

**Ejemplo.** Supongamos que la siguiente tabla muestra las probabilidades de transición de un cliente que compra unos tipos particulares de cereales de unos proveedores dados A, B, C y D. Por ejemplo, si hoy compra A tiene una probabilidad de 0.08 de comprar otra vez A la próxima estación, una probabilidad de 0.184 de comprar B próxima estación, una probabilidad 0.368 de comprar C próxima estación y una de 0.368 de comprar D.

	A	B	C	D
A	0.080	0.184	0.368	0.368
B	0.632	0.368	0	0
C	0.264	0.368	0.368	0
D	0.157	0.259	0.442	0.142

Si el coste de cada cereal es:

Coste de A: 4.25€

Coste de B: 3.17€

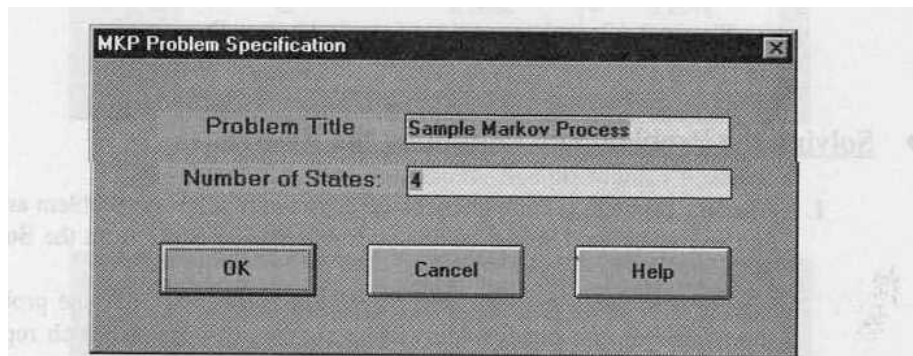
Coste de C: 5.33€

Coste de D: 3.86€

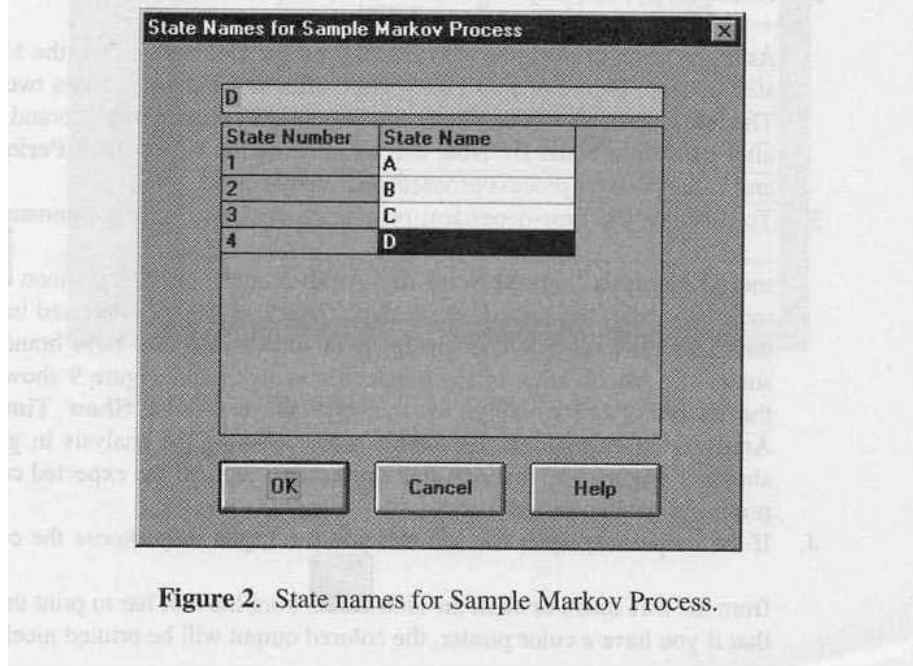
¿Cuál es coste esperado para un cliente que compra estos cereales? Si alguien empieza comprando al proveedor B, ¿cuál es la probabilidad de que compre al proveedor B después de 2 estaciones? ¿cuál es la probabilidad a largo plazo de comprar de los cuatro proveedores?

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Se selecciona **New Problem**, y se introduce el nombre y características de la cadena:



**Figure 1.** Specification for Sample Markov Process.



**Figure 2.** State names for Sample Markov Process.

En el menú *Solve and Analyze*, usar el menú *Markov Process Step*: Analizar la cadena paso a paso.  
 En el menú *Solve and Analyze*, usar el menú *Solve Steady State*.

Transition Probabilities for Sample Markov Process					
State Cost : D		3.8600			
From \ To	A	B	C	D	
A	0.0800	0.1840	0.3680	0.3680	
B	0.6320	0.3680			
C	0.2640	0.3680	0.3680		
D	0.1570	0.2590	0.4420	0.1420	
Initial Prob.		1			
State Cost	4.2500	3.1700	5.3300	3.8600	

Figure 3. Complete entry for Sample Markov Process.

Steady State for Sample Markov Process			
02-19-1997	State Name	State Probability	Recurrence Time
1	A	0.3038	3.2918
2	B	0.2979	3.3568
3	C	0.2680	3.7311
4	D	0.1303	7.6748
	Expected	Cost/Return =	4.1669

Figure 4. Steady state solution for Sample Markov Process.

First Passage Times for Sample Markov Process			
02-19-1997	From State	To State	First Passage Time
1	A	A	3.2918
2	A	B	3.7292
3	A	C	3.4001
4	A	D	6.0121
5	B	A	1.5823
6	B	B	3.3568
7	B	C	4.9824
8	B	D	7.5944
9	C	A	2.5036
10	C	B	3.1400
11	C	C	3.7311
12	C	D	8.5157
13	D	A	2.9329
14	D	B	3.4655
15	D	C	3.2917
16	D	D	7.6748

Figure 5. First passage time for Sample Markov Process.

Markov Process for Specific Periods

Specify the initial state probabilities and enter the number of time periods from now (i.e., initial), then press the OK button. The resulted state probabilities will be shown in the right column. You may press the Steady State button to obtain the steady state result.

State	Initial State Probability	Resulted State Probability
A	0	0.632000
B	1	0.368000
C	0	0
D	0	0

The number of time periods from initial: 1

Expected cost or return: 3.852560

OK Next Period Steady State

Cancel Print Help

Figure 6. One period after buying brand B for Sample Markov Process.

Markov Process for Specific Periods

Specify the initial state probabilities and enter the number of time periods from now (i.e., initial), then press the OK button. The resulted state probabilities will be shown in the right column. You may press the Steady State button to obtain the steady state result.

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State	Initial State Probability	Resulted State Probability
A	0	0.283136
B	1	0.251712
C	0	0.232576
D	0	0.232576

The number of time periods from initial: 2

Expected cost or return: 4.138628

OK Next Period Steady State

Cancel Print Help

Figure 7. Two periods after buying brand B for Sample Markov Process.

**Time Parametric Analysis**

Select a parameter for analysis

**Total Expected Return/Cost**

Probability of State A  
 Probability of State B  
 Probability of State C  
 Probability of State D  
 Expected Cost of State A  
 Expected Cost of State B  
 Expected Cost of State C  
 Expected Cost of State D

Total Expected Return/Cost

Starting time period

Ending time period

Step

Figure 8. Specification of the time parametric analysis for Sample Markov Process.

Time Parametric Analysis for Sample Markov Process		
02-19-1997	Time Period	Total Expected Return/Cost
1	1	3.8526
2	2	4.1386
3	3	4.1987
4	4	4.1695
5	5	4.1644
6	6	4.1666
7	7	4.1671
8	8	4.1669
9	9	4.1669
10	10	4.1669

Figure 9. Result of the time parametric analysis for Sample Markov Process.

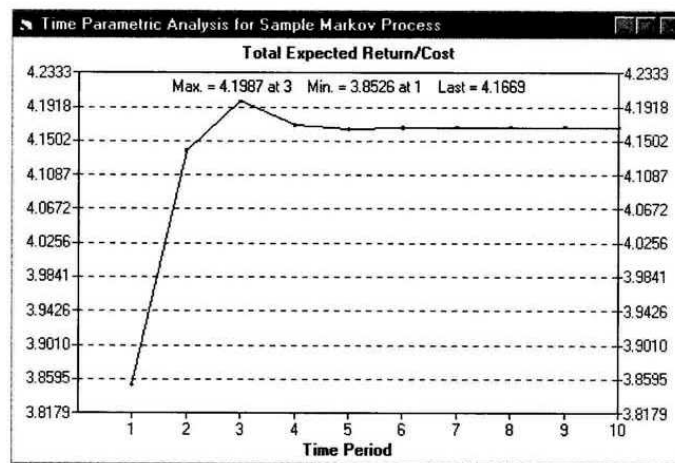


Figure 10. Graphic result of the time parametric analysis for Sample Markov Process.