



# **RANKING OF CROATIAN WOOD INDUSTRY COMPANIES ACCORDING TO BUSINESS SUCCESS**

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- ✓ Wood processing and furniture production are two of the most important industrial branches of the Republic of Croatia.
- ✓ Competitiveness among the participants of the wood industry sector, both of European and non-European companies and of the companies within the European Union, has been continuously increasing (Lähtinen, 2007).
- ✓ However, in the last two years, the Republic of Croatia has been stagnating on the world economic forum competitiveness scale (National Competitiveness Council, 2008)
- ✓ This paper assesses the success of Croatian wood industry companies according to four criteria of success

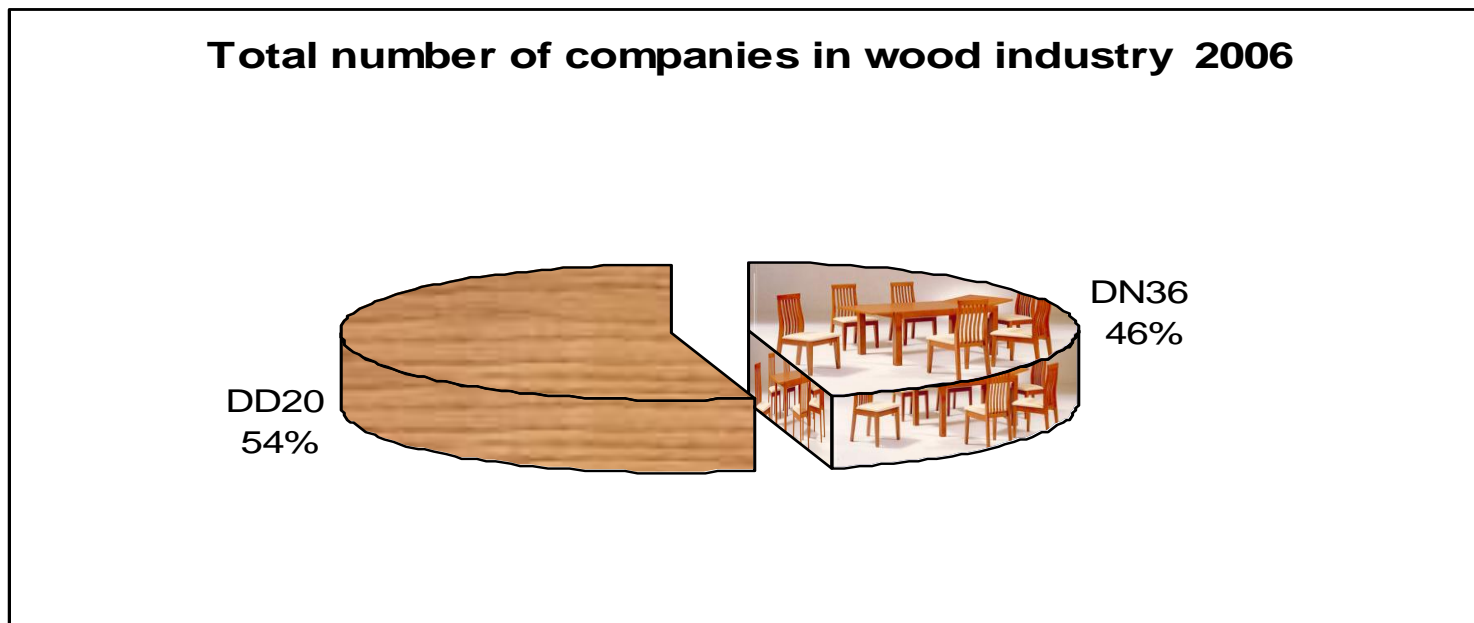
The analysis includes companies that, according to the National Classification of Activities as of 2002 (The Official Gazette 52/2003), are classified under:

- ✓ the **DD 20** group - wood processing and wood and cork products production,
- ✓ the **DN 36** group - furniture production and other processing industry.

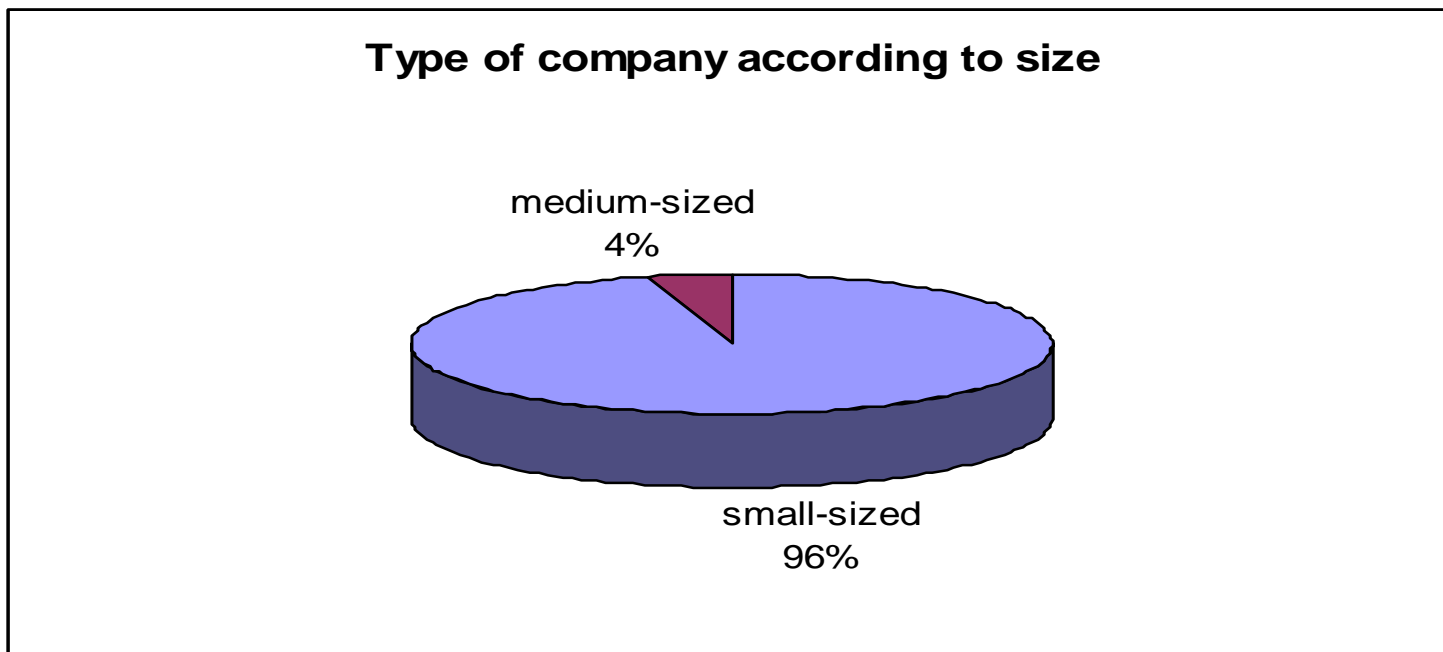
For ranking companies we have used:

- ✓ data from ex Ministry of Agriculture, Forestry and Water Management of Wood Industry,
- ✓ The Analytical Hierarchy Process (AHP) - a decision making tool for multi-criteria decision analysis. The AHP mathematical theory was developed by T. Saaty in the 1970s.

- The number of companies and the relevant employment confirms how important the industrial wood processing is for Croatian economy
- According to the official data of the Central Bureau for Statistics the total numbers of companies was 1381 (747-DD20, 634-DN36)



- Croatian industrial wood processing can considerably contribute to the European efforts to put small and medium-sized businesses on the top of its development plan



The aim of the work is to analyse business performance of Croatian companies in wood sector. The same are defined according to the following categories:

- ✓ according to the National Classification of Activities are classified under:
  - the **DD 20 group**
  - the **DN 36 group**

- ✓ according to their **sizes**, companies are divided, based on the Act on Promoting the Development of Small Enterprises (Official Gazette 29/2002) and the Act on the Amendments to the Act on Promoting the Development of Small Enterprises (OG 63/2007), into **small-size**, **middle-size** and **large-size**; criteria for size determination are total annual income and average annual employment
- ✓ according to the **type of ownership**, they are divided into: Croatian ownership (company is 100% owned by Croatian entities), foreign (company is 100% owned by foreign entities) partially Croatian (51% of the company is Croatian and 49% is foreign) and partially foreign (51% is foreign and 49% is Croatian)

**Table 1** Classification of companies according to categories

	<i>Craft (Trade)</i>	<i>Limited liability company (Distribution company)</i>			<i>Join stock company (Company with share capital)</i>		$\Sigma$
		<i>Small</i>	<i>Medium</i>	<i>Big</i>	<i>Medium</i>	<i>Big</i>	
<b>DD 20</b>	15	33	7	0	2	1	<b>58</b>
<b>DN 36</b>	9	15	3	3	0	2	<b>32</b>
<b><math>\Sigma</math></b>	<b>24</b>	<b>48</b>	<b>10</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>90</b>



The four criteria for evaluation of success have been chosen with unequal importance of the said criteria:

- ✓ income per employee
- ✓ percentage of export
- ✓ percentage of university educated employees
- ✓ company age

The data on all four criteria were gathered from development projects of companies within the framework of first granting of non-repayable aid for improvement and enhancement of industrial wood processing in 2007 by the former Ministry of Agriculture, Forestry and Water Management.

- By inspecting all 90 companies according to the four criteria of success, the most successful ones have been chosen, singularly for each criterion, and the first 10 companies have been ranked separately for sectors DD 20 and DN 36.
- The data are shown in tables 2 and 3.

**Table 2** Data for successful assessment of companies' success for the sector DD

-20

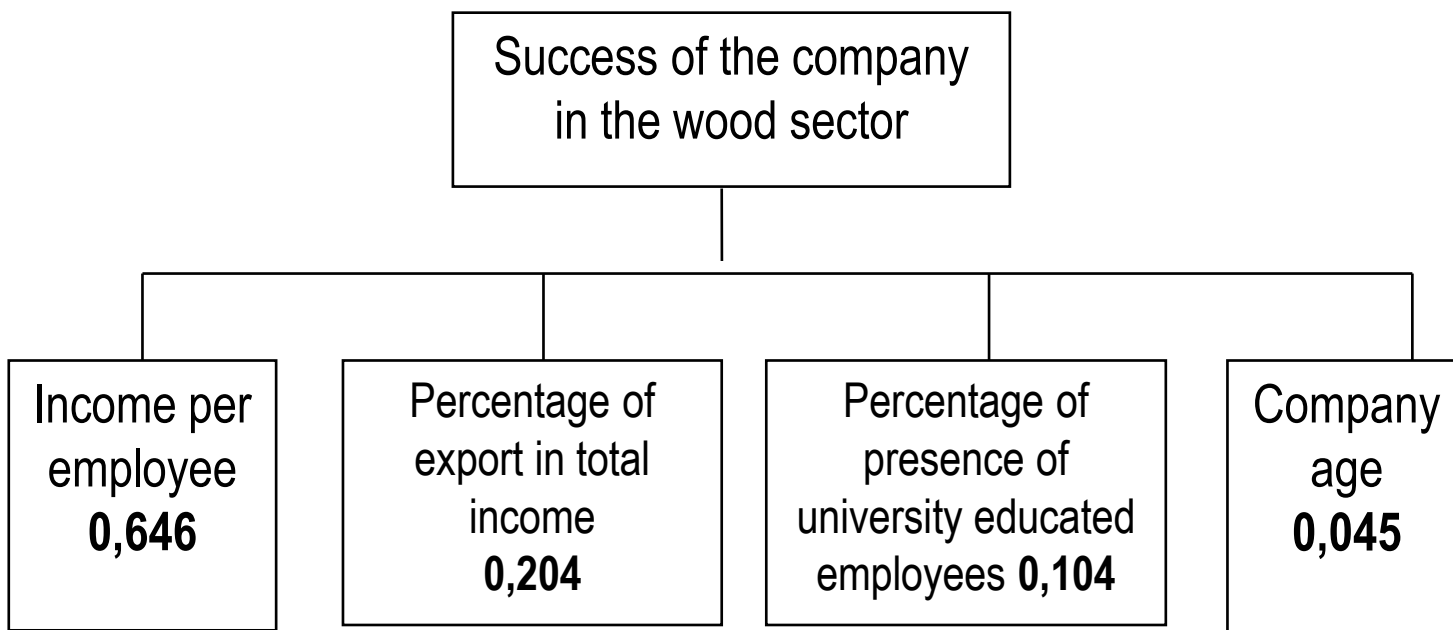
Company	Income per employee (HRK)	Share of export in total income (%)	Share of university educated employees (%)	Company age (years)
2	234,268.46	98	12.5	12
3	188,500.84	97	5.3	22
4	322,932.64	95	0.8	17
5	903,950.86	95	15.0	12
6	352,439.09	95	7.0	17
8	646,593.13	90	0.0	4
9	256,284.00	90	14.3	6
10	317,805.74	86	3.3	2
11	398,796.17	85	0.0	12
13	541,741.99	79	4.3	14

**Table 3** Data for successful assessment of success of companies for the sector DN-36

Company	Income per employee (HRK)	Share of export in total income (%)	Share of university educated employees (%)	Company age (years)
16	160,554.06	72	4.0	94
18	202,405.10	69	4.3	14
19	139,066.10	61	3.0	16
22	9,839.00	60	20.0	1
27	416,565.65	50	5.6	14
31	125,637.81	40	0.4	12
36	27,736.16	32	2.4	11
39	205,275.00	23	33.3	13
40	119,949.16	22	2.0	12
43	606,950.83	15	33.3	12

- Ranking companies pursuant to their overall success assessed according to the four unequally important criteria is the problem of the multicriteria analysis and contains all the steps of the multicriteria decision-making (Winston, 1994).
- **AHP method** was used (Saaty, 1980).
- AHP model for determination of the company's success in wood sector has the following criteria on the first level:
  - (1) income per employee,
  - (2) percentage of export,
  - (3) percentage of presence of university educated employees,
  - (4) company ageand alternatives are companies that we want to rank (Figure 1).

- **Figure 1** AHP hierarchy for evaluation of success of the companies in wood sector



## RESULTS AND DISCUSSION

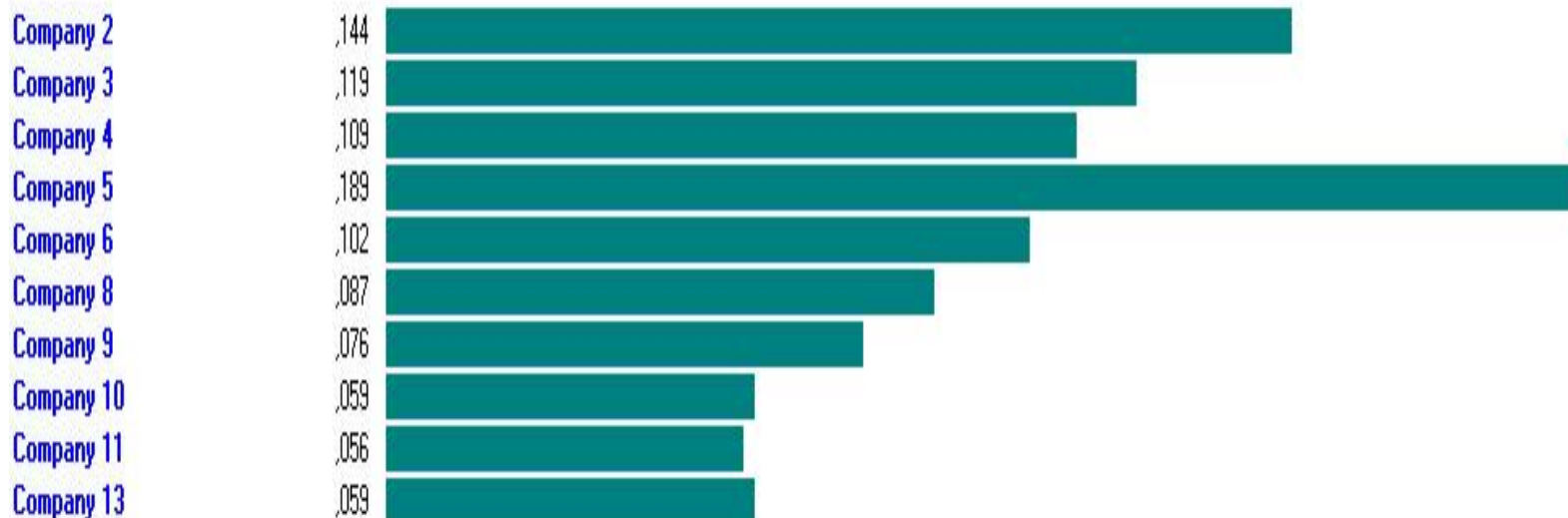
- After the hierarchy was constructed, pairwise comparisons for the first level were made with the help of experts in wood technology using a **9-point scale**.
- These evaluations resulted in matrix and by the eigenvector method we got the priorities of the criteria: income per employee **0.646**, percentage of export in total income **0.204**, percentage of presence of university educated employees **0.104**, company age **0.045**.
- So, the most important is first criterion. The priorities of the criteria are the same in both cases, DD20 and DN36.
- Then we have data from the tables 2 and 3 and the final result can be seen in Figure 2 and Figure 3.

- **Figure 2.** Priorities of the companies in wood sector DD20

**Synthesis with respect to:**

Goal: Success of the company in the wood sector

Overall Inconsistency = ,10





- **Figure 3.** Priorities of the companies in wood sector DN36

**Synthesis with respect to:**

Goal: Success of the company in the wood sector

Overall Inconsistency = ,10



- According to the results reached by the AHP assessment in the DD20 sector, **company 5** has taken the first place for success. This company belongs to the group of small businesses, it employs 20 people (out of which 15% university educated), the company exports 95% of its products and the company is 100% owned by Croatian entities.
- Then follows **company 2**, also Croatian ownership, which belongs to the group of craft businesses, employs 8 people, out of which 12,5% are university educated. It makes profit of 234.152,23 HRK per capita (per employee), and exports 98% of its products.
- The results are as expected i.e. small companies achieve better results.

- In the sector DN 36, the most successful company is **company 27**, which belongs to the group of large businesses - joint stock company.
- The second most successful company is **company 43**, which belongs to the group of small businesses, employs 6 people, out of which 33,3% are university educated and its export rate is 15%.
- Next is **company 16**, also belonging to the group of big businesses, with 1257 employees (out of which 50 people or 4% are university educated). This company exports 72% of its products.
- In this case, the results of the assessment are not in concordance with prior researches because big companies also proved to be successful.

## CONCLUSION

- To determine which company is the best has always been very interesting, but has also been a very complex problem. The ranking lists are most frequently based on only one quantitative indicator. The aim of this work was to provide a possibility of a different approach to this problem, that is, to consider the problem of company ranking as the problem of multicriterial decision making.



# Thank You for Your attention!