A Solutions:

1) x1 = number of unfurnished tables

x2 = number of furnished tables

x3 = number of unfurnished chairs

x4 = number of furnished chairs

Maximize z = 70x1 + 140x2 + 60x3 + 110x4

subject to constraints:

40x1 + 40x2 + 30x3 + 30x4 ≤ 40000.

2x1 + 5x2 + 2x3 + 4x4 ≤ 6000.

1	Objective	x1	x2	x3	x4			
2		70	140	60	110			
3	z	0	0	0	1333.333	146666.667		
4								
5	c1	40	40	30	30	40000	<=	40000
6	c2	2	5	2	4	5333.33333	<=	6000
7								

2) Currently unfinished chairs are sold at $60. Price can be increased maximum of 50 i.e. 110 but it's not profitable to increase the cost of unfinished chairs to the cost of furnished chairs.

3) Currently unfinished tables are sold at $20. Price can be increased maximum of $76.67. But practically this is not possible as price of unfinished tables is way more than the price of finished tables. So, it is not recommended to increase the price of unfinished tables.

4) If price of finished chairs fell to $100 i.e. decrease of price by $10, but the allowable decrease is only $5. So, the optimal solution won't remain same.

5) Shadow price of lumber is $3.67, allowable increase is $5000, by doing this the profit increases and if we decrease lumber supply, then the profit will also decrease.

6) As all the current labours are used and the total money is paid for them, nothing could be paid for additional workers.

7) Generally, the change in plan is not feasible as the profit will reduce. To verify this, we can solve this in excel.

22	Objective	x1	x2	x3	x4			
23		70	140	60	110			
24	z	3.13E-13	1000	0	0	140000		
25								
26	c1	40	40	30	30	40000	<=	40000
27	c2	2	6	2	5	6000	<=	6000
28								

As mentioned above, this is not recommended as the profit decreases.

8) This can be achieved by adding additional variable and a constraint. Solving in excel will give us the answer.

12									
13	Objective	x1	x2	x3	x4	x5			
14		70	140	60	110	200			
15	z	0	0	0	1328.767	2.73972603	146712.3		
16									
17	c1	40	40	30	30	50	40000	<=	40000
18	c2	2	5	2	4	250	6000	<=	6000
19									

So, the new design by the owner of the firm is worthy and it's recommended.