visible and that it has a meaningful correlation with the decline in the rates of capacity utilization.

While the production related problems of highest priority were focused on technological inadequacy concerned with machinery and equipment in furniture and plywood industry; in timber, parquet, coating and fiber plates industries that directly utilize wood as raw material in production, the first priority is focused on problems arising from raw materials and subsidiary materials. On the other hand, while the biggest problem in the woodwork and packaging industry is lack of qualified personnel, in chipped wood industry, the biggest complaint is concerned with the high rates of loan interests; and in wooden construction elements industry, the biggest problem is concerned with the high costs of energy.

The problems of top priority experienced by the subsidiary industries of forest products during the marketing of their products were identified in respective order as follows: The effective marketing strategies applied by the foreign buyers for the furniture, parquet and packaging industry; the limited scope of opportunities offered by the foreign markets for the timber industry; cash deficits for the plywood and wooden construction elements industry; conditions for competition for the coating industry; recession in the markets for the chipped wood industry; and the credit sale system for the fiber plates industry.

The top three reasons underlying the inability of certain subsidiary industries to realize export sales, or the major problems experienced by the subsidiary industries that realize export sales were questioned. Based on the answers, furniture and woodwork industry have indicated that their number one problem was the lack of financial resources; timber industry indicated that the volume of

production was only adequate in the meeting of the demands of the domestic markets; and the wooden construction elements industry had emphasized that their major problem was relevant to designs.

A listing was made based on the level of challenge experienced by each sub-industry included in the industry for forest products in their competition against their competitors in the EU countries. According to this listing, while the timber industry was identified as the sub-industry that is most adversely affected from the challenges imposed by the competition with the EU countries, packaging industry appears as the sector that is most prepared for competing with the EU countries. This listing is based on the responses that have been provided by the management of the enterprises who have participated in the survey. The accuracy of this listing is open to debates, as it does not include any other indicators.

## **DISCUSSION AND RESULTS**

### **Production and technological structure in the forest products industry in Turkey**

Enterprises operating in the forest products industry in Turkey generally perform their production on the basis of conventional machine tools. However, it is also marked that production based on machine tools that operate with NC or CNC systems has increased, starting from the beginning of 1990's. Nevertheless, it cannot be asserted that an adequate progress had been achieved in Turkey in terms of technology. For, a lot of enterprises have not been able to perform successful feasibility studies regarding the purchase of NC or CNC based machinery, and have committed errors in the selection of the appropriate machine functions, and consequently, have faced significant failures in terms of the efficiency of their machine tools, loading levels and the rate of return of their investments. Whereas, during the purchase of NC or CNC based machinery that entail substantial investments, the issues that constitute bottlenecks must be taken into consideration, and accordingly, elaborate and carefully designed plans must be developed. One of the main reasons why the enterprises choose to continue their production operations with conventional machine tools is lack of adequate financial resources. In this respect, leasing of machinery equipped with high technology plays an important role. However, it has also been understood that leasing does not offer an adequate solution to the existing problem. Therefore, enterprises that consider the acquisition of machinery supported with high technology as their top priority are required to develop a financial leasing policy commensurate with their economic power.

Most of the enterprises operating in the forest products industry are unable to work at full capacity.

The results of the survey highlight the fact that one of the basic problems underlying production is related to market limitations at a rate of 19%. Nevertheless, in spite of all these adverse conditions, it had been also marked that most of the enterprises operating in this sector have adopted certain measures with a view to enhance their levels of efficiency, which creates certain optimism about the future. Those enterprises, who fail to adopt measures to increase their efficiency, indicate that their failure is due to financial reasons. As the result of the inadequacy of their operating capitals, enterprises may become exposed to serious problems, or may be unable to realize their targets due to the economic recession, or due to other reasons. The solution to such problems would consist of the implementation of the necessary measures for the financing of the operating capital, to set aside reserves for this purpose at times of profitability, and the utilization of the subsidies or loans received in a careful and prudent manner.

### **The marketing concept in the forest products industry in Turkey**

About 77% of the enterprises have difficulties in the marketing of their products due to the recession that is experienced in the markets. An appraisal from the standpoint of consumers highlights that fact that the consumers are on the whole unhappy with the enterprises operating in the forest products industry. Since the enterprises presume that marketing consists solely of distribution and sale, they may overlook the issue of post-sale services. In the occurrence of bottleneck circumstances in domestic markets, enterprises should endeavor the marketing of their products in foreign markets. They should even endeavor to sell their products both in domestic and in international markets. Although around 62% of the enterprises are directly or indirectly involved in export activities, and although the volume of exports are increasing both in terms of the types of products exported and in terms of export quantities since 1990's, Turkey's exports in forest products have not yet reached the desired level. Turkey's export potential regarding forest products is visible only in large size enterprises. A substantial portion of the small and medium size enterprises are far away from this concept. Enterprises should form partnerships with the Sectoral Foreign Trade Companies which is an organizational structure based on the realization of exports and small and medium size enterprises must ensure solidarity with various types of organizations. For example, among the enterprises that are engaged in exports, and the enterprises that have not yet realized exports, lack of familiarity with the foreign markets occupies the first place among their difficulties related to foreign trade. Inability to compete in terms of price and quality is also an important problem. The elimination of all

these problems necessitates solidarity.

### **Suggestions for the forest products industry in Turkey**

In order to enhance competitiveness in the forest products industry on a worldwide basis, there are certain duties that should be undertaken by the enterprises, the universities, concerned government establishments, finance institutions like banks, the end consumers and the manufacturers and suppliers of raw materials. During the contacts with the managements of enterprises, the managers have confirmed that there were certain issues for which they have deserved criticisms. However, most of these enterprises anticipate a lot from the government. Obviously, some of their claims are justifiable. However, the degree to which they have attempted to derive benefits from the R&D subsidies offered by the State, the Small and Medium-Scale Industry Development Association projects, and the applications of the Regional Technological Development Center and the issue as to whether or not they have expended the subsidies that they have derived from the public sector in line with the desired purposes, should be discussed and further efforts should be exerted in order to ensure that they derive further benefits from such subsidies and incentives.

The results that were achieved from the survey show that while the Forestry Enterprises are supplying the raw material of wood to the consumers, they are at the time committing certain erroneous actions that result in the impairment of the quality of the forest products. The conscientious attitude of the enterprises operating in the forestry industry in line with the expectations shall be effective in the elimination of the current problems that are experienced in raw materials. For example, the method of sale of planted trees, that ensures the classification of the forest products as per their types, sizes and appearance, in line with the demands of the buyers, that minimizes losses in production, that increases productivity in terms of economic value, that offers a saving in production costs, and that had been developed for the purpose of the elimination of the occurrence of negative effects such as cracking, decaying, or darkening that might occur during storage in the warehouses (Aslankara, 1998) can be applied in a more effective manner.

The reduction of the pressure applied on the licensed producers by the State will be beneficial. The reduction of the burdens imposed by the VAT and income taxes, and the Social Security premiums, shall facilitate the enterprises operating in the forestry industry to accomplish certain effective endeavors. In fact, both the enterprises that document every sales transaction, and the enterprises that perform the operation on the basis of unrecorded economy for purposes of tax avoidance, are

enforced to compete on the same race track. This situation marks a great unfairness to those enterprises who comply with the rules and regulations.

The government bureaucracy that imposes barriers in front of the enterprises, who wish to export their products, needs to be restructured for being more active; the current legislation needs to be updated and the bureaucracy must be charged with more responsibilities. The enterprises that are currently suffering from financial bottlenecks must be subsidized with low interest loans that will enable them to operate in foreign markets. Authentic designs must be developed to enhance Turkey's share in foreign markets. The Sectoral Foreign Trade Companies which have decisively achieved positive developments in the export scene on behalf of many industries in Turkey must include the sector of forest products in its scope and must gain the confidence of the sector through its efforts. Uncontrolled and low quality imports are gradually becoming a subject matter of great concern. The opportunities granted to such importers must be restricted and this type of importation must be deterred. According to a recent study, the opportunities granted to the enterprises in the forest products industry for benefiting from free zones is extremely low as compared to the other sectors (0.01%) (Koç and Aksu, 1999). Enterprises operating in the forest products industry must be granted opportunities to effectively benefit from the free trade zones (Atatürk Airport, Aegean Free Zone, etc.).

## REFERENCES

- Aksu B, Koç H (1999). Türkiye Orman Ürünleri Dış Ticaretinin Çeşitli Ürün Grupları Bazında İncelenmesi, İ.Ü. Orman Fakültesi Dergisi, Seri B, Cilt 49, Sayı 1-2-3-4, Issn 0535-8418, 2001 Basımı, ss.105-117, İstanbul.
- Aksu B, Koç H, Karademir D (2009). An Evaluation On Growth Potential Of The Small And Medium Scale Enterprises In Turkish Furniture Industry, I.Uluslararası Ulusal Meslek Yüksekokulları Sempozyumu, 27-29 Mayıs 2009, ISBN 978-975-448-194-5, Selçuk Üniversitesi Kadınhanı Faik İçli Meslek Yüksekokulu, Konya.
- Akyüz, KC, Akyüz İ, Serin H, Cındık H (2004). Determining Suitable Investment Areas for the Forest Products Industry: An Example from the Black Sea Region in Turkey. J. Agric. For., TUBITAK, Ankara, 28: 281-289.
- Akyüz KC, Akyüz İ, Serin H, Cındık H (2004). Export Problems of Forest Product Industry Companies Located in The Western Mediterranean Region of Turkey, Süleyman Demirel Üniversitesi Orman Fakültesi Dergisi, Seri: A, Sayı: 1, Yıl: 2004, ISSN: 1302-7085, Sayfa: 97-110, Isparta.
- Aslankara MS (1998). Cumhuriyetin 75.Yılında Ormanlığımız, Orman Bakanlığı Yayın Dairesi Başkanlığı, Ob Yayın No:120, ISBN 975-8273-31-0, Ankara.
- Çiçek ÖNN (1999). Avrupa Birliği Ülkeleri ve Türkiye Orman Ürünleri Endüstrilerinin Karşılaştırmalı İncelenmesi, İ.Ü.Fen Bilimleri Enstitüsü, Basılmamış Yüksek Lisans Tezi, İstanbul.
- Ergün M (1997). Nümerik Kontrollü Takım Tezgahları Ve Programlama Prensipleri, TMMOB Makine Mühendisleri Odası, Mmo Yayın No:190, ISBN: 975: 395-226-0, Ankara.
- Gavcar E (1996). Türkiye'de Orman Ürünleri Endüstrisi İşletmeciliği Üzerine Bir Araştırma, K.T.Ü. Orman Fakültesi, Orman Endüstri Mühendisliği Bölümü, Trabzon.
- Gavcar E, Aytekin A, Şen S (1999). Türkiye'de Orman Ürünleri Endüstrisinin Hammade Kaynakları ve Karşılaştığı Problemler. TUBITAK, Ankara, J. Agric. For., 23: 243-248.
- Gavcar E, Arslan ÜS (1999). Kereste Endüstrisinde İşletmecilik, J. Agric. For., 23(4): 855-861. TUBITAK, Ankara.
- İlter E (1990). Odun Kökenli Ürün Sanayilerinde Kaynak Kullanımı Ve Verimlilik, MPM Yayınları: Ankara, p. 425.
- İlter E (1993). Avrupa Topluğunda Ormanlık ve Orman Endüstrisi, Bolu
- Karademir D (2000). Orman Endüstri Ürünlerinin Dış Ticaretimizdeki Yeri, İ.Ü Institute Of Sciences, Unpublished Post-Graduate Thesis, İstanbul.
- Karayılmazlar S, Çabuk Y, Aşkın A (2006). Social and Economical Characteristics of Forest Products Enterprises Classified as Small and Medium Sized in the Vicinity of Bartın, Gazi Üniversitesi, Orman Fakültesi Dergisi, Kasım-2006 Cilt:6 No:2 ISSN 1303-2399, Kastamonu.
- Karayılmazlar S, Çabuk Y, Aşkın A (2008). Problems and Solution Proposals in the Production and Technological Characteristics of Forest Products Enterprises in The Vicinity of Bartın, Süleyman Demirel Üniversitesi, Orman Fakültesi Dergisi, Seri: A, Sayı: 1, Yıl: 2008, ISSN: 1302-7085, Sayfa: 143-154, Isparta.
- Koç KH, Aksu, B (1999) Serbest Bölgelerde Orman Ürünleri ve Mobilya Dış Ticareti, ISO Dergisi, Aralık 1999, Sayı 401., S.44-46, İstanbul.
- Koç KH (2002). Kalite Kontrol Ders Notları, Basılmamış, İ.Ü.Orman Fakültesi, Orman Endüstri Mühendisliği Bölümü, İstanbul.
- Kurtoğlu A, Koç KH, Aksu B (1998). Türkiye Orman Ürünleri Sanayii Dış Ticaretinin Gelişimi, Cumhuriyetimizin 75. Yılında Ormanlığımız Symposium Book, 21-23 October, Harbiye-İstanbul, ss.480-487.
- Kurtoğlu A (2001). Mobilya Endüstrisi, İ.Ü.Orman Fakültesi, Forestry Industrial Engineering, Unpublished Lecture Notes.
- Kurtoğlu A (2001). Günümüzde Türkiye Ve Dünyada Mobilya Endüstrisi Ve Dış Ticareti, Mobilya Dekorasyon Dergisi, Kasım-Aralık, Sayı, p. 45.
- Mistepe MU (1998). Orman Ürünleri Sanayiinde Eğitim, Teknoloji Ve Verimlilik İlişkileri, Cumhuriyetimizin 75. Yılında Ormanlığımız Symposium Book, 21-23 October, Harbiye-İstanbul, pp. 135-145.
- Mucuk İ (1993). Modern İşletmecilik, Der Yayınları, İstanbul.,
- OGM (2010). Orman Genel Müdürlüğü İnternet Sayfası,
- Özdamar K (1999). Paket Programlar İle İstatistiksel Veri Analizi, 2. Baskı, Kaan Kitapevi, Yayın No:2, Eskişehir.
- Özkul M (1997). Orman Ürünleri Endüstri Tesislerinde Üretim Politikaları ve Üretimi Etkileyen Faktörler, İ.Ü.Institute Of Sciences, Unpublished Post-Graduate Thesis, İstanbul.
- Rice RW (1998). Portrait of An Emerging Wood Products Market. J. For. Prod., September, pp. 48-49
- Scott AB, Robert, LS, Philip AA (2001). A National Profile Of The U.S.Hadwood Sawmill Industry, For. Prod. J., 51(10): 25-30.
- Top Y, Akyüz İ (2009). Foreign Direct Investments in the Turkish Forest Products Industry, Süleyman Demirel Üniversitesi Orman Fakültesi Dergisi, Seri: A, Sayı: 2, Yıl: 2009, ISSN: 1302-7085, Sayfa: 104-118
- TURKSTAT (1991). Türkiye İmalat Sanayiinde Küçük ve Orta Ölçekli İşyerleri.
- TURKSTAT (1992). Genel Sanayi ve İşyerleri Sayımı, İkinci Aşama Sonuçları, 1.Büyük İmalat Sanayi
- Vlosky RP, Westbrook T, Poku K (2002). An Exploratory Study Of İnternet Adoption By Primary Wood Products Manufacturers In The Western United States, J. For. Prod., 52(6): 35-42.