

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
100 000	-20 000	40 000

$200\,000 +$

$-180\,000$

$\frac{\quad}{2}$

$100\,000 +$

$-20\,000$

$\frac{\quad}{2}$

أكبر قيمة بالأعلى

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

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

أكبر نتيجة بالأعلى

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

EMV = expect monetary value

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

large ←

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

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

الاحتمال  $\times$  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

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

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

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

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

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

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

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

$$EVPI = EV_{wPI} - \text{Max EMV} \\ = 120k - 52k$$

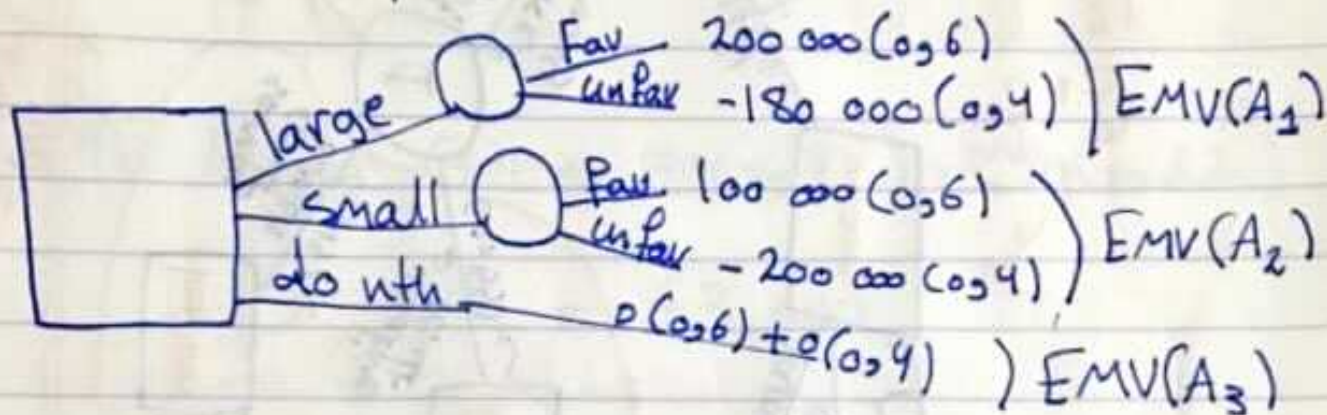
$$EVPI = 68k$$

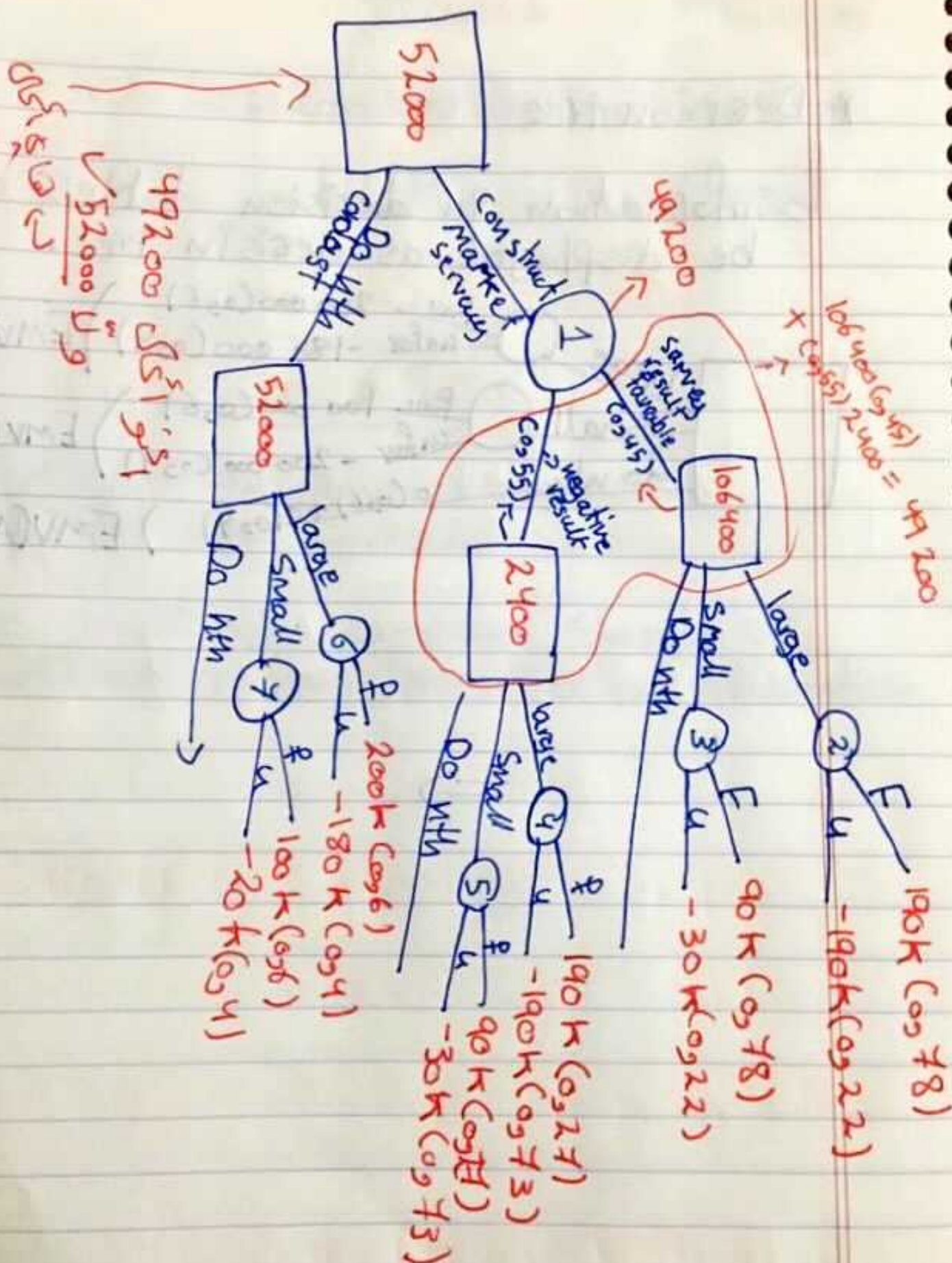
Perfect info.   
 الكلفة التي بدو ان يدفعها الشركة

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

## \* Decision tree

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





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

$$= 106,400$$

لح عند الفرع (2) بحسب  $u + F$

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

$$= 63,600$$

لح عند الفرع (3) بحسب  $u + F$

أنتو أعلى 106,400 أم 63,600 ؟

ار 106,400 أعلى فبسطها من المربع 106,400 باختيار Max

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

$$= -87,400$$

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

$$= 2400$$

أنتو أعلى؟ 2400 أعلى، 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 الأكل ببطوريا امر بيع

بفضل كندي أنو ابط لها برقم (1) هل 106,400 اول

24000 لاهاي ولاهاي! بسوي هيك :-

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

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

ببط لها دال رقم

أمر الله انو اكل 49200 ولا 52000 ؟

52000 الأكل ببط لها بامر بيع

So :- As a result 52000 is  
the Best choice

(Not seek making information)  
without survey.!