# ISE 583

# ERP Sim Game

# Game Analysis

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| Team: | A |  |

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| Members: | Shaoqian Chen |  | Wei Li |
|  | Zhounan Wang |  | Tianxiao Yu |

Answer the following questions by referring to the data generated from the SIM Game. You can use Excel (OData connection) to download the data in which you can create charts and pivot tables to analyze the data, or you can use Tableau as you answer the questions below.

When you finish answering the questions, save your entire document and name the document as: *Team#\_*erpsim1. Submit your document on the class web site. Please note: I will grade only one answer sheet per team. If more than one answer sheet is submitted, I will grade the most recently submitted document.

For help answering the questions, refer to: [Connecting to OData Source using Excel](https://erpsim.hec.ca/en/system/files/ERPsim_OData_Microsoft_Excel_2020.pdf)

[OLAP Exercises using Excel Pivot Tables](https://erpsim.hec.ca/en/node/578)

## General Analysis

1. (1 pt) Briefly describe your team’s initial strategy. Include your strategy on pricing, marketing, and production. Why did your team consider this to be a winning strategy? Was there a need to change your strategy? Why or why not?

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| At first, we just stuck to the initial market price the system provided. Since marketing only generates short-term effects, we did not pay much attention to this. The major focus is production because we figured that productivity is of vital importance in this game. In order to maximize our productivity, we ordered a great number of raw materials and tried not to switch between products frequently to avoid costs from setup times. Actually, we did not expect this strategy would work brilliantly. In the first run, not every company started to produce, which mitigated the competition and helped us to dominate the market. In the following runs, we paid more attention to the price and tried to advertise our product, on account of acute competition.  **Our initial strategy was focusing on a few popular products and trying to produce as efficiently as possible. Luckily, at the first two rounds of the game, we don’t have to do many things and our production can always be sold out. Later, we figured that we needed to change our strategy because more teams joined the market. We were not dominating the market anymore and a lot of completed products were stocked in the inventory. The new strategy we use is price-competition.** |

1. (1 pt) If you changed your strategy during the game, what was your new strategy? Did your new strategy increase your net income? How? If you did not change your strategy, simply state N/A (not applicable).

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| Our new strategy was adapting ourselves to the changing market which was becoming more competitive. We slightly reduced the price of some 1kg products, since customers are more price sensitive. We also started to advertise poor-selling products to facilitate selling.  **In detail, we were monitoring the market price constantly and adjusting our prices, so they were always a few cents lower than the average market price for some products. I think this strategy worked pretty well. Some products stuck in the inventory became sold out soon after we adjusted the price. We were also monitoring the sales report to identify poor-selling products in a timely manner.**  **In the end, our new strategy increased our net income per round from around 500,000 to around 800,000, which is quite effective.** |

1. (1 pt) What problems did your team initially encounter? These problems could be either transactional based, or business strategy related.

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| The first major problem we had was that we overestimated our production capacity and purchased too many raw materials, resulting in an increase in storage costs. Luckily, we were able to bring the storage amount down to a comfortable level rather quickly thanks to our high productivity.  **The second major problem we met was the setup time. In the first two rounds, we were trying to produce several different kinds of cereal since we are trying to find out the market preference for different locations and different markets. The consequences of this action were our production rate was dropping a lot. Plus, our team was dominating the market, therefore, the supply fell short of demand. This problem was solved after we invested to reduce the setup time.** |

1. (1 pt) Were you able to correct these problems? What did you do (or change) to correct these problems?

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| First of all, we invested in the production line to increase the production capacity. It facilitated the consumption of raw materials.  **Moreover, as mentioned above, we made investment to reduce the setup time. Because we were making profit, we had decided to make some investments to eliminate the unnecessary loss when we were switching products to produce. We assumed that the earlier we make those investments, the earlier we can get benefit in a long-term game.** |

## Financially Speaking…

Your team was ranked against other teams based upon your *Company Valuation:* 

There are a number of factors that are used to determining your company’s Yearly Profit and your Company’s Discount Rate. Therefore, you should refer to the Partici-pant’s Guide for specific information regarding the formula so you can best increase your Company Value. But for now, let’s take a look at your current financial health.

*From your Balance Sheet…*

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| 1. (1½ pts) What is your current Bank Cash account balance? | **1562094.39** |
| What is the current amount your customers still owe you (A/R)? | **1793793.82** |
| What is the current value of your Machinery and Equipment? | **24183333.36** |

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| 1. (1 pt) What is the current amount of your Bank Loan? | **7425848.65** |
| What is the current amount you still owe your vendors (A/P)? | **0** |



*From your Income Statement…*

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| 1. (2½ pts) What is the total amount you paid in machinery depreciation? | **816666.64** |
| What is the total amount you paid in Warehouse costs? | **272900** |
| What is the total amount you paid in Interest Expenses on your loan? | **201566.06** |
| What have you invested in advertising (marketing)? | **2940** |
| How much have you invested in the Lean Manufacturing Program? | **100000** |



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| 1. (1 pt) What is your current Revenue from Sales earned to date? | **7345413.62** |
| What is your cumulative Net Income earned after four Rounds? | **2181380.41** |

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| 1. (1 pt) Calculate the Total Expenses incurred after four rounds of doing business. | |
| *Remember: Income = Revenue – Expenses* | **5164033.21** |
| Considering all four Rounds, estimate your current, daily “cost of doing business”. | |
| *You can simply divide your total expenses by 80 days* | **64550.415** |

As you see, from your Income Statement, you have many expenses; some you can’t control while other’s you choose to engage in. For example, you can control your advertising expenses, warehousing costs, and the amount of your loan which is directly responsible for your interest expenses. It is your job to routinely analyze these expenses and determine if they are optional and if you can reduce their direct impact on your Net Income

*From your Investor’s Perspective …*

Return on Share Holders Equity is probably the most widely used measure of how well a company is performing for its stockholders Return on equity measures a corporation's profitability by revealing how much profit a company generates with the money shareholders have invested. Businesses that generate high returns on equity are businesses that pay off their stockholders well and create substantial assets for each dollar invested. You can view the Game’s results posting to check your calculation.

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| 1. (1 pt) At the end of the game, what was your team’s Return on Share Holders | |
| Equity (%)? (Hint: Net Income / (Net Income + Total Equity) ) | **9.834%** |

The debt-to-equity ratio identifies companies that are highly leveraged and therefore represent a greater risk for investors. A high debt-to-equity ratio implies that the company has been aggressively financing its activities through debt and therefore must pay interest on this financing. Over the long-term, this could possibly lead to bankruptcy. You can view the Game’s results posting to check your calculation.

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| 1. (1 pt) At the end of the game, what was your team’s Debt-to Equity ratio (%)? | |
| (Hint: Total Liabilities / (Net Income + Total Equity) ) | **33.478%** |

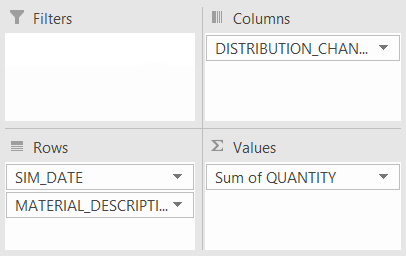
## Demand Planning

Your customers are your only source of Revenue. Because of this, it’s important to accurately predict what your customers want and be in the position to meet your customer demand. After all, the better you can meet your customers’ demand, the higher the Revenue you will earn and thus the higher your Net Income. Let’s take a look at what you produced during the game and determine if you were meeting your customer demand.

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| 1. (1 pt) From your Production data table, what product did you produce the most | | | |
| during the game? Product name: | 1kg Nut Muesli | | What was |
| the total quantity of this product you produced during the game? | | 368000 | |

The question remains, *Was this a product that your customers preferred?* This question can be answered by estimating the sales rate of each of your products to each of your customer types (hypermarket, grocery stores, and independent stores).

The “best case” sales rate can be estimated by a pivot table listing the sales that occurred each day of your products to each of your three customer types.

For instance, create a pivot table from your Sales data.

Review the results.

Identify three different products which had the greatest total quantity sold in a given day.

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| 1. (1½ pt) List, in order, those products with the greatest total quantity sold in a given day and indicate which distribution channel those products were sold to on that day. | | | | |
|  | **Product Name** | **Sales Quantity Grand Total** | **Dist Chanl #1 No. | Qty** | **Dist Chanl #2 No. | Qty** |
| 1. | **1Kg Strawberry Muesli** | **34203** | **12|24247** | **10|9956** |
| 2. | **1Kg Nut Muesli** | **30485** | **12|25263** | **10|5222** |
| 3. | **1Kg Blueberry** | **28479** | **12|14385** | **10|14094** |

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| 1. (½ pt) Referring to your answers in Questions #12 and #13, are you producing | |
| the product which your customers seem to want to buy? (Yes/No) | Yes |

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| 1. (1 pt) At the end of the game, what was your team’s production capacity in boxes | | | |
| per day? | 25000 | Referring to your answers in Question #13, do you | |
| think you have the capacity to meet your customer demand? (Y/N) | | | No |

1. (1 pt) Compare the number of boxes you produced (Production data) and your production utilization from the Results Page displayed after each round with the number of boxes you sold and the max. sales rate for what the market will accommodate (Questions #13). Should you invest more in production machinery and/or Reduce setup? Or, have you invested too much already?

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| Since we have a round productivity of 93.452%, our investment does not seem to be too early. Since our production capacity (25000) is less than the max sales rate (34203), we should probably invest more. |

What do you calculate to be the optimum production capacity for your team (boxes

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| per day, not %)? | 26000? |  |

*Product Contribution Margin*

The contribution margin is computed as the selling price per unit, minus the variable cost per unit. 

This measure indicates how a particular product contributes to the overall profit of the company. It provides one way to show the profit potential of a particular product offered by your company.

The Contribution Margin Ratio will change as you play the game and change the selling price of your products. Because of this, during the game you can use Tableau to monitor your products’ contribution margin in real time. However, for analysis purposes here, you can simply look at the average of the products’ contribution margin.

Create a pivot table from your sales table so you can compare the products which you produced with their respective Contribution Margin Percentage. Be sure to display the data as the average of the contribution margin percentage.

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| 1. (1 pt) From your sales data, which product that you produced have the greatest | | |
| average contribution margin percentage? | 500g Raisin Muesli | |
| What was that contribution margin? | | 0.79 |

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| 1. (½ pt) (Yes/No) Is the product with the greatest contribution margin the same | |
| product which you produced the most of as reported in Question 12? | No |

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| 1. (½ pt) (Yes/No) (Yes/No) Is the product with the greatest contribution margin the | |
| same product as those with the highest sales rate reported in Question 13? | No |

Hopefully, this analysis highlights the importance of choosing products that ① have a quick sales rate, and ② provide a high contribution margin. Often, it won’t be the same products. It will be up to you to determine a favorable business strategy which provides a good balance between the products that result in the highest total sales revenue.

In addition, you should review the formula for “Company Valuation” and the factors which go into its calculation. Know which factors you have control over and identify what you can do to increase the value for your company.

After you have completed the exercises and answered the questions, save your entire document and name the document as: *Team#\_*erpsim1. Upload this document to the Class web page. I ask that only one answer sheet per team to be submitted.