

# **MANAGEMENT AND MARKETING**

## **ELECTRE METHOD**

It is a tool for optimizing decisions under certainty.

It is used in situations when there are several variants  $V_i$  ( $i = 1, m$ ) possible to achieve an objective, the evaluation being performed based on several criteria  $C_j$  ( $j = 1, n$ )

**The method is presented in 7 steps.**



***How do you choose the best gaming console? What functions and features should the gaming console have for your needs?***

*The video game industry is constantly evolving. That's because people are increasingly feeling the need for entertainment. Old forms of entertainment are rapidly running out.*

*In addition, accelerated technological progress is also reflected in the development of more interactive, immersive video games with much better graphics. It is normal to want to be able to play the newest and best games.*

***But how can you choose the best gaming console?***

## 1. Consola Playstation 4 PRO, Fortnite Neo Versa Bundle, 1TB, Negru



Amplifica-ti experienta de joc cu cea mai puternica consola PlayStation de pana acum.

Joaca cele mai recente jocuri blockbuster si jocurile exclusive pentru PlayStation in uimitoarea rezolutie 4K.

Pachetele PS4 Pro cu putere GPU dubla fata de PS4 standard – te lasa sa experimentezi o claritate incredibila a imaginii, o experienta de joc mai cursiva si timpi de incarcare mai scurti.

Culori intens de vibrante cu HDR – Elemente vizuale optimizate pe orice televizor.

## 2. Consola Microsoft Xbox One X 1TB Limited Edition, Gears 5 Ultimate Edition



Jocurile joaca mai bine pe Xbox One X. Cu 40% mai multa putere decat orice alta consola, experimentati jocuri adevarate imersive 4K.

Xbox Live Gold – Joaca cu prietenii din cea mai avansata retea multiplayer, primeste jocuri gratuite si primeste reduceri exclusive.

Rezolutie 4K – Ultra HD Blu-ray™ si streaming video.

Audio spatial – Premium Dolby Atmos si DTS: X audio.

Include o descarcare completa a jocului Gears 5 Ultimate Edition, Xbox Wireless Controller – Kait Diaz Limited Edition si multe altele.

## 3. Consola NINTENDO SWITCH (WITH GREY JOY-CONS)



Sistemul Nintendo Switch se poate transforma in functie de situatia in care te afli, astfel incat să te poți juca jocurile preferate, indiferent cat de ocupat ai fi.

Mod TV – Conectează consola la televizor pentru ca toată lumea să se poată juca, de la copii până la adulți.

Mod Tabletop – Dacă nu ai acces la un televizor, montează standul atasat consolei și oferă un Joy-Con unui prieten pentru a vă juca in mod cooperativ sau competitiv, direct pe ecranul consolei.

## 4. Consola Sony Playstation 4 SLIM, 500 GB, Neagra



Experimentati un PS4 mai mic, cu aspect elegant, oferind o putere fantastica a jocurilor, care este intotdeauna pentru jucatori.

Experimentati culori incredibil de vii, vibrante, cu imagini HDR impresionante. Organizati-va jocurile si aplicatiile si partajati cu prietenii de pe o interfata noua, intuitiva.

Stocati-va jocurile, aplicatiile, capturile de ecran si videoclipurile pana la 500 GB. Toate emisiunile de televiziune si filmele extraordinare, precum si multe din aplicatiile de divertisment preferate.

## Step 1

Achieving the goal is done according to the established variants and criteria.

All possible variants for achieving the goal are listed.

The criteria for assessing the variants are taken into account.

In this sense the decision maker can perform a quantitative (grades) or qualitative (qualifiers) assessment.

**In the decision to purchase a gaming console we consider 4 assessment criteria**

**C1: Media services (Netflix, Stan, YouTube)**

**C2: Power and şi performance**

**C3: Price**

**C4: Compatibility with VR Technology**

**V1: Console Playstation 4 PRO, Fortnite Neo Versa Bundle**

**V2: Console Microsoft Xbox One X 1TB, Gears 5 Ultimate Edition**

**V3: Console NINTENDO SWITCH (WITH GREY JOY-CONS)**

**V4: Console Sony Playstation 4 SLIM, 500 GB**

# Matrix M

		C1 Media services	C2 Power and performance	C3 Price	C4 Compatibility with VR Technology
M=	V1- Console Playstation				
	V2- Console Microsoft Xbox				
	V3-Console NINTENDO				
	V4- Console Sony				

Step 2

US unsatisfactory	S satisfying	G good	VG very good
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Each variant is evaluated according to the established criteria, and with the help of the granted ratings, the M matrix of the ratings is constructed. The M matrix was made according to the qualitative assessment of the variants.

M=

	C1 Media services	C2 Power and performance	C3 Price	C4 Compatibility with VR Technology	
V1- Console Playstation	G	VB	G	VG	→ The decision maker considers which are the optimal variants depending on the personal options.
V2- Console Microsoft Xbox	VB	S	G	G	
V3-Console NINTENDO	US	G	S	G	
V4- Console Sony	G	US	VG	G	

## Step 3

For each criterion, a rating scale is established, corresponding to the weight of each one in the process of variants evaluation. The rating scales are defined by establishing the minimum score for each criterion, respectively the constant ratio between the scores for each rating.

	US	S	G	VG	rating scale
C1- Media services	1	4	7	10	3
C2- Power and performance	6	7	8	9	1
C3- Price	4	6	8	10	2
C4- Compatibility with VR Technology	4	6	8	10	2



After establishing the rating scale, the grades in the M matrix are replaced with the notes corresponding to the ratings next to each criterion, resulting in the matrix M1 of the notes.

	C1 Media services	C2 Power and performance	C3 Price	C4 Compatibility with VR Technology		US	S	G	VG	rating scale
V1- Console Playstation	G	VB	G	VG	C1- Media services	1	4	7	10	3
V2- Console Microsoft Xbox	VB	S	G	G	C2- Power and performance	6	7	8	9	1
V3- Console NINTENDO	US	G	S	G	C3- Price	4	6	8	10	2
V4- Console Sony	G	US	VG	G	C4- Compatibility with VR Technology	4	6	8	10	2

  

M1=

	C1	C2	C3	C4
V1	7	9	8	10
V2	10	7	8	8
V3	1	8	6	8
V4	7	6	10	8

## Step 4

The vector of the coefficients of importance  $K_j$  ( $j = 1, n$ ) is established by which the decision maker adjusts the weight of the criteria in the process of elaborating the final decision. The sum of the coefficients of importance is equal to 1 or 100.

The notes are given according to the preferences of the decision maker.

	<b>K</b>	<b>M1=</b>				
		<b>C1</b>	<b>C2</b>	<b>C3</b>	<b>C4</b>	
C1 : Media services	<b>0,4</b>	V1	7	9	8	10
C2 : Power and performance	<b>0,3</b>	V2	10	7	8	8
C3 : Price	<b>0,2</b>	V3	1	8	6	8
C4 : Compatibility with VR Technology	<b>0,1</b>	V4	7	6	10	8
	<b>----</b>	<b>K=</b>	<b>0,4</b>	<b>0,3</b>	<b>0,2</b>	<b>0,1</b>
	<b>1</b>					

## Step 5

The notes of the M1 matrix are multiplied with the importance coefficients corresponding to each criterion being obtained the homogeneous M2 matrix

	C1	C2	C3	C4
M1=				
V1	7	9	8	10
V2	10	7	8	8
V3	1	8	6	8
V4	7	6	10	8
K=	0,4	0,3	0,2	0,1

	C1	C2	C3	C4
M2=				
V1	2,8	2,7	1,6	1
V2	4	2,1	1,6	0,8
V3	0,4	2,4	1,2	0,8
V4	2,8	1,8	2	0,8

## Step 6

The Concordance Matrix and the Discordance Matrix are calculated.

The **concordance matrix** is quadratic and expresses the superiority of the "i" variant in comparison with the "j" variant.

The **discordance matrix** is quadratic and expresses the superiority of the "j" variant compared to the "i" variant.

Hm is calculated as follows: the difference between the highest note and the lowest note in the homogeneous M2 matrix.

If we have all the negative results, we will take the smallest negative value and put it in the mode taking into account the highest positive value.

## Concordance matrix

C=

	V1	V2	V3	V4
V1	X	0,6	1	0,8
V2	0,6	X	0,7	0,8
V3	0	0,4	X	0,4
V4	0,6	0,3	0,7	X

	C1	C2	C3	C4
V1	2,8	2,7	1,6	1
V2	4	2,1	1,6	0,8
V3	0,4	2,4	1,2	0,8
V4	2,8	1,8	2	0,8
K=	0,4	0,3	0,2	0,1

$$C(1,2) = 0,3 + 0,2 + 0,1 = 0,6$$

$$C(1,3) = 0,4 + 0,3 + 0,2 + 0,1 = 1$$

$$C(1,4) = 0,4 + 0,3 + 0,1 = 0,8$$

$$C(2,1) = 0,4 + 0,2 = 0,6$$

$$C(2,3) = 0,4 + 0,2 + 0,1 = 0,7$$

$$C(2,4) = 0,4 + 0,3 + 0,1 = 0,8$$

$$C(3,1) = 0$$

$$C(3,2) = 0,3 + 0,1 = 0,4$$

$$C(3,4) = 0,3 + 0,1 = 0,4$$

$$C(4,1) = 0,4 + 0,2 = 0,6$$

$$C(4,2) = 0,2 + 0,1 = 0,3$$

$$C(4,3) = 0,4 + 0,2 + 0,1 = 0,7$$

## Discordance matrix

D=

	V1	V2	V3	V4
V1	X	0,33	0,66	0,11
V2	0,16	X	0,08	0,11
V3	0,66	1	X	0,66
V4	0,25	0,33	0,16	X

$$D(1,2) = 1,2 / 3,6 = 0,33$$

$$D(1,3) = 2,4 / 3,6 = 0,66$$

$$D(1,4) = 0,4 / 3,6 = 0,11$$

$$D(2,1) = 0,6 / 3,6 = 0,16$$

$$D(2,3) = 0,3 / 3,6 = 0,08$$

$$D(2,4) = 0,4 / 3,6 = 0,11$$

$$D(3,1) = 2,4 / 3,6 = 0,66$$

$$D(3,2) = 3,6 / 3,6 = 1$$

$$D(3,4) = 2,4 / 3,6 = 0,66$$

$$D(4,1) = 0,9 / 3,6 = 0,25$$

$$D(4,2) = 1,2 / 3,6 = 0,33$$

$$D(4,3) = 0,6 / 3,6 = 0,16$$

M2=

	C1	C2	C3	C4
V1	2,8	2,7	1,6	1
V2	4	2,1	1,6	0,8
V3	0,4	2,4	1,2	0,8
V4	2,8	1,8	2	0,8

$$D(1,2) = 4 - 2,8 = 1,2$$

$$= 2,1 - 2,7 = -0,6$$

$$= 1,6 - 1,6 = 0$$

$$= 0,8 - 1 = -0,2$$

The highest value is taken into account

hm= 4 - 0,4 = 3,6 (Weighting element so that the results in the discrepancy matrix are at the level of the elements in the concordance matrix.)

## Step 7

The order of variants is evaluated according to the following relations:

**$C_{ij} > C_{ji}$  then  $V_i \gg V_j$**

$$C(1,2) > C(2,1) \Rightarrow V1 = V2$$

$$0,6 = 0,6$$

$$C(1,3) > C(3,1) \Rightarrow V1 \gg V3$$

$$1 > 0$$

$$C(1,4) > C(4,1) \Rightarrow V1 \gg V4$$

$$0,8 > 0,6$$

$$C(2,3) > C(3,2) \Rightarrow V2 \gg V3$$

$$0,7 > 0,4$$

$$C(2,4) > C(4,2) \Rightarrow V2 \gg V4$$

$$0,8 > 0,3$$

$$C(3,4) > C(4,3) \Rightarrow V4 \gg V3$$

$$0,4 < 0,7$$

**C=**

	V1	V2	V3	V4
V1	X	0,6	1	0,8
V2	0,6	X	0,7	0,8
V3	0	0,4	X	0,4
V4	0,6	0,3	0,7	X

**$V1 \gg V2 \gg V4 \gg V3$**

**V1 Console Playstation 4 PRO, Fortnite Neo Versa Bundle  
(G, VG,G, VG)**

**$D_{ij} < D_{ji}$  then  $V_i \gg V_j$**

$D(1,2) < D(2,1) \Rightarrow V1 \gg V2$

$0,33 > 0,16$

$D(1,3) < D(3,1) \Rightarrow V1 = V3$

$0,66 = 0,66$

$D(1,4) < D(4,1) \Rightarrow V4 \gg V1$

$0,11 < 0,25$

$D(2,3) < D(3,2) \Rightarrow V3 \gg V2$

$0,08 < 1$

$D(2,4) < D(4,2) \Rightarrow V4 \gg V2$

$0,11 < 0,33$

$D(3,4) < D(4,3) \Rightarrow V3 \gg V4$

$0,66 > 0,16$

**D=**

	V1	V2	V3	V4
V1	X	0,33	0,66	0,11
V2	0,16	X	0,08	0,11
V3	0,66	1	X	0,66
V4	0,25	0,33	0,16	X

**$V2 \gg V1 \gg V3 \gg V4$**

**V2 Console Microsoft Xbox One X 1TB, Gears 5 Ultimate Edition  
(VG, S, G, G)**



**$C_{ij}-D_{ij} > C_{ji}-D_{ji}$  then  $V_i \gg V_j$**

$$C(1,2) - D(1,2) > C(2,1) - D(2,1) \Rightarrow V_2 \gg V_1$$

$$0,6 - 0,33 > 0,6 - 0,16 \\ -0,17 < 0,44$$

$$C(1,3) - D(1,3) > C(3,1) - D(3,1) \Rightarrow V_1 \gg V_3$$

$$1 - 0,66 > 0 - 0,66 \\ 0,34 > -0,66$$

$$C(1,4) - D(1,4) > C(4,1) - D(4,1) \Rightarrow V_1 \gg V_4$$

$$0,8 - 0,11 > 0,6 - 0,25 \\ 0,69 > 0,35$$

$$C(2,3) - D(2,3) > C(3,2) - D(3,2) \Rightarrow V_2 \gg V_3$$

$$0,7 - 0,08 > 0,4 - 1 \\ 0,62 > -0,6$$

$$C(2,4) - D(2,4) > C(4,2) - D(4,2) \Rightarrow V_2 \gg V_4$$

$$0,8 - 0,11 > 0,3 - 0,33 \\ 0,69 > -0,03$$

$$C(3,4) - D(3,4) > C(4,3) - D(4,3) \Rightarrow V_4 \gg V_3$$

$$0,4 - 0,66 > 0,7 - 0,16 \\ -0,26 < 0,54$$

**$V_2 \gg V_1 \gg V_4 \gg V_3$**

**V2 Console Microsoft Xbox One X  
1TB, Gears 5 Ultimate Edition (FB, S,  
B, , B)**