Issues of oceanview development corporation

This report analyses the issues that Oceanview Development Corporation is facing with regards to their endeavor to bid for the property that will be sold by sealed bid at a county tax foreclosure. The two pivotal points of chance events are whether Oceanview will have the highest bid and if the referendum for the zoning change will be rejected by the voters. This is of utmost importance to Oceanview because the acceptance of the bid will require a follow up from the corporation. Otherwise, Oceanview will have a deficit of 10% of the bid as a form of penalty.

Hence, Oceanview is at the dilemma of choice on the employment of a market research firm, who is capable of producing a detailed report on the sentiments of a zoning change, which is thereby valuable with respect to the decision that the corporation has to make.

The purpose of this case study is to recommend Oceanview on the employment of the market research firm, and weigh the cost of the research with the expected value of the information provided by them.

This will be achieved step by step with a decision tree that succinctly displays the sequence of the bidding process. Next, the possibility of entering the bid without the market research information will be explored thoroughly via various mechanisms like Optimistic and Conservative Approaches. To form a comparison for a clearer picture, the branch of conducting a market research will be analyzed. And finally, a recommendation to the employment of the market research firm will be decided by the results of the aforementioned analysis.

1. 2 Findings

Upon analysis of the data calculations, we concur that the optimal decision that is available to Oceanview is to bid for the property. This is supported with concrete information derived from several methods that, points only to the outcome of bidding for the property.

With regards to the branch of having the availability of market research, our team has concluded that while it is an optimal approach to bid for the project when the zoning change approval is favorable, the best decision to make for an unfavorable outcome of the market research is not to bid for the property.

We further concluded that by weighing the cost of the market research with the expected value of the data that can be achieved, it is ultimately a wise choice to employ the firm so as to extract more information about the zoning change.

Lastly, recommendations will be given as to how we can integrate such a method of decision analysis in other businesses as well.

2. Data Collation

2. 1 Decision Tree

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Figure 1: Decision Tree

2. 2 Branch Probabilities

Sn

P(Aâˆ©Sn)

P(Nâˆ©Sn)

P(Sn| A)

P(Sn| N)

S1

0. 3 X 0. 9 = 0. 27

0. 3 X 0. 1 = 0. 03

0. 27 / 0. 41

0. 03 / 0. 59

0. 6585

0. 0508

S2

0. 7 X 0. 2 = 0. 14

0. 7 X 0. 8 = 0. 56

0. 14 / 0. 41

0. 56 / 0. 59

0. 3415

0. 9492

P(A) =

P(N) =

0. 27 + 0. 14 = 0. 41

0. 03 + 0. 56 = 0. 59

Figure 2: Calculations of the Branch Probability Elements

States of Nature

Prior Probabilities

Conditional

Joint

Posterior Probabilities

Probabilities

Probabilities

Sn

P(Sn)

P(A| Sn)

P(N| Sn)

P(Aâˆ©Sn)

P(Nâˆ©Sn)

P(Sn| A)

S1

0. 3

0. 9

0. 1

0. 27

0. 03

0. 6585

S2

0. 7

0. 2

0. 8

0. 14

0. 56

0. 3415

P(A)= 0. 41

P(N)= 0. 59

Figure 3: Branch Probability Table

2. 3 Payoff Table

Payoff 12

Total Revenue – Property cost – Construction Expenses

= $15, 000, 000 – $5, 000, 000 – $8, 000, 000

= $2, 000, 000

Payoff 13

Cost of forfeiting bid

= 10% of $5, 000, 000

= -$500, 000

Payoff 14

= 0

Payoff 15

= 0

Payoff 16

= 0

Payoff 17

Total Revenue – Property cost – Construction Expenses

= $15, 000, 000 – $5, 000, 000 – $8, 000, 000

= $2, 000, 000

Payoff 18

Cost of forfeiting bid

= 10% of $5, 000, 000

= -$500, 000

Payoff 19

= 0

Payoff 20

Total Revenue – Property cost – Construction Expenses

= $15, 000, 000 – $5, 000, 000 – $8, 000, 000

= $2, 000, 000

Payoff 21

Cost of forfeiting bid

= 10% of $5, 000, 000

= -$500, 000

Payoff 22

= 0

Payoff 23

= 0

Figure 4: Payoff Table

The payoffs of the various chance events on the decision tree are labeled in pink, with the corresponding number being derived on the payoff table.

3. Recommendation when market research is not available

With reference to the lower branch of the decision tree, where market research is not available(as shown in the figure below), Overview will have to

make a decision of whether to bid(D1) or not to bid(D2) in the property. 4 mechanisms will be used to assist the corporation in making the decision.

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Figure 1: Decision Tree

3. 1 Expected Value Method

Using the Expected Value Method, we have to find out the EV(D1) and EV(D2) so as to make a comparison on the expected values of the two decisions.

At node 11,

State of Nature

Expected Value

P(S1) = 0. 3

P(S2) = 0. 7

$2, 000, 000

$-500, 000

=(2, 000, 000*0. 3) +(-500, 000*0. 7)

=$250, 000

Figure 5: Calculation at Node 11

At node 5,

Decision

Variables

Expected

Choices

P(Highest Bid) = 0. 2

P(Not Highest Bid) = 0. 8

Value

D1

$250, 000

(EV of Node 11)

$0

=(250, 000*0. 2)+(0. 8*0)

=$50, 000

(EV of Node 8)

D2

$0

$0

$0

Optimal Decision

$50, 000 (D1)

Figure 6: Calculation at Node 5

The calculation using the expected values at node 5 has clearly shown that it is more beneficial for Oceanview to bid for the property because the Expected Value of D1 is greater than the Expected Value of D2. Hence, D1 is the optimal choice.

3. 2 Optimistic and Conservative Methods

Decision

Outcomes of the Highest Bid & Not Highest Bid Branches

Optimistic (Maxi-max) Method

Choices

P(Highest Bid) = 0. 2

P(Not Highest Bid) = 0. 8

D1

=($250, 000*0. 2) + (0*0. 8)

=$50, 000

$0

$50, 000

D2

$0

$0

$0

Optimal Decision

$50, 000 (D1)

At node 5,

Figure 7: Optimistic and Conservative Methods

Using the optimistic method, our team has discovered that the decision choice of D1 has potential of reaping higher benefits as compared to D2. However, the conservative approach shows that Oceanview will be indifferent between the two choices because they are both equal to zero.

3. 3 Mini-Max Regret Method

At node 5,

Decision Alternative

State of Nature

S1

Regret

S2

Regret

D1

$2, 000, 000

$0

$-500, 000

$500, 000

D2

$0

$2, 000, 000

$0

$0

Decision

Figure 8: Mini-Max Regret Method

Using the Mini-Max regret method, our team has found out that the optimal choice of decision is D1, which reduces the amount of regret that Oceanview is subjected to.

3. 4 Conclusion

With conclusion, although the Maxi-Min produces a result of indifference between D1 and D2, the other methods all show support for D1 as the optimal decision. However, Oceanview should not base their choice solely on this result because the accuracy of the information is not known. In retrospection, the probability of Oceanview may not be 0. 2 because there is a lack of information on the number of bidders at that point of time. With the uncertainty on the number of bidders, the probability of Oceanview winning as the highest bid may drop when the contest for the property increases.

4. Recommendation when market research is available

4. 1 Expected Value Approach

Our group will use the expect value approach to determine the course of decision to be taken.

With reference to Appendix and the decision tree below, at node 4, the EV(D1) is $229, 500 while EV(D2) is $0. Hence, it is logical that Oceanview should choose to bid for the property if the result from the market research is favorable.

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Figure 1: Decision Tree

On the other hand, at node 5, the EV(D1) is -$74, 600 while EV(D2) is $0. In other words, if Oceanview has a choice of decision, they will choose D2, not to bid in the property, when the market research result is unfavorable.

4. 2 Conclusion

In short, Oceanview should bid for the property when the result for the market research is favorable, and not submit the bid when the prediction is unfavorable.

5. Recommendation to whether the firm is to be employed

5. 1 Expected Value Of The Sample Information

Expected value of the sample information(EVSI) can be derived from the following equation of, | EVwSI – EVwoSI|. The numerical answer of the

equation is often compared with the cost of obtaining the sample information.

To find EVwSI, the expected value with sample information, we have to find EV(2), which is equivalent to EVwSI. With reference to Appendix, EV(2) = $93, 992. 50

EVwoSI refers to the expected value without using sample information. In other words, it is the expected value without performing the market research. Referring back to Appendix and the decision tree, node 5 will give us the answer to EVwoSI, amounting to $50, 000.

Therefore, when we return to the equation, we will tabulate EVSI, which is calculated by $93992. 50 – $50, 000 = $43, 992. 50. Since this value is greater than $15, 000, we can conclude that EVSI is greater than the cost of performing the market research itself. Employing the market research firm will then be an optimal choice since the benefits within is more than the cost required.

6. Integration of knowledge to other business situations

A decision tree is a business model that requires the logical thinking of the sequence of events and the expected values within. While the decision analysis with the various mechanisms used for calculating expected values is useful in this case of property bidding, its usage is not limited. Many situations in our daily life that requires decisions which are irreversible, needs the empowerment of the tree to lay down the bigger picture. A close example will be the decision to drill an oil field. The decision to drill an oil field is irreversible in the short run, due to the great cost of machinery usage

involved. Hence, a decision tree will allow the companies involved to seek out every possible outcome, e. g. a sudden surge or drop in oil prices, and make an optimal decision.

Another situation which the knowledge from the decision analysis can be used is the allocation of resources. One of the main pioneers of allocation efficiency is Vilfredo Pareto. His concept of Pareto Optimal is that we should always allocate resources of the society till a point where, we are unable to make an individual better off without making another worse off. However, how can we ensure that our allocation is efficient enough to cover the needs of everyone in the society? By using the decision analysis route, we can maximize the coverage. For instance, when Government Officials allocate the social budget, they can better envisage the ground situations by using decision analysis. In the manner, the impact of their decision can be calculated and a better allocation is ensured.

The third area of business where a decision analysis has much of a use is the market penetration of a new product by a marketer. Very often at times, marketer suffers from product cannibalization, whereby the demand for that new product stripes away customers from the existing merchandizes. While we have enough data on the existing merchandizes to gauge how they will affect the demand for the new product, without decision analysis, it is almost impossible to tell on the converse relationship. With Bayer’s Theorem and the decision tree, it becomes easier for marketers to understand the full relationship between the new products and the existing ones and they will then make a better decision on the method of market penetration to prevent product cannibalization.