LINKS Tutorial #1:
P&L Statements

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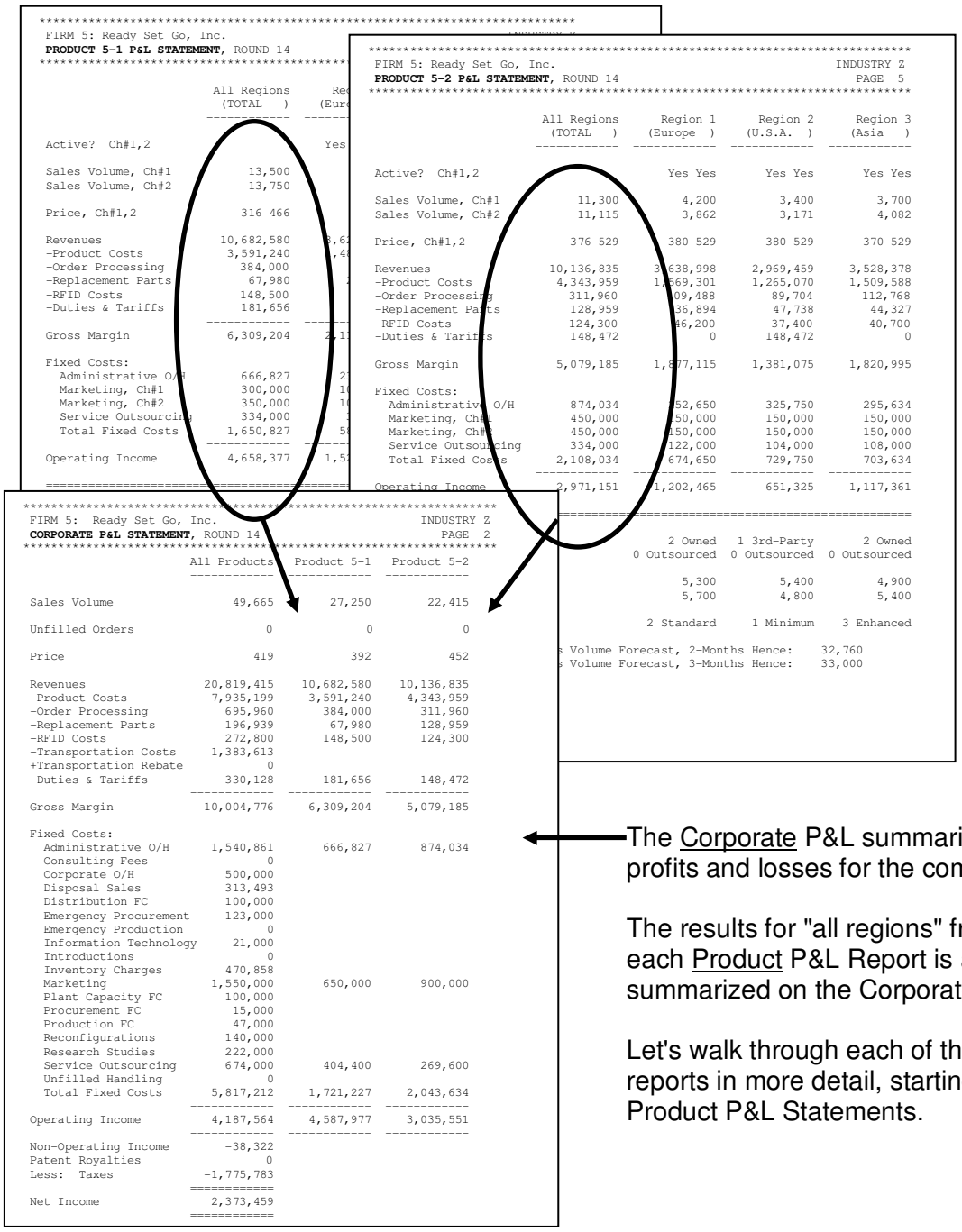
In LINKS, you receive several financial reports after every simulation round. The first several pages of your report are "**P**&**L** Statements" that show what **P**rofits (P) or **L**osses (L) resulted from your company's operations.

This tutorial introduces you to P&L statements by walking you through some example reports. You'll also find some helpful tips to help you start analyzing your own P&L statements. Here's how this tutorial is organized:

1. Overview

In LINKS, you'll receive one Corporate P&L (profit-and-loss) Statement and a Product P&L Statement for each of your products after every simulation round. The graphic below shows the interrelationship between these reports for a fictitious company:



FIRM 5: Ready Set Go, Inc.
PRODUCT 5-2 P&L STATEMENT, ROUND 14 — INDUSTRY Z, PAGE 5

	All Regions (TOTAL)	Region 1 (Europe)	Region 2 (U.S.A.)	Region 3 (Asia)
Active? Ch#1,2		Yes Yes	Yes Yes	Yes Yes
Sales Volume, Ch#1	11,300	4,200	3,400	3,700
Sales Volume, Ch#2	11,115	3,862	3,171	4,082
Price, Ch#1,2	376 529	380 529	380 529	370 529
Revenues	10,136,835	3,638,998	2,969,459	3,528,378
-Product Costs	4,343,959	1,569,301	1,265,070	1,509,588
-Order Processing	311,960	109,488	89,704	112,768
-Replacement Parts	128,959	36,894	47,738	44,327
-RFID Costs	124,300	46,200	37,400	40,700
-Duties & Tariffs	148,472	0	148,472	0
Gross Margin	5,079,185	1,877,115	1,381,075	1,820,995
Fixed Costs:				
Administrative O/H	874,034	252,650	325,750	295,634
Marketing, Ch#1	450,000	150,000	150,000	150,000
Marketing, Ch#2	450,000	150,000	150,000	150,000
Service Outsourcing	334,000	122,000	104,000	108,000
Total Fixed Costs	2,108,034	674,650	729,750	703,634
Operating Income	2,971,151	1,202,465	651,325	1,117,361

2 Owned 0 Outsourced | 1 3rd-Party 1 Minimum | 2 Owned 0 Outsourced

5,300 5,400 4,900
5,700 4,800 5,400

2 Standard | 1 Minimum | 3 Enhanced

Volume Forecast, 2-Months Hence: 32,760
Volume Forecast, 3-Months Hence: 33,000

FIRM 5: Ready Set Go, Inc.
CORPORATE P&L STATEMENT, ROUND 14 — INDUSTRY Z, PAGE 2

	All Products	Product 5-1	Product 5-2
Sales Volume	49,665	27,250	22,415
Unfilled Orders	0	0	0
Price	419	392	452
Revenues	20,819,415	10,682,580	10,136,835
-Product Costs	7,935,199	3,591,240	4,343,959
-Order Processing	695,960	384,000	311,960
-Replacement Parts	196,939	67,980	128,959
-RFID Costs	272,800	148,500	124,300
-Transportation Costs	1,383,613		
+Transportation Rebate	0		
-Duties & Tariffs	330,128	181,656	148,472
Gross Margin	10,004,776	6,309,204	5,079,185
Fixed Costs:			
Administrative O/H	1,540,861	666,827	874,034
Consulting Fees	0		
Corporate O/H	500,000		
Disposal Sales	313,493		
Distribution FC	100,000		
Emergency Procurement	123,000		
Emergency Production	0		
Information Technology	21,000		
Introductions	0		
Inventory Charges	470,858		
Marketing	1,550,000	650,000	900,000
Plant Capacity FC	100,000		
Procurement FC	15,000		
Production FC	47,000		
Reconfigurations	140,000		
Research Studies	222,000		
Service Outsourcing	674,000	404,400	269,600
Unfilled Handling	0		
Total Fixed Costs	5,817,212	1,721,227	2,043,634
Operating Income	4,187,564	4,587,977	3,035,551
Non-Operating Income	-38,322		
Patent Royalties	0		
Less: Taxes	-1,775,783		
Net Income	2,373,459		

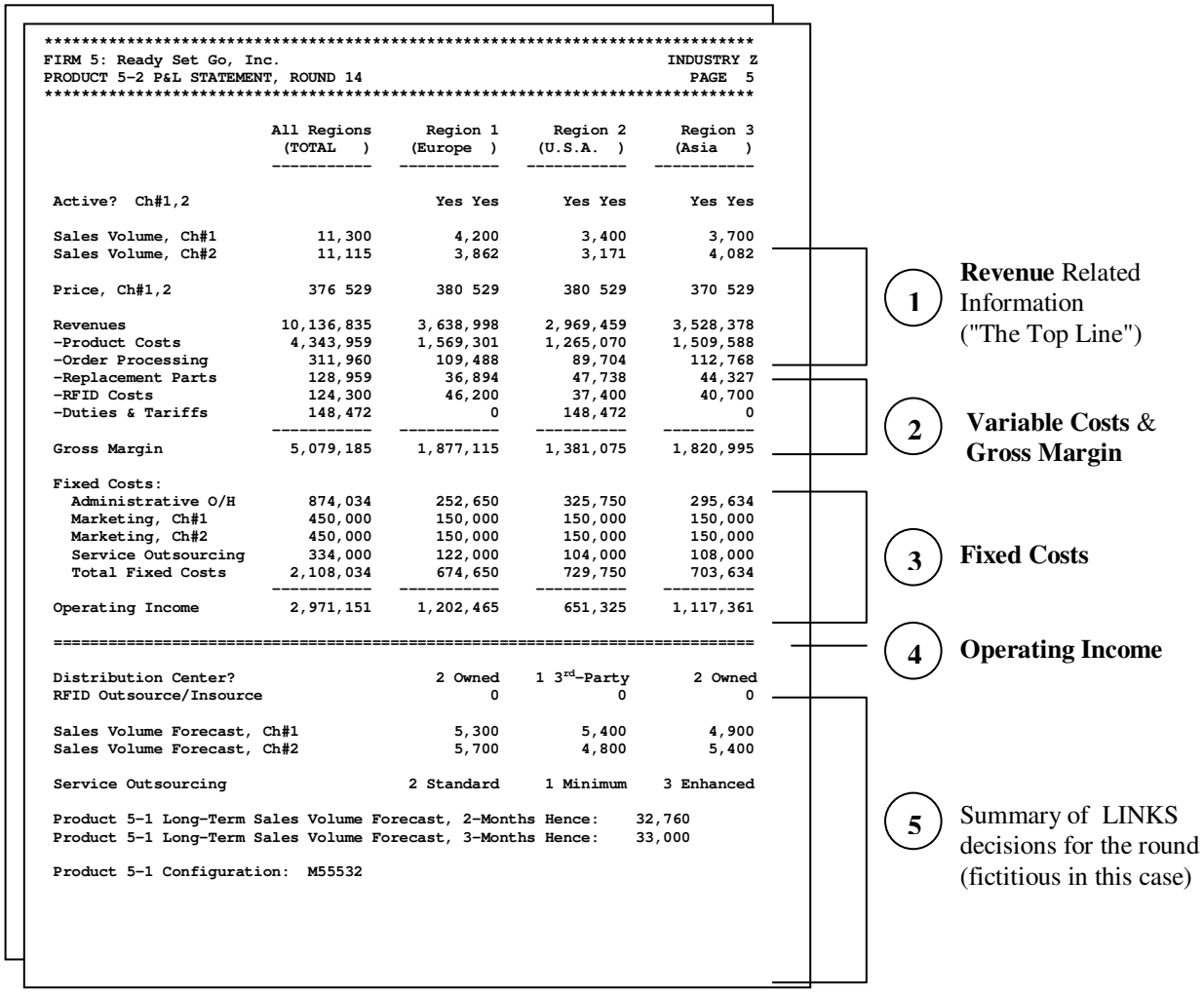
The Corporate P&L summarizes all profits and losses for the company.

The results for "all regions" from each Product P&L Report is also summarized on the Corporate P&L.

Let's walk through each of these reports in more detail, starting with Product P&L Statements.

2. Product P&L Statements

After every simulation round, you'll receive a Product P&L statement for each of your products. Each Product P&L Statement consists of **five sections**:



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**************************************************************************
FIRM 5: Ready Set Go, Inc.                                    INDUSTRY Z
PRODUCT 5-2 P&L STATEMENT, ROUND 14                             PAGE  5
**************************************************************************

                      All Regions      Region 1      Region 2      Region 3
                       (TOTAL   )     (Europe  )    (U.S.A.  )     (Asia   )
                      -----------    -----------   -----------   -----------

 Active?  Ch#1,2                          Yes Yes       Yes Yes       Yes Yes

 Sales Volume, Ch#1          11,300         4,200         3,400         3,700
 Sales Volume, Ch#2          11,115         3,862         3,171         4,082

 Price, Ch#1,2              376 529       380 529       380 529       370 529

 Revenues                10,136,835     3,638,998     2,969,459     3,528,378
 -Product Costs           4,343,959     1,569,301     1,265,070     1,509,588
 -Order Processing          311,960       109,488        89,704       112,768
 -Replacement Parts         128,959        36,894        47,738        44,327
 -RFID Costs                124,300        46,200        37,400        40,700
 -Duties & Tariffs          148,472             0       148,472             0
                          ----------    ----------    ----------    ----------
 Gross Margin             5,079,185     1,877,115     1,381,075     1,820,995

 Fixed Costs:
   Administrative O/H       874,034       252,650       325,750       295,634
   Marketing, Ch#1          450,000       150,000       150,000       150,000
   Marketing, Ch#2          450,000       150,000       150,000       150,000
   Service Outsourcing      334,000       122,000       104,000       108,000
   Total Fixed Costs      2,108,034       674,650       729,750       703,634
                          ----------    ----------    ----------    ----------
 Operating Income         2,971,151     1,202,465       651,325     1,117,361

 ========================================================================

 Distribution Center?                      2 Owned    1 3rd-Party       2 Owned
 RFID Outsource/Insource                         0             0             0

 Sales Volume Forecast, Ch#1               5,300         5,400         4,900
 Sales Volume Forecast, Ch#2               5,700         4,800         5,400

 Service Outsourcing                  2 Standard     1 Minimum    3 Enhanced

 Product 5-1 Long-Term Sales Volume Forecast, 2-Months Hence:    32,760
 Product 5-1 Long-Term Sales Volume Forecast, 3-Months Hence:    33,000

 Product 5-1 Configuration:  M55532
```


The first **four** sections of this report are what *really* comprise the ***financial*** statement. These first four sections are similar to what you'd find on most P&L or "income" statements in real-world firms. Let's explore each of these four sections and see what information they convey.

1 Revenue Related Information ("The Top Line")

```
**************************************************************************
 FIRM 5: Ready Set Go, Inc.                                    INDUSTRY Z
 PRODUCT 5-2 P&L STATEMENT, MONTH 14                             PAGE  5
**************************************************************************

                        All Regions      Region 1      Region 2      Region 3
                          (TOTAL   )    (Europe  )    (U.S.A.  )     (Asia   )
                        ------------  ------------  ------------  ------------

 Active?  Ch#1,2                          Yes Yes       Yes Yes       Yes Yes

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 Revenues                10,136,835     3,638,998     2,969,459     3,528,378
```

At the top of each Product P&L Statement, you'll find revenue-related information for each region in which your product is sold. **Revenue** is the Ldollars coming into your firm as a result of your product sales. Revenue is simply calculated as:
Sales Volume (in units) x Unit Price = Revenue

For example, in Region 1/Channel 1: 4,200 x $380/unit = $1,596,000 in revenue

EXERCISE #1: Revenue

Work through each of the following questions, then check out the "answers" on the next page…

1. Calculating Revenue: Assume your firm sold 3,300 units in Region 2/Channel 1 for a price of $320 per unit in round 5. What was your revenue for this channel in round 5?

2. Impacting Revenue: Unit sales volume is obviously a key driver of revenue in this simulation. What can you do to increase volume?

EXERCISE #1: *ANSWERS*

1. 3,300 x $320 = $1,056,000 in revenue

2. In LINKS, there are several actions that could increase volume:
   - Changing price (typically a price decrease increases volume).
   - Improve "Product Quality" Perceptions that are influenced by product configuration and product failure rate.
   - Improve "Service Quality" Perceptions that are influenced by CSR (customer service representative) call capacity, service call volume, and service salary.
   - Improve "Availability" Perceptions that are influenced by channels, marketing spending, and unfilled orders).

   Of course, all of these actions need to attract customers to *your* offering as compared to what *competitors* are offering to generate demand.

(2) **Variable Costs and Gross Margin**

FIRM 5: Ready Set Go, Inc. INDUSTRY Z
PRODUCT 5-2 P&L STATEMENT, MONTH 14 PAGE 5

	All Regions (TOTAL)	Region 1 (Europe)	Region 2 (U.S.A.)	Region 3 (Asia)
Active? Ch#1,2		Yes Yes	Yes Yes	Yes Yes
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-Replacement Parts	**128,959**	**36,894**	**47,738**	**44,327**
-RFID Costs	**124,300**	**46,200**	**37,400**	**40,700**
-Duties & Tariffs	**148,472**	**0**	**148,472**	**0**
Gross Margin	**5,079,185**	**1,877,115**	**1,381,075**	**1,820,995**

For every unit sold, your firm pays product, transportation, and replacement parts costs throughout your product's warranty period. If the product is not made in the region you sell it in, then you also have to pay duties and tariffs on a per product basis. These costs (product costs, order processing, replacement parts, RFID (radio frequency identification) costs, and duties and tariffs) are called **variable costs** because the total Ldollar amount per region varies with the number of units you sell.

Gross margin tells you how much profit you have after you subtract variable costs:

Gross Margin = Revenues - Variable Costs

Ideally, you'd like your gross margin in every region to be as high as possible, so you have profit after all other costs are subtracted.

EXERCISE #2: Variable Costs and Gross Margin

1. Variable Costs: Take a look at the Product P&L excerpt on page 5. What were the total variable costs listed on this report for Region 1?

2. Variable Costs: These costs are called "variable" because:
   a. They tend to vary a lot through time.
   b. No two costs are ever exactly the same in any given round.
   c. The total amount varies with the number of units sold.
   d. a and c
   e. None of the above.

3. Variable Costs: Identify which (if any) of the following factors influence product costs in LINKS:
   _____ a. Product configuration.
   _____ b. Raw material costs.
   _____ c. Component costs.
   _____ d. Production costs.
   _____ e. Labor costs.

4. Variable Costs: Identify which (if any) of the following factors influence replacement parts costs:
   _____ a. Past sales volumes.
   _____ b. Raw material costs.
   _____ c. Failure rate.
   _____ d. Warranty.
   _____ e. Service availability.

EXERCISE #2: *Continued…*

5. Variable Costs: Identify which (if any) of the following factors influence duties and tariffs:

   _____ a. Sales volume.

   _____ b. Selling price.

   _____ c. Production location.

   _____ d. Production costs.

   _____ e. Transportation.

6. a. Gross Margin: In the example report on page 5, which of the three regions for Firm 5 has the highest gross margin per unit?

   b. Gross Margin: What appears to be causing differences in gross margin per unit between regions?

7. Gross Margin: What can a firm do (if anything) to increase their gross margin per product per region?

EXERCISE #2: *ANSWERS*

1. $1,569,301 + $109,488 + $36,894 + $46,200 = $1,761,883

2. c

3. All (a through e)

4. a, c, d

5. a, b, c

6. a. At $234.00 per unit, Region 3 is slightly higher than Region 1.
   ($234.00 = $1,820,995/(3,700 + 4,082)

   b. Since product costs per unit were similar for all regions, the biggest difference appears to be duties and tariffs—which are causing gross margin per unit to be lowest in Region 2. This must mean that Firm 5 is shipping finished Product 5-2s from their plant in Region 1 to a DC2. Region 3 must be using postponed production at a DC3 because they incurred no duties or tariffs in this region. Keep in mind that gross margin does not account for other costs associated with distribution and postponed production (like distribution operation expenses, transportation, inventory, etc.). These costs are on the Corporate P&L Statement that you'll explore later in this tutorial.

7. You could:
   - Increase price while holding or decreasing variable costs.
   - Decrease variable costs while holding or increasing price.

Now let's learn more about ***fixed* costs**…

3 Fixed Costs

FIRM 5: Ready Set Go, Inc. INDUSTRY Z
PRODUCT 5-2 P&L STATEMENT, ROUND 14 PAGE 5

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Service Outsourcing	**334,000**	**122,000**	**104,000**	**108,000**
Total Fixed Costs	**2,108,034**	**674,650**	**729,750**	**703,634**

Fixed costs are the remaining expenses you spend each simulation round to generate revenue for your firm. These costs are called "**fixed**" because they remain the same regardless of the number of units you sell during a simulation round. (By contrast, variable costs vary according to the number of units sold.)

Overhead-related (O/H) fixed costs occur *indirectly* as a result Administrative Overhead. Forecasting inaccuracy influences Administrative Overhead, with Administrative Overhead increasing 1% for every 1% inaccuracy in sales volume forecasts (to a maximum of double the base amount of Administrative Overhead).

You make decisions about the *other* fixed costs (such as Marketing) *directly* each simulation round.

EXERCISE #3: Fixed Costs

1. Definition: Fixed costs are called "fixed" because they:
   a. Stay the same from through time.
   b. Improve ("fix" themselves) by the end of the simulation.
   c. Do not vary with changes in sales volume.
   d. a and c

2. Comparison to Variable Costs: How do total fixed costs compare to total variable costs for our example Product 5-2 in round #14 (see report excerpt on previous page)?

ANSWERS follow on the next page.

EXERCISE #3: *ANSWERS*

1. c

2. Variable costs greatly exceed fixed costs overall, and for every region. In fact, total fixed costs were less than half of just product costs alone in every region.

4 Operating Income

The "bottom line" on every P&L Statement is the profit resulting from operations—in this case the profit from each product sold by your firm. This profit or "income from operations" is calculated as:

Revenue - Variable Costs - Fixed Costs = Operating Income

or

Gross Margin - Fixed Costs = Operating Income

The overall operating income for our example Firm 5 in round #14 was $2,971,151 (see report on next page).

FIRM 5: Ready Set Go, Inc. INDUSTRY Z
PRODUCT 5-2 P&L STATEMENT, ROUND 14 PAGE 5

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Service Outsourcing	334,000	122,000	104,000	108,000
Total Fixed Costs	2,108,034	674,650	729,750	703,634
Operating Income	**2,971,151**	**= 1,202,465**	**+ 651,325**	**+ 1,117,361**

EXERCISE #4: Operating Income

1. Definition: Operating income equals revenues less:
   a. Fixed costs
   b. Variable costs
   c. Gross margin
   d. b and c
   e. a and b

2. a. Comparison Between Regions: Which region was the most profitable for our example Firm 5 in round #14? Which was the least profitable?

   b. Impacting Operating Income: What are some ways that Firm 5 could increase their operating income for Product 5-2 in the future?

EXERCISE #4: *ANSWERS*

1. e

2. a. Region 1 was most profitable; Region 2 was least profitable.

   b. Generally speaking, Firm 5 could increase operating income by:
   - Increasing revenues while keeping costs the same or less.
   - Decreasing costs while keeping revenues constant (or decreasing revenues at a slower rate than costs).

   Firm 5 obviously had some problems with their demand forecasting (as evidenced by their high Administrative Overhead); this may be a good area to start improvements.

TIPS FOR ANALYZING PRODUCT P&L STATEMENTS…

Here are some things you and your company team may want to explore about your own Product P&L Statements:

- Calculate all costs as a percentage (%) of revenue each round. What costs have the greatest impact on your profitability in each region? Compare these results from round to round. What's changed? Why?

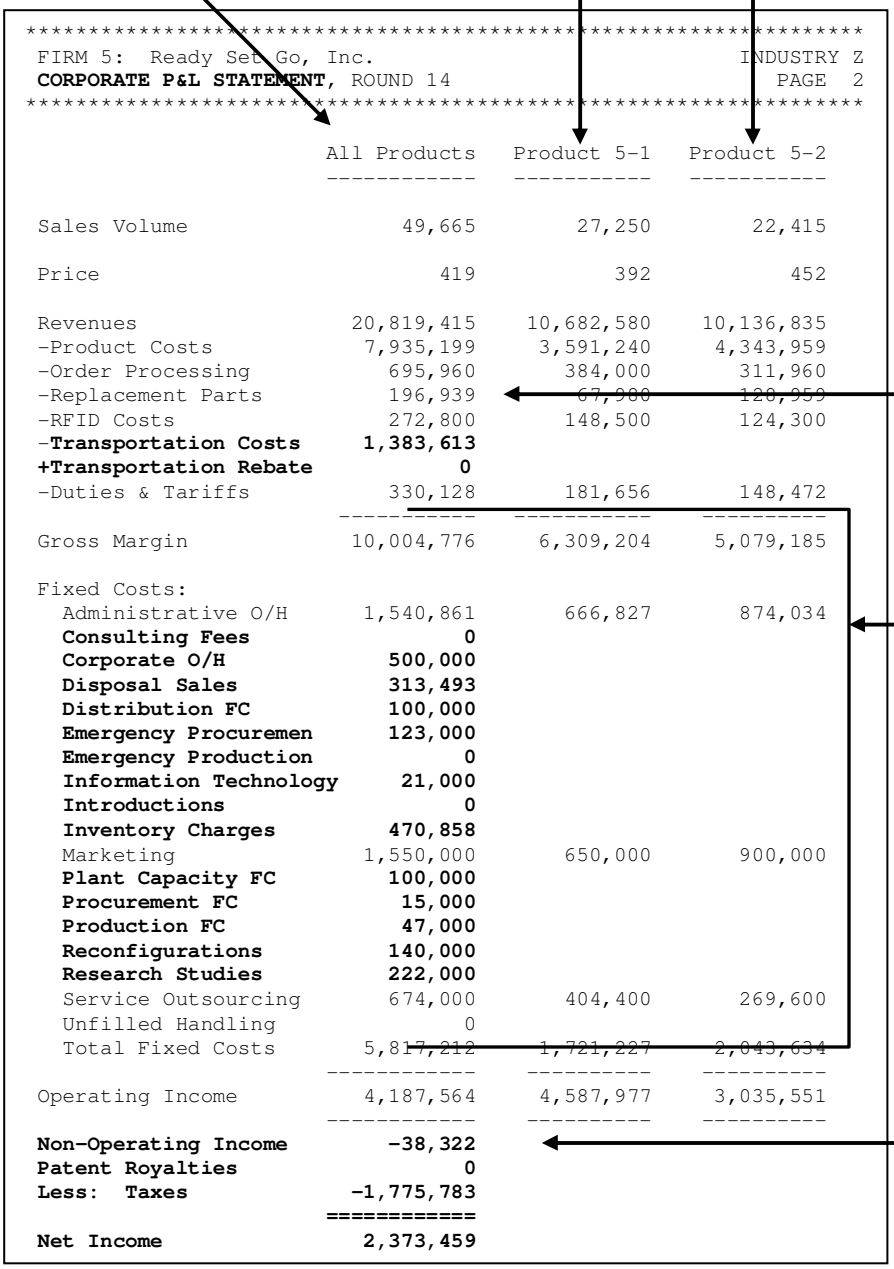
- Calculate the gross margin per unit for every region and every channel. Which are the most profitable? Least profitable? Why? Could these results be changed? How? Should you add or delete any channels?

- What revenue, cost, and profit results would be helpful to track each round? Why? How would you use this information?

Now let's move on to exploring the ***Corporate*** P&L Statement…

3. Corporate P&L Reports

The Corporate P&L Statement provides a snapshot of profit from the operations of the **entire firm**—including the "All Regions" columns from each Product P&L Statement.



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Administrative O/H	1,540,861	666,827	874,034
Consulting Fees	**0**		
Corporate O/H	**500,000**		
Disposal Sales	**313,493**		
Distribution FC	**100,000**		
Emergency Procuremen	**123,000**		
Emergency Production	**0**		
Information Technology	**21,000**		
Introductions	**0**		
Inventory Charges	**470,858**		
Marketing	1,550,000	650,000	900,000
Plant Capacity FC	**100,000**		
Procurement FC	**15,000**		
Production FC	**47,000**		
Reconfigurations	**140,000**		
Research Studies	**222,000**		
Service Outsourcing	674,000	404,400	269,600
Unfilled Handling	0		
Total Fixed Costs	5,817,212	1,721,227	2,043,634
Operating Income	4,187,564	4,587,977	3,035,551
Non-Operating Income	**-38,322**		
Patent Royalties	**0**		
Less: Taxes	**-1,775,783**		
Net Income	**2,373,459**		

Costs not found on the Product P&L are also included, like...

…**transportation costs** (a variable cost), **transportation rebate** (a 20% discount for using a single shipper), and …

…several **fixed costs** (in bold). Each of these corporate-level fixed costs is detailed in your LINKS manual.

Non-operating income and **taxes** are also included, resulting in a total income "net" (less) all costs and taxes.

The Historical Corporate P&L Statement is also available. This report (example below) shows "All Products" results from the current Corporate P&L Statement and the Corporate P&L Statement for the past round, **and** it shows each line item expressed as percentages of revenue each round.

FIRM 5: Ready Set Go, Inc. INDUSTRY Z
HISTORICAL CORPORATE P&L STATEMENT, ROUND 14 PAGE 3

	Previous (Month 13)		**Current** (Month 14)	
Sales Volume	56,549		49,665	
Unfilled	0		0	
Price	395		419	
Revenues	22,346,945	100.0%	20,819,415	100.0%
-Product Costs	9,459,846	42.3%	8,903,959	42.8%
-Order Processing	0	.0%	0	.0%
-Replacement Parts	201,372	.9%	196,939	.9%
-RFID Costs	0	.0%	0	.0%
-Transportation Costs	1,584,032	7.1%	1,383,613	6.6%
+Transportation Rebate	0	.0%	0	.0%
-Duties & Tariffs	385,861	1.7%	330,128	1.6%
Gross Margin	10,715,834	48.0%	10,004,776	48.1%
Fixed Costs:				
Administrative O/H	1,378,527	6.2%	1,540,861	7.4%
Consulting Fees	0	.0%	0	.0%
Corporate O/H	500,000	2.2%	500,000	2.4%
Disposal Sales	0	.0%	313,493	1.5%
Distribution FC	325,000	1.5%	100,000	.5%
Emergency Procurement	135,000	.6%	123,000	.6%
Emergency Production	855,000	3.8%	0	.0%
Information Technology	14,000	.1%	21,000	.1%
Introductions	0	.0%	0	.0%
Inventory Charges	515,905	2.3%	470,858	2.3%
Marketing	1,750,000	7.8%	1,550,000	7.4%
Plant Capacity FC	100,000	.4%	100,000	.5%
Procurement FC	15,000	.1%	15,000	.1%
Production FC	47,000	.2%	47,000	.2%
Reconfigurations	0	.0%	140,000	.7%
Research Studies	125,000	.6%	222,000	1.1%
Service Outsourcing	674,000	3.0%	668,000	3.2%
Unfilled Handling	0	.0%	0	.0%
Total Fixed Costs	6,434,432	28.8%	5,811,212	27.9%
Operating Income	4,281,402	19.2%	4,193,564	20.1%
Non-Operating Income	-42,317	-.2%	-38,322	-.2%
Patent Royalties	0	0.0%	0	0.0%
Less: Taxes	-1,684,107	-7.5%	-1,775,783	-8.5%
Net Income	2,554,978	11.4%	2,379,459	11.4%

This report enables you to compare results from round to round and identify changes that require further investigation.

EXERCISE #5: Corporate P&L Reports

1. Net Income Definition: Net income equals:
   a. Operating income.
   b. Non-operating income.
   c. Operating income less taxes.
   d. Non-operating income less taxes.
   e. a and b
   f. c and d

2. Corporate Variable Costs: (True/False) The Product P&L Statement includes all variable costs included on the Corporate P&L Statement.

3. a. Net Income: Using the Historical Corporate P&L Statement on the previous page, calculate the percentage change in Firm 5's net income from round #13 to round #14?

   b. Net Income: Is this percentage change in net income a satisfactory result for Firm 5?

   c. Net Income as % of Revenue: How did net income change as a percent of revenue from round #13 to round #14? What does this mean?

   d. Historical Corporate P&L: What were the biggest changes in the Corporate P&L results from round #13 to round #14?

EXERCISE #5: *ANSWERS*

1. f

2. False. The Product P&L Statement doesn't include transportation costs. You could calculate this, given the total amount of transportation cost on the Corporate P&L, your known decisions for the round, and the rules from the LINKS simulation manual.

3. a. (2,379,459 - 2,554,978)/2,554,978 ≈ -0.0687 … which, in percentage terms, equals -6.87%

   b. That depends on what Firm 5's objectives were for the round. It also depends on what other firms' results were in Industry Z.

   c. It remained at 11.4% although the actual net income amount was less in round #14.

   d. Revenue was down about 7.3%, apparently due to a volume drop and a price increase on average. This would be something Firm 5 should investigate and understand before they make decisions for round #15. Fixed costs improved overall in round #14, with the biggest improvement being an emergency production reduction. Firm 5 should investigate whether this was a planning improvement or the result of an unexpected sales volume decrease.

TIPS FOR ANALYZING CORPORATE P&L REPORTS…

Here are some things you and your company team may want to explore on your own current and historical Corporate P&L Statements:

- Costs as a percentage (%) of revenue. What costs have the greatest impact on your profitability? Why? Compare these results from round to round. What's changed? Why?
- Calculate the average gross margin per unit for each product. Which is more profitable? Why? Could these results be changed? How? Should you consider reallocation of your resources between products?
- How has your net income changed from round to round? Why?
- Are there any corporate results you should record and track each round? Why? How would you use this information?

4. Links to the Performance Evaluation Report

The first page of your report packet each round is a Performance Evaluation Report. The first two financial metrics on this report relate directly to your P&L statements. Here is an excerpt of the round #14 Performance Evaluation Report for our fictitious Firm 5:

```
**************************************************************
 FIRM 5:  Ready Set Go, Inc.                        INDUSTRY Z
 PERFORMANCE EVALUATION REPORT, ROUND 14               PAGE  1
**************************************************************
```

	Firm 5	Industry Average
FINANCIAL		
Net Income to Revenues	**11.4%**	**8.4%**
Change in Net Income to Revenues	**0.0%**	**.1%**

Referring back to the round #14 Historical Corporate P&L Statement on page 15, you could see that:

Net Income to Revenues = Net Income/Revenues = $2,379,459/$20,819,415 ≈ 11.4%

The "Change in Net Income to Revenues" for Firm 5 was reported as zero percent (from 11.4% in round #13 to 11.4% in round #14).

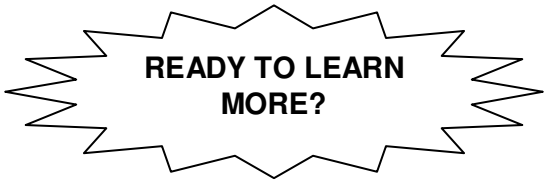
EXERCISE #6: Net Income to Revenues

1. Net Income to Revenues: How did Firm 5's "Net Income to Revenues" metric compare to the "Industry Z Average" for round #14?

2. Net Income to Revenues: (True/False) Firm 5's ratio of net income to revenues increased about 13% from round #13 to round #14.

EXERCISE #6: *ANSWERS*

1. It was above the industry average.
2. False, the ratio didn't change at all.



Other LINKS tutorials available via the LINKS web site include:

2. Inventory Tracking
3. Balance Sheets
4. Forecasting

More advanced tutorials provide "hands-on" problems for you to use financial data to assess the profitability of:

5. Inventory or Emergency Production?
6. Reconfiguration
7. Distribution Alternatives
8. Postponed Production