

Alternative	Favorable Market	un-Favorable Market
Construct Large Plant	200 000	-180 000
Construct Small Plant	100 000	-20 000
Do nothing	0	0

0,4

0,6

أقصى قوة

max	min	Avg	
200 000	-180 000	10 000	$\rightarrow \frac{200 000 + (-180 000)}{2}$
100 000	-20 000	40 000	$\rightarrow \frac{100 000 + (-20 000)}{2}$

أكبر قيمة بالأكثر

$$\textcircled{1} \text{ Maxi Max} = \text{Max}(200k, 100k, 0) = 200k$$

$$\textcircled{2} \text{ Maxi Min} = \text{Max}(-180k, -20k, 0) = 0$$

أكبر نتيجة بالأقل

$$\textcircled{3} \text{ equal like} = \text{Max}(10k, 40k, 0) = 40k$$

EMV = expect monetary value

الاحتمالات

$$EMV(A_1) = 200\,000 \times (0,4) + (-180\,000) \times (0,6) = -28\,000$$

large

$$EMV(A_2) = 100\,000 \times (0,4) + (-20\,000) \times (0,6) = +28\,000$$

$$EMV(A_3) = 0 \times (0,4) + 0 \times (0,6) = 0$$

الاحتمالات X weight



0,6

0,4

* 3) Decision Making under certainty.

- Is the cost of Perfect information worth it?

EVPI :- Expected value of Perfect Information

- the differences between the payoff under perfect information and payoff under risk.

EVPI = Expected value with Perfect information (EVPI) - Max EMV

$$\begin{aligned} EVPI = & \left(\begin{array}{l} \text{Best outcome or} \\ \text{consequences for} \\ \text{first state of nature} \end{array} \right) \times \left(\begin{array}{l} \text{Problem of 1st} \\ \text{state of} \\ \text{nature} \end{array} \right) \\ & + \left(\begin{array}{l} \text{Best out come for} \\ \text{2nd state of nature} \end{array} \right) \times \left(\begin{array}{l} \text{Problem of 2nd} \\ \text{state of} \\ \text{nature} \end{array} \right) \\ & + \left(\begin{array}{l} \text{Best outcome for} \\ \text{last state of nature} \end{array} \right) \times \left(\begin{array}{l} \text{Problem of} \\ \text{last state of} \\ \text{nature} \end{array} \right) \end{aligned}$$

Ex:~

Alternative	Favorable	unfavorable
A_1 : large	200 000	-180 000
A_2 : small	100 000	-20 000
A_3 : Do nothing	0	0
P	0,6	0,4

$$EMV(A_1) = 200k(0,6) + (-180k)(0,4) \\ = 48k$$

$$EMV(A_2) = 100k(0,6) + (-20k)(0,4) \\ = 52k$$

$$EMV(A_3) = 0(0,6) + 0(0,4) = 0$$

$$EMV(\bar{A}_2) = 52k$$

$$EV_{wPI} = \overset{\substack{\text{Best} \\ \text{in state 1}}}{200000}(0.6) + \overset{\substack{\text{best} \\ \text{in state 2}}}{0}(0.4) =$$

$$EVPI = EV_{wPI} - \text{Max EMV}$$

$$= 120k - 52k$$

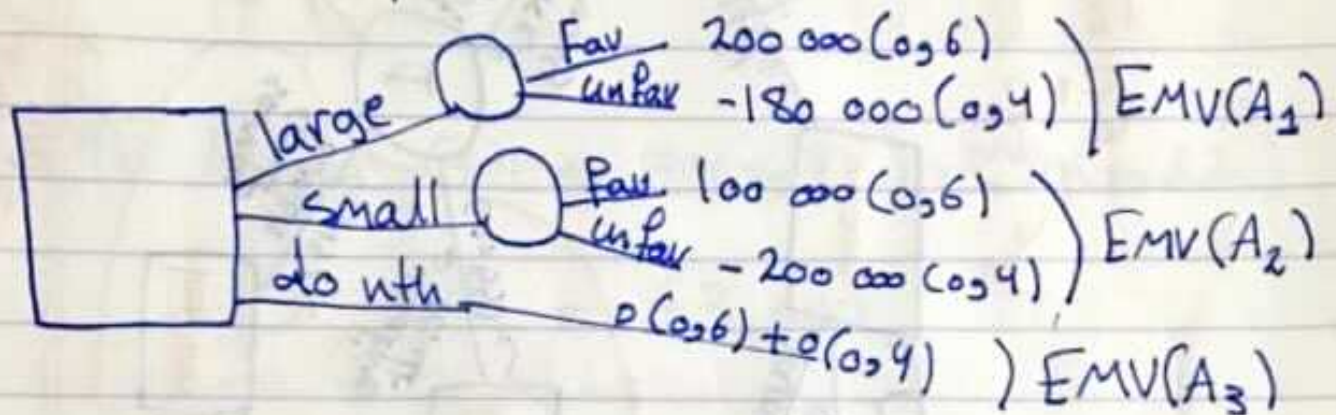
$$EVPI = 68k$$

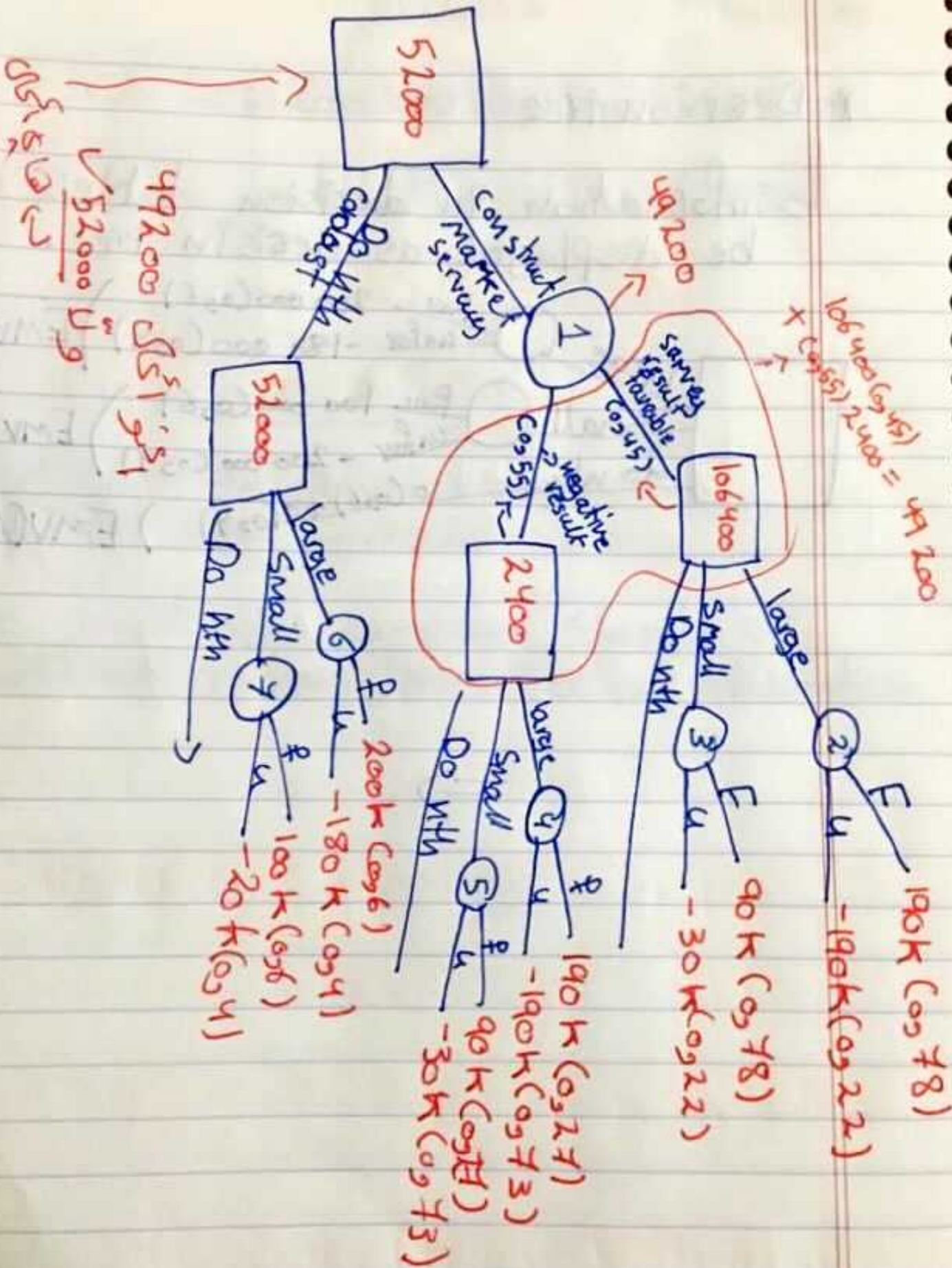
القيمة التي بدو أن دفعها للمعرفة
Perfect Info. $\leftarrow$ القيمة

the most the company should be
willing to pay for Perfect information.

* Decision tree

→ information in decision tables can be displayed as decision tree.





$$EMV \text{ Node (2)} = \overset{F}{190}(0,78) + \overset{u}{-190}(0,22)$$

$$= 106,400$$

لـ عند الفرع (2) بحسب $u + F$

$$EMV \text{ Node (3)} = 90(0,78) + -30(0,22)$$

$$= 63,600$$

لـ عند الفرع (3) بحسب $u + F$

أنو ألكى 106,400 ألي 63,600 ؟

ار 106,400 ألكى فبسطها في المربع 106,400 باضار Max

$$EMV \text{ Node (4)} = 190(0,27) + -190(0,73)$$

$$= -87,400$$

$$EMV \text{ Node (5)} = 90(0,27) + -30(0,73)$$

$$= 2400$$

أنو ألكى؟ 2400 ألكى، بقطرها

بالمربع 2400

$$EMV \text{ Node}(6) = 200(0,6) + -180(0,4)$$

$$= 48,000$$

$$EMV \text{ Node}(7) = 100(0,6) + -20(0,4)$$

$$= 52,000$$

52000 الأمل بـ ٥٢ ألفاً مربع

بفضل عذري أنو املها برقم (1) هل ١٠٦,٤٥٥ ولا
٢٢,٢٤٥٥ لاهاي ولاهاي! بسري هيك :-

$$EMV \text{ Node} = 106,400(0,45) +$$

$$2400(0,55) = 49,200$$

بـ ٤٩ ألفاً و ٢٠٠ رقم

أمرائي أنو أمل ٤٩,٢٠٠ ولا ٥٢,٠٠٠

52000 الأمل بـ ٥٢ ألفاً مربع

So ~ As a result 52000 is
the Best choice

(Not seek making information)
without survey.!