

## 3.5: Preliminary and Final Design

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considerations when looking at preliminary designs. This is not only a creative process but also an analytical evaluation.

help transform a nagging idea about a new product to be more explicit and real. The tool for completing this task is called the FAD concepts necessary to understand and motivate the use of the FAD template. The FAD template will then be introduced and used to

SuperDuper Smartphone". The SuperDuper phone has a keypad (attribute, feature, function, and form), with lighted square keys (attribute, features and functions), listening to stereo music (attribute, feature, and function), and locating friends within 1 mile (attribute, feature and

an (TDD) school is not a school per se, but rather an approach that is focused on applying new and emerging technologies to develop satisfy these meanings. Most products can be designed using all three approaches, for example, software, custom houses, furnishings,

o consumers. They still obtain a reaction from potential consumers, but it is not the sole driving force behind the process. The MDD unique part of MDD is the search for meaning. There is a search for meaning in the way that people relate to objects. This is often UDD, but is also driven by the innovator and new and emerging technologies. In MDD, the innovator synthesizes information from a In user-centered design, there is an iterative process of building the application and having the user continuously validate software

sumers. The MDD approach to developing a Blue Ocean market involves understanding how customers relate to products and then at is radically differentiated from existing products that are being offered.

elate to objects in their everyday life. The MDD school of innovation not only contemplates beauty and form, but also examines the attending to product differentiation. Since the MDD school of innovation uses a push strategy. Product ideas are conceived as a vision what people were waiting for—and thus are great marketing successes” (p. 116).

id some of them are complex and elusive. Key areas of meaning include the following: provide physical and emotional sustenance; and comfort; facilitate the completion of some work or home task; provide familial support; support learning and adaptation; help us

iends. Embedding diamonds in wireless phones contributes little to the calling function. But in some people’s minds, diamonds are a A Cirque du Soleil performance is not just a circus or just entertainment, it is a risky adventure in an ethereal world never seen before.

terdependent.

1 work is the never-ending process of determining the proper ingredients that go into the secret sauce to keep people from becoming

that are similar to the products that you are examining. They can be suppliers and component manufactures, consultants, consumers,

role of project management, new product development and portfolio management in providing structure to the innovation process.

Apple, who we believe is the wunderkind of MDD in the USA, listens to their customers. For example, they redesigned Apple TV to be very important for software development, whether it be in the context of game development, applications development, or social high-quality software products to the consumers.

It occurs where someone thinks that there is a need or demand for a product or service, but the end-users were not listened to or were not a programmer. Here is the story.

Findings as well as calculate the handicaps. Barlow had been doing this for years. Someone in human resources thought that he was right and the payback was deemed acceptable, so the green light was given to the project. A team of analysts and programmers were assigned to the project, and most importantly, Barlow could finish his calculations faster than it would take to key-in the data and generate the reports.

Products and services that simply do what they are supposed to do, because they are functional. Functionally designed products can be

product and service development.

Why is it so easy to change? Does the product perform satisfactorily in a variety of environmental conditions? In which environment was it designed, and reduces the time it takes to complete a task.

The meaning of a product is derived from the type and color of the material used to construct a product, the texture and feel of the material, masculine, macho, healthy, psychedelic, smart, fashionable, earthy, retro, metal, avant-garde, youthful, personal, worldly,

The key success indicator for a service is the customer's perception of the overall experience with the service process. Bitner, Ostrom,

What do consumers want to solve and will the solution attract them to the product or service? The product or service provides emotional sustenance; provides feelings of being needed or being listened to; supports artistic and creative needs; facilitates self-expression; supports feelings of adventure; supports gender needs; supports feelings of security and comfort; facilitates and assists in the achievement of goals; has above-average intrinsic value to some or many people; provides for respect and recognition; and finally, provides a source of attachment that attach significant meaning to products and services that support communication.

The proliferation of synonyms. A Venn diagram illustrating the relationships among words and their meanings would visually depict the mental associations that are generated when you see or think about a certain product. Another way to think about branding is as a way to ensure that the product or service is recalled.

Primary control is a coping strategy that involves trying to change the environment to make it more comfortable. As we age, this strategy does not work very well and achieving financial security are milestones in achieving control. One person's gain in control may lead to a loss of control for others. However, that same individual can in turn use the control to dominate those who helped him or her to achieve control.

Primary control is a coping strategy that involves trying to change the environment to make it more comfortable. As we age, this strategy does not work very well and achieving financial security are milestones in achieving control. One person's gain in control may lead to a loss of control for others. However, that same individual can in turn use the control to dominate those who helped him or her to achieve control.

When people have feelings of ownership towards material things or tangible objects and even immaterial or intangible objects, they own it. This ownership is the direct result of being able to exercise both primary and secondary controls over their online character

1. It is much easier, and is indeed acceptable, in Facebook interactions to talk about oneself. There are several mechanisms built into the activity. Facebook permits people to control what is known and what is not known about them. It also opens up new lines of choice. While Twitter is the outlet of choice for serial braggarts and businesses that want to obtain exposure.

vice out of loyalty.

Contributes to depression. Schwartz (2003). Novice users of any product or service need directed guidance. A wireless phone or a DVR

; meanings are constantly in flux. The importance of product attributes changes. The following classification scheme can be used to Tybout (2002); Kim and Mauborgne (2005); McGrath and MacMillan (2000); Tybout and Sternthal (2005).

Something, and has a function. is something that is tangible and it does something and has a function. Adamson (2006). For example, it want to do, with certain features that are compelling and functional. These features with their accompanying functionality are “must-have,” an auto global positioning system (GPS) should have the ability to enter an address and display how long it will take to get to a

from Midas products and are high-end products. They are for nonprice-sensitive consumers. You can think of the demand curve as a consumers. Important differentiators for auto GPSs include Bluetooth capability, voice recognition, and topography maps. A movie product or service that assist in distinguishing products from the competition and from similar models in a product line.

Contested marketplace. In general, BOF features are in their infancy—beginning to unfold and emerge. Examples for auto GPS might

Many of the ideas that have contributed to putting companies, industries, and even countries out of business were derived from radical process innovations that eventually eclipse or overturn the existing dominant technology. Disruptive technologies can lead to sunrise

These EXTs cannot be removed because there may be a small subset of people that demand the feature. In this case, a decision has to be made between versions of Microsoft’s operating systems that abandoned some of the legacy DOS code. Apple made a similar decision in regards to technologies. Attributes that are no longer necessary or on the verge of becoming extinct.

Using a product. The feature may be a negative attribute of the product. This can occur because the product or service has not been designed to want the feature in the product or service. DISs are often sunset features. For example, many people did not attend circuses anymore. Cirque du Soleil simply abandoned the use of animals in their programs. Instances when products and features in existing products

One way to provide a description of the product or service that is being considered. The second step in using the FAD template involves performance characteristics, form, design, and even additional meanings. We have included a few attributes that are often considered, and Blue Ocean features will assist in the differentiation process. It is sometimes helpful to focus on features that are on the verge of extinction to help the designer to gain deeper insight into how to improve the current performance of the product.

Principles of Prototypes”). Learning-by-doing means that you make and build things. You try experiments and you construct prototypes. The idea is to develop a very rough prototype of the product or service. There are many different ways to do this. It could be a report or a 3D model developed in Google’s free SketchUp program, or a flow diagram illustrating a process. If the product is a computer application, that are very effective for developing mock-ups of applications and for drawing or sketching preliminary product ideas.

the business in receiving the service. These interactions between the customer and the business are referred to as the touch points or touch points of interaction. Execution of the service is a function of how all the service components work together.

port the customer interactions. Bitner et al. (2008). There are a number of tools that can be used to conceptualize, design, and test the services often involve queues or lines, simulations can be used to understand how fast or how slow a service will be performed in a

Another is an important part of the learning-about and the learning-by-doing process that will facilitate creative insight. This notion is

graphics, drawing, and mock-up software. Towards the later stages of development, the prototype might be a functioning product or

thing will be manufactured. The Printed World (2011). These new tools are part of a new approach for manufacturing called additive manufacturing is the 3D printer. Very detailed and complex plastic working models of products can be generated using 3D using 3D digital descriptions to print successive thin layers of plastic on top of plastic until a 3D solid emerges. Some of these plastic model aviation companies are investigating the use of very large 3D printers to create entire aircraft wings.

years of aging. Several products have been introduced and patents have been secured and applied for that are purported to speed up the wine aging process with a very specific magnetic field strength. Suppose that the same inventor found that the taste of all wines could be improved by the wine aging product. Section 7.14 “Appendix 2: FAD Template for Wine Aging Product” illustrates how the FAD template could be used in the process.

market with high profit and significant growth potential. They use the Strategy Canvas as a tool to assist in identifying Blue Ocean uncontested market spaces. The idea is simply to create new markets and attract customers.

It can be used as an input device for constructing the Strategy Canvas by facilitating the identification of important attributes and features

speed, ease of use, and other product features. These key competitive factors are then placed on the X-axis of the canvas (either at the top or bottom). The key attributes are plotted below the middle of the Y-axis.

of a Strategy Canvas. Figure 7.4 “Potential Strategy Canvas for Nintendo Wii” illustrates how the Strategy Canvas could be used to identify a point of differentiation highlighted in bold. For example, the *Appeal to the entire Family* attribute is considered a point of differentiation and a Blue Ocean Canvas” illustrates a more attractive graphic that was created using the Strategy Canvas data.



order to identify a Blue Ocean. It can also be used to identify attributes or factors that could be eliminated because the product features less from other industries and products, and flipping ideas.

ing and new products.

create innovative products and services. Not all products and services introduced will be Blue Oceans; nevertheless, the approach using

res are relevant to consumers:



and Birks (2009). and the Cavusgil, Knight, Riesenberger, and YaprakCavusgil, Knight, Riesenberger, and Yaprak (2009). book on

red the development of substitute energy sources such as steam, electric, fuel cells, and solar energy. The automobile was the driving  
ompasses, sextants, and GPSs. The FAD template and the Strategy Canvas can also be used to identify competitive complementary

o what you could bring, that knife would certainly be on a short list of must-have items. The Giant was probably introduced because  
is a trade-off between having everything in one place that is readily accessible and having superb capabilities and functionality. The

, social networking, and communications) are stellar; they are, however, always available to the user. Apple has been very successful  
Apple is attributable to the cache of the superb Apple brand. But there is a secret sauce for Apple's success. There are strong design  
rcials exude the development of meaning. The Flip Mino video camera was once very successful because it was simple and very easy

e. They are like vestigial physical characteristics in human beings that are no longer needed. For example, humans have tailbones or  
strate how feature creep occurs over time. Feature creep has been the boom and the boon of companies that produce automobile GPS  
photo players on their auto GPSs to play music or view photos, but these features have crept into many of the units sold by GPS  
ers because of the numerous choice points. Sometimes the vestigial features hinder design changes and can adversely affect the ability

ducts as well as incorporating the importance of new technological developments (TDD). We have also introduced the FAD template. The FAD template in conjunction with the Strategy Canvas can be used to assist in taking an abstract product concept and preparing a first-cut

value creation and meaning.

tition.

l over the environment; provides entertainment; supports feelings of status, superiority, and elitism; provides a sense of stewardship; completion of some work or home task; provides feelings of familial support; helps an individual or a community to learn and adapt; e is a source of satisfaction, happiness, and hope.

es the product or service suggest a certain meaning?

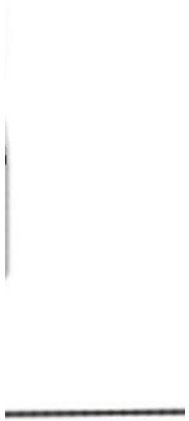
**the product you are planning to introduce and to existing products,**

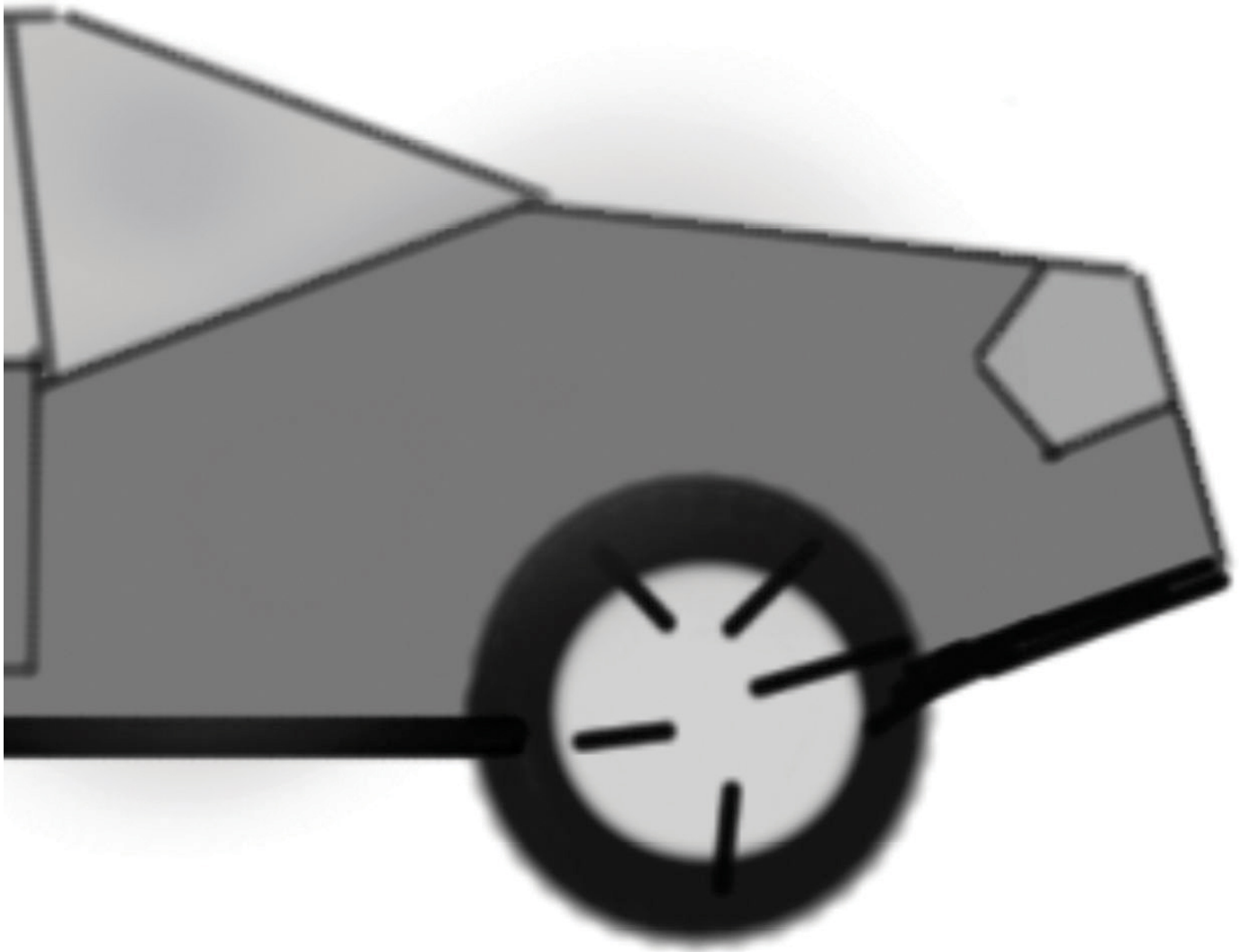
ervices that are already being sold.

ng sold.

: screen here (use a word processor or presentation software). If the idea behind the product or service involves a complex process or







nd individuals interested in fine wine.

l over the environment; provides entertainment; supports feelings of status, superiority, and elitism; provides a sense of stewardship; completion of some work or home task; provides feelings of familial support; helps an individual or a community to learn and adapt; e is a source of satisfaction, happiness and hope.



Does the product or service suggest a certain meaning?

How does it relate to the product or service?

**the product you are planning to introduce and to existing products,**

services that are already being sold.

being sold.

Insert a screenshot here (use a word processor or presentation software). If the idea behind the product or service involves a complex process or

ative system for my sales staff, and I'd like to get a better handle on our financial information.

st 12 months. It looks like we made a profit in some months, and had losses in other months. From what I can tell, we sell each snowboard and our fixed cost is \$75 per unit. It seems to me that if we sell just one snowboard each month, we should still show a profit of \$25, and a small profit.

The cost of \$150 look accurate to me, but I'm not sure about your unit fixed cost of \$75. Fixed costs total \$50,000 a month regardless of the sales. Fixed costs on a per unit basis can be misleading because it depends on the number of units being produced and sold, which changes each month. One unit produced and sold provides \$100 toward covering fixed costs—that is, \$250, the sales price of one snowboard, minus \$150 in variable cost.

ate based on last year's sales, but I get your point. As you know, I'd like to avoid having losses. Is it possible to determine how many units we need to sell to cover our expenses? I'd also like to discuss what it will take to make a decent profit.

ave to be sold to cover expenses, and I'd be glad to discuss how many units must be sold to make a decent profit.

rough this in detail.

which identifies how changes in key assumptions (for example, assumptions related to cost, volume, or profit) may impact financial

profit equation is typically presented in the form of a contribution margin income statement (first introduced in [Chapter 5 “How Do](#)

use it describes a cost that *varies in total* with changes in volume of activity. We use the term “fixed cost” because it describes a cost

[Behavior Patterns?”](#) and the profit equation stated previously. Study this figure carefully because you will encounter these concepts

short-term period varies, depending on a company’s current production capacity and the time required to change capacity. In the long

l sales measured in dollars required to achieve zero profit. If a company sells products or services easily measured in units (e.g., cars, break-even point in *sales dollars* is used.

fixed costs (F), and solve for the quantity of units produced and sold (Q).

units for Snowboard Company, set the profit to zero, insert the unit sales price (S), insert the unit variable cost (V), insert the total fixed

*in units help companies like Snowboard Company?*

At Snowboard Company, Recilia (the vice president of sales) and Lisa (the accountant) are in their next weekly meeting.

*g fixed costs, and if total monthly fixed costs are \$50,000, we would have to sell 500 units to break even—that is, \$50,000 divided by \$100.*

*profit will total \$300?*

*the break-even point to earn a profit of \$30,000. This means we would have to sell 800 units in total to make \$30,000 in profit.*

in the information for selling price per unit (S), variable cost per unit (V), and total fixed costs (F), and solve for the quantity of units

formula, and how is it used to find the target profit in units for Snowboard Company?

, use the formula for Snowboard Company by finding the number of units produced and sold to achieve a target profit of \$30,000:

cts not easily measured in units, such as law firms and restaurants. How do companies find the break-even point if they cannot easily

sales in units.

creasing profit. The contribution margin ratio is the contribution margin per unit divided by the selling price per unit. (Note that the

ard Company?

a certain profit. Finding the target profit in sales dollars is similar to finding the break-even point in sales dollars except that “target dollars required to earn a target profit of \$30,000?”

eved **United’s** troubles resulted in part from a relatively high break-even point.  
ve the figure for other major airlines, as you can see in the list that follows:

he percentage of seats filled.

005.

*ated to the production of snowboards?*

and profits. The horizontal axis represents the volume of activity for a period, measured as units produced and sold for Snowboard.

al revenue is \$500,000 ( $= 2,000 \times \$250$ ).

;, total cost is \$350,000 [ $= \$50,000 + (2,000 \times \$150)$ ].

profit is \$150,000 ( $= \$500,000 - \$350,000$ ). If no units are sold, a loss is incurred equal to total fixed costs of \$50,000.

target profit to \$0 for break-even calculations, or to the appropriate profit dollar amount for target profit calculations. The margin of

Star Symphony a fee of \$2 per ticket. Star Symphony expects to sell 500 tickets.



*t easily measured in units. Suppose you are the manager of a company called Kayaks-For-Fun that produces two kayak models, River*

model (e.g.,  $S_r$  stands for the River model's selling price per unit). CM is new to this section and represents the contribution margin.

might be correct. If only the River kayak is produced and sold, 60 units is the break-even point. If only the Sea kayak is produced and

*d to calculate the break-even point?*

sales.

• solve for the break-even point in units for multiple-product companies is similar to the one used for a single-product company, with  
lows.

ted unit contribution margins for all products are then added together.

y would like to achieve.

Product	Total
Product A	20,000
Product B	100 percent

Figure 6.4 “Type of Good or Service Determines Whether to Calculate Break-Even Point and Target Profit Points in Units or Sales

even point in sales dollars for organizations with multiple products or services. Note that this formula is similar to the one used to find

company's income statement for the year. Amy, the owner, would like to know what sales are required to break even. Note that fixed


vice, the weighted average contribution margin ratio is 45 percent ( $= \$225,000 \div \$500,000$ ). For every dollar increase in sales, the total sales dollars.)

total sales. The resulting weighted average contribution margin ratios for all departments are then added. The calculation for Amy's contribution margin ratio) + (consulting has 50 percent of total sales  $\times$  50 percent contribution margin ratio) Thus 45 percent = 14 percent + 6

the target profit the company would like to achieve.

ization's operations. When performing CVP analysis, it is important to consider the accuracy of these simplifying assumptions. It is

*ety calculated for multiple-product and service organizations?*

dollars is calculated as follows:

it dollar amount for target profit calculations.

opriate profit dollar amount for target profit calculations:

How is sensitivity analysis used to help managers make decisions?

How will changes in prices alter profit.


best guess of 700 units in monthly sales. This is called the “base case.” The base case is summarized as follows in contribution margin

statement (you are now performing sensitivity analysis!). Each scenario is independent of the others. Unless told otherwise, assume that

the following columns providing answers to the three questions posed by management. The top part of [Figure 6.6 “Sensitivity Analysis for](#)

ensitive to changes in sales price. Another way to look at this is that for every one percent *increase* in sales price, profit will *increase* *decrease* in sales volume will *decrease* profit by 3.5 percent; or every one percent *increase* in sales volume will *increase* profit by 3.5  
ward less automation and more direct labor!)

An example of how to use Excel to prepare the CVP model shown in Figure 6.6 “Sensitivity Analysis for Snowboard Company” is shown.

Using the \$150 variable cost per unit (cell D6) by 700 units (cell D8). Fixed costs of \$50,000 come from the top section (cell D7). The

E	F	G	H
<b>Summary Section</b>			
<b>Scenario (1)</b>	<b>Scenario (2)</b>	<b>Scenario (3)</b>	
		<b>Fixed costs decrease 30%; variable cost increase 10%</b>	
<b>Price Increase 10%</b>	<b>Sales volume decrease 10%</b>		
\$275	\$250	\$250	
\$150	\$150	\$165	
\$50,000	\$50,000	\$35,000	
700	630	700	
<b>Snowboard Company Analysis Result</b>			
\$192,500	\$157,500	\$175,000	
105,000	94,500	115,500	
\$87,500	\$63,000	\$59,500	
50,000	50,000	35,000	
\$37,500	\$13,000	\$24,500	
\$17,500	(\$7,000)	\$4,500	
87.50%	(35%)	22.50%	

analysis to determine the impact of changes in variables on the break-even point and target profit. How is sensitivity analysis used to

calculation is based on the shortcut formula presented earlier in the chapter:

management. All parties involved in the process of raising money—potential investors and banks, as well as the three entrepreneurs (i.e., the owner, the two partners)—were expected to increase in each of the next four years.

“I was worried after my personal assets if the business doesn’t have the money to pay!” Although all three owners felt the financial model was

useful information, they were able to calculate the break-even point and margin of safety. The worried owner was relieved to discover that

act on the break-even point and target profit as well.



products is as follows:

Product	Total
Product A	20,000
Product B	100 percent

cent fixed costs and 20 percent variable costs.

roduction facilities and equipment and therefore have a cost structure with high fixed costs. Businesses that rely on direct labor and  
st structures, as we do in [Figure 6.7 “Operating Leverage Example”](#). High Operating Leverage Company (HOLC) has relatively high

of \$166,667 to break even ( $= \$50,000 \div 0.30$ ).

because every additional dollar in sales will provide \$0.80 in profit for HOLC (80 percent contribution margin ratio), and only \$0.30 for LOLC (30 percent contribution margin ratio). High operating leverage can lead to higher profit. However, high operating leverage companies that encounter declining sales tend to feel the negative impact more acutely. HOLC's profit would decrease by \$45,000 ( $= 30 \text{ percent} \times \$150,000 \text{ contribution margin}$ ). LOLC's profit would increase by \$45,000 ( $= 30 \text{ percent} \times \$150,000 \text{ contribution margin}$ ). HOLC benefits more from increased sales than LOLC.

Describe companies with relatively high fixed costs. Firms with high operating leverage tend to profit more from increasing sales, and

Companies with low operating leverage have a relatively low proportion of fixed costs to total costs, and their profits tend to be much less sensitive to changes in sales.

*1. If a company that produces multiple products faces a constraint, managers often calculate the contribution margin per unit of constraint. This measure is used by managers to make decisions when faced with resource constraints?*

of the River model because it has the highest contribution margin per unit.

or hours per unit and the Sea model requires 1 labor hour per unit (most of the variable cost for the Sea model is related to expensive

e Sea model, which would yield a total contribution margin of \$48,000 ( $= \$150 \times 320$  hours). If the River model were the only model  
ices the labor required to build the River model (e.g., through increased automation). Whatever the outcome, companies with limited  
resources should be utilized.

; limited available machine hours. It has a total of 3,000 machine hours available each month. The River model requires 16 machine

gin would be \$75,000 ( $= \$25 \times 3,000$  machine hours). If only the Sea model were sold, the total contribution margin would be

*Is the target profit in units or sales dollars for organizations that pay income taxes?*




Under U.S. GAAP, all nonmanufacturing costs (selling and administrative costs) are treated as period costs because they are expensed. These costs are attached to inventory as an asset on the balance sheet until the goods are sold, at which point the costs are transferred to the cost of goods sold. (The term *full costing* is also used to describe absorption costing.)

*How does it compare to absorption costing?*

Under variable costing, fixed manufacturing overhead is reported as a *period cost*.

Under absorption costing, fixed manufacturing overhead is reported as a *period cost*. [Figure 6.8 “Absorption Costing Versus Variable Costing”](#)

*What is the effect on inventory at the end of the reporting period? How does the use of absorption costing affect the value of ending inventory?*

Under variable costing, fixed manufacturing overhead costs are treated as period costs. Since variable costing treats fixed manufacturing overhead costs as period costs, all fixed manufacturing overhead costs are expensed as incurred. Under absorption costing, fixed manufacturing overhead costs are treated as product costs and are included in the cost of inventory. Since absorption costing treats fixed manufacturing overhead costs as product costs, all fixed manufacturing overhead costs are included in the cost of inventory at the end of the reporting period.

*the number of units sold?*

the variable costing income statement is called a contribution margin income statement.

With absorption costing, fixed manufacturing overhead costs are fully expensed because all units produced are sold (there is no ending inventory). If the absorption costing method used, profit is identical when the number of units produced and sold is the same.



.000 units sold). c  $\$70,000 = \$7 \text{ per unit variable production cost} \times 10,000 \text{ units sold}$ . d  $\$50,000 = \$20,000 \text{ fixed overhead as a period cost}$ . Thus all fixed manufacturing overhead costs are expensed in the period incurred regardless of the

er than the number of units sold?

sed, a portion of fixed manufacturing overhead costs remains in ending inventory as an asset on the balance sheet until the goods are  
er costs and lower profit.

$(\$4,000 = \$4 \times 1,000 \text{ units})$ .

*it × 9,000 units sold). c \$63,000 = \$7 per unit variable production cost × 9,000 units sold. d \$47,000 = \$20,000 fixed overhead as a period cost. Thus all fixed manufacturing overhead costs are expensed in the period incurred regardless*

*compare using absorption costing and variable costing when the number of units produced is less than the number of units sold?*

be expensed when incurred. However, using absorption costing, the entire \$40,000 is expensed because all 10,000 units produced were sold and lower profit.

of month 2 and recorded as cost of goods sold during month 3 using absorption costing ( $\$4,000 = \$4 \times 1,000$  units).

*t × 11,000 units sold). c \$77,000 = \$7 per unit variable production cost × 11,000 units sold. d \$53,000 = \$20,000  
turing overhead as a period cost. Thus all fixed manufacturing overhead costs are expensed in the period incurred*

and fixed costs, managers are able to determine contribution margin ratios, break-even points, and target profit points, and to perform

bonus for reaching a certain profit target but expects to be \$15,000 short of the target. The company uses absorption costing, and the \$20,000 in fixed production cost (\$20,000) will be included in inventory at the end of the period, thereby lowering expenses on the income statement and increasing profit by increasing production. This strategy does not work with variable costing because all fixed manufacturing overhead costs

are treated as product costs (included in inventory on the balance sheet until sold), while variable costing

treats fixed manufacturing overhead as a period cost. (2) When units produced is more than units sold, absorption costing yields the highest profit. (3) When units produced is less than units sold, variable costing yields the





untant? How does Recilia plan on using this information?

gin ratio.

) percent of total sales. Variable cost per unit is \$150 for cars and \$300 for boats. Find (a) the contribution margin per unit for each

0 percent. Calculate (a) the new projected profit, (b) the dollar change in profit from the base case, and (c) the percent change in profit

by 10 percent. Calculate (a) the new projected profit, (b) the dollar change in profit from the base case, and (c) the percent change in

roduce. Calculate the contribution margin (a) per unit, (b) per machine hour, and (c) per direct labor hour.

chieve the \$300,000 after-tax profit desired by management?

’ Explain.

iese data are the same as the previous exercise):

Assume Nellie Company expects to sell 24,000 units of product this coming month.

	<b>Total</b>
	30,000
	100 percent
	\$1,800,000

xercise).

	<b>Total</b>
	30,000
	100 percent
	\$1,800,000

.9787 = \$379.)

	<b>Total</b>
	30,000
	100 percent
	\$1,800,000

:)



it may be helpful in confirming your answer.)  
ts each month (this is the base case).

	Total
	2,000
	100 percent
	\$180,000

	Tricycle
	\$100
	\$ 50

year, and the Bicycle product requires 4 labor hours per unit while the Tricycle model requires 2 labor hours per unit. The company

.

) percent (these data are the same as the previous exercise).

Company.

00 (these data are the same as the previous exercise).

se). Assume Phan Incorporated expects to sell 51,000 units of product this coming year.

	Total
)	40,000
cent	100 percent
	\$205,900

is exercise).

	Total
)	40,000
cent	100 percent
	\$205,900

.9787 = \$379.)

	Total
)	40,000
cent	100 percent
	\$205,900

g your answer.)

month (this is the base case).

	Total
	25,000
	100 percent
	\$1,000,000

	Tricycle
	\$100
	\$ 50

each year, and the Bicycle product requires 2 machine hours per unit while the Tricycle model requires 1 machine hour per unit. The

percent (these data are the same as the previous exercise).

y.

is year (this is the base case).

duct is sold for \$1,000. Riviera expects to sell 70,000 units this year.

old for \$1,000. Riviera expects to sell 70,000 units this year (this is the same data as the previous problem). Assume a tax rate of 30

Calculations are not necessary but may be helpful in confirming your answer.)

	Total
	35,000
	100 percent
	\$750,000

.45 percent; an example for dollar calculations is  $\$378.9787 = \$378.98$ .)

confirming your answer.)

year is shown (this is the base case). Fixed costs are known in total, but Conway does not allocate fixed costs to each department.

Impact the operating leverage of the company?

	Total
100,000	100,000
100 percent	100 percent
	\$650,000

3.45 percent; an example for dollar calculations is  $\$378.9787 = \$378.98$ .)

total sales remains at 100,000 units.)

increase or decrease? (Detailed calculations are not necessary.) Explain.

Product requires 3 labor hours per unit, and the Boat product requires 5 hours per unit. The company sells everything it produces. Based on this information, what is the company's operating leverage?

company.

t (called the *consolidated statements of earnings*).

desks to an automated process that requires expensive machinery and equipment. If the company moves to an automated process, s. The costs predicted for the coming year are shown. The selling price is expected to be \$900 per unit for both processes.

	<b>Automated Process</b>
	\$290 per unit
	\$2,600,000
	\$10 per unit



	\$400,000
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that (1) the labor intensive process is used, and (2) the automated process is used.

ports to incur losses. Financial data for the most recent year are shown.

drop in rafts sold.  
did not offset the sales price reduction.  
did not more than offset the increase in advertising costs.

the scenarios presented in the case. Using the spreadsheet in the *Computer Application* box in this chapter as a guide, include “data”  
Although the company has maximum production capacity of 20,000 units per year, only 2,000 units were produced and sold during

date, Paul Glezner, indicated he could turn the company around within a year. He felt the company was producing too few products,  
and it was clear he would help the company for year 2, but intended to move on after the year ended.

nto, California. This brewpub was to be called Roseville Brewing Company (RBC).  
see the beer brewing process.

st year of operations. (Notice that operating profit of \$302,212 is the same as in the first model.)

.9787 = \$379.)

in income statement to reflect these changes. How will this shift in product mix affect operating profit?

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