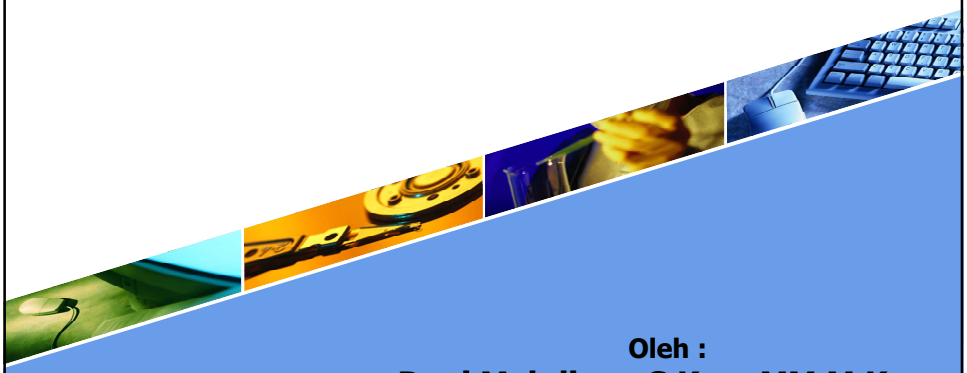
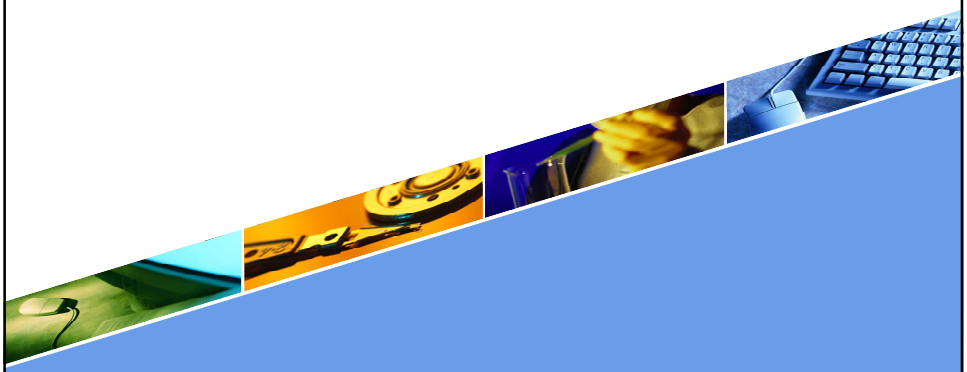
FAKULTAS EKONOMI UNIVERSITAS BUDI LUHUR

SISTEM INFORMASI MANAJEMEN



Oleh :
Deni Mahdiana,S.Kom,MM,M.Kom

MENINGKATKAN PROSES PENGAMBILAN KEPUTUSAN



Manajer dan Dukungan komputerisasi

- IT **bagian vital** dari kegiatan bisnis
- Komputer mempunyai **dampak yang luas** dalam organisasi dan masyarakat
- Manager menggunakan "**easy-to-use software**"
- Aplikasi komputer dari **proses transaksi dan monitor kegiatan** ke **analisa masalah dan solusi juga pembuatan keputusan**

3 PERAN UTAMA MANAJER

- **Peran Interpersonal**
  - Figur yang ditiru
  - Pemimpin
  - Penghubung
- **Peran Informasi**
  - Pengawas
  - Penyebar Informasi
  - Juru bicara
- **Peran Pengambil Keputusan**
  - Wirausaha
  - Orang yang menangani masalah
  - Penentu alokasi sumber daya
  - Negosiator

Faktor-faktor yang mempengaruhi pengambilan keputusan:

Faktor	Trend	Hasil
Teknologi Informasi Teknologi Komputer.	Meningkat. Meningkat.	Lebih banyak alternatif pilihan.
Kompleksitas struktural. Kompetisi.	Meningkat. Meningkat.	Biaya yang lebih besar dari kesalahan yang terjadi.
Pasar Internasional. Stabilitas politik. Konsumerisme. Intervensi Pemerintah.	Meningkat. Menurun. Meningkat. Meningkat.	Ketidakpastian berkaitan dengan masa depan.

Kerangka Kerja Decision Support (DS).

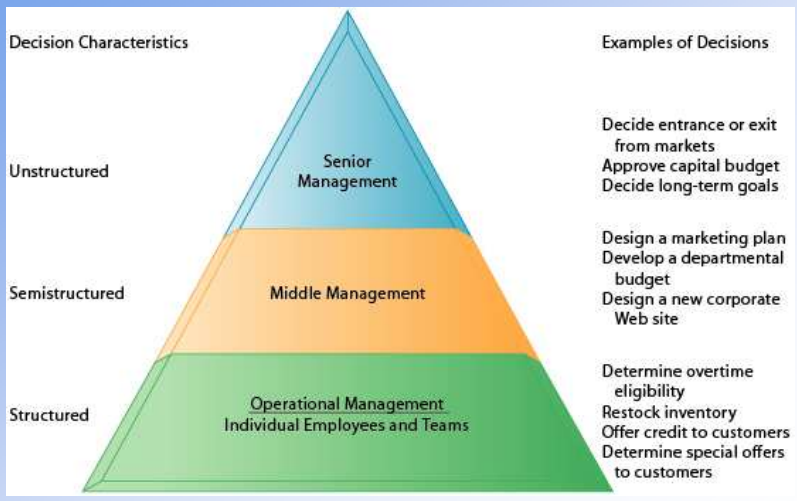
Figure 1.2 Decision Support Frameworks

Type of Decision	Type of Control: Operational Control	Managerial Control	Strategic Planning	Technology Support Needed
Structured	1 Accounts receivable, account payable, order entry	2 Budget analysis, short-term forecasting, personnel reports, make-or-buy	3 Financial management (investment), warehouse location, distribution systems	Management information system, management science models, transaction processing
Semistructured	4 Production scheduling, inventory control	5 Credit evaluation, budget preparation, plant layout, project scheduling, reward system design, inventory categorization	6 Building new plant, mergers and acquisitions, new product planning, compensation planning, quality assurance planning, HR policies, inventory planning	DSS, KMS, GSS, CRM, SCM
Unstructured	7 Selecting a cover for a magazine, buying software, approving loans help desk	8 Negotiating, recruiting an executive, buying hardware, lobbying	9 R & D planning, new technology development, social responsibility planning	GSS, KMS ES, neural networks
Technology Support Needed	Management information system, managment science	Management science, DSS, ES, EIS, SCM CRM, GSS, SCM	GSS, CRM EIS, ES, neural networks, KMS	

JENIS KEPUTUSAN

- **Terstruktur**, mengacu pada permasalahan rutin dan berulang dan melibatkan prosedur yang jelas dalam menanganinya
- **Semi terstruktur**, hanya sebagian masalahnya mempunyai jawaban yang jelas tersedia dengan prosedur yang disetujui bersama.
- **Tak terstruktur**, adalah permasalahan kompleks dimana tak ada solusi yang langsung tersedia, sehingga pengambil keputusan harus memberikan penilaian, evaluasi dan pengertian untuk memecahkan masalahnya.

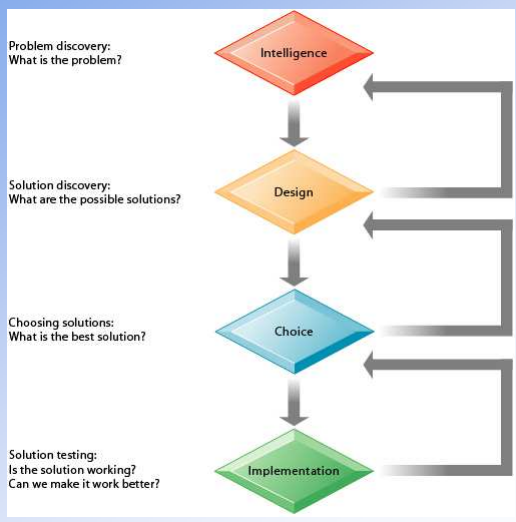
KEBUTUHAN INFORMASI DALAM TINGKATAN MANAJEMEN DI PERUSAHAAN



PROSES PENGAMBILAN KEPUTUSAN

- **Intelligence** – terdiri atas menemukan, mengidentifikasi dan memahami masalah yang terjadi pada organisasi- mengapa masalah itu terjadi, dimana dan akibat apa yang dialami perusahaan.
- **Design** – melibatkan identifikasi dan pencarian berbagai solusi masalah
- **Choice** – memilih alternatif solusi yang ada.
- **Implementation –** tentang membuat alternatif yang dipilih dapat bekerja dan tetap mengawasi seberapa baik kerja solusi tersebut.

TAHAPAN PENGAMBILAN KEPUTUSAN



Ilustrasi Problem decision

- Memilih pacar (alt 2, 3, 5, … 10) → 1
- Menentukan lokasi (alt 100, … 1000) → 2
- Memilih hape (alt 10, …) → 3
- Menentukan penerima beasiswa (alt 150..) → 4,5, …, 10
- Memilih/menentukan pemenang tender proyek (alt 5.. 10) → 1

  = ada banyak alternatif → harus dipilih?

  = Bagaimana cara memilihnya?

+ ada kriteria mmh pacar: cantik, pintar, suku, agama, gaji..
+ ada kriteria mmh hape: fitur, harga, merk, ukran, desain…
+ ada kriteria mntk beasiswa: ipk, finance ortu, jmlh sem,

Problem memilih pacar

= ada banyak alternatif → harus dipilih?
= gimana cara memilihnya?

+ ada kriteria mmh pacar: cantik, pintar, suku, agama..
+ ada kriteria mmh hape: fitur, harga, merk, ukran, desain…
+ ada kriteria mntk beasiswa: ipk, finance ortu, jmlh sem,

Measurement dari kriteria (angka, nominal, categori, rasio, ranking, skala, rating, … gramatikal/fuzzy)

- Cantik:
- Langsing : rasio brt/tinggi
- Pintar:
- Suku: jawa, sunda, betawi, batak,
- Agama: islam, kriten, hindu, ..
- Fitur: 3g, blutooh, camera, wifi, gps
- Harga: murah, dibawah 1 jt, mahal, sedang
- Ipk: diatas 3, cumlaude
- Finance ortu: kaya, miskin, sdg, .. Klao angka 1jt, 1.25jt

Variabel kualitatif

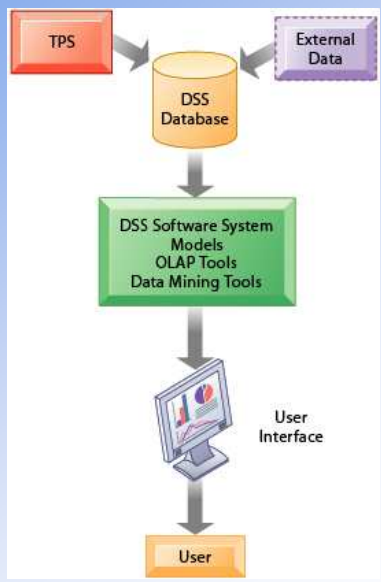
SISTEM UNTUK MENDUKUNG KEPUTUSAN

- **Sistem Informasi Manajemen (SIM),** memberikan Laporan rutin dan rangkuman dari data transaksi kepada manajer menengah dan manajer oprasional untuk memberikan jawaban atas masalah keputusan terstruktur dan semiterstruktur
- **Sistem Pendukung Keputusan *(Decision support system),*** menyediakan model analitis atau perangkat analisis data berukuran besar kepada manajer menengah menghadapi situasi keputusan semi terstruktur dan tidak terstruktur.
- **Sistem Pendukung Eksekutif *(Executif Support System),*** adalah sistem yang memberikan informasi dari luar (berita, analisis saham dan tren industri) dan rangkuman tingkat tinggi tentang kinerja perusahaan kepada manajer senior, yang harus mengambil keputusan yang kebanyakan bersifat tidak terstruktur yg timbul pada tingkat strtategis.
- **Sistem Pendukung keputusan Kelompok *(Group Decision Support System)*** adalah sistem khusus yang memberikan sekumpulan lingkungan elektronik dimana manajer dan tim dapat mengambil keputusan secara kolektif dan merancangan solusi untuk masalah semi terstruktur dan tidak terstruktur.

DECISION SUPPORT SYSTEMS (DSS).

- Sistem informasi berbasis komputer yang menggabungkan model dan data guna menyelesaikan masalah semiterstruktur dan beberapa masalah taktersetruktur dengan keterlibatan pengguna secara luas.
- Sistem berbasis komputer yang menggabungkan intelektual individu dan kemampuan komputer untuk meningkatkan kualitas keputusan.
- Komponen DSS adalah basis data, user interface dan software DSS
- Sebuah kategori khusus DSS adalah Sistem Informasi Geografis (GIS) menggunakan teknologi visualisasi data untuk menganalisis dan menampilkan data untuk perencanaan dan pengambilan keputusan dengan peta digital.

GAMBARAN UMUM SISTEM PENDUKUNG PENGAMBILAN KEPUTUSAN



DAFTAR CONTOH TRANSAKSI ON-LINE MANAGEMENT TRAINING INC.

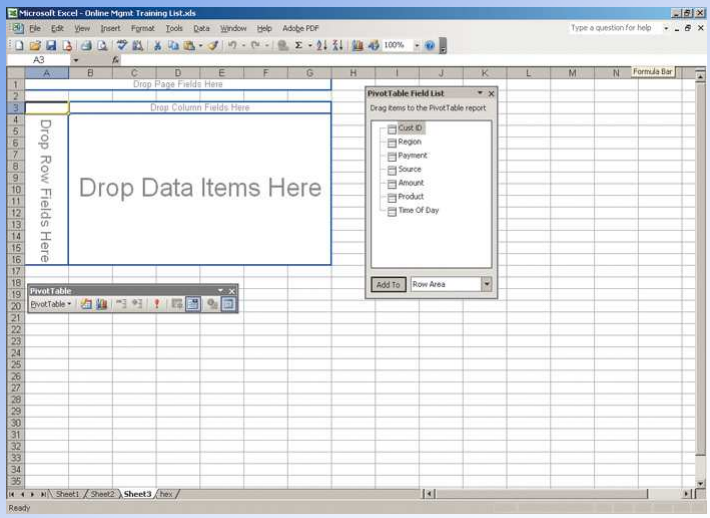
Microsoft Excel - Online Mgmt Training List.xls

Online Management Training Inc.

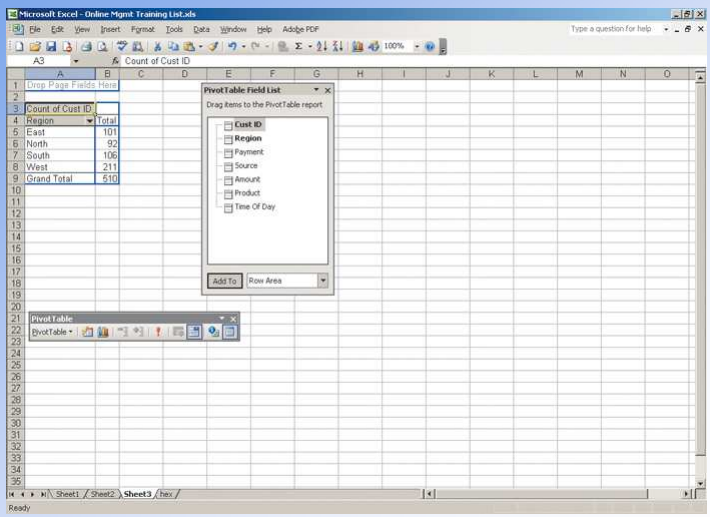
Online Management Trainingnc.
Transaction Log: October 28

Cust ID	Region	Payment	Source	Amount	Product	Time Of Day
10001	East	Paypal	Web	$20.19	Online	22:19
10002	West	Credit	Web	$17.85	Online	13:27
10003	North	Credit	Web	$23.98	Online	14:27
10004	West	Paypal	Email	$23.51	Book	15:38
10005	South	Credit	Web	$15.33	Book	15:21
10006	West	Paypal	Email	$17.30	Online	13:11
10007	East	Credit	Web	$177.72	Book	21:59
10008	West	Credit	Web	$21.76	Book	4:04
10009	West	Paypal	Web	$15.92	Online	19:35
10010	South	Paypal	Web	$23.39	Online	13:26
10011	South	Paypal	Email	$24.45	Book	14:17
10012	East	Credit	Web	$20.39	Book	1:01
10013	North	Paypal	Web	$19.54	Online	10:04
10014	East	Credit	Web	$151.67	Book	9:09
10015	West	Credit	Web	$21.01	Online	5:05

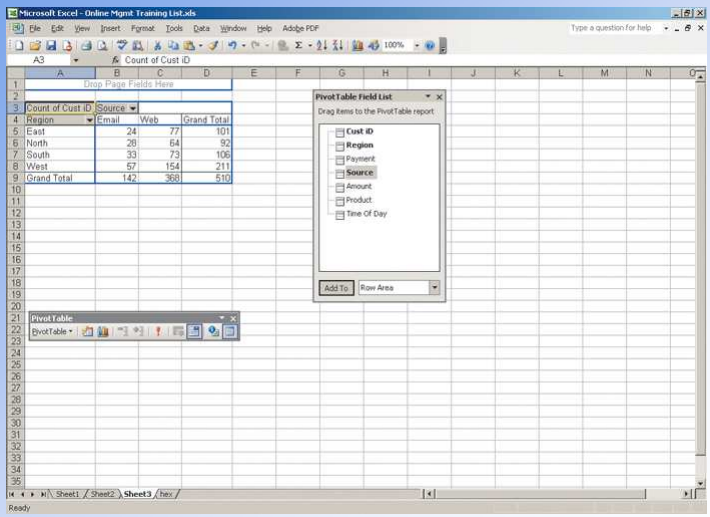
WIZARD PIVOTTABLE EXCEL



TABEL PIVOT YANG MENENTUKAN DISTRIBUSI WILAYAH PELANGGAN DENGAN CEPAT



TABEL PIVOT YANG MENELAAH DUA DIMENSI

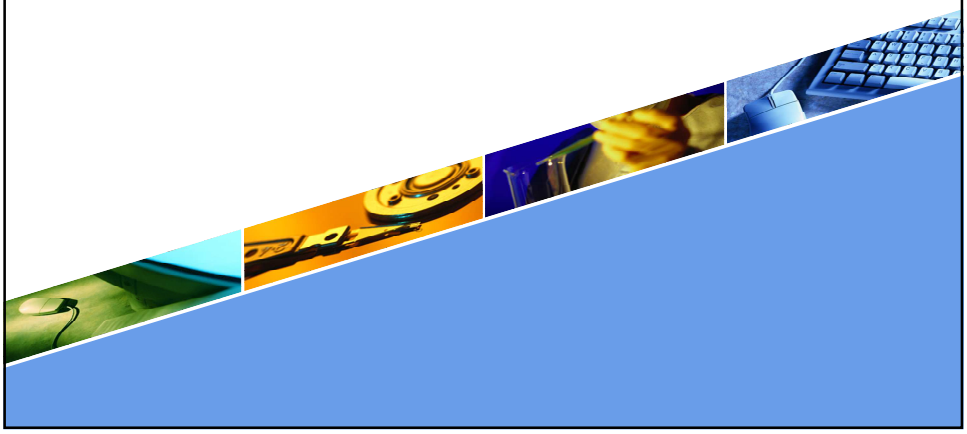


NILAI BISNIS DSS

- DSS telah menjadi sangat berguna dan penting, dengan menyediakan informasi yang terinci dan baik untuk mengambil keputusan yang memungkinkan perusahaan mengkoordinasikan proses bisnis baik internal maupun ekternal dengan tepat.
- Contoh :
  - P&G : DSS untuk Aplikasi restrukturisasi rantai pasokan
  - Renault : DSS untuk perencanaan rantai pasokan
  - Compass bank : DSS untuk CRM
  - Burlington Coat Factory : DSS untuk Penentuan Harga
  - Syngenta AG : DSS untuk analisis profitabilitas

Analytical Hierarchy Process

Diambil dari AHP Tutorial dari Expert Choice dengan izin
url: http://www.expertchoice.com

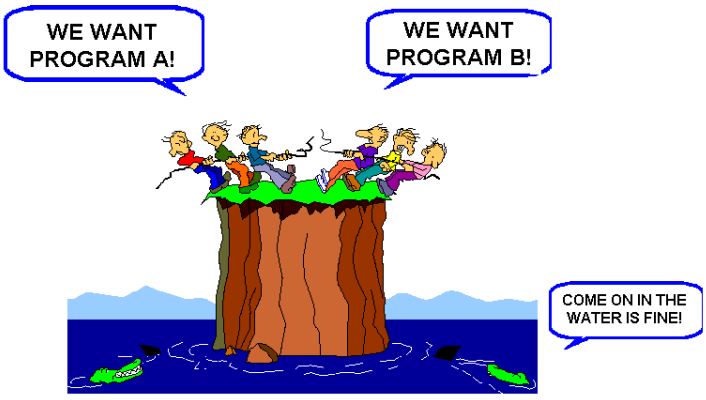


Analytical Hierarchy Process (AHP)

- Proses Hirarki Analitik (*Analytical Hierarchy Process-AHP*) dikembangkan oleh Dr. Thomas L. Saaty dari Wharton School of Bussines pada tahun 1970-an untuk mengorganisasikan informasi dan judgment dalam memilih alternatif yang paling disukai.
- Persoalan yang kompleks dapat disederhanakan dan dipercepat proses pengambilan keputusannya.
- Prinsip kerja AHP adalah penyederhanaan suatu persoalan kompleks yang tidak terstruktur, strategik dan dan dinamik menjadi bagian-bagiannya, serta menata dalam suatu hirarki.

AHP TUTORIAL--[2 of 42]

DO YOUR DECISION CONFERENCES TURN OUT LIKE THIS ?



SEA OF INDECISION

OR DOES THIS HAPPEN?

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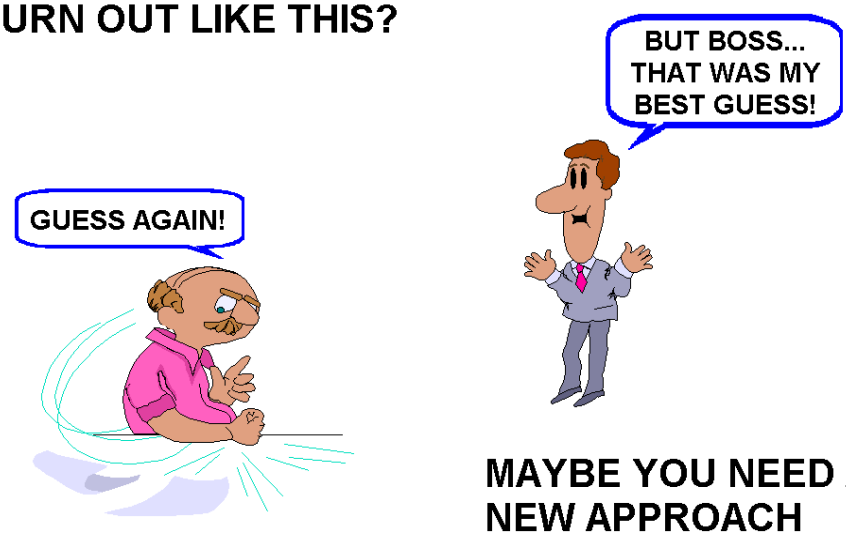
AHP TUTORIAL--[3 of 42]

DO YOUR RECOMMENDATIONS TURN OUT LIKE THIS?



MAYBE YOU NEED A NEW APPROACH

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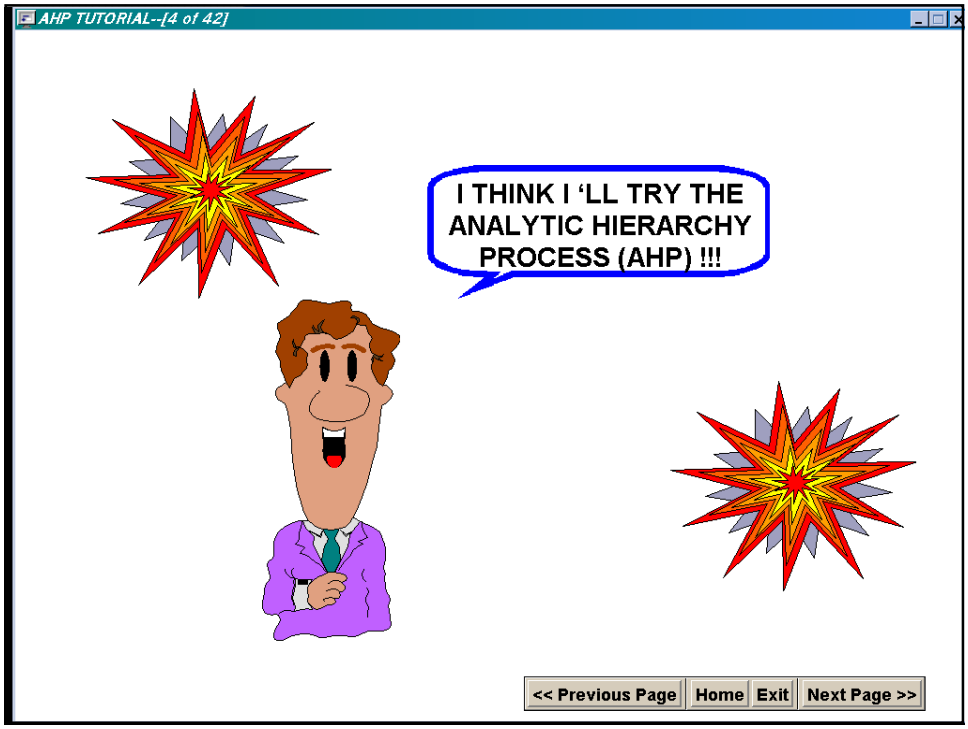
AHP TUTORIAL--[4 of 42]
I THINK I 'LL TRY THE ANALYTIC HIERARCHY PROCESS (AHP) !!!
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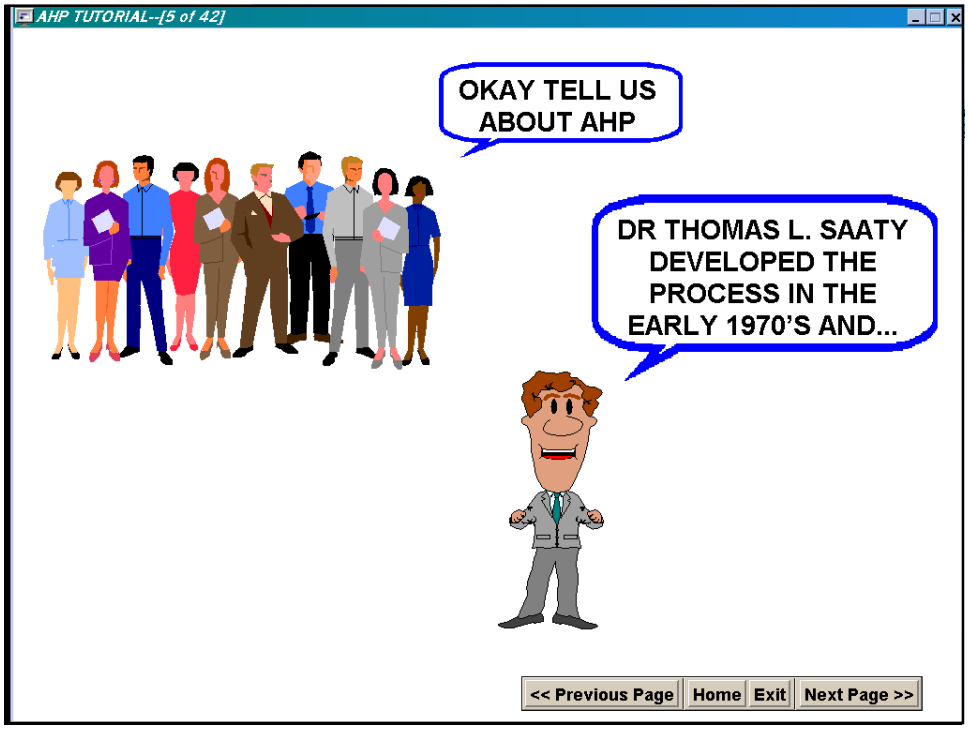
AHP TUTORIAL--[5 of 42]
OKAY TELL US ABOUT AHP
DR THOMAS L. SAATY DEVELOPED THE PROCESS IN THE EARLY 1970'S AND...
<< Previous Page
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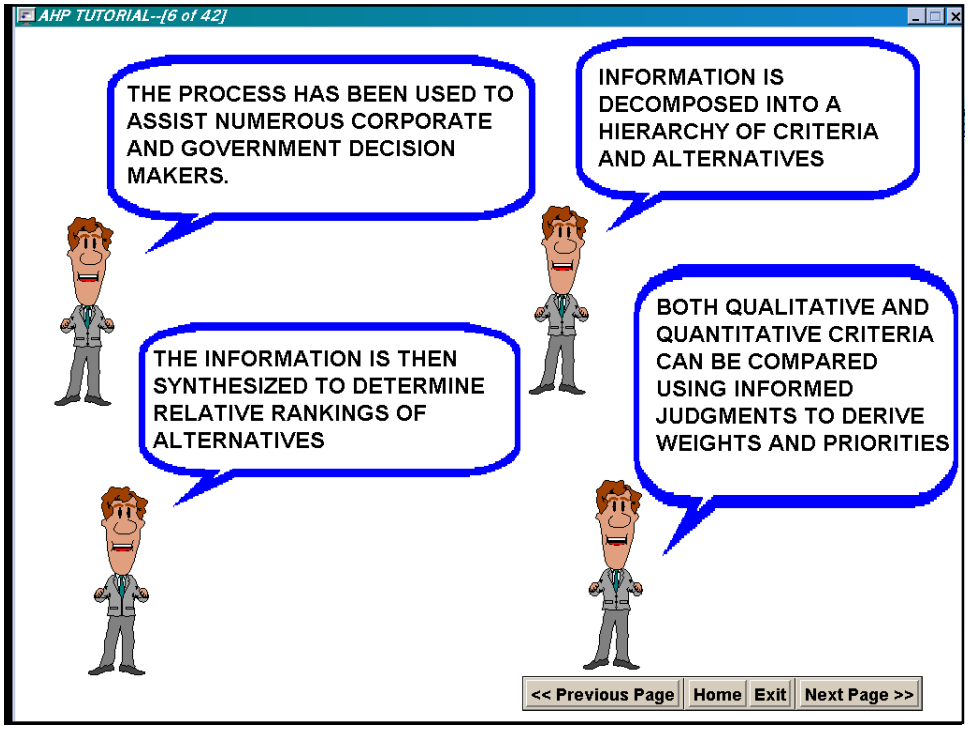
AHP TUTORIAL--[6 of 42]
THE PROCESS HAS BEEN USED TO ASSIST NUMEROUS CORPORATE AND GOVERNMENT DECISION MAKERS.
INFORMATION IS DECOMPOSED INTO A HIERARCHY OF CRITERIA AND ALTERNATIVES
THE INFORMATION IS THEN SYNTHESIZED TO DETERMINE RELATIVE RANKINGS OF ALTERNATIVES
BOTH QUALITATIVE AND QUANTITATIVE CRITERIA CAN BE COMPARED USING INFORMED JUDGMENTS TO DERIVE WEIGHTS AND PRIORITIES
<< Previous Page
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AHP TUTORIAL--[7 of 42]
THIS AHP STUFF SOUNDS INTERESTING. HOW ABOUT AN EXAMPLE OF HOW IT WORKS.
OKAY, HERE'S A DECISION WE FACE IN OUR PERSONAL LIVES
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AHP TUTORIAL--[8 of 42]

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AHP TUTORIAL--[9 of 42]

AN IMPORTANT PART OF THE PROCESS IS TO ACCOMPLISH THESE THREE STEPS

· STATE THE OBJECTIVE:
- SELECT A NEW CAR
· DEFINE THE CRITERIA:
- STYLE, RELIABILITY, FUEL ECONOMY
· PICK THE ALTERNATIVES:
- CIVIC COUPE, SATURN COUPE, FORD ESCORT, MAZDA MIATA

WHAT ABOUT COST?

SKEPTIC-GATOR

(BE QUIET, WE'LL TALK ABOUT THAT LATER)

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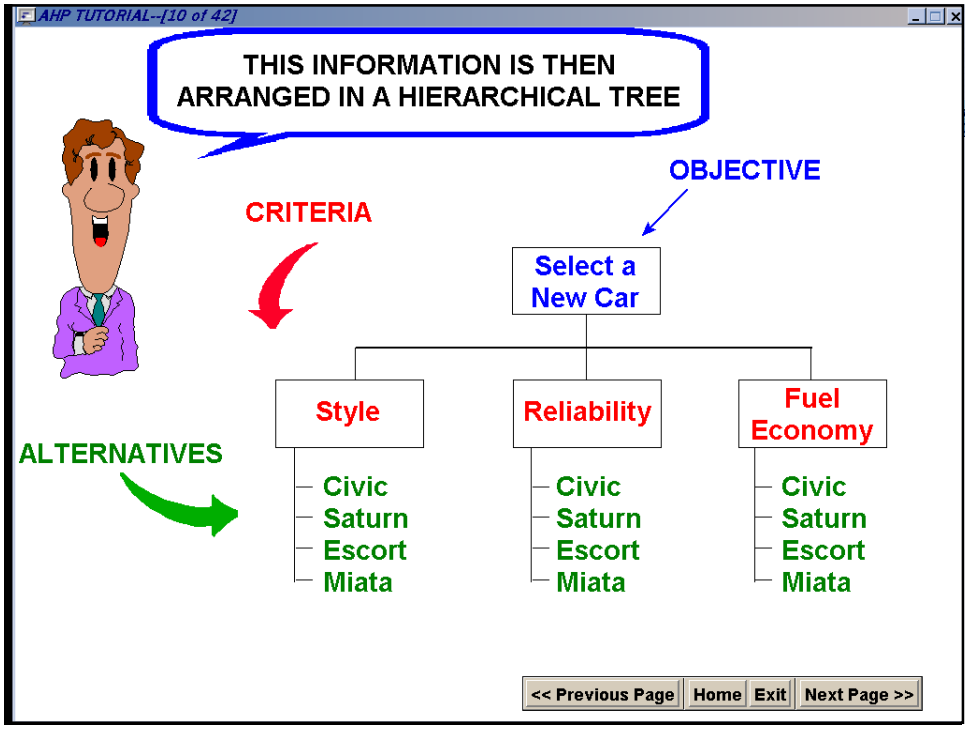
AHP TUTORIAL--[10 of 42]
THIS INFORMATION IS THEN ARRANGED IN A HIERARCHICAL TREE
OBJECTIVE
CRITERIA
Select a New Car
Style
Reliability
Fuel Economy
ALTERNATIVES
Civic
Saturn
Escort
Miata
Civic
Saturn
Escort
Miata
Civic
Saturn
Escort
Miata
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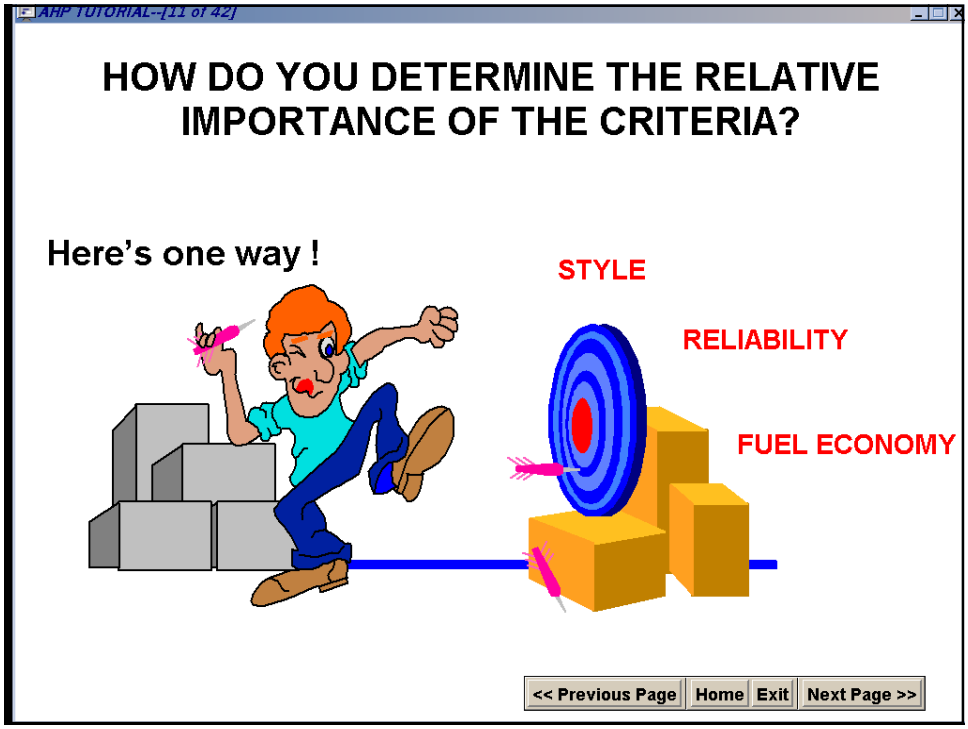
AHP TUTORIAL--[11 of 42]
HOW DO YOU DETERMINE THE RELATIVE IMPORTANCE OF THE CRITERIA?
Here's one way !
STYLE
RELIABILITY
FUEL ECONOMY
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AHP TUTORIAL--[12 of 42]

HERE'S ANOTHER WAY

USING JUDGMENTS TO DETERMINE THE RANKING OF THE CRITERIA

HMM,
I THINK RELIABILITY IS THE MOST IMPORTANT FOLLOWED BY STYLE AND FUEL ECONOMY IS LEAST IMPORTANT SO I WILL MAKE THE FOLLOWING JUDGMENTS.

1. RELIABILITY IS 2 TIMES AS IMPORTANT AS STYLE
2. STYLE IS 3 TIMES AS IMPORTANT AS FUEL ECONOMY
3. RELIABILITY IS 4 TIMES AS IMPORTANT AS FUEL ECONOMY

HE'S NOT VERY CONSISTENT HERE...THAT'S OKAY!

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AHP TUTORIAL--[13 of 42]

THE ANALYTIC HIERARCHY PROCESS
A BETTER WAY

USING PAIRWISE COMPARISONS, THE RELATIVE IMPORTANCE OF ONE CRITERION OVER ANOTHER CAN BE EXPRESSED

1 EQUAL 3 MODERATE 5 STRONG 7 VERY STR0NG 9 EXTREME

	STYLE	RELIABILITY	FUEL ECONOMY
STYLE	1/1	1/2	3/1
RELIABILITY	2/1	1/1	4/1
FUEL ECONOMY	1/3	1/4	1/1

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AHP TUTORIAL--[14 of 42]

HOW DO YOU TURN THIS MATRIX INTO A RANKING OF CRITERIA?

	STYLE	RELIABILITY	FUEL ECONOMY
STYLE	1/1	1/2	3/1
RELIABILITY	2/1	1/1	4/1
FUEL ECONOMY	1/3	1/4	1/1

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AHP TUTORIAL--[15 of 42]

HOW DO YOU GET A RANKING OF PRIORITIES FROM A PAIRWISE MATRIX?

AND THE SURVEY SAYS

ACTUALLY...

DR THOMAS L. SAATY, CURRENTLY WITH THE UNIVERSITY OF PITTSBURGH, DEMONSTRATED MATHEMATICALLY THAT THE EIGENVECTOR SOLUTION WAS THE BEST APPROACH.

REFERENCE : THE ANALYTIC HIERARCHY PROCESS, 1990, THOMAS L. SAATY

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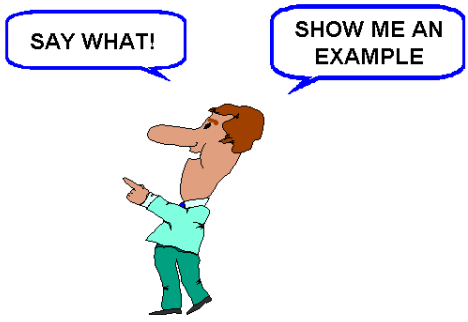
AHP TUTORIAL--[16 of 42]

HERE'S HOW TO SOLVE FOR THE EIGENVECTOR:

1. A SHORT COMPUTATIONAL WAY TO OBTAIN THIS RANKING IS TO RAISE THE PAIRWISE MATRIX TO POWERS THAT ARE SUCCESSIVELY SQUARED EACH TIME.
2. THE ROW SUMS ARE THEN CALCULATED AND NORMALIZED.
3. THE COMPUTER IS INSTRUCTED TO STOP WHEN THE DIFFERENCE BETWEEN THESE SUMS IN TWO CONSECUTIVE CALCULATIONS IS SMALLER THAN A PRESCRIBED VALUE.



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AHP TUTORIAL--[17 of 42]

IT'S MATRIX ALGEBRA TIME !!!

	STYLE	RELIABILITY	FUEL ECONOMY
STYLE	1/1	1/2	3/1
RELIABILITY	2/1	1/1	4/1
FUEL ECONOMY	1/3	1/4	1/1

FOR NOW, LET'S REMOVE THE NAMES AND CONVERT THE FRACTIONS TO DECIMALS :

1.0000	0.5000	3.0000
2.0000	1.0000	4.0000
0.3333	0.2500	1.0000

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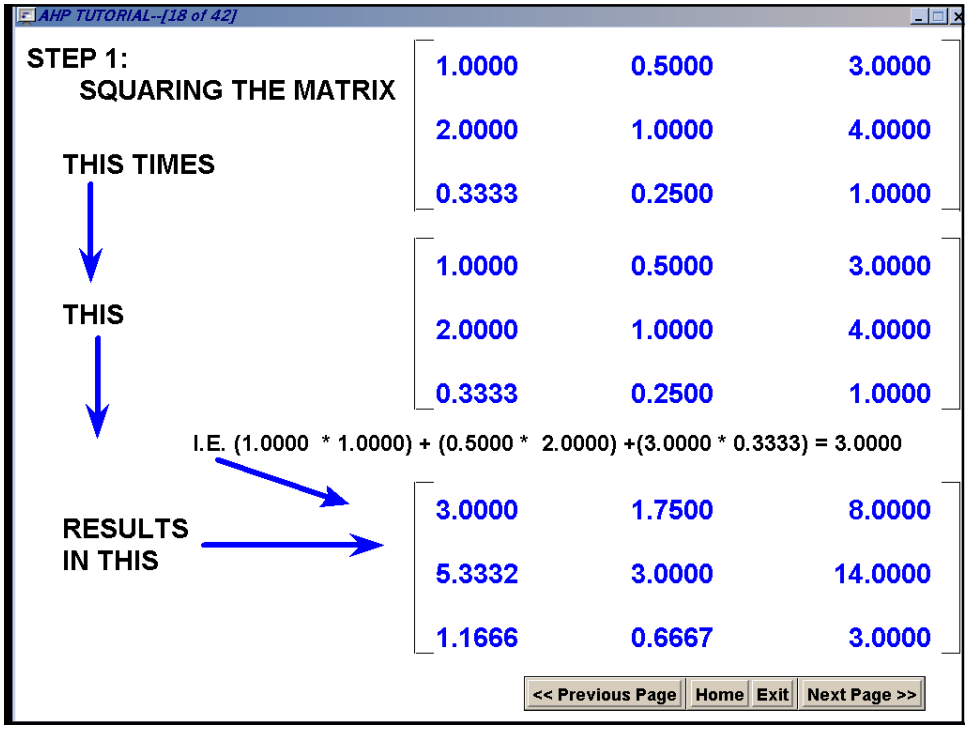
AHP TUTORIAL--[18 of 42]
STEP 1:
SQUARING THE MATRIX
THIS TIMES
THIS
1.0000 0.5000 3.0000
2.0000 1.0000 4.0000
0.3333 0.2500 1.0000
1.0000 0.5000 3.0000
2.0000 1.0000 4.0000
0.3333 0.2500 1.0000
I.E. (1.0000 * 1.0000) + (0.5000 * 2.0000) +(3.0000 * 0.3333) = 3.0000
RESULTS
IN THIS
3.0000 1.7500 8.0000
5.3332 3.0000 14.0000
1.1666 0.6667 3.0000
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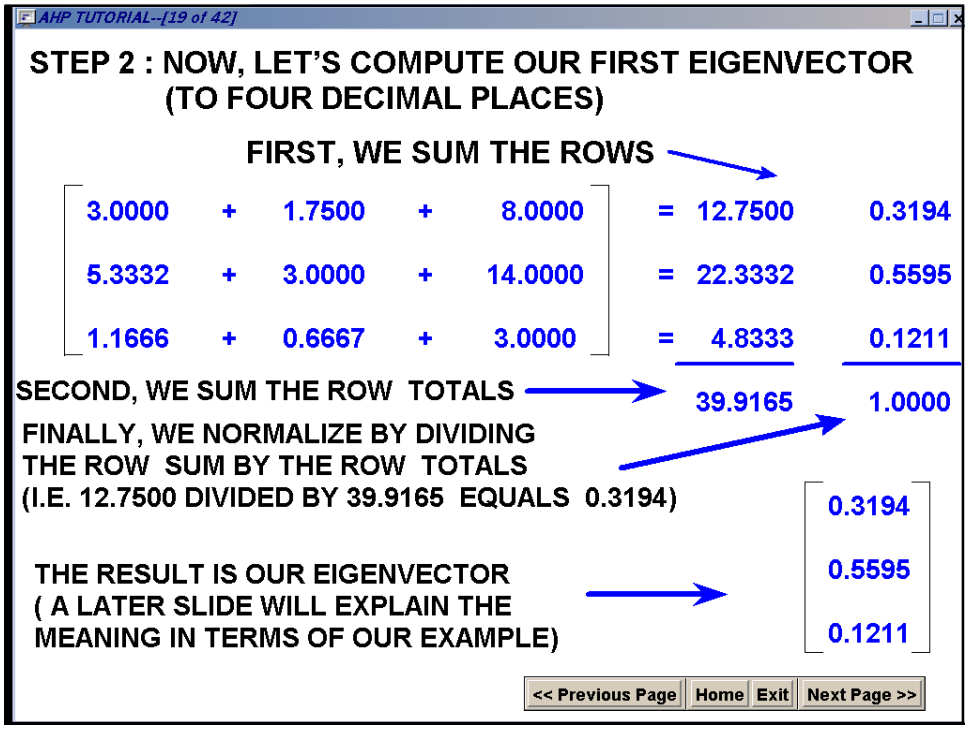
AHP TUTORIAL--[19 of 42]
STEP 2 : NOW, LET'S COMPUTE OUR FIRST EIGENVECTOR
(TO FOUR DECIMAL PLACES)
FIRST, WE SUM THE ROWS
3.0000 + 1.7500 + 8.0000 = 12.7500 0.3194
5.3332 + 3.0000 + 14.0000 = 22.3332 0.5595
1.1666 + 0.6667 + 3.0000 = 4.8333 0.1211
SECOND, WE SUM THE ROW TOTALS
39.9165 1.0000
FINALLY, WE NORMALIZE BY DIVIDING
THE ROW SUM BY THE ROW TOTALS
(I.E. 12.7500 DIVIDED BY 39.9165 EQUALS 0.3194)
THE RESULT IS OUR EIGENVECTOR
(A LATER SLIDE WILL EXPLAIN THE
MEANING IN TERMS OF OUR EXAMPLE)
0.3194
0.5595
0.1211
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AHP TUTORIAL--[20 of 42]

THIS PROCESS MUST BE ITERATED UNTIL THE EIGENVECTOR SOLUTION DOES NOT CHANGE FROM THE PREVIOUS ITERATION (REMEMBER TO FOUR DECIMAL PLACES IN OUR EXAMPLE)

CONTINUING OUR EXAMPLE,
AGAIN, STEP 1: WE SQUARE THIS MATRIX

$$\begin{bmatrix} 3.0000 + 1.7500 + 8.0000 \\ 5.3332 + 3.0000 + 14.0000 \\ 1.1666 + 0.6667 + 3.0000 \end{bmatrix}$$

WITH THIS RESULT →

$$\begin{bmatrix} 27.6653 + 15.8330 + 72.4984 \\ 48.3311 + 27.6662 + 126.6642 \\ 10.5547 + 6.0414 + 27.6653 \end{bmatrix}$$

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AHP TUTORIAL--[21 of 42]

AGAIN STEP 2 : COMPUTE THE EIGENVECTOR (TO FOUR DECIMAL PLACES)

27.6653 + 15.8330 + 72.4984	=	115.9967	0.3196
48.3311 + 27.6662 + 126.6642	=	202.6615	0.5584
10.5547 + 6.0414 + 27.6653	=	44.2614	0.1220
	TOTALS	362.9196	1.0000

COMPUTE THE DIFFERENCE OF THE PREVIOUS COMPUTED EIGENVECTOR TO THIS ONE:

$$\begin{bmatrix} 0.3194 \\ 0.5595 \\ 0.1211 \end{bmatrix} - \begin{bmatrix} 0.3196 \\ 0.5584 \\ 0.1220 \end{bmatrix} = \begin{bmatrix} -0.0002 \\ 0.0011 \\ -0.0009 \end{bmatrix}$$

TO FOUR DECIMAL PLACES THERE'S NOT MUCH DIFFERENCE
HOW ABOUT ONE MORE ITERATION?

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AHP TUTORIAL--[22 of 42]

I SURRENDER !!
DON'T MAKE ME COMPUTE
ANOTHER EIGENVECTOR

OKAY,OKAY
ACTUALLY, ONE MORE
ITERATION WOULD SHOW
NO DIFFERENCE TO FOUR
DECIMAL PLACES

LET'S NOW LOOK AT
THE MEANING OF THE
EIGENVECTOR

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AHP TUTORIAL--[23 of 42]

HERE'S OUR PAIRWISE
MATRIX WITH THE NAMES

	STYLE	RELIABILITY	FUEL ECONOMY
STYLE	1/1	1/2	3/1
RELIABILITY	2/1	1/1	4/1
FUEL ECONOMY	1/3	1/4	1/1

AND THE COMPUTED EIGENVECTOR GIVES US THE RELATIVE RANKING OF OUR CRITERIA

STYLE	0.3196	← THE SECOND MOST IMPORTANT CRITERION
RELIABILITY	0.5584	← THE MOST IMPORTANT CRITERION
FUEL ECONOMY	0.1220	← THE LEAST IMPORTANT CRITERION

NOW BACK TO THE HIEARCHICAL TREE...

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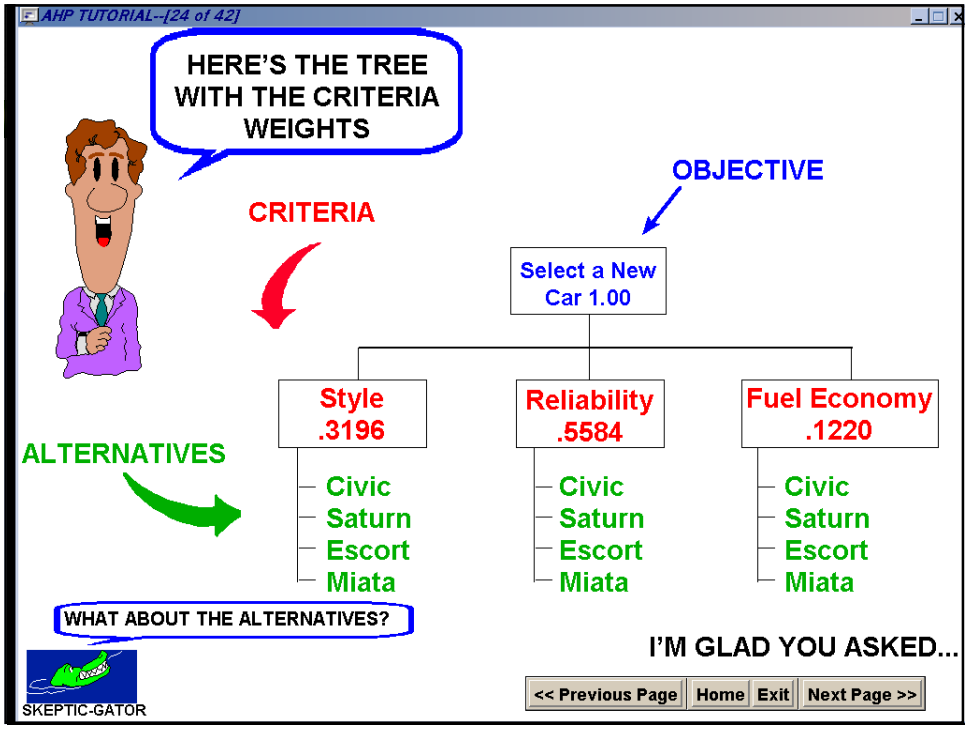
AHP TUTORIAL--[24 of 42]
HERE'S THE TREE WITH THE CRITERIA WEIGHTS
OBJECTIVE
CRITERIA
Select a New Car 1.00
Style .3196
Reliability .5584
Fuel Economy .1220
ALTERNATIVES
Civic
Saturn
Escort
Miata
Civic
Saturn
Escort
Miata
Civic
Saturn
Escort
Miata
WHAT ABOUT THE ALTERNATIVES?
SKEPTIC-GATOR
I'M GLAD YOU ASKED...
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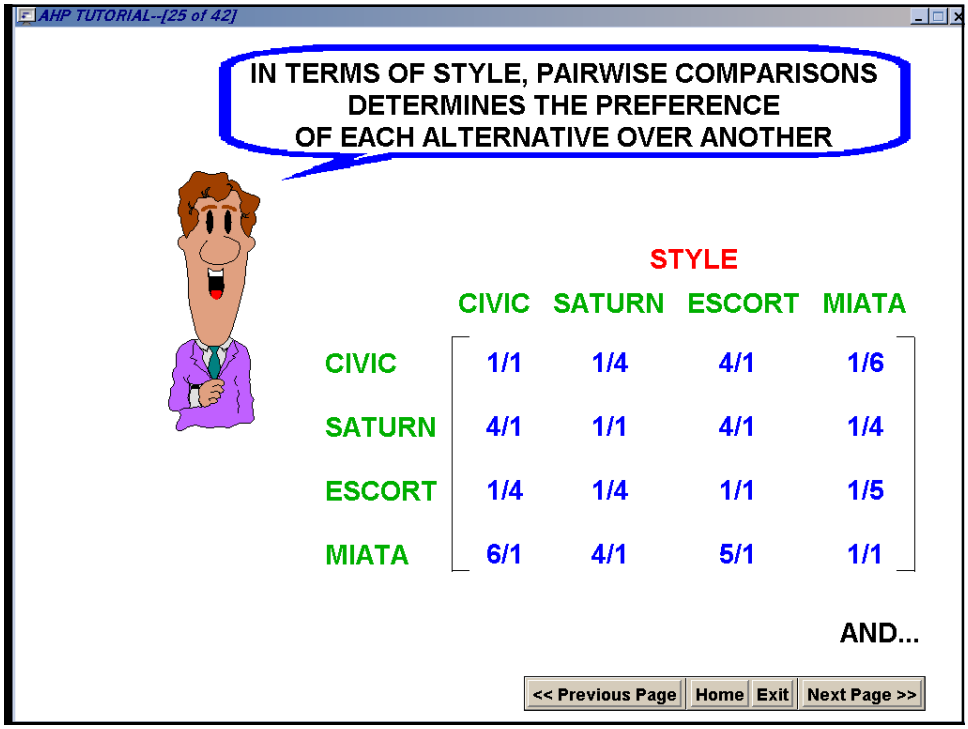
AHP TUTORIAL--[25 of 42]
IN TERMS OF STYLE, PAIRWISE COMPARISONS DETERMINES THE PREFERENCE OF EACH ALTERNATIVE OVER ANOTHER
STYLE
CIVIC SATURN ESCORT MIATA
CIVIC 1/1 1/4 4/1 1/6
SATURN 4/1 1/1 4/1 1/4
ESCORT 1/4 1/4 1/1 1/5
MIATA 6/1 4/1 5/1 1/1
AND...
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AHP TUTORIAL--[26 of 42]

IN TERMS OF RELIABILITY, PAIRWISE COMPARISONS DETERMINES THE PREFERENCE OF EACH ALTERNATIVE OVER ANOTHER

RELIABILITY

	CIVIC	SATURN	ESCORT	MIATA
CIVIC	1/1	2/1	5/1	1/1
SATURN	1/2	1/1	3/1	2/1
ESCORT	1/5	1/3	1/1	1/4
MIATA	1/1	1/2	4/1	1/1

ITS MATRIX ALGEBRA TIME!!!

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AHP TUTORIAL--[27 of 42]

COMPUTING THE EIGENVECTOR DETERMINES THE RELATIVE RANKING OF ALTERNATIVES UNDER EACH CRITERION

RANKING		STYLE	RANKING		RELIABILITY
3	CIVIC	.1160	3	CIVIC	.3790
2	SATURN	.2470	2	SATURN	.2900
4	ESCORT	.0600	4	ESCORT	.0740
1	MIATA	.5770	1	MIATA	.2570

WHAT ABOUT FUEL ECONOMY?

SKEPTIC-GATOR

ANOTHER GOOD QUESTION...

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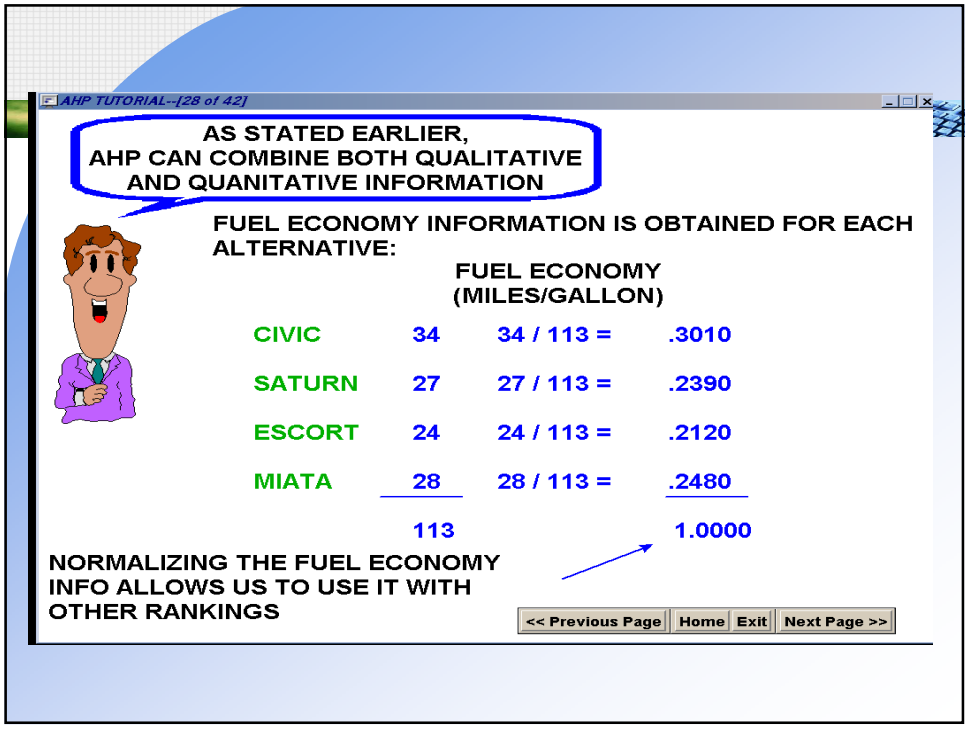
AHP TUTORIAL--[28 of 42]
AS STATED EARLIER,
AHP CAN COMBINE BOTH QUALITATIVE
AND QUANITATIVE INFORMATION
FUEL ECONOMY INFORMATION IS OBTAINED FOR EACH ALTERNATIVE:
FUEL ECONOMY (MILES/GALLON)
CIVIC 34 34 / 113 = .3010
SATURN 27 27 / 113 = .2390
ESCORT 24 24 / 113 = .2120
MIATA 28 28 / 113 = .2480
113 1.0000
NORMALIZING THE FUEL ECONOMY INFO ALLOWS US TO USE IT WITH OTHER RANKINGS
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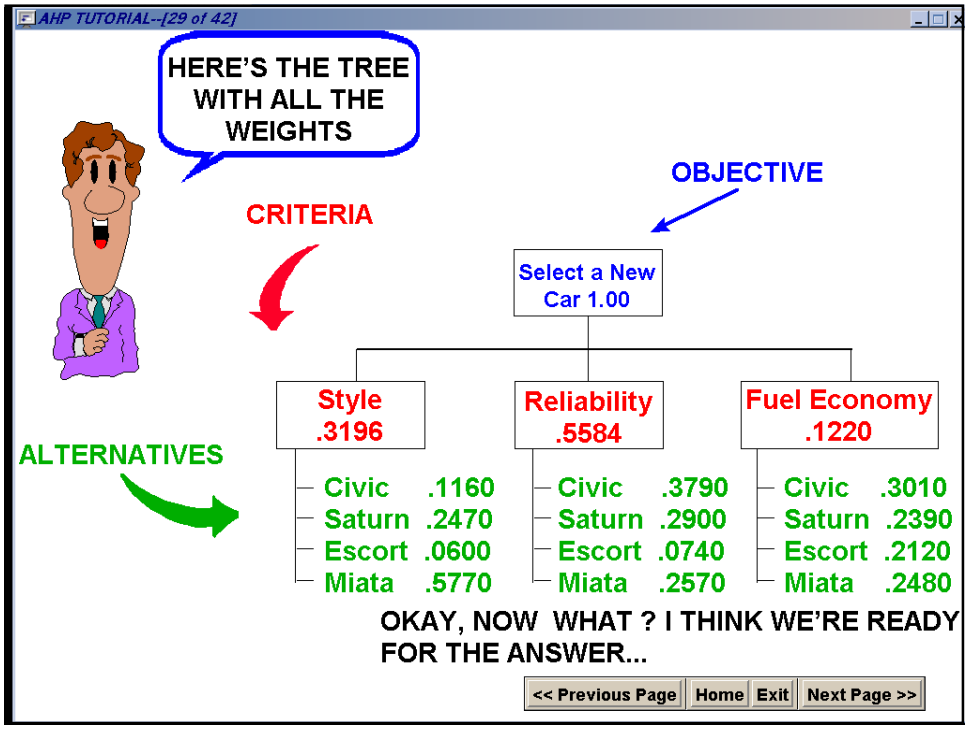
AHP TUTORIAL--[29 of 42]
HERE'S THE TREE WITH ALL THE WEIGHTS
OBJECTIVE
CRITERIA
Select a New Car 1.00
Style .3196
Reliability .5584
Fuel Economy .1220
ALTERNATIVES
Civic .1160
Saturn .2470
Escort .0600
Miata .5770
Civic .3790
Saturn .2900
Escort .0740
Miata .2570
Civic .3010
Saturn .2390
Escort .2120
Miata .2480
OKAY, NOW WHAT ? I THINK WE'RE READY FOR THE ANSWER...
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AHP TUTORIAL--[30 of 42]

A LITTLE MORE MATRIX ALGEBRA GIVES US THE SOLUTION:

	STYLE	RELI-ABILITY	FUEL ECONOMY		CRITERIA RANKING	
CIVIC	.1160	.3790	.3010	*	0.3196	STYLE
SATURN	.2470	.2900	.2390		0.5584	RELIABILITY
ESCORT	.0600	.0740	.2120			
MIATA	.5770	.2570	.2480		0.1220	FUEL ECONOMY

I.E. FOR THE CIVIC (.1160 * .3196) + (.3790 * .5584) + (.3010 * .1220) = .3060

=	CIVIC	.3060
	SATURN	.2720
	ESCORT	.0940
	MIATA	.3280

AND THE WINNER IS ...

THE MIATA IS THE HIGHEST RANKED CAR

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AHP TUTORIAL--[31 of 42]

IN SUMMARY, THE ANALYTIC HIERARCHY PROCESS PROVIDES A LOGICAL FRAMEWORK TO DETERMINE THE BENEFITS OF EACH ALTERNATIVE

1. MIATA .3280
2. CIVIC .3060
3. SATURN .2720
4. ESCORT .0940

WHAT ABOUT COSTS?

SKEPTIC-GATOR

WELL, I'LL TELL YOU...

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AHP TUTORIAL--[32 of 42]

ALTHOUGH COSTS COULD HAVE BEEN INCLUDED, IN MANY COMPLEX DECISIONS, COSTS SHOULD BE SET ASIDE UNTIL THE BENEFITS OF THE ALTERNATIVES ARE EVALUATED

OTHERWISE THIS COULD HAPPEN...

YOUR PROGRAM COST TOO MUCH I DON'T CARE ABOUT ITS BENEFITS

DISCUSSING COSTS TOGETHER WITH BENEFITS CAN SOMETIMES BRING FORTH MANY POLITICAL AND EMOTIONAL RESPONSES

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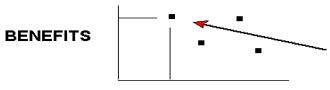
AHP TUTORIAL--[33 of 42]

WAYS TO HANDLE BENEFITS AND COSTS INCLUDE THE FOLLOWING:

1. GRAPHING BENEFITS AND COSTS OF EACH ALTERNATIVE



2. BENEFIT TO COST RATIOS

3. LINEAR PROGRAMMING

4. SEPARATE BENEFIT AND COST HIERARCHICAL TREES AND THEN COMBINE THE RESULTS

IN OUR EXAMPLE...

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AHP TUTORIAL--[34 of 42]

LET'S USE BENEFIT TO COST RATIOS

	COST $	NORMALIZED COSTS	BENEFIT - COST RATIOS
1. MIATA	18,000	.3333	.3280 / .3333 = .9840
2. CIVIC	12,000	.2222	.3060 / .2222 = 1.3771
3. SATURN	15,000	.2778	.2720 / .2778 = .9791
4. ESCORT	9,000	.1667	.0940 / .1667 = .5639
	54,000	1.0000	

(REMEMBER THE BENEFITS WERE DERIVED EARLIER FROM THE AHP)

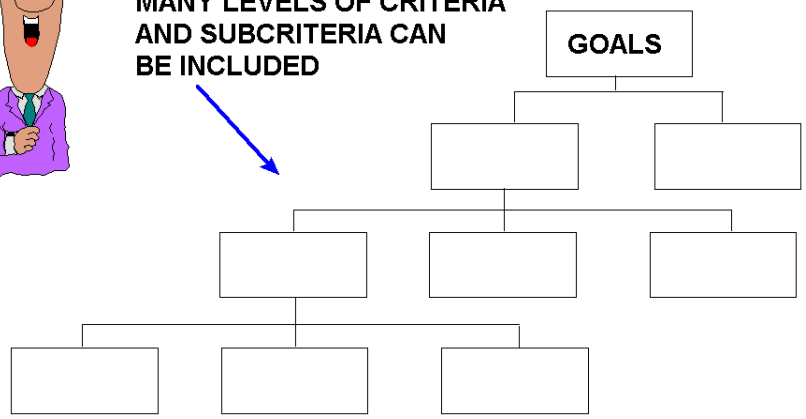
AND...

THE CIVIC IS THE WINNER WITH THE HIGHEST BENEFIT TO COST RATIO

AHP TUTORIAL--[35 of 42]

AHP CAN BE USED FOR VERY COMPLEX DECISIONS

MANY LEVELS OF CRITERIA AND SUBCRITERIA CAN BE INCLUDED



HERE'S SOME EXAMPLES

AHP TUTORIAL--[36 of 42]

AHP CAN BE USED FOR A WIDE VARIETY OF APPLICATIONS

STRATEGIC PLANNING

RESOURCE ALLOCATION

SOURCE SELECTION

BUSINESS/PUBLIC POLICY

PROGAM SELECTION

AND MUCH MUCH MORE...

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AHP TUTORIAL--[37 of 42]

I DON'T HAVE TIME FOR ALL THAT MATRIX ALGEBRA

AUTOMATED TOOLS ARE AVAILABLE TO HELP YOU

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AHP TUTORIAL--[38 of 42]

EXPERT CHOICE AUTOMATES THE ANALYTIC HIERARCHY PROCESS

DOES ALL THE MATH FOR YOU

YOU CAN SAVE AND ITERATE THE RESULTS

YOU CAN PERFORM SENSITIVITY ANALYSIS

EXPERT CHOICE PRINTS GRAPHS AND TABLES

HOWEVER, REMEMBER...

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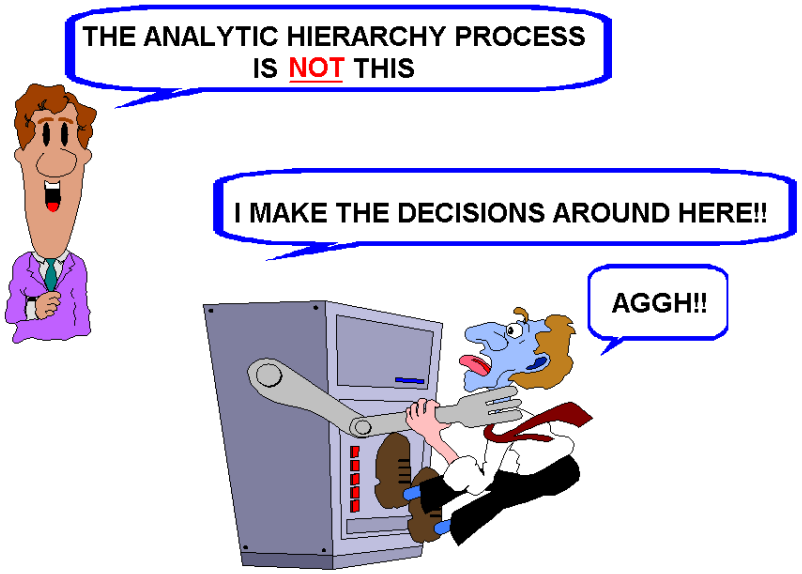
AHP TUTORIAL--[39 of 42]



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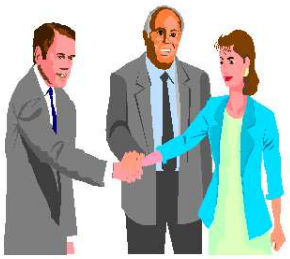
AHP TUTORIAL--[40 of 42]

AHP BUILDS CONSENSUS

PROVIDES AN AUDIT TRAIL

CAN BE ITERATED

AND ITS FUN!!!



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AHP TUTORIAL--[41 of 42]

DECISION MAKING FOR LEADERS,
1999, THOMAS L. SAATY
(VERY GOOD BOOK OF CASE STUDIES)

THE ANALYTIC HIERARCHY PROCESS,
1990, THOMAS L. SAATY
(AN INDUSTRIAL STRENGTH MATH BOOK)

THE HIERARCHON, A DICTIONARY
OF HIERARCHIES, 1993, THOMAS L. SAATY
AND ERNEST H. FORMAN
(A HUGE FOREST OF HIERARCHICAL TREES)

AND WITH ALL THIS KNOWLEDGE
YOU WILL BE ABLE TO...

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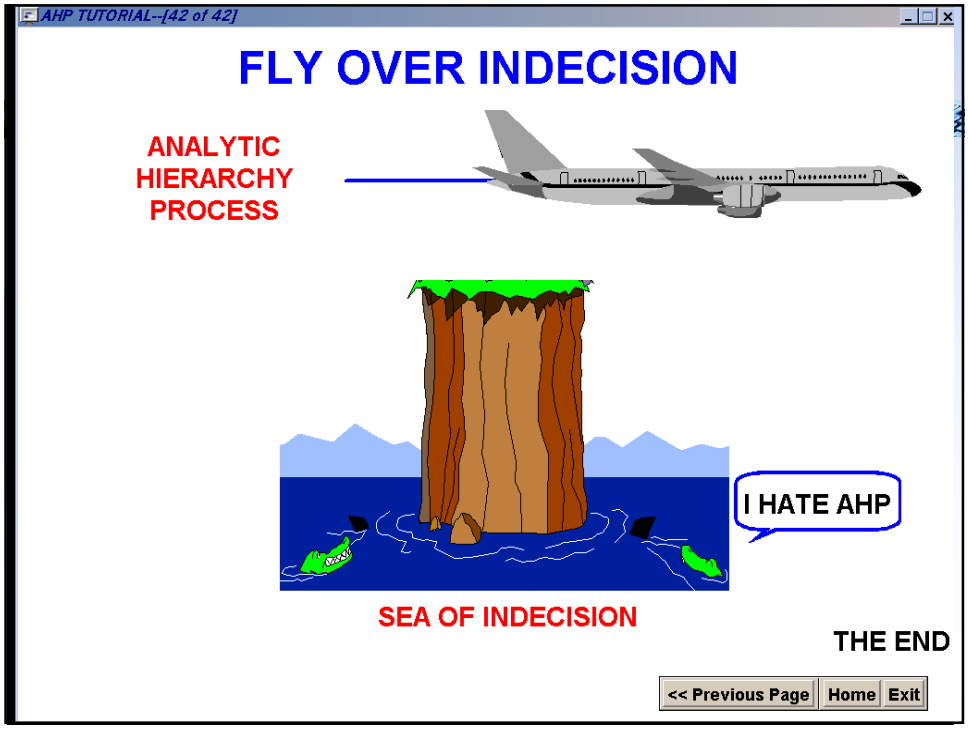

Latihan

- Tn. Budi Luhur Ingin Membeli Handphone baru dan ingin menentukan merek HP apa yang paling cocok dengan kriteria yang Tn. Budi Tentukan. Adapun kriterianya adalah : Harga (H), Fitur (F), Daya Tahan Batre (D), dimana Menurut Tn. Budi Luhur Harga 4 kali lebih penting daripada Fitur, sedangkan Fitur 2 kali lebih penting daripada Daya tahan batre dan Harga 7 kali lebih penting daripada Daya tahan batre
- Diminta :
  - Hitung Eigen Vector dari soal diatas

Merk Hp Yang ditawarkan

- Nokia (N)
- Motorola (M)
- LG (L)
- SAMSUNG (S)

Berdasarkan Kriteria Harga, Fitur dan Daya tahan batre ditentukan sebagai berikut :

Bedasarkan kriteria Harga

Motorola 2 kali lebih penting dari Nokia, Nokia 2 kali lebih penting daripada LG, Samsung 4 Kali lebih penting dari pada Nokia, Motorola 4 kali lebih penting daripada LG, LG 2kali lebih penting daripada Samsung dan Motorola 5 kali lebih penting daripada Samsung.

Berdasarkan Kriteria Fitur

- Nokia 2 kali lebih penting dari pada Motorola, LG 4 kali lebih penting daripada Nokia, Samsung 5 kali lebih penting daripada Nokia, LG 2 kali lebih penting dari pada Motorola, Motorola 2 kali lebih penting dari pada Samsung dan LG 3 kali lebih penting daripada Samsung.

Berdasarkan Kriteria Daya tahan Batre

- NOKIA = 96 Jam
- MOTOROLA = 80 Jam
- LG = 75 Jam
- SAMSUNG = 78 Jam

- Diminta : Hitunglah Eigen Vector dari setiap Kriteria dan alternatif berdasarkan yang ditentukan oleh Tn. Budi Luhur.