

# Experiential Learning Enters the Eighties, Volume 7, 1980

## WHAT BUSINESS STUDENTS LEARN FROM FINANCE SIMULATIONS

Abderrahman Robana, Alfred University

### ABSTRACT

The purpose of this paper is to examine and analyze two widely used simulations in Finance, Fingame and Finansim, as learning devices which supplement textbooks in managerial finance.

The paper discusses the purpose of using these finance simulations, shows the decision-making skills called *for*, and the need to integrate short-run and long-run decisions as reflected in the participants pro-forma cash budgets, income statements and positions statements.

A conceptual framework is designed which indicates the steps which have to be followed by students in reaching their ultimate objectives. Then, the advantages and shortcomings of both Fingame and Finansim as a learning device are discussed along with the need to improve these two simulations.

### INTRODUCTION

As more and more business schools use business simulations, instructors suddenly discover that they are providing their students with a unique applied decision-making experience to supplement and implement theoretical concepts, models and basic economic and business principles.

Although it is not the purpose of this paper to prove that simulations can provide students with a valuable learning experience, this paper will focus on the specific strengths and weaknesses of two widely used simulations in Finance, Fingame [1] and Finansim [3], and the reactions of students to such simulations. Following a brief description of Fingame and Finansim, the purpose, prerequisites, and problems related to either one of these simulations will be discussed in this paper along with their integration into finance courses. Finally, suggested improvements to both Fingame and Finansim will be examined.

### DESCRIPTION OF FINGAME AND FINANSIM

#### Fingame

This simulation is non-interactive and provides a multi-period decision setting not available in cases or textbook problems. Students are allowed to make up to eighteen decisions per period given an economic and company environment. Participants can control internal production and finance functions including the determination of the external acquisition of assets and funds. They also make sequential decisions through several periods of play (usually 10 to 15 periods) subject to specific rules and conditions. The objective is to maximize owners' accumulated wealth by the end of the game. The attainment of such objective ultimately depends on the formulation of optimal operating and financial strategies by the players.

To this end, they are asked to show evidence of how decisions are reached by submitting pro-forma financial statements reflecting their strategies.

Student feedback includes three major statements:

- 1) A Quarterly Position Statement
- 2) A Quarterly Performance Report
- 3) A Summary Sheet

This feedback allows students to re-examine the rationale behind previous decisions and to reformulate new sets of decisions based on both their past and forecasting information.

#### Finansim

This simulation introduces students to the same financial decision making processes as in Fingame, however, at a lower level of sophistication.

Finansim is also a non-interactive simulation where each firm's results are the sole function of the specific player's decisions. Performance here is based on each firm's per share growth in owner's wealth. Each period of play students' input include seven decisions with regards to:

- 1) Capital improvement alternatives
- 2) Capacity expansion of Plant and Machine
- 3) Production
- 4) Marketable securities
- 5) Bank term loan acquisition
- 6) Debenture
- 7) Dividends on Common Stock

The above variables are interrelated in a way that causes students to analyze the impact of each decision variable on present and future operations. For instance, the operating decision has to be consistent with the investment decision, since the number of units to be produced depends on present plant and machine capacities as well as the amount to be added to these capacities and cost-saving capital improvement alternatives; in turn the investment decision depends on the financing decision which consists of selling or retiring common stock, long-term debentures, borrow a three to five year loan or draw upon a short-term line of credit. Finally, the working capital decision, which consists of inventory balances and the amount of marketable securities to hold or sell, has an impact on the firm's dividend decision as well as the overall profitability of the firm.

### PURPOSE OF USING FINGAME OR FINANSIM

The main purpose of using Fingame or Finansim is to apply tools and decision techniques to an operating situation resembling the "real world". By using either one of these two simulations, students' decision-making skills in finance is enhanced and their ability to apply methods and techniques to specific problems presented in the simulation improves as the number of decisions increases. Moreover, since the objective of these simulations is to maximize cumulative owners wealth, participants pay more attention to the analysis of relationships between the various variables affect-

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ting their financial statements. In playing Fingame or Finansim, students soon realize that they are presented with several facts, and conflicting information which call for careful screening and synthesis. First they must be able to construct income statements, balance sheets, sources and uses of funds statements, and a cash budget that are consistent with the external environmental constraints of the uncertainty of demand and product price, the specific company's operating environment and the computer generated forecasts in the summary data statements.

Second, the construction of pro-forma statements require students to apply techniques they learn from introductory finance courses, specifically with regards to working capital decisions and long-term financial decisions such as the determination of:

- Cash balances
- Safety stocks and optimum inventory sizes
- The importance of financial ratios with regards to liquidity, solvency, activity and profitability.
- Capital budgeting decisions with regards to plant and machine capacities as well as the financing of additional capacities with equity and/or debt.
- Cost/benefits from the choice of alternative capital improvements.
- Decisions to refund long-term debt
- Dividend policy

The emphasis is on the integration of the above decisions to determine the optimal financial structure of the firm and to obtain an efficient resource allocation. For instance, decisions affecting the firm's cash flows will determine the company's ending cash balances and its overall liquidity position. The production decisions will determine the company's inventory balances and the quantity to produce based on students' expected demand forecasts.

A major difference between Fingame and Finansim is the flexibility of the former which allows five versions of use. Fingame allows users to apply this simulation to different courses in finance ranging from the basic principles courses to the advanced ones. The first three versions can easily be incorporated in the finance principles courses for they merely consist in making the following decisions:

- 1) Students have no control on any variable; this is to make them familiar with the conditions and rules of Fingame. Their main task is to prepare proforma financial statements.
- 2) Students control one variable at a time.
- 3) Students sequentially control additional variables as time progresses.

The last two versions of Fingame should be used to supplement Finance courses beyond the principles of finance courses from a pedagogical point of view. Decisions relative to these two versions are:

- 1) Students are given an immediate control over a set of decisions for a complete operation of the firm.
- 2) Students are asked to start from scratch, and to organize a new company given a beginning cash balance and some equity.

Advantages of Fingame and Finansim as a learning device:

Since both of these simulations are based on the use of accounting statements, in going through past accounting statements and in constructing new ones (Pro-Formas), students reinforce their learning and retention. At a second

stage of implementing these simulations, students' involvement and interest are stimulated by the results of their previous decisions, thus, bad results call for remedial action and change in strategy while good results stimulate them to either maintain their lead or to even do better. Through the use of these simulations, a competitive environment is created resembling the 'real world' and related to the Finance course content. In this respect, students' satisfaction is expressed when they recognize on their own the transferability of the principles and theory in finance to an operating problem. By simplifying the mechanics of the simulations through available subroutine programs, students spend more time planning, analyzing, making decisions and controlling their firms.

Shortcomings of Fingame and Finansim as a learning device:

Neither Fingame nor Finansim duplicate real business situations for they really simplify the real world through eighteen decisions in Fingame and seven decisions in Finansim. Textbook models for optimal solutions may not apply and may lead students to a great deal of frustration and guesses; this has been the case in both simulations mainly with regards to demand forecasts.

Several constraints in both simulations reduce the flexibility of decision-making by the participants. For instance, neither game allows for stock repurchase, credit policy, brokerage costs on the issue of stocks and bonds.

The need to improve Fingame and Finansim:

Both Fingame and Finansim could be simplified by relieving students of the burdens of generating pro-forma statements for the benefit of spending more time on integrating their decisions through better planning and strategy. A simulation subroutine called DRUDGE was developed by Donald E. Fisher [3] in 1974 which saves students a great deal of time they would have otherwise needed to spend calculating pro-forma cash, income and position statements by hand in the use of Finansim.

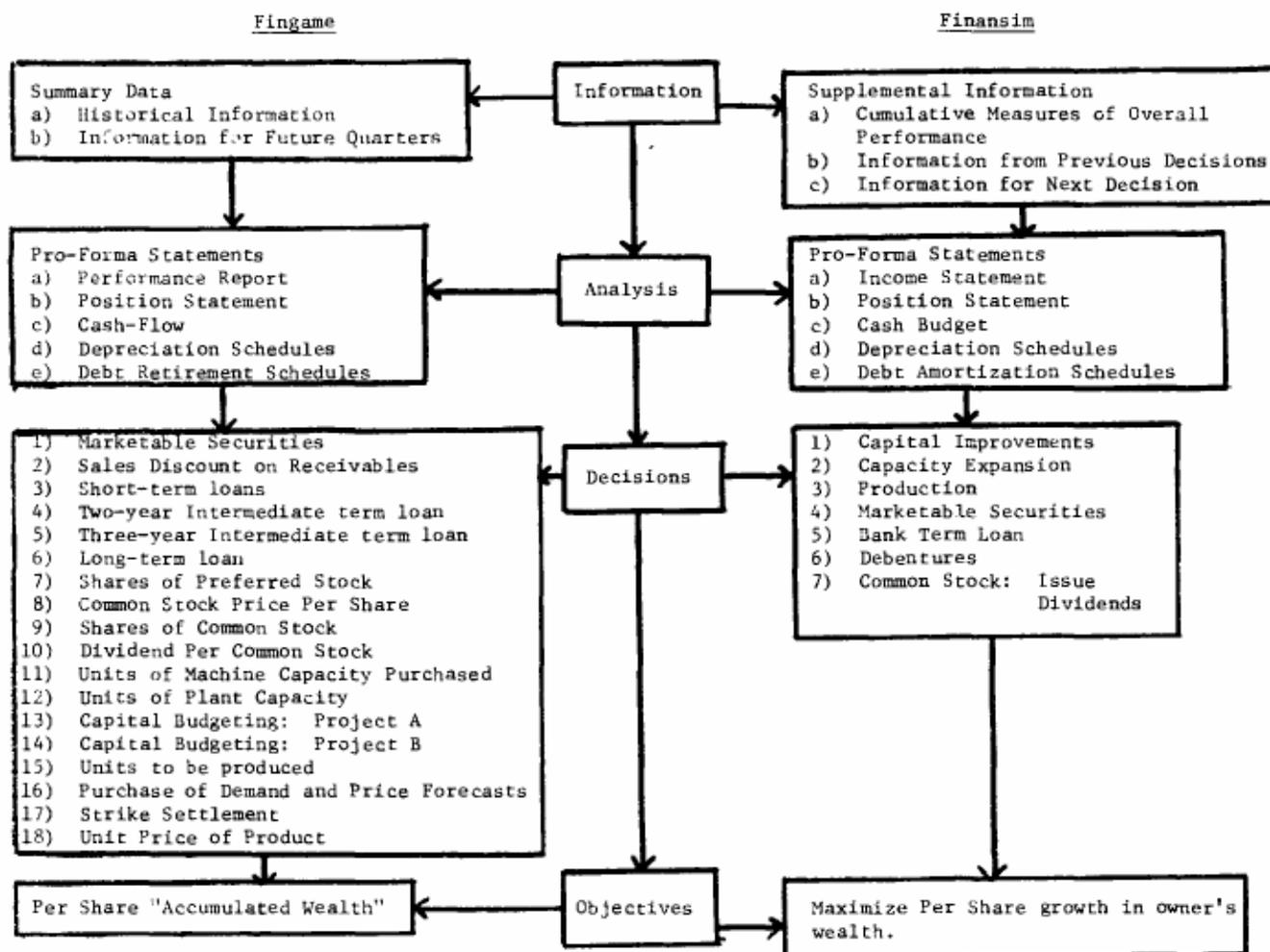
The two simulations may be adjusted to include brokerage costs associated with stock or bond issues, taxes on dividends received by stockholders so as to avoid the bias favoring dividend distribution at the expense of retained earnings, and finally, allowing participants to have the option of repurchasing their own stocks as it is a regular occurrence in the real world.

### CONCLUSION

In order for students to effectively enhance their learning in finance courses through the supplemental use of Fingame or Finansim, they should first understand and assimilate the rules, constraints, and mechanics of the simulations. Once this is achieved, usually after the first three or four periods of play, students can proceed to implement the tasks of planning, organizing, directing if they work in teams, and controlling their resource utilization. The period to period output of the simulations points out the strengths and weaknesses of participants' input and the logic they have followed, starting from given information, analysis, decisions and goals. In the first three or four periods, the emphasis is placed on reinforcing accounting principles, as well as the clarification of the distinction between cash-flows and accounting income. Following the third or fourth period of play, students should start experimenting with the

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FIGURE 1. CONCEPTUAL FRAMEWORK



simulated system through different financial strategies both short-term and long-term respectively with regards to working capital and capital structure.

Hopefully, in going through the above steps, as shown in Figure 1, students' problem solving skills and cognitive learning are enhanced; this becomes more so, if the pro-forma financial statements become computer generated so that students spend more time analyzing alternative decisions and goals.

My personal experience with Finance simulations leads me to conclude that favorable perceived learning, motivation and satisfaction took place, whenever this pedagogical technique is used to supplement traditional textbooks in Finance.

## REFERENCES

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