Teaching Note

Business Viability of Dish TV: Would it Break or Break-even?

Prerequisite Conceptual Understanding


Synopsis of the Case Study

The case study intends to study the importance of cost and revenue structures in determining the viability of Dish TV – the pioneer and leader of Direct to Home (DTH) services in India. Through the understanding of business operations of with special emphasis on its fixed and variable costs there is an attempt to get an insight about the vital concepts of break-even point and shutdown point. Though Dish TV is into its sixth year of operation, it has not been able to taste profit. Yet it continues to be in operation. In the short-run, as far as the variable costs are covered by the firm it continues to operate. The rationale behind its subsidisation of prices of set top boxes and the subscription fee in spite of incurring losses is to secure its market leader position to reap continued profit in the long run. Total variable and fixed costs are compared with sales revenue to determine if the firm will be in or out of operation. There is an attempt to probe if the probability of it reaching the break-even point is higher or it is closer to shutdown. Dish TV, by resorting to innovative ways of price increase, seems pretty optimistic to break-even soon.

Pedagogical Objectives

- To understand the cost structure of a firm
- To understand the concept of break-even point
- To understand the concept of shutdown point.

This teaching note was written by Nitu Gupta under the direction of Akshaya Kumar Jena, IBSCDC. It is only an illustrative orchestration of the case study ‘Business Viability of Dish TV: Would it Break or Break-even?’. It is never meant to limit the learning outcomes.

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Assignment Questions

• Explain the cost structure of a firm.
• Explain the concept of break-even point.
• Explain the concept of shutdown point.

Teaching Plan

Both Teaching Note and Structured Assignment follow a specific Teaching Plan [Annexure (TN)-I].

Case Analysis

I. Explain the cost structure of a firm.

The class may be initiated to the basic concepts of cost structure, to help in the analysis of break-even and shutdown point. To make students understand these concepts, I took the help of Dish TV financial report for 2008 (Exhibit III of the case study) and explained the concepts of Fixed Cost, Variable Cost and Total Cost.

Total Fixed Cost (TFC) refers to the cost of all fixed factors. It is independent of the level of output. It does not increase when production increases. Neither does it decrease when production decreases. The level of fixed cost remains broadly the same even if the firm has a zero output or high output. In the long-term, fixed cost may change as a result of additional capital investment (for example, adding a new factory unit) or due to increase in overheads to support a larger and more complex business. But then, the distinction between fixed and variable cost becomes non-existent. Rent, depreciation, research and development, marketing and administration costs are examples of fixed costs. In case of Dish TV the fixed cost for FY08 is INR 4,980 million.

Total Variable Cost (TVC) refers to the cost of all variable factors of production. Variable costs are those costs, which vary directly with the level of output. It increases or decreases with increase or decrease in production. They represent payment to output-related inputs such as raw materials, direct labour, fuel and revenue-related costs such as commission. Dish TV’s variable cost for FY08 is INR 1,330 million.

Total Cost (TC) refers to the cost of acquiring and using all factors of production. It is the total variable cost + total fixed cost. Dish TV’s total cost for FY08 is then INR 4,980 million plus INR 1,330 million which equals INR 6,310 million (Exhibit III of the case study). I explained to the students how TFC, being independent of output, is a horizontal straight line while TVC varies with output [Exhibit (TN)-I]. TC is the vertical addition of TFC and TVC.
I asked the students why TVC curve is usually increasing at a decreasing rate and later starts increasing at a decreasing rate. Incorporating the responses of the class, I simply hinted at the law of variable proportions which will be elaborated in a later session.

II. **Explain the concept of break-even point.**

I asked the students why they are pursuing MBA, in the hope of getting the answer that they want to be managers or entrepreneurs. After getting the expected answers, I asked them at what revenue and cost scenario a company would start making profit; and whether a firm would close shop if it happens to incur losses. After hearing the responses of students, I introduced into our discussion two important concepts, namely, break-even point and shutdown point. These two concepts provide an insight into the cost-revenue relations that would help answer the questions that I posed. The relationship between costs and revenue forms the core on which entrepreneurs and top-notch managers base their business decisions.

Break-even analysis is based on the comparison between TR and TC [Exhibit (TN)-II].
The line TR represents the change of revenue as the levels of production activity or output varies. The line TFC represents the total fixed costs of the firm; this is shown to be constant throughout the production process. Even at zero output, the fixed cost remains unchanged. With the increase in output, variable costs also increase; this implies that the total costs, which are equal to total fixed costs plus total variable costs, also increase. At the point of tangency between TR and TC curves at B, total costs are equal to total revenue. Thus, there is neither profit nor loss. The point, where neither profit nor loss is made, is known as the ‘break-even point’. In the case study, Dish TV would break-even if it could avoid the losses by equating the total revenue and the total cost. From the above analysis it is clear that at the break-even point,

\[ TC = TR \].............(1)

Manipulating equation (1), I showed the break-even point with the help of average revenue and average cost thus:

\[ TC = AC \times Q \].............(2)
\[ TR = AR \times Q \].............(3)

By substituting it (2) and (3) into (1),

\[ AC \times Q = AR \times Q \]

Or, \[ AC = AR \] (cancelling Q from both sides)

To reinforce the illustration of the break-even point in the average framework, I showed it graphically at point B [Exhibit (TN)-III] where AR and AC curves are tangent. At this the break-even point, there is no profit no loss. I stressed one important point in this regard, TR and TC equality as well as AR and AS equality can be achieved either when these curves become tangent to each other or intersect each other. I initiated a debate about the break-even point and decided in favour of tangency points since that reflect the condition of equilibrium of a firm, namely MC= MR.

**Exhibit (TN)-III**

The Break-even Point

<table>
<thead>
<tr>
<th>Price</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>Q</td>
</tr>
<tr>
<td>P=MR=AR Break-even point</td>
<td></td>
</tr>
</tbody>
</table>

Prepared by the author
I intended to do the break-even analysis of Dish TV.

Total Revenue of Dish TV for FY2008 = INR 4130 million (Exhibit III of the case study)

“In 2008–2009 fiscal, Dish TV crossed 5 million subscriber mark” (page 5, para 3 of the case study). To keep the analysis simple, the number of subscribers is taken to be exactly 5 million.

Therefore, Average Revenue (Revenue per Unit) = TR/ Q = INR 4,130 million/5 million = INR 826........(4)

Total Variable Cost of Dish TV for FY2008 = INR 1330 million (Exhibit III of the case study)

Thus, Average Variable Cost (Variable cost per unit) = INR 1,330 million/5 million = INR 266.........(5)

At break-even point, TC = TR
Or, TFC+TVC = TR
Or, Q x AFC +Q x AVC = Q xAR
Or, Q x ( AFC + AVC ) = Q x AR
Or, AFC + AVC = AR
Or, AFC = AR-AVC
Or, AFC = 826-266=560........(6)

This implies at break-even point, AFC should be INR 560
AFC = TFC /No. of subscribers.

Fixed Cost of Dish TV for FY2008 being INR 4,980 million (Exhibit III of the case study),

AFC = 4,980million/No. of subscribers............(7)

Substituting (6) into (7),

560 = 4,980/No. of subscribers
Or, No. of subscribers = 4,980/560 = 8.9 million (By transposing)

Thus, 8.9 million subscribers in the FY2009 would allow Dish TV to breakeven. Dish TV “aspires to achieve gross subscriber base of over 7.5 million subscribers” in order to reach break-even soon (page 5, para 3 of the case study). This implies that they claim to break-even with 2.5 million additional subscribers (7.5million–5million). But as per our analysis, it is supposed to add another 3.9 million (8.9million–5 million).

I checked with the students, what about the net revenue to be contributed by 1.4 million subscribers (8.9 million–7.5 million)? The students were a little perturbed. I told them not to worry and simply go ahead and calculate the net revenue to be generated by 1.4 million subscribers.

1.4 million subscriber would generate a net revenue of 1.4 million x ( AR-AVC )
= 1.4 million x (826-266)
= 1.4 million x 560
= INR 784 million

I explained to them that out of the INR 784 million, Dish TV “expects the carriage fees around INR 500 million in the current fiscal 2009–2010” (page 5, para 3 of the case study), and rest from advertising generated on clean feed of select foreign channels.
I pointed out one obvious limitation in this approach of break-even analysis: Price per unit is assumed to be constant for various levels of output which is the case only under perfect competition.

Then I proceeded to explain the break even analysis with a more realistic approach. Dish TV is operating in a monopolistic competitive market with other close competitors like Tata Sky, Airtel, DD, Sun, etc., providing similar DTH service. Therefore, I attempted the average framework of monopolistic competition where AR curve is downward sloping. The relationship between average and marginal makes the latter diverge from the former and stay below the former if the former is falling.

When the number of subscribers is 5 million for Dish TV in FY2008,

\[
\text{ATC} = \frac{\text{TFC}}{5\text{million}} = \frac{4,980 \text{ million}}{5\text{million}} = 996
\]

\[
\text{AVC} = 266 \text{ and } \text{AR} = 826
\]

In order to break-even the firm’s

\[
\text{AR-AVC} = \text{AFC}
\]

Or,

\[
Q \times (\text{AR-AVC}) = Q \times \text{AFC}
\]

Or,

\[
Q \times (\text{AR-AVC}) = \text{TFC}
\]

As per the case, Dish TV is optimistic to breakeven at 7.5 million subscribers. This implies,

\[
7.5\text{million} \times (\text{AR-AVC}) = 4,980 \text{ million}
\]

Or,

\[
\text{(AR-AVC)} = \frac{4,980}{7.5}
\]

Or,

\[
\text{(AR-AVC)} = 664.
\]

In a realistic scenario where both average revenue and average variable cost are variable, our analysis shows that at the break point of Dish TV with 7.5 million subscribers, the difference between the average revenue and average variable cost should be INR 664 per subscriber.
III. Explain the concept of shutdown point.

After a vivid analysis of the break-even point, the next logical concept to be analysed was shutdown point. The students were too keen to know about it as it is the key to the firm’s continuity or closure. In order to justify its existence in the industry in the long run, a firm needs to reap at least normal profit. In the short-term, however the case may not be the same. Many businesses incur operating losses in the short-run. Due to fall in market demand, the prices tend to fall and the revenues dip. This however, does not imply that the business should call quits as soon as it sinks into red. The decision of the firm to be in business or not could be explained through the concept of shutdown point which emphasises the variable cost.

The total fixed costs must be borne regardless of the level of output. These costs are sunk costs and cannot be avoided even if the firm shuts down. When the total variable cost was more than fully covered, the loss would rather be greater in case the firm shuts down, for at least a part of the TFC would be covered from the TR if it was not shutdown. Only when the firm fails to cover its TVC, it becomes worth a firm’s while to quit production. When total revenue just covers total variable costs, the firm reaches its shutdown point. Using average framework, shutdown is found when AR= AVC, proof of which is given below:

TR = TVC

or, Q x AR = Q x AVC

or, AR = AVC (cancelling Q from both sides)

The equilibrium output for the firm is at output Q corresponding to point E where MR=MC [Exhibit (TN)-V]. The firm is incurring an economic loss at P since AC>P. But this price P is high enough for the firm to cover not only all of its variable costs but also a part of its fixed costs. In this scenario, the firm is justified in continuing to produce in the short-run. Losses will be greater if it closes down. The loss of the firm is equal to PRST if the firm is in operation. But if the firm shuts down, the loss would be more, which would be UVST. Hence, to minimise loss the firm would continue to stay in business.

Exhibit (TN)-V
Circumstance Where the Loss-making Firm Stays in Business

Prepared by the author
In the case for Dish TV,

\[ TR = \text{INR 4,310 million}, TC = \text{INR 6,310 million}, TFC = \text{INR 4,980 million}, TVC = \text{INR 1,330 million} \]

\[ \text{Loss} = TR - TC = \text{INR 2,180 million}, \text{for FY2008 (Exhibit III of the case study)} \]

Dish TV would have been forced to shutdown only if the TR would have been less than TVC, which is INR 1330 million. But as TR is much higher at INR 4,310 million, Dish TV continues to operate.

With average figures calculated above we have

\[ \text{Average Revenue} = \frac{\text{INR 826}}{\text{Average Variable Cost} = \frac{\text{INR 266}}{\text{This implies (AR INR 826)} > (AVC INR 266)} \]

The shutdown point is at AR=AVC. Since for Dish TV, the AR is quite greater than AVC, business of Dish TV can be considered absolutely viable with no reason to close down in the short run.

At this point the average fixed cost = \( \frac{TFC}{\text{No. of subscribers}} = \frac{\text{INR 4,980 million}}{5\text{million}} = \text{INR 996} \)

Therefore for Dish TV, the average or per unit loss is

\[ \text{\( (AVC+AFC) - AR = (226+996) - 826 = 1,222-826 = 396 \)} \]

This implies at current level, the average loss per unit of Dish TV is INR 396 while if it chooses to shutdown at current situation the minimum sunk cost which it shall have to bear is INR 996. Thus with the objective of loss minimisation it is definitely advisable for Dish TV to remain in operation in spite of losses.

The point S is referred to as the shutdown point [Exhibit (TN)-VI] where the market price is at a point where the firm is just covering its variable costs and the fixed costs are untouched. When price<AVC, the supplier is better off closing down a plant.

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*Exhibit (TN)-VI*

**The Shutdown Point**
Final Thoughts

A business is started with a purpose of making money. Once in the business, a firm may experience profit, loss or no-profit-no-loss. Though in the long run a firm can quit if loss persists, in the short run, its aim is two-fold – profit maximisation or loss minimisation. Though avoiding losses is the objective of all firms no matter in what kind of business they are in, the firms do and should remain operational even in a loss-making scenario in the short run. The rider is that the price must not be below AVC. When the price just covers AVC, price line becomes tangent to AVC curve. This point represents the shutdown point. On the other hand, when the price just covers AC, price line becomes tangent to AC curve. This point represents the break-even point. Reaping supernormal profit by moving beyond break-even is the motive of any economic enterprise. Dish TV is no exception to this aspiration.

Additional Readings


Annexure (TN)-I
Teaching Plan

The Big Picture
To debate if Dish TV would remain in business under circumstances of loss?

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Analysis Section</th>
<th>Expected Learning Objectives</th>
<th>Forward Linkage</th>
<th>Ideal Duration (mins)</th>
</tr>
</thead>
</table>
| 1      | Cost Structure of a Firm | • Fixed Cost  
• Variable Cost  
• Total Cost  
• Average Cost. | To prepare the background for understanding the concept of break-even | 30 |
| 2      | Break-even Point | • Total revenue  
• Break-even at TR = TC. | To explore the point of cost structure where the firm has to shutdown | 30 |
| 3      | Shutdown Point | • Shutdown at AR = AVC. | | 30 |

Prepared by the author