

# Metode in tehnike reševanja problemov

## **BRAIN STORMING**

Skupina naj ne bo sestavljena le iz ozkih poznavalcev problema, pač pa tudi iz ljudi, ki se s tem problemom še niso ukvarjali.

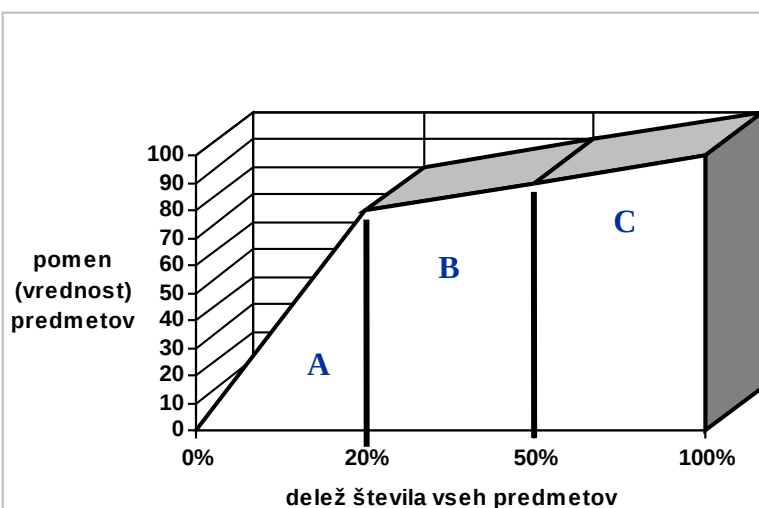
Vse ideje so last skupine in ne posameznikov, ki so jih prispevali.

Ideje se med potekom le zapisujejo in ne komentirajo

## ABC TEHNIKA

20 - 50 % vseh delovnih nalogov v delavnici predstavlja 80 - 90% delovne obremenitve

80% prometa v podjetjih uresničuje s prodajo le okoli 20% od skupnega števila vseh izdelkov v proizvodnem programu



skupina	delež števila predmetov (dejavnikov) določene skupine (v % od števila vseh)	vrednost (pomen) predmetov (dejavnikov) določene skupine (v % od skupne vrednosti)
A	20 %	80 %
B	30 %	10 %
C	50 %	10 %

## FUNKCIJSKA ANALIZA

PREDMET	GLAVNA FUNKC.	POMOŽNE FUNKC.
kavč	omogoča sedenje in spanje, boljše izrabo prostora	daje prestiž, estetsko ugodje, udobnost, omogoča shranjevanje posteljnine
jedilniški stol	omogoča udobno sedenje, ne ovira pri jedi	daje prestiž, estetsko ugodje, udobnost, s svojo obliko omogoča lažje čiščenje
zunanja vrata	omogočajo prihajanje v hišo in iz hiše,	tesnijo, absorbirajo zvok, polepšajo stavbo, varujejo pred tatovi
notranja vrata	omogočajo prehajanje iz sobe v sobo, absorbirajo zvok	polepšajo interier, omogočajo intimnost
okno	omogoča naravno osvetlitev, omogoča pogled ven brez ohlajevanja prostora	omogoča prezračevanje, hlajenje prostora, polepša videz stavbe in prostora

## FUNKCIJSKA ANALIZA

UPOR. FUNK.	nosi TV, video, stolp	izvlečna polica	estetska vrednost	shranjev. knjig	shranjev. AV kaset	omogoč a premika- nje	zakriva kable	odlaganj e ure in okrasov	odlaganj e rož (vaze)	odporno st površ. na vlago	odporno st površ. na meh.poš
V DNEVNI SOBI	G	P	G	P	G	G	P	P	P	P	G
V SPALNICI	P	P	P	G	P	P	P	G	P	P	P
V JEDILNICI	N	N	G	P	N	G	N	G	G	G	P
DRUŽINA Z MAJH. OTROKI	N	N	P	P	P	G	G	P	N	G	G
GOSPO- DINJA	G	G	P	P	G	G	G	G	G	G	P
ZAPOSŁ. INTELEK- TUALCI	G	G	G	N	G	G	G	P	P	N	N
STAREJŠI LJUDJE	G	G	P	P	G	G	G	G	P	N	N

## **ANALIZA VREDNOSTI**

Sistematičnost

Timsko delo

Ustvarjalni sestanki brez kritizerstva

Funkcijsko naravnani pristop

## ANALIZA VREDNOSTI

ANALIZA

VREDNOST

proizvajalec

Vrednost = Funkcija /  
Strošek

uporabnik

Vrednost = Uporabnost  
/ Cena

## ANALIZA VREDNOSTI

VREDNOSTI

UPORABNA

PRESTIŽNA

MENJALNA

NADOMESTNA

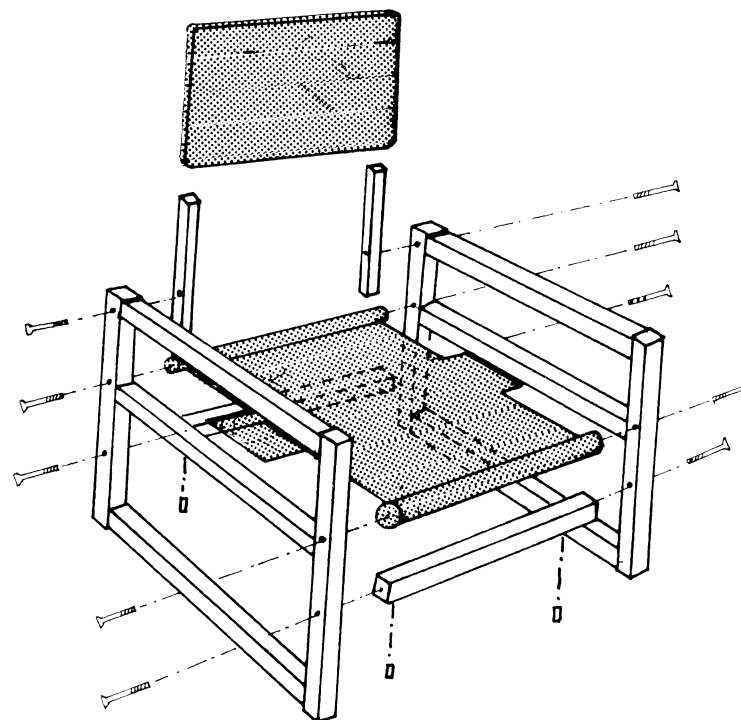
IZGUBITVENA

STROŠKOVNA



**ANALIZA VREDNOSTI**

primer: stol SAFARI



## ANALIZA VREDNOSTI

primer: stol SAFARI

JOB DEFINITION AND BASIC INFORMATION (form No. 1) 82-03-31

Product <u>SAFARI</u>	Project No. <u>82-07</u>
Part _____	Drawings No. <u>78-52</u>
	Price/pcs <u>about 140 FIM</u>
	Pcs/year <u>about 2'000</u>
	Cost/year <u>90.5 x 2'000 = 181'000</u>
Goal savings <u>10</u> per cent =	<u>18 100 FIM/year</u>
Estimated costs <u>25h x 50 + 1000</u>	<u>2 250 FIM</u>
Savings/first year	<u>15 850 FIM</u>
Time reserved <u>TWO MONTHS,</u>	<u>25 man-hours</u>

Project team Co-ordinator: P.J.  
Members K.E, HL, PM, JP

Time and place of meeting TUESDAYS 9 a.m. to 11 a.m

Definition of the depth of the analysis and parts and properties that have to be retained

- A SAME KIND OF PRODUCT FOR THE SAME MARKET, EVEN ABOUT THE SAME PRICE RANGE ? OR A LITTLE LESS EXPENCIVE
- CHANGES IN DESIGN ACCEPTABLE
- RAW MATERIALS : WOOD & CANVAS

Appendices DRAWING  
PRODUCT CALCULATIONS

# Metode in tehnike reševanja problemov

AN

PART/OPERATION MATRIX (form No. 15)      PRODUCT: Safari chair      82-04-01      BY \_\_\_\_\_      PAGE 1, 2

PART	Picture Description	Front leg				Back leg				Side parts				Cross bars				Back wood PCS.				TOTAL	
		2	545	45	45	2	545	45	45	6	506	45	45	2	506	45	45	2	340	30	20		
OPERATION		pcs/foot	min/pc	min/foot	pcs/foot	min/pc	min/foot	pcs/foot	min/pc	min/foot	pcs/foot	min/pc	min/foot	pcs/foot	min/pc	min/foot	pcs/foot	min/pc	min/foot	min/foot			
Cross cutting		2	1	.10	.20	2	1	.10	.20	6	1	.10	.60	2	1	.10	.20	2	1	.05	.10	1.30	
Edging				.11	.22			.11	.22			.11	.66			.11	.22			.05	.11	1.43	
Planing				.09	.18			.09	.18			.09	.54			.09	.18			.04	.09	1.17	
Trimming		↓	↓	.09	.18	↓	↓	.09	.18	↓	↓	.09	.54			.09	.18	↓	↓	.04	.09	1.17	
Drill 1st end												.29	1.74	↓	↓	.29	.58					2.32	
Drill 2nd end																							
Drill side 1		2	1	.19	.38	2	1	.19	.38									2	1	.19	.38	1.14	
Drill side 2				.19	.38			.19	.38					2	1	.19	.38					1.14	
End moulding				.21	.42			.21	.42	6	1	.21	1.26			.21	.42					2.52	
Puttying		↓	↓	.42	.84	↓	↓	.42	.84		↓	↓	.42	2.52	↓	↓	.42	.84				5.04	
Sanding wide belt		2		.05	.20	2		.05	.20		2		.05	.60	2		.05	.20				1.20	
Sanding narrow belt		1		.35	.70	1		.35	.70		1		.35	2.10			.35	.70	2	1	.15	.30	4.50
1st spray				.20	.40			.20	.40			.20	1.20			.20	.40					2.40	
Sanding between springs				.30	.60			.30	.60			.30	1.80			.30	.60					3.60	
2nd spray		↓	↓	.20	.40	↓	↓	.20	.40	↓	↓	.20	1.20			.20	.40					2.40	
Dowels to ends												.15	.90	↓	↓	.15	.30					1.20	
Sides assembly																							
Packing																							
Packing of fittings																							
Cutting & sewing																							
TOTAL				5.10		5.10				15.66			5.60					1.67				32.53	



## ANALIZA VREDNOSTI

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Functions	
1.1.	Construction
1.1.1.	Make Construction
1.1.2.	Give Strength
1.1.3.	Joints
1.2.	Other use Values
2.1.	Design
2.2.	Comfort
2.3.	Other Prestige
3.1.	Cost Value
3.2.	KD Construction

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FUNCTION ANALYSIS (form No. 3)

Product SAFARI Project No. 82-07  
Date 82-04-06

Part	Main function	Value Code	Other functions	Value <sup>a</sup> / Code
The CHAIR	To allow sitting - for one person - comfortably? In second living room or at country side house	1.1 1.2	Functions as part of pine furniture set	2.1
SIDE - upper part	As armrest	1.1.1	Construction Strength	1.1.1 1.1.2.
- middle part	Construction	1.1.1.	Strength Allows attaching of canvas	1.1.2. 1.1.3.
- lower part	Design	2.1.	Construction?	
LEGS - front	Construction	1.1.1		
- back	Constr.	1.1.1	Design ? All. attaching of the Back	2.1 1.1.2.
FRONT CROSS BAR	Strength	1.1.2		
BACK CROSS BAR	- " -	1.1.2.		
SEA - Canvas	allows sitting	1.1.1	Design	2.1
- side part of canvas	gives strength	1.1.2	Design	(2.1)

# Metode in tehnike reševanja problemov

## ANALIZA VREDNOSTI

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FUNCTION COST ANALYSIS (form No. 4)			Page 1/1			
Product SAFARI		Project No. 82-07				
		Date 82-04-07				
		COST				
Part	Function	Value	R-M	Labour	TOTAL	Per cent
SIDE						
- upper	construction	1.1.1	3.05	2.90	5.95	
	strength	1.1.2		.92	.92	
- middle	construction	1.1.1	3.05		3.05	
	strength	1.1.2		2.90	2.90	
- lower	design	2.1.	3.05	2.90	5.95	
LEGS						
- front	constr.	1.1.1	3.05	2.83	5.88	
- back	constr.	1.1.1	3.05	2.83	5.88	
FRONT CB	Strength	1.1.2	3.05	3.11	6.16	
BACK CB	Strength	1.1.2				
SEAT						
- canvas	- constr.	1.1.1	4.00	1.89	5.89	
	- strength	1.1.2	.83	1.89	2.72	
	- design	2.1	5.83	1.89	7.72	
- screws	- joints	1.1.3	1.00		1.00	
- thread	- joints	1.1.3				
- wood	- constr.	1.1.1	1.02		1.02	
round	- strength	1.1.2	1.02	1.31	2.33	
supports	- joint.	1.1.3	1.02	1.31	2.33	
BACK						
- canvas	- constr.	1.1.1.	1.00		1.00	
	- comfort	2.2	5.83	1.89	7.72	
- fittings	- comfort (fit)	2.2	1.00		1.00	
- wood	- }					
- thread	- } joints	1.1.3	1.53	.60	2.13	
KD Fittings	KD	3.2	3.00	.28	3.28	
Packaging	Pack.	4.	10.00	1.19	11.19	
Finishing						
Fitting	} Design	2.1	4.50		4.50	
Total			59.88	30.64	90.52	

## ANALIZA VREDNOSTI

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Product SAFARI

Project No. 82-07

Date 82-04-13

Value type/Function	Cost	Per cent
1.1. CONSTRUCTION	(49.16)	(54.3)
1.1.1. Construction	28.67	31.7
1.1.2. Strength	15.03	16.6
1.1.3. Joints	5.46	6.0
2.1. Design	18.17	20.1
2.2. Comfort	8.72	9.6
3.4. KD	3.28	3.6
4. Package	11.19	12.4
TOTAL	90.52	100

Comments: *The cost of package is high but it also serves as sales promoter.*

*The chair is not very comfortable. Also the cost of comfort is low.*

## ANALIZA VREDNOSTI

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CREATIVE PHASE Page 2 / 6

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Product SAFARI Project No. \_\_\_\_\_

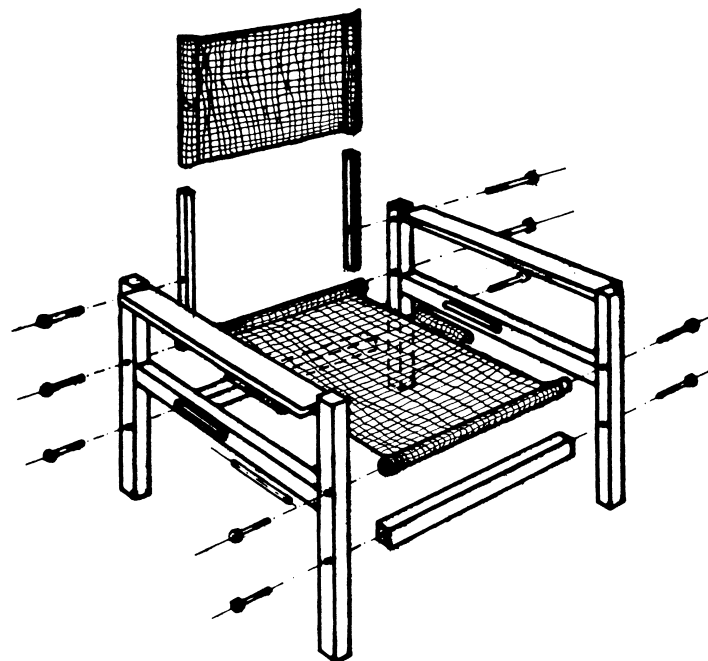
Date \_\_\_\_\_

Part	Ideas		Cost effect
SIDES	1 ELIMINATE LOWEST B.	A	
	2 ELIMINATE MIDDLE B	R	
	3 ELIMINATE UPPER BAR	R	
	<del>X</del> AND USE CANVAS INSTEAD		
	5 MAKE UPPER BAR WIDER	A	
	<del>X</del> TO FUNCTION AS REAL ARM -		
	<del>X</del> REST.		
	8 SHORTEN DIMENSIONS OF	A	
	<del>X</del> BARS		
	10 USE THINNER MATERIAL IN	R	
	<del>X</del> THE MIDDLE AND IN THE		
	<del>X</del> LOWER BAR		
	13		
	14		
	15		



**ANALIZA VREDNOSTI**

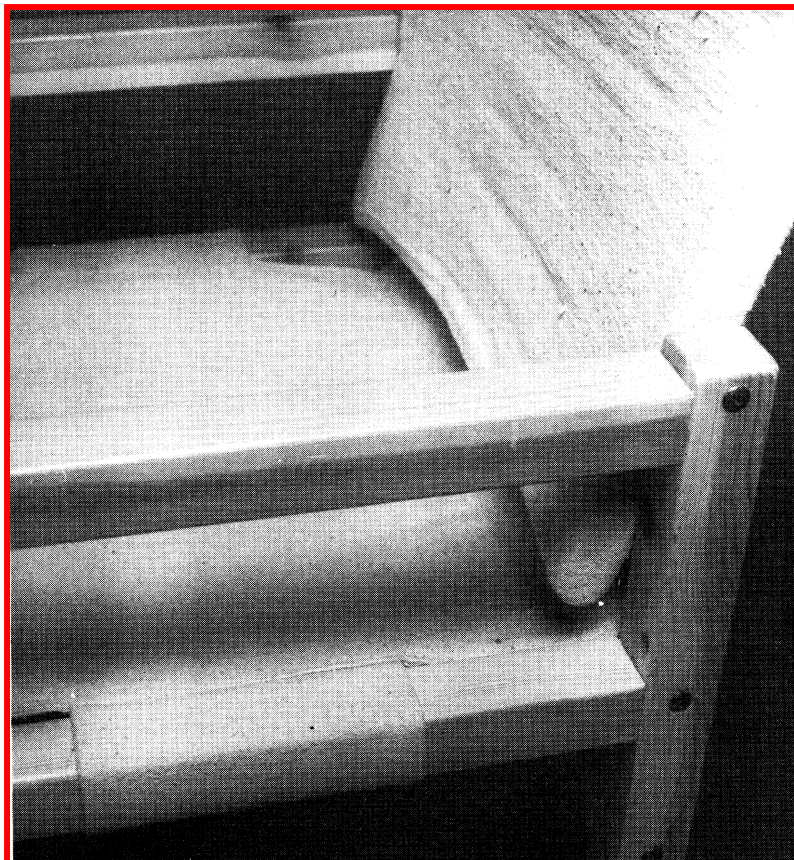
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**ANALIZA VREDNOSTI**

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## ANALIZA VREDNOSTI

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	<i>PREJ (de)</i>	<i>PO (de)</i>	<i>Razlika(%)</i>
<i>material</i>	<b>59.88</b>	<b>50.52</b>	<b>15.6</b>
<i>Delo (min)</i>	<b>(61.28)</b>	<b>(50.97)</b>	<b>16.8</b>
<i>delo</i>	<b>30.64</b>	<b>25.48</b>	<b>16.8</b>
<i>Skupaj direktni stroški</i>	<b>90.52</b>	<b>76.00</b>	<b>16.0</b>
<i>Dodatek indirektnega dela (min)</i>	<b>49.02</b>	<b>40.78</b>	<b>16.8</b>
<i>Splošni stroški (0,8 x dir. delo)</i>	<b>139.54</b>	<b>116.78</b>	<b>16.3</b>
<i>Cena</i>	<b>?</b>	<b>?</b>	<b>?</b>



## ANALIZA VREDNOSTI

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<i>Področje</i>	<i>Razlogi za prihranek-povečano vrednost</i>
<i>MATERIAL</i>	<i>Manjše dimenzije lesa, odstranjen spodnji stranski prečnik, manj platna za naslon</i>
<i>OKOVJE IN DODATKI</i>	<i>Manj vijakov, cenejši način pritrjevanja blaga, uporaba izvijača, cenejši paket za samo-montažo</i>
<i>MONTAŽA IN PAKIRANJE</i>	<i>Manjša embalaža, manjši prostor za skladiščenje, manjši strošek dela</i>
<i>USTREZNOST ZA KUPCA</i>	<i>Lažje sestavljanje, večje udobje, boljše sedenje, širši naslon za roke</i>
<i>DIZAJN</i>	<i>Boljši dizajn</i>

## ANALIZA VREDNOSTI

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PROJECT SUMMARY (form No. 9)		82-04-20	
Product	<u>NEW SAFARI</u>	Project No.	<u>82-07</u>
Part		Drawings No.	<u>82-09</u>
		New price/piece	<u>120</u>
		Pieces/year	<u>2 000 or more</u>
		Cost/year	
Goal savings	percent =	<u>18 100</u>	FIM/year
Previous costs	<u>2000 x 90.50 =</u>	<u>181 000</u>	FIM/year
New costs	<u>2000 x 76.00 =</u>	<u>152 000</u>	FIM/year
Savings	<u>2000 x 14.50 =</u>	<u>29 000</u>	FIM/year
Percentage-savings	= <u>16</u>		
Cost of analysis	<u>22 manhours x 50 Fim</u>	<u>1 100</u>	FIM
Other costs	<u>drawings + proto</u>	<u>2 000</u>	FIM
First-year savings		<u>25 900</u>	FIM/year
Comments	<u>Because of lower price and improved functions the value is now higher and so higher sales figures are expected</u>		
Ideas to be further developed	<u>THE CHAIR WITH COMBINED CANVAS SEAT AND BACK IS TO BE DEVELOPED</u>		

[1] le = denarne enote