

Developments in Business Simulation & Experiential Exercises, Volume 9, 1982

THE RECYCLING INDUSTRY¹

Gary G. Whitney, The University of San Diego

ABSTRACT

The Recycling Industry is designed to integrate many of the topics raised in experiential organization behavior classes into one exercise to be used near the end of the course. Authority relationships motivation, strategic planning, intergroup competition, and even nuisance paperwork are included in the exercise. It has proven to be an effective and exciting way to provide closure to experiential exercises.

INTRODUCTION

My Organization Behavior classes have been ending with an exciting climax since I added the Recycling Industry exercise to the schedule. Previously when teaching Organization Behavior using experiential methods I felt a letdown as the semester expired and we continued to do narrowly focused exercises until the last day of classes. I wanted an exercise that would integrate many of the concepts that had been covered individually such as group behavior, bargaining, motivation, communication and intergroup competition. The Recycling Industry exercise was developed to involve a multitude of organizational behavior concepts in a dynamic simulation of a competitive business organization.

The Recycling Industry is played with two to six teams of six or more students. The teams goals are to maximize profit by buying raw materials from a market, transforming them into useful products, and selling them to a market. The team with the highest profit at the end is the winner. The simulation can last from 2 to 10 hours split over several days if necessary.

A formal organization structure is used so that authority relationships are tested. Explicit role behaviors are defined so that the students experience the advantages of the division of labor and the frustration of limitations on their initiative. Record keeping (paperwork) is required both as a necessity in the simulation and to add to the realism.

Team effectiveness in the simulation is a combination of speed of manufacturing the products and appropriate strategy. Strategy is the dominant factor.

The instructor can manipulate the pace and intensity of the simulation by controlling the market for raw materials and the market for finished goods.

The Recycling Industry is a complex simulation providing the complexity of many computerized simulations but it requires no special equipment beyond common office supplies and a source of used computer punch cards which are available at most universities.

Students give the simulation credit for face validity as a representation of what does happen in real organizations.

Running this simulation and receiving student feedback has made two things very clear:

1. The diverse activities that occur stimulate learning on many different levels and concepts.

2. Participants rate the Recycling Industry as the high point of the semester and wish the simulation would last longer.

PREPARATION

The goal of each company in the Recycling Industry is to maximize profit. This requires all the skills required of managers: planning, organizing, leading, and controlling.

As always, time pressure is high and decisions must be made accurately but quickly.

Objectives

1. simulate real, competitive, complex organizations.
2. Provide practice in coping with multiple, simultaneous problems.

Time Required

Two to six hours.

Materials Required

Each company should bring several scissors and staplers (with staples) with your names on them. These should be given to the instructor when you arrive.

The instructor will supply tape and punch cards.

Premeeting Preparation

1. Read the entire exercise.
2. Each company should decide on a name and prepare a large sign (about 20 x 30 inches) with the company name.
3. Each company should assign individuals to positions in the organization chart (Figure I).
4. Each person should read his/her position description, plus all others.
5. Companies may make plans and strategies prior to class.

The Industry

A lucrative but very competitive industry has evolved in the last few years. The industry buys computer punch cards on the scrap market, converts them into several useful products, and sells these products to wholesalers. Although handsome profits can be made,

¹Copyright © Gary C. Whitney

Developments in Business Simulation & Experiential Exercises, Volume 9, 1982

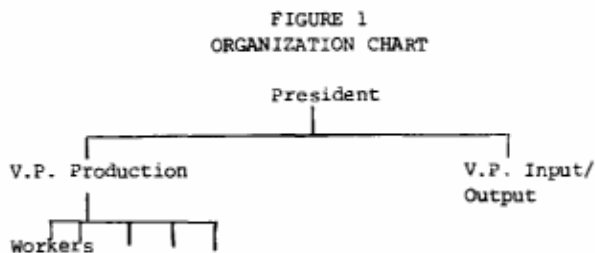
not all companies in the industry are profitable. Profitability depends on many factors, among them are: buying the scrap cards at the lowest prices, production efficiency, making the best mix of products, and selling them at the best prices. Materials prices and product prices vary according to supply and demand at the moment and are difficult to predict in advance. Success is contingent on good strategy and effective implementation.

There may be from two to ten companies operating in the industry.

The primary objective of each company is to maximize profits

The Organization

Each company consists of a president, a vice-president for input/output, a vice-president for production, and several production workers. The organization chart looks like this:



President

You are to plan, coordinate, and control all the activities of the vice-presidents. You are the ultimate decision maker in the organization. Generally, there is no need to interact directly with the production workers. You must sign all purchase and sell orders.

Vice-President, Input/Output

You do all purchasing of materials on the scrap market and selling of all finished goods to the wholesalers. Only you can buy and sell at the markets. Occasionally material may become available from your competitors. Again, only you can make a purchase. Before you can purchase or sell anything, you need a purchase or sell order signed by the President. You also assist the president in making decisions by doing studies, planning, keeping records or any other analysis activities required. At the end of every workday, you prepare and post your company's cash account.

Vice-President, Production

You are to coordinate the production task among your workers so you can make the products required by the President. Your primary concern is production efficiency. Normally you do not get involved in actually making the product.

workers

You are to make the products as directed by the vice-president for production. You are not unionized.

GENERAL RULES

The objective for each company is to maximize their profit at the end of play. Each company starts with 100 Shekels (8) as venture capital. All transactions are cash; no borrowing or

lending is permitted. Therefore, profit is cash on hand at the end of play minus the cash venture capital from the beginning.

A workday in the industry is 15 minutes long. All work must be conducted during the workday. Rest and discussion periods will occur between workdays. The instructor will announce the beginning and end of each workday. There may be three or more workdays in the game depending on time available. During the rest periods, the markets will be closed, production must cease, and production workers leave the room.

During the workday the Input/Output Vice-President may buy and lease materials and sell finished products, and the production operation may operate. Materials purchased from the market may be resold back to the market at one half the current posted selling price. Unused material may be sold to other companies at whatever price can be negotiated. All transactions must be accompanied by signed purchase or sell orders and must occur during the workday.

Prior to the first workday, there will be a five minute planning period for the President to confer with the two Vice-Presidents. During this time the workers should sit silently to the side.

Current prices for material will be posted at the scrap market.

Current prices for finished products will be posted at the wholesalers. Product specification sheets will be available at the beginning of the first workday. Occasionally new product specification sheets may be announced. Products not meeting all specifications will not be accepted by wholesalers.

Mergers may occur between two teams but the same organization structure must prevail. That is, the newly formed company may have only one President, one input/output Vice-President, and one production Vice-President. All others must be production workers. Mergers may occur only after the second workday and may not include more than two of the original companies.

SCHEDULE OF ACTIVITY

1. Instructor reviews the rules, introduces the scrap dealer and the wholesale buyer, and announces the number of work days in the game.
2. Companies go to their factory and install their sign -
3. Instructor distributes venture capital to each company (100 Shekels).
4. Instructor announces the beginning of the first workday. Product specification sheets are available at the wholesalers.
5. Instructor announces the end of the workday. All activity ceases. Transactions in process may be completed but none may commence
6. production workers take a five minute rest break.
7. The cycle repeats for the planned number of workdays.
8. At any time during the workdays there may be

Developments in Business Simulation & Experiential Exercises, Volume 9, 1982

announcements about new products and price changes.

9. After the second workday mergers between two companies may occur. Merger negotiations may occur only during the workdays. A merger requires complete organizational integration. That is, one president, two vice-presidents and 9 production workers.

PRICE LIST

scissors (Limit of two per company)
Rent: D. shekel per workday
Lease: 3 shekels for 4 workdays

stapler (with staples) (Limit of two per company)
Rent: 1 shekel per workday
Lease: 2 Shekels for 4 workdays

Tape
9 Shekels for a package of 10 (subject to market conditions)
80 shekels for a package of 100 (subject to market conditions)

ADMINISTERING THE EXERCISE

Before the Meeting

1. Collect old punch cards and package them in bundles of 10 and 100.
2. Bring extra scissors, staplers, and tape.
3. Make up Shekels or other play money and validate them with your initials or a rubber stamp to climate counterfeiting.
4. Assign one student to sell the raw materials and another to buy the finished goods. Brief the buyer on quality standards for finished products. Remind them to accept only orders with the company president's signatures.
5. Provide separate worktables for each company. Place them as far apart as space allows.
6. Make copies of product specification worksheets (samples follow) for each team.
7. Remind students to bring staplers, staples, tape, and scissors.
8. Assign individuals to companies--6 students per company is the minimum, more is okay. The number of companies is variable.
9. Make up formal purchase and sell orders requiring the president's signature for validation.

During the Meeting

1. Distribute venture capital to companies (8100).
2. Time the workdays.
3. Hand out product specification sheets. Start with the Aircraft Belly Container and the Belly Container on the first workday. Next add the Small Tug, then the Jet Fuel Tank Trailer, and then the two complete systems. Space the introduction of these to introduce uncertainty and keep the companies constantly making decisions.

4. Post price changes for products. Lower the prices if several companies are making the same product and increase them if none are being made.
5. Similarly you may increase or decrease prices for cards.
6. In general, you should make certain that people stay in their roles. Do this by enforcing the rules carefully. Be certain that;
 - a. Workers leave the room during rest breaks.
 - b. Only the input/output vice-president conducts transactions.
 - a. All orders are signed.

After the Meeting

Predicting experiences and debriefing topics is difficult because the exercise is designed to elicit many different experiences from participants. Therefore, the instructor should be prepared to select the most important issues and direct the discussion accordingly. Of course, some students will have experiences which are very important to them that the instructor may not notice. Therefore, the instructor also needs to be prepared to "go with the flow."

PRODUCT SPECIFICATION SHEETS

The product specification sheets include photographs which do not reproduce well in these proceedings. A sample is included without the photo but a complete set may be obtained by writing to me at: School of Business, University of San Diego, San Diego, CA 92110.

Jet Fuel Tank Trailer

No. of Cards: 24

Function: Deliver Fuel to airplanes, towed by small tug.

Performance Specs:

Must stand unsupported.

Tank must be 4 card widths in circumference.

Craftsmanlike work throughout.

Minimum length, 26".

Tank must be round.

All exterior surface unprinted.

Typical Market Price

High 850

Med. 840

Low 833