



## LSM523: Marketing Research and Analysis

### This course includes

- Three self-check quizzes
- Two discussions
- One Ask the Expert interactive
- One scored project in multiple parts
- One [video transcript file](#)

Completing all of the coursework should take about five to seven hours.

### What you'll learn

- Recognize opportunities for using marketing research to reach better managerial decisions
- Select an appropriate research method for a particular organizational need
- Apply the six-stage Marketing Research Process to ensure the usefulness of the research data
- Use marketing analyses effectively in the workplace



### Course Description

Marketing professionals rely on clearly defined goals to determine the course of action when placing a product in the market. Leveraging research to learn more about your target audience is the main subject of this third online course in the Marketing Strategy for Business Leaders certificate program. In this course you will learn how to be an intelligent consumer of information when it comes to marketing research and analysis, so you can become a more effective decision maker. You will first look at marketing research, including the purpose and goals of research, how to balance the ideal with reality in doing research, and how to apply the six stages of research to a marketing situation. Next you will examine different ways to analyze the data acquired through marketing research. Using formulas to determine how cannibalization

affects the profitability of new products and the value of a long-term customer, you will perform a basic sensitivity analysis to assess the robustness of your results.

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Professor Stayman's teaching and research interests are in the areas of advertising and consumer decision making. He came to Johnson from the University of Texas at Austin. His research has focused on the study of emotional responses to advertising and the role of affect in decision making. His work has involved methodological and measurement issues in studying emotions. He is also interested in theoretical accounts of the effects of emotions on people's preferences. His research has been supported by grants from the Ogilvy Center for Research and Development, the Marketing Science Institute, and the American Academy of Advertising.

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## Module Introduction: Marketing Research



Marketers perform research to gain insight into the needs, desires, perceptions, and preconceptions of their customers. They then use that insight to improve their decision-making and to achieve better outcomes. In this module, you first look at what marketing research is and why marketers do it. Then you identify some questions that research can answer. You weigh the pros and cons of different research methods and find out why sampling is an important part of any research project. You discover a careful examination of the six stages of research can help you formulate an effective research objective.

By the time you complete this module, you should be able to:

- Identify reasons for doing marketing research
- Develop a definition of marketing research
- List some questions marketing research can answer
- Explain why sampling is necessary in marketing research
- Identify some different sampling methods that marketing research companies use
- Describe surveys, experiments, and focus groups
- Name several factors that should influence your choice of research method
- Identify the six stages of research
- Describe how to use the stages of research to formulate an appropriate research objective
- Suggest a research method for a hypothetical marketing scenario



## Watch: **What Is Marketing Research?**

Understanding your customers is fundamental to developing effective marketing strategies. Marketing research is the function that gives you the information you need to enhance this understanding. The American Marketing Association defines "marketing research" thus:

*Marketing research is the function that links the consumer, customer, and public to the marketer through information--information used to identify and define marketing opportunities and problems; generate, refine, and evaluate marketing actions; monitor marketing performance; and improve understanding of marketing as a process. Marketing research specifies the information required to address these issues, designs the method for collecting information, manages and implements the data collection process, analyzes the results, and communicates the findings and their implications.*

What motivates firms to do this research? And, what makes marketing research effective?



## Watch: **Goals of Research**

Now that you have an understanding of the concept of marketing research, we can look at how that research factors into marketing decision-making. Where can research contribute to the planning and execution of your marketing strategy?



## Watch: **Making Intelligent Compromises**

If you have ever taken a statistics class, you know that one of the major pitfalls of research is that most testing environments preclude the gathering of 100% of the data. Instead, we must *sample* a portion of the data, doing our best to make sure that the sample is a reasonable representation of the entire data set. This sampling issue applies in marketing research as well, and poses some unique challenges for the researcher.



## Read: **Sampling in Action**

Sampling is the process of selecting a group of individuals from a population or a market for the purpose of testing, in order to find out something about the larger population. Creating or selecting a sample is an important part of the research design. For example, a marketer might perform research that tests a small group of preteens in order to get information about how preteens in general respond to a certain product.

Researchers create samples for several good reasons. By testing a representative sample, the researcher is relieved of the burden of testing the product on every member of the larger population, a process that would be expensive, time-consuming, and ultimately unnecessary. A sample that is truly representative of the whole can yield a result almost as accurate as testing the entire target population.

Marketers use sampling to test product performance in entire target markets and in different segments of markets or market environments. For example, a researcher might use sampling to compare product performance in a region where the firm has a high market share with performance in another region where it has a low market share. Or, the researcher may use sampling to compare product perception in a geographic area where the competition is strong with one where competition is weak.

When selecting a sample, marketers think, "How can I create a sample that will tell me exactly what I want to know?" Be sure to consider market segments and different market environments when selecting a sample for a marketing research project.

### **Two Examples of Sampling in Action**

1) The Nielsen Company provides businesses with marketing data from a variety of sources, such as TV ratings, mobile and online data, and book sales data. Nielsen market research looks at samples of scanner data taken from many different channels. That is, they take data from distributors, retailers, and wholesalers and compare them. This enables Nielsen to ask questions like: How does a particular product sell in superstores versus drugstores?

2) comScore is a marketing research company that supplies businesses with Internet marketing data. They analyze web browsing behaviors by comparing sampling locations (home, work, and mobile browsing).

Both companies do marketing research, and both use sampling, but each provides a very different service that generates different kinds of data.



## Watch: **Effective Research Methods**

Having determined that you would like to conduct a research project, you need to consider what data you will be collecting. The collection and processing of that data can be costly and time-consuming, so you need to balance your priorities when designing the research effort. Different research methods provide different kinds of data. Before you begin a research project, you need to consider which method is best suited to providing the data you need.

## Read: **What's the Best Method?**

### ★ **Key Points**

Primary research is the most costly but most closely relates to your specific needs

Secondary research involves gathering information that already exists, from either industry or government reports

Your goals, constraints, timeline, and other factors will aid you in selecting the right research method

### **Methods of Primary Research**

Primary research is original research you perform yourself or hire someone to do for you. Primary research takes time and resources, but you can tailor it to suit your specific needs. It gives you data you can use for your current decisions.

A *focus group* is a small-group interview conducted by a moderator. It is usually unstructured, and participants can respond in any way they choose. In marketing, focus groups are an important method of generating feedback about products and ad campaigns. Focus groups allow companies to test a new product or its packaging, name, and so on, in a limited way before it is released generally.

An *experiment* is a research method in which the researcher manipulates a variable—the price of a product, for example, or another of its characteristics—to see how changing that variable affects another one, such as its sales in a market. Experiments are useful for giving very specific data about different aspects of a product, but they can also present technological or logistic challenges to carry out.

A *survey* is a way to collect information from people about their attitudes, opinions, likes, and dislikes. Traditionally, researchers conduct surveys either in person or on the telephone, as an interview, or via a written questionnaire. More recently, though, the online survey has become a dominant method of conducting marketing survey research. Researchers can contact respondents almost instantly and at little cost, which makes this kind of research very appealing to marketers. However, there are drawbacks. Researchers often need to give respondents incentives, such as points and prizes, for filling out online surveys, and this kind of incentive can sometimes make the data more suspect.

### **Methods of Secondary Research**

Secondary research involves gathering information from either industry and government reports, such as the Census or the U.S. Industry and Trade Outlook, or internal company historical data. This kind of research is usually inexpensive and there is often much of it available. However, it is generally less targeted and specific than primary research.

### **Selecting a Method**

Depending on the goals of your research, your resource constraints, your timeline, and other factors, one research method will probably emerge as a better choice than the others. What are some factors that may influence your selection of a research method? What determines whether a focus group, for example, is the right method for you? Here are some questions to consider as you think about which method to choose.

#### Goals

Think about the goals of your research. Do you want to find out whether a particular advertising campaign is effective

in a certain market? Are you trying to decide whether to open a new store? Be clear about your goals and the kinds of data needed to support them.

#### Costs

Every piece of data has a dollar cost. As you consider your options, weigh the potential costs and benefits of the research to be sure of a reasonable return on investment (ROI).

#### Time

What is the time frame for your research? An experiment that compares the adoption rates of a product in several different markets will take much longer to conduct than a simple focus group.

#### Specificity

How specific are the questions you wish to answer? Choose a research method that will yield data specific enough to be of use to you.

#### Technology

What technology is needed to conduct the research you want to do? Advances in technology are constantly making new information available. For example, new cable television technology allows marketers to test different advertisements on randomly assigned samples of viewers. Before this technology, marketers had to rely on surveys to tell them about the effectiveness of advertisements.



## Watch: **Six Stages of Research**

Marketing research is designed, ultimately, to help decision-makers make better decisions. How do you improve the odds that the research will be both productive and actually taken into consideration by those decision-makers?



## Read: Guide to Formulating a Research Objective

Your goal in performing marketing research is to provide information that will help the decision-makers make better decisions. The more rigorous your methods are, the more useful your research results will be.

Let's begin by looking at the six stages of research and what each stage entails.

Stage	Step	Description
1	Specify Research Objective	What are you trying to find out?
2	Research Design	What kind of data do we need to collect? Is there secondary data available? If not, we need to collect primary data.
3	Research Methods	Think about how your research method will determine your objective, and vice versa. If you choose to perform a focus group, for instance, you will gather a great deal of rather subjective data. What type of objective will be supported by this data? Would a different method, such as an experiment, provide the kind of data around which you can formulate your objective?
4	Collect Data	This is the step in which you actually carry out your research. When planning the data collection portion of your research, take care to anticipate unexpected glitches and results. If, for example, you find out that very few customers are filling out your survey, will you have a fallback plan in place? Is your research objective flexible enough to handle unforeseen circumstances at this stage?
5	Interpret Data	How do you plan to use the data to develop information? Will you plot graphs or subject it to different mathematical models? How will this choice get you closer to your objective?
6	Prepare Reports	Your reports are the final product of your research. You should make all of your decisions up to this stage with the final reports in mind. What will they include and who will receive them? In particular, your research objective should anticipate the final report.

Now let's consider how you can use these steps as a framework for developing your research project.

In social research, specifying the objective is usually the first step. This makes sense, because you don't want to put too much work into your project before you know exactly what you're trying to find out. However, it is a mistake to settle on the objective without taking all the other stages of research into account. For example, consider Stage 6, Prepare Reports. Who is going to receive these reports? What kind of report will be most persuasive to this person? It's best to formulate your research objective with a consideration of this final stage.

In fact, you should formulate your research objective with a consideration of stages two through five as well. Move backward through the stages, starting at the end. Ask what kind of *data* will be most effective, and what is the best research method you can use to get that data. Given the research method you use, what is the best research design? The answers to these questions will lead you to a more developed and refined research objective.

## Module Introduction: Marketing Analysis



Marketing analysis is what marketers do with the raw data they get from marketing research, outside vendors, or other sources. In this module, you become familiar with the analytic tools that marketers use. These analyses turn data into the knowledge decision-makers need to make the best possible decisions.

This module presents some of the most frequently used marketing analyses, including cost analysis, break-even analysis, cannibalization analysis, and the lifetime value of a customer. You also consider ways to determine how robust and relevant your analyses are.

After completing this module, you will be able to:

- Explain the relevance of marketing analyses to business decisions
- Identify several key marketing analyses and briefly define each
- Explain the difference between fixed costs and variable costs
- Distinguish between costs that are relevant to marketing decisions and those that are not
- Define break-even analysis and incremental break-even, and explain why they're important
- Use formulas to determine break-even unit volume and incremental break-even unit volume
- Calculate the effects of cannibalization on break-even and on profit
- List the factors that go into determining the worth of a customer
- Use the lifetime value of a customer formula to answer questions about the value of a customer
- Define sensitivity analysis and give examples of ways to perform one
- Build an understanding of the appropriate context for marketing analysis



## Watch: **Why You Should Do the Math**

Marketers often have to handle and interpret a lot of data. This data can come from their own marketing research, other parts of the organization, or from outside vendors. Whatever the origin of a particular data set, it is not very useful in its raw form. That's why analysis is so important. By using analytical tools, you can find meaning in the data so it can be used effectively in a decision-making process.

This section introduces the concept of marketing analysis and provides a quick overview of several different analyses used in marketing.

## Read: Common Marketing Analyses

The following charts contains brief descriptions of some commonly used marketing analyses. Many of these will be explored in greater depth in this module.

Analysis Technique	Description
Break-even analysis (BE)	<p>Determines the sales result needed to insure that the action under consideration does not lose money. It is the most commonly used quantitative concept for making specific marketing decisions. When the concept of breaking even is applied to an entire marketing plan or business, we refer to this as computing the Total Break-even Unit Volume (TBEV). The TBEV is the point at which the Total Profit is zero.</p> $\text{Total Break-even Unit Volume} = \frac{\text{Total Fixed Cost}}{\text{Unit Contribution}}$
Incremental Break-even Volume (IBEV)	<p>Related to BE, calculated as the fixed costs of the marketing action divided by the unit contribution. Marketers use the IBEV to determine whether an action will generate sufficient sales to cover its cost.</p> $\text{Incremental Break-even Volume} = \frac{\text{Incremental Expenditures}}{\text{Unit Contribution}}$
Cannibalization	<p>Refers to the loss of sales of one product due to an increase in sales of another product in the line. The possibility of cannibalization is considered whenever a new product is introduced into an existing product line, or more generally, whenever a marketing action for one product in the product line may result in sales of that product INSTEAD OF sales of other products in the line. Marketers perform cannibalization analyses to be sure the product line as a whole will not suffer.</p>
Break-even Cannibalization Rate (BECR)	<p>This is the highest acceptable cannibalization rate. The analysis seeks to determine whether the actual cannibalization rate will be lower than the BECR.</p>

$$\text{Break-even Cannibalization Rate} = \frac{\text{New Product Contribution}}{\text{Old Product Contribution}}$$

**Sensitivity analysis** An analysis of an analysis; marketers use it to determine how robust the results of the analysis are. You can do a simple sensitivity analysis by plugging carefully chosen variables into your formula and seeing how widely the outputs range.

**Lifetime Value of a Customer (LTVC)** Estimates the present value of a customer who will generate a stream of revenue and costs over a relatively long period of time (several years). Marketers use this test whenever single transactions do not represent customer behavior well. The underlying assumption of this analysis is that customers often make multiple interrelated purchases and generate costs that are not specifically related to any specific transaction. This analysis puts a dollar value on customer loyalty.

Note: A positive LTVC indicates that marketing actions should more than break even over the lifetime of the customer.

The following are some analyses that this course does not examine in detail, but they are still useful to know about:

**Margin analysis** examines the difference between the purchase price of a product and the resale price of that product (the product's margin) and determines how large the margin must be in order for the product to be profitable. A margin analysis tracks prices, variable costs, and profit margins through the value chain for every product within the firm's product line and across competitors. Marketers use a margin analysis to understand the incentives of all the players in the value chain. The margin analysis provides inputs for break-even analyses, segment value, lifetime value of the customer (LTVC), and EVC.

**Trends, growth rates, and changes over time** are analyses that look at projected changes in the marketing environment. When you plot your data against time, you can spot trends, growth rate (the slope), shape (linear, exponential), bumps (reversals, changes), and other changes.

**Economic Value to the Customer (EVC)** is a number that quantifies a product's value to the customer. This analysis looks at the value compared to a benchmark competitor before deducting the purchase price.

In addition, there are financial analyses that allow you to explore important issues like time value of money, return on investment, net present value, and discounted cash flow. These, too, are relevant to marketing decisions.

## Read: **Marketing Math Essentials**

Marketing-oriented analyses, whether they are very simple or dauntingly complex, are only as good as the data used to perform them. In a 2003 note, Hutchinson and Eisenstein provide some general rules to follow regarding inputs for the analyses covered in this course. Here is a brief overview:

### **Hard Data**

Some of the data that marketers use in analyses represent best practices for the industry and are typically based on some combination of

- marketing research
- economic forecasting, and
- managerial judgment.

These are referred to as *hard data*. They reflect factors that are specific to the product over the planning horizon. Hard data should be used whenever possible.

### **Company/Industry Averages**

Company and industry averages are well established and typical for the industry. They don't reflect factors that are specific to the product over the planning horizon. When using these data, adjust them to fit the current product and situation whenever possible.

### **Educated Guesses**

So called "educated guesses" are guesses based on common beliefs or experiences. They may be plausible for certain business situations but generally do not relate specifically to the industry involved. Educated guesses should be used only as a last resort!

### **Wishful Thinking**

Inputs that represent what the marketer wishes were true are called *wishful thinking*. These data have no basis in reality and have no use in marketing analyses.

Marketing reports typically include hard data and company and industry averages. As Hutchinson and Eisenstein advise, marketers should eschew wishful thinking! Marketing-analysis reports should cite the sources of input data explicitly and should justify any assumptions used to generate or adjust inputs.

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*Source: A note prepared by J. Wesley Hutchinson, The Wharton School, University of Pennsylvania, 2002. Revised by Eric M. Eisenstein, The Johnson School, Cornell University, 2003.*



## Activity: Project Part Three: Which Analyses Should You Use?

Think about the marketing research scenario you developed in previous entries. Record some preliminary notes here about which analyses might be most applicable to the situation. State explicitly what you want to know and then indicate which marketing analysis you would use to find that out.

To complete this activity:

1. If you have not done already, download the [project worksheet](#).
2. Open the document and complete Part Three.
3. When you are done, save your work.



## Watch: **Decision-relevant Costs**

A number of factors will be included in your marketing research and analysis. One of the most important will be the issue of *costs*. A cost is any amount that is related to the provision of the product or service, some of which are direct and some of which are indirect. What is important to the value of your marketing analysis is that you include the costs that are relevant and leave out the ones which cannot be adjusted to affect market outcomes.

## Read: Elements of Profit

Cost is related to profit and revenue in a simple way:

$$\text{Total Profit} = \text{Total Revenue} - \text{Total Cost}$$

From this relationship, it's easy to see that minimizing costs is a good way to increase profits. From a marketing perspective, however, it's important to distinguish between costs that are relevant to the marketing decision and those that are not. Therefore, you need to consider whether costs are *variable* or *fixed*, and whether the fixed costs are *avoidable* or *unavoidable*.

**Variable Cost (VC):** an expense that changes with fluctuations in business activity or production. (In the long run, all costs are variable.)

**Fixed Cost (FC):** a cost that does not change with business volume, such as rent or a mortgage.

There are two kinds of fixed costs: *avoidable* and *unavoidable*. Marketing decisions will not affect unavoidable fixed costs, so you can ignore these costs when analyzing a new investment. An *avoidable* fixed cost is one that can be avoided, depending on the situation, so it matters in decision-making. Note: Some costs can be a mixture of avoidable and unavoidable, so don't assume a cost is entirely one or the other.

How do we consider variable and fixed costs in the profit equation?

$$\text{Total Profit} = \text{Total Revenue} - (\text{Total Variable Costs} + \text{Total Fixed Costs})$$

Though profit is often considered as simply the difference between revenue and costs, you can think about it instead in terms of *contribution*.

**Contribution:** the difference between revenue and variable costs.

Contribution is a key concept in marketing because marketers take actions to increase sales, and an increase in sales leads to changes in revenue and variable costs; that is, in *contribution*. Contribution becomes a shorthand for the effect of marketing.

Marketers interested in calculating the amount of revenue needed to compensate for a particular marketing expense often consider profit from a unit perspective, or in terms of contribution. The profit equation is rewritten:

$$\begin{aligned} \text{Total Profit} &= (\text{Unit Volume} \times \text{Unit Price}) - [(\text{Unit Volume} \times \text{Unit Variable Cost}) + \text{Total Fixed Cost}] \\ &= [\text{Unit Volume} \times (\text{Unit Price} - \text{Unit Variable Cost})] - \text{Total Fixed Cost} \\ &= \text{Unit Volume} \times \text{Unit Contribution} - \text{Total Fixed Cost} \end{aligned}$$

$$= \text{Total Contribution} - \text{Total Fixed Cost}$$

While all these equations look different, they all express the same basic profit equation. We return to this in the section on the break-even analysis.



## Watch: **Performing a Break-even Analysis**

Break-even and incremental break-even are some of the most frequently used analyses in marketing. Why? Because they give information about profit, using numbers that are readily available. The inputs for these analyses are the selling price, the variable costs, and the fixed costs. Marketing professionals use a break-even analysis to get the level of sales necessary in order to realize any profit. The break-even analysis is calculated as fixed costs divided by contribution.

This section provides a good foundation for performing break-even analyses yourself.



## Read: An Example of Incremental Break-even

One useful approach to break-even analysis is *Incremental Break-even Unit Volume (IBEV)*. You can use the incremental break-even analysis to calculate the number of additional units you need to sell in order to justify an added, fixed-cost expenditure, such as the cost of an advertising campaign. You can apply IBEV to nearly every marketing decision you make.

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$$\text{Incremental Break-even Volume} = \text{Incremental Expenditure} \div \text{Unit Contribution}$$

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In the most straightforward incremental break-even calculation, you evaluate an expenditure. For example, what if you are considering an advertising expenditure of \$15 million when the product's unit contribution is \$2? The incremental expenditure is \$15 million, so the break-even volume is 7.5 million units.

$$\text{IBEV} = \$15 \text{ million} \div \$2.00 = 7.5 \text{ million units}$$

### Using the IBEV to Evaluate a Price Cut

You can use the IBEV formula to analyze other kinds of actions, too. For example, you can determine how many additional units you would need to sell in order to break even after changing price. To analyze a price change, rewrite unit contribution as price minus variable cost:

$$\text{IBEV} = \text{Incremental Expenditure} \div (\text{Unit Price} - \text{Unit Variable Cost})$$

For example, the Daylight Widget company sells 90,000,000 widgets at \$5 a piece, with a variable cost of \$3. The company is considering a \$0.50 price cut, which would make the new price \$4.50. How many extra widgets will Daylight have to sell in order to justify the price cut?

In this example, the "incremental expenditure" is the revenue that will not be realized when the 90 million units are sold at the lower price. This amount is 90 million units multiplied by \$0.50, or \$45 million. Using the IBEV formula,

$$\text{IBEV} = \text{Incremental Expenditures} \div \text{New Unit Contribution}$$

$$\text{IBEV} = \$45 \text{ million} \div (\$4.50 - \$3.00)$$

$$\text{IBEV} = \$45 \text{ million} \div \$1.50 = 30 \text{ million units}$$

Daylight would need to sell 30 million extra units to break even after the price cut.

### Using the IBEV to Evaluate Multiple Actions

You can also perform a break-even analysis for multiple actions. For example, what if you were to increase advertising by \$15 million simultaneously cut your price by \$0.50? If you are considering taking these two actions, you can use the IBEV to find the number of units you need to sell to justify taking both actions simultaneously.

**IBEV = (Incremental Expenditure of Ad + Incremental Expenditure of Cut) ÷ New Unit Contribution**

$$\text{IBEV} = (\$15 \text{ million} + \$45 \text{ million}) \div \$1.50$$

$$\text{IBEV} = \$60 \text{ million} \div \$1.50$$

$$\text{IBEV} = 40 \text{ million units}$$

This number is actually a little higher than you would have guessed if you had considered taking each action separately. The advertising expenditure of \$15 million, when taken singly, results in 7.5 million additional units needed. The \$0.50 price cut alone results in an incremental break-even of 30 million units. Together, however, the two actions result in an incremental break-even of 40 million units, not 37.5 million units. The reason is that the reduced price influences the amount of sales needed to justify the \$15 million advertising expenditure, too. When you take both actions together, you require an even greater volume to break even.

## Read: Cannibalization

In marketing, *cannibalization* refers to the reduction in sales or market share of a company's product due to the introduction of a new product by the same company. Marketers should consider the potential cannibalization effect whenever they introduce a new product that could "steal" sales from an existing product in the same line. When Intel brought out the Pentium III chip, for example, it cannibalized sales from Pentium II, as well as other Intel chips.

You can think about cannibalization in a number of ways that are all algebraically equivalent, such as:

- Break-even cannibalization rate
- Incremental contribution with cannibalization, and so on

### The Break-even Cannibalization Rate (BECR)

The maximum percentage of the old product's sales that can be cannibalized (stolen) by the new product (or channel) while breaking even, assuming no changes to fixed costs, is called *the break-even cannibalization rate*.

You can use this formula to calculate BECR:

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$$\text{Break-even Cannibalization Rate} = \frac{\text{New Product Unit Contribution}}{\text{Old Product Unit Contribution}}$$

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What does this equation mean? Let's look at an example: Company Z is considering the introduction of a new product that will have a unit price of \$4.00 and a cost to produce of \$2.50. The unit contribution for this new product will be \$1.50. If the old product contributed \$2.00 per unit, the BECR would be 1.50/2.00 or 75%. That is, the new product could cannibalize up to 75% of the old product's sales and still break even.

Note: A large BECR is preferable. When the new unit contribution is larger than the old unit contribution, the BECR is greater than 100%, so cannibalization is not a problem; in fact, it's a good thing.

Be aware that the BECR formula only works if *fixed costs don't change* with the new product. Cannibalization is a problem at the product-line (or company) level, not at the individual product level, and so it requires a broader perspective. Sometimes we see "preemptive" cannibalization when a marketer decides to bring out a new product to cannibalize sales before a competitor can take sales away (for example, many say Intel could and should have brought out Celeron earlier).



## Watch: **What's a Customer Worth?**

It's a common practice for marketers to review profits and losses over the fiscal year, but it's also valuable to take a longer perspective-over the lifetime of a customer. Knowing how much a loyal customer is worth over a period of years can help the marketer make more informed longer-term marketing decisions.

You've probably heard the 80/20 rule as it applies to marketing: 80% of your revenue will come from 20% of your customers. In other words, repeat customers are the group to whom it is both cheapest and most rewarding to market your products and services. That being true, it is helpful to think of the value of your customers not just in terms of a single transaction, but as the total value of all of their transactions with you.

## Read: **Customer for Life**

### ★ **Key Points**

When developing a marketing strategy, look beyond short-term gains and consider the long-term picture

One important consideration is the lifetime value of the customer

$$\text{LTVC} = \text{Cumulative Retention Rate}_t \times \text{Net Customer Contribution}_t$$

Marketing decisions have repercussions that last much longer than the fiscal year. When developing a marketing strategy, remember to look beyond short-term gains and consider the long-term picture. Many firms find that one important consideration is the lifetime value of the customer. Like these firms, you can calculate a dollar value for customer loyalty and find out for yourself what it's worth to maintain customers over many years. Let's look at how lifetime value is calculated, using the example of the Daylight Widget Company.

The Daylight Widget Company is one of the top two manufacturers of widgets in the territories it serves. The unit price of the Daylight widget is \$5 and the unit variable cost is \$3, making the unit contribution \$2. Loyal customers buy an average of 6 widgets a year! However, 10% of Daylight's customers switch to Bigtop Widgets each year and subsequently become loyal customers of that company.

The marketing team at Daylight has launched two campaigns to increase sales and build the number of long-term customers. In one designed to gain customers, it provides free samples of its entry-level widget via direct mail. Each free-sample mailing costs \$4: \$3 unit cost + \$1 shipping. Research shows that widget sales increase as a result of this campaign, and that one out of four individuals who receive the mailing becomes a loyal customer.

In a second campaign designed to retain customers, it mails a \$1 coupon each year to customers. Postage and handling for these coupons is \$.50.

What is the LTVC with these two marketing plans in place? The Daylight marketing research team was asked this question. They calculated the lifetime value of its loyal customers, or LTVC, using this formula:

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$$\text{LTVC} = \text{Cumulative Retention Rate}_t \times \text{Net Customer Contribution}_t$$

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In this formula, Cumulative Retention Rate<sub>t</sub> is the fraction of customers retained each year. For Daylight, this rate is assumed to be 0.9 (recall that 10% are lost to Bigtop Widgets). In the first year, the retention rate is 1.0; in the second year, the rate is 0.9; in the third year, the rate is 0.81; and so on. These rates are calculated using the following rule: after  $t$  time periods the Cumulative Retention Rate is  $.9^{t-1}$ .

The team at Daylight assumed that the Net Customer Contribution<sub>t</sub> in the first year was the amount each customer spent on widgets, minus the amount Daylight spent on promotions per customer.

### **Year One**

- Customer Spent: Each new customer purchased the average 6 units per year, which provided a gross contribution of 6 x \$2 unit contribution, or \$12.
- Daylight Spent: Daylight spent 4 mailings x \$4 per mailing to acquire each customer, so the acquisition cost per customer is \$16.

### Subsequent Years

- Customer Spends: Each customer provides a gross contribution of \$12.
- Daylight Spends: Daylight spends \$0.50 postage plus \$1 per coupon per mailing, so the retention cost per customer is \$1.50.

Therefore, the Net Customer Contribution in the first year is \$12 - \$16 = -\$4. However, the Net Customer Contribution for subsequent years is \$12 - \$1.50 = \$10.50.

The LTVC over a five-year time horizon is:

$$\text{LTVC} = [1.0 \times (-\$4)] + [0.9 \times \$10.50] + [(0.9) \times (0.9) \times \$10.50] + [(0.9) \times (0.9) \times (0.9) \times \$10.50] + [(0.9) \times (0.9) \times (0.9) \times (0.9) \times \$10.50]$$

$$\text{LTVC} = [1.0 \times (-\$4)] + [0.9 \times \$10.50] + [0.81 \times \$10.50] + [0.729 \times \$10.50] + [0.656 \times \$10.50]$$

$$\text{LTVC} = \$28.50$$

Remember that these numbers are undiscounted. You could obviously work out a more sophisticated version that takes discounts into account. Discounting matters when the pattern of revenue differs between segments, or when the acquisition cost is seriously different across segments.



## Watch: **Sensitivity Analysis**

All marketing decisions involve making assumptions; it's unavoidable. But which assumptions are significant? Which ones affect your final decision, and which are less important? Sensitivity analysis gives you a context for all your other analyses.

## Read: **How Sensitive Are the Results?**

*Sensitivity analysis* is the study of how variations in the input of a mathematical model (both qualitative and quantitative variations) alter the output. In other words, sensitivity analysis is a method for determining the effects of variations in your data. It does this by changing the data in a systematic way and seeing what happens. A sensitivity analysis can help you to determine how robust a research study is. It can alert you when your results are highly dependent on small fluctuations in your data.

If your data inputs are sensitive—that is, if changes in them result in wildly different results—they are called *high leverage*.

### Some ways to perform a simple sensitivity analysis

#### *Informal methods:*

Play with the numbers. That is, plug different possibilities into your formulas and see what comes out.

Create multiple scenarios. What happens if a supplier raises the cost of a particular part? Will the higher costs make offering a customer loyalty discount untenable, for example? An analysis should be robust enough to take various scenarios into account.

#### *More formalized methods:*

Make graphs. Sometimes, seeing data in graphic form can help you spot trends and glitches that are less obvious when you are looking only at data tables.

Use a spreadsheet. If you have a great deal of data, plugging the numbers into a spreadsheet program can help you work with your data efficiently.

Use more sophisticated methods, such as Monte Carlo. *Monte Carlo* refers to any method of statistical sampling that solves a problem by simulating the underlying process and calculating a result.

### The context for analysis

Remember that the data you collect are useful in decision-making, but numbers are only one input. Numbers support cogent recommendations for action, but they are pieces of evidence, not conclusions. Data must be analyzed appropriately to provide useful insights.

*Analyses don't make decisions; people make decisions.*



Watch: **Thank You and Farewell**

## Stay Connected

## Supplemental Reading List

To learn more about the concepts presented in this course, you may want to consult, on your own, the following supplemental resources:

"Marketing Math Essentials." (2002 & 2005) - Hutchinson, J. Wesley and Eisenstein, Eric M. Wharton School  
*University of Pennsylvania, and Johnson School, Cornell University.*

"Marketing Math Essentials B: When to use marketing math techniques and why to use them." (2002 & 2005) - Hutchinson, J. Wesley and Eisenstein, Eric M. Wharton School.  
*University of Pennsylvania, and Johnson School, Cornell University.*

