**ECO550 Week 4 Scenario Script:** How to Define and Measure Costs

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| **Slide #** | **Scene #** | **Narration** |
| Slide 1 | Scene 1  An older cottage style family run business (Katrina's Candies’s Candies) |  |
| Slide 2 | Scene 2  In Maria’s office, Herb and Maria meet to discuss Katrina's Candies’s cost | **Herb**: Hello, Maria.  **Maria**: Hi, Herb. How’s your day going?  **Herb**: Great, so far. I’ve been busy all morning taking notes on our progress regarding our project for Ken.  **Maria**: How much have we done?  **Herb**: We’ve finished about thirty-five percent of the tasks we identified after our first full-team meeting. We might have completed a bit more, if we hadn’t been challenged at the forecasting stage.  **Maria**: Really! What happened?  **Herb**: The forecasting process started out okay. Renee explained how to develop forecasts using the raw data you compiled to estimate the demand model. Then we formulated a trend-line forecast and a two-period moving average forecast. Later we used the estimated demand model to generate a forecast based upon hypothetical values for the set of independent variables. We also developed weighted-average and exponential forecasts.  **Maria**: Since Renee and you were able to develop forecasts, why was that challenging?  **Herb**: Developing forecasts was easy; the challenge was deciding which forecast would give the most information for decision-making purposes. After evaluating results for each type of forecast, Renee and I selected the *estimated regression model* to forecast demand.  **Maria**: Any particular reason the regression model is the best?  **Herb**: Yes, the reason is that the trend-line forecast we worked on showed a linear relationship. Keep in mind that when trend line forecasts show a positive, straight-line relationship between dependent variables and time, *regression models* are the best forecasting tool.  **Maria**: Thank you for sharing that with me! Was there anything else you’d like to share?  **Herb**: Yes. Then when we compared forecasts for each of the forecasting methods we used, the regression model forecasts based upon estimated coefficients and hypothetical values resulted in a forecast that’s closest to the actual demand; thereforethe errors were small.  **Maria**: Thanks for the update, Herb. What are we doing now?  **Herb**: Renee and I decided Ken might request an *analysis of production costs*be included as a component of his analysis and report to the board of directors. We know your department maintains data files on costs and revenues so Renee thought I should prepare you with a few concepts, just in case Ken does make a last minute request for a cost analysis.  **Maria**: Seems like a reasonable assumption to me, Herb. From past experience, I can tell you Ken is likely to make lots of last minute requests. Whenever the Board is involved, anything is possible. |
| Slide 3 | Scene 3  Herb and Maria are in Maria’s office and Herb is explaining the types of uses of cost data.  Ledger will be placed on table. | **Herb**: Okay, let me start by explaining that the **analysis of costs** depends upon the intended use of the analysis. There are two basic uses of cost analyses and when firms consider decisions that involve the use of scarce resources, firms analyze costs associated with alternative uses of those resources. The term **opportunity costs** are used to describe the cost of using alternative resources. The other term used to describe opportunity costs is **implicit costs**. When firms evaluate costs to be used in financial reports, firms use historical outlays. The term **explicit costs** are used to describe historical costs. Opportunity costs are added to explicit costs to make decisions about merits of investment decisions. However, only explicit costs are used in actuality to determine the level of reportable profit. More so, a **sunk cost** is a retrospective cost that has already been incurred and cannot be recovered. Keep in mind that sunk costs are sometimes contrasted with *prospective costs*, which are future costs that may be incurred or changed if an action is taken.    **Maria**: That’s a clear explanation, Herb. However, I will need some concrete examples of explicit and opportunity costs so I’ll know what they look like when I encounter a situation where knowing the difference is important.  **Herb**: Is that an accounting ledger over there?  **Maria**: Yes, that’s last year’s ledger.  **Herb**: Let me look at it.  **Maria**: Sure, no problem. Is there anything in particular you want to see?  **Herb**: I want to show you what explicit cost means. Turn to any of the account pages.  **Maria**: What about this account, payments for bubble-tissue paper?  **Herb**: Perfect! This account represents an *explicit cost* which is the actual expense Katrina's Candies incurred when bubble-tissue paper was purchased. In fact, every expenditure Katrina's Candies’s actually made to run the business is an explicit cost.  **Maria**: Do these “explicit costs” you’re talking about include *utility* and *incidental expenses*?  **Herb**: Yes, explicit costs include expenditures to cover all costs associated with the production of a good. On the other hand, **implicit costs** refer to costs firms do not actually incur.  **Maria**: What type of costs are costs that firms do not actually incur? I’m pretty sure Katrina's Candies’s is certainly not one of those firms. I recall that every expenditure the accounting department makes on behalf of Katrina's Candies’s is for an *actual cost*associated with manufacturing chocolate candy. |
| Slide 4 | Scene 4  Herb and Maria are in Maria’s office discussing the profit function.  Show calculation components on projector.  Show formulas to Maria for the example | **Herb**: There are costs other than the explicit costs you described, Maria. Firms also incur implicit costs. For example, look at the current situation Ken has to consider. If Ken decides Katrina's Candies’s should expand into the international market, it means there is at least one other investment project it will not be able to implement. Alternatively, if Ken decides Katrina's Candies should not expand, it means Katrina's Candiesit is discarding what gains would come from expanding into the international market. The value of the choices Katrina's Candies’s Candies does not make are considered *implicit costs* of the actual decision. To clarify,implicit costs are the same as opportunity costs, which means that there is a sacrifice when making a given decision.  **Maria**: For an accountant, opportunity costs seem to be an interesting concept. Let me see if I understand. I recall that there are two types of costs, explicit costs for where the accounting department actually issues checks, makes payments, and next the implicit costs for which no check is issued yet and we have to consider making decisions about using our productive resources.  **Herb**: That’s correct. For example, when we evaluate *expected return* and *profit to be received* from a particular decision, we include implicit costs in the calculation of profit as follows.  **Maria**: Wait, before you explain let me see if I can explain what’s going-on in the model. I see where you defined total revenue as price times quantity then defined total cost as explicit costs plus implicit costs. When you defined explicit costs, there are two terms you used the first time—total fixed cost and total variable cost.  **Herb**: Yes, there are two new cost terms. I’ll explain those terms a little later.  **Maria**: So after defining the terms in the total cost function, you combined total revenue and total cost into an expression that calculates profit.  **Herb**: Yes, that’s correct! Profit equals total revenue minus explicit costs minus implicit costs. After completing this calculation, if the result is *positive* or *above normal*, we say the firm has earned **above normal profit**. If the result equals *zero*, we say the firm has earned **normal profits**. If the result is *less than zero*, meaning there is a minus sign, the firm is *incurring a loss*.  **Maria**: Got it! Could you now provide me with an example?  **Herb**: Sure! Let’s use the Board’s directive to Ken mentioning that Katrina's Candies’s Candies should expand internationally. The expansion will involve using Katrina's Candiesits current resources like our managers, some of the chocolate recipe specialists, possibly a couple of our manufacturing teams.  **Maria**: I believe the expertise these employees possess would be required in a new facility, if that’s the form expansion would take, to ensure uniformity of the quality of chocolates no matter where Katrina's Candies’s produces the chocolates. Am I correct?  **Herb**: That is correct! I was just going to mention that. (laughter) Now let’s assume there is another way we could use the employee expertise. We could use managers, chocolate recipe specialists and so on to expand into the general pastry industry where Katrina's Candies’s could bake cakes and so on. Suppose that we know that venturing into the pastry industry would generate fifty thousand dollars in profit. The fifty-thousand dollars is the implicit cost, while not choosing to go into the general pastry market is the opportunity cost.  **Maria**: Okay that makes a lot of sense! I do have a question though, are you saying we use the fifty-thousand dollar amount, although Katrina's Candies’s is not actually manufacturing pastry products?  **Herb**: Exactly! Look at the profit function again. Instead of the term opportunity cost, we would substitute the dollar amount, the fifty-thousand dollars, into the profit function to get the *level of profit* after expanding internationally. |
| Slide 5 | Scene 5  Herb and Maria are in Maria’s office discussing the importance of using opportunity costs when decisions are to be made about changes Katrina's Candies’s production, the size of the company and so on. | **Maria**: I do understand the math logic;, however, the way you have used the fifty-thousand dollars implies Katrina's Candies’s would not make a profit unless total revenue was enough to cover *explicit costs* and *opportunity cost*.  **Herb**: Correct! Total Revenue has to cover all cost before we can say the proposed expansion is profitable; for that matter, total revenue must cover the opportunity costs of any foregone alternative that is the next best option.  **Maria**: I think I understand now!  **Herb**: To elaborate a little more on the new terms used in the total cost function which include the total fixed costs and total variable costs. **Total fixed costs** are costs of production the firm incurs in preparation to produce a product and this could be a monthly lease, the cost of machinery, a security system including security guards for the building and grounds, or even the CEO’s salary. These total fixed costs, however, do not change as production changes.  **Maria**: According to this definition of total fixed costs, this means my salary is also included in fixed costs because the function of the accounting department is independent of the level of production.  **Herb**: Yes, that’s correct. On the other hand, there are costs that change as production changes, these costs are **total variable costs**. From the moment Katrina's Candies’s began production, variable costs change with each new hire of a manufacturing worker, the amount of chocolate and other ingredients used in the recipes to make the various types of chocolates.  **Maria**: I clearly understand the concept of variable costs. During my employment at Katrina's Candies’s I have witnessed increases in expenditures on labor and ingredients as the company grew. In fact, we had to purchase the latest in accounting software just last year when demand for our product increased just so we could have the most up-to-date information on variable costs.  **Herb**: It’s good that you are able to apply your personal knowledge as an accountant to these economic concepts. At this point I can now explain the difference between using costs for decision-making purposes and using costs for financial reporting.  **Maria**: Thanks for taking me back to this question about using costs. I’m ready to hear more about some of these key concepts.  **Herb**: When a company creates a financial report, the company cannot include calculations for opportunity cost because those costs are not actually incurred. Therefore, opportunity costs are dropped from the profit function when the result is to be included in financial reports however only *explicit costs* are included.  **Maria**: This form of the profit function makes more sense to me, Herb! I suppose you could say that as an accountant I am interested only in the amount of actual expenditures. (laughter)  **Herb**: Although you understand, here’s a video I found that offers a numeric explanation of the total cost function when only explicit costs are included. |
| Slide 6 | Scene 6  Interaction Slide  Incorporate iPad to show Video about Cost Functions   * Cost Function: Solving for total, fixed and variable cost   + <http://www.youtube.com/watch?v=dwRo0VJ_TO8> |  |
| Slide 7 | Scene 7  Herb and Maria are in Maria’s office discussing average total costs  Show average total cost function on projector | **Maria**: That was a very concise and clear example, Herb. Thanks and by now, you know how much I appreciate examples. (laughter)  **Herb**: No problem, Maria. Let’s now discuss the last cost concept we’re going to cover today.  **Maria**: Okay, I’m ready!  **Herb**: Now that you understand the concept of total costs we can make one more distinction in terms of how cost information is utilized to make decisions. In the case where a firm needs to determine the level of production, or how much to produce, the firm focuses on **average total cost** or **ATC**. The average cost to produce a unit of output in our case would be the average cost to produce a box of chocolates.  **Maria**: So how do we find the average total cost?  **Herb**: Average total cost is derived by *dividing* total cost by the level of output. So, first we find the total cost for producing a given level of output then we divide the total cost by the amount of output to get the average. Given our total cost function, there are two components of average total cost and they include the average fixed cost and average variable cost. Here is what the average total cost function looks like.  **Maria**: How would a firm use this cost?  **Herb**: By using average total cost as the decision variable, a firm should produce the amount of output where average total cost is at a minimum per unit.  **Maria**: Sounds like a reasonable decision-making rule.  **Herb**: It is a very practical rule. Do you have any other questions?  **Maria**: No that is all; I have no further questions at this point.  **Herb**: I want to make sure you understand the different concept we discussed today. Therefore, I would like for you to participate in a review activity I put together based on the key items we discussed.  **Maria**: Thanks Herb! |
| Slide 8 | Scene 8  Interaction Slide  Incorporate iPad to show supplemental information about today’s topics   * Productivity and Costs in the Short-Run   + <http://www.youtube.com/watch?v=_M7CtkWnD5U> * Economies of Scale.   + <http://useconomy.about.com/od/glossary/g/economy_scale.htm> * Low Cost Producer or Economies of Scale.   + <http://news.morningstar.com/classroom2/course.asp?docid=144752&page=3> |  |
| Slide 9 | Check Your Understanding  Multiple Choice  Question: In the decision process, management should ignore:   1. Implicit costs 2. Historical costs. 3. Sunk costs. 4. Marginal costs.  * Correct Answer is C. * Incorrect A: No. Implicit costs are important to determining whether economic profit is earned. * Incorrect B: No. Historical costs are important for understanding the behavior of variables. * Correct Answer: Yes. Sunk costs are not recoverable. * Incorrect D: No. Marginal costs are costs that change as output changes. |  |
| Slide 10 | Summary  Concluding scene taking place in conference room | **Herb**: Maria, I hope the review activities were helpful!  **Maria**: They were great Herb! Thank you for sharing those with me; they were a great review tool. Can we do a review of what we accomplished today so I can update Ken?  **Herb**: Sure thing! The main concept of our meeting today revolved around cost relationships and how firms like Katrina's Candies’s should apply cost concepts to make decisions. We also noted that the process for using costs to make decisions involve the use of scarce resources.We then examined the procedure for using costs to create financial reports.  **Maria**: Yes, and top of that, we also spent some time developing the concept of opportunity costs since opportunity costs will be most important to Ken as he evaluates the decision to expand Katrina's Candies’s.  **Herb**: The use of per unit costs to make production decisions was the last concept we discussed. I explained to you that the per unit costs are a firm’s average total costin which I provided an explanation and an example of how to derive these average total costs.  **Maria**: I would say today was a success! I feel really good about meeting up with Ken and answering any questions he may have about the concepts we discussed today.  **Herb**: That is fantastic and I believe that is all for our meeting today. Until we meet again, don’t forget to complete your weekly threaded discussions based on the key concepts we covered this week.  **Maria**: Thanks, Herb and have a great day! |