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CRITICAL SUCCESS RATIOS: A COMPARISON OF TWO BUSINESS SIMULATIONS IN A MULTI-YEAR ENVIRONMENT

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ABSTRACT

In this study, two simulations were compared two ways. They were related to each other for similarities and differences and then examined for their external validity features. It was discovered that both games were useful, yet emphasized different factors that might ultimately influence their use.

Rockart (1979) identified 'critical success factors' which serve as verbal descriptions a firm's actions in the most important areas of business performance. Financial and operating ratios are widely used for performance measurement, and permit performance comparisons among companies or operating units for a given time period by adjusting time and scale differences. Key performance ratios can also be determined to show successful or unsuccessful performance in a given industry.

COMPONENTS OF RETURN ON ASSETS

Return on assets, when broken down into its two basic components (net income/sales revenues and sales/total assets), provides detailed information on sales profitability and the efficient use of assets to produce sales revenue. Actual results should be carefully analyzed to determine which changes are due to accounting treatments and which changes are due to operations of the firm.

If net income/sales revenues is multiplied by both sales/assets and assets/equity, the resulting ratio is net income/equity, another common performance measure used by stockholders and financial analysts. Sales/assets can be used to indicate the efficiency with which asset investment is being used to produce sales revenues. Assets/equity is a measure of the extent to which assets are being financed through equity capita: and, indirectly, the relative amount of debt capital being utilized in the total capital structure.

The PIMS studies, using a large data base of manufacturing companies, found that market share was positively correlated with higher returns on assets (Gale, 1990). In addition, there is some indication that advertising intensive and research and development intensive strategies, as measured by advertising by advertising expenses/sales revenues and research and development outlays/sales revenues, can result in higher levels of profitability in a long-range sense.

STRATEGIC EVALUATION METHODS

One of the most pervasive ideas in business is to grow by gaining as much market share as possible through the experience curve. This, in turn, leads to lower costs (all else being equal). One strategy evaluation method appropriate for simulations is Porter's Market Share Curve. Porter (1980) notes that a firm which fails to clearly use the strategic options of cost leadership, differentiation, or focusing on a particular market segment (i.e., focus) may be 'stuck in the middle' and have low (if any) profits. Porter explains that this firm does not have the market share, capital investment, and resolve to play the part of a low-cost operator, the industry-wide differentiation needed to avoid a low cost position, or sufficient focus to operate as the low cost producer in a very limited market segment (Porter, 1980). ROl for this type of company is likely to be low, since market share is in the middle and costs are fairly high.

THE EXECUTIVE GAME

For business simulations to serve as surrogates of reality, some critics insist that they should incorporate a few salient features of the business world. One particular simulation game in which (Henshaw & Jackson, 1990). Up to nine firms can compete within the same industry and multiple industries are available as well. A typical game that the authors have conducted with business students involves nine firms that compete for a portion of their grade. The team that finishes in first place is one of four types that can be easily related to the experience curve and the market share curve.

In the Executive Game, one can opt to use cost leadership, differentiation, or focus strategies. Thus, this game does contain several important features of the real business world enhancing its external validity and relevance as a teaching pedagogy. On the other hand, if a simulation captures the features of uncertainty, complexity, novelty, judgment, and incomplete information (Taylor, 1987) it does not necessarily have to accurately reflect the real world in all content aspects of the game. For example, if marketing expenses comprise a certain portion of a firm's budget that is relatively stable in the real world, that same amount does not have to be reproduced in a simulation for it to be an effective research and teaching tool.

METHOD AND RESULTS

A sample of 28 business simulation companies was selected from business policy classes involving senior level and graduate business students playing a modified version of the Edge, Keys, and Remus Multinational Game (1980). Only the U.S. segment of the game was used and quarterly reports were consolidated ~ aggregate data for years one and two. For comparative purposes, a sample of 29 business simulation companies was also drawn from senior and graduate level business policy classes playing the Executive Game. In a similar manner, quarterly data was aggregated to produce annual data for years one and two for the Executive Game.

The Edge, Keys, and Remus Game is a moderately complex game involving two products and allowing students to make decisions involving advertising and research and development levels, pricing, number of salespersons, sales commission rates, production quantities and plant expansion. The Executive Game is a one product game in which sales and income results are affected by the marketing/price/R&D mix as well as by maintenance, production levels, raw materials purchases and plant expansion decisions. In both games, the assumption is that a consumer product is being produced and marketed.

Income, growth, and leverage ratios were calculated for the two business game environments. The income ratios (i.e., net income/sales and net income/assets) were used as dependent performance measures. The growth variables included sales, income, and asset growth as well as market share. Leverage variables included sales/assets, assets/equity, advertising expenses/sales revenues and R&D outlays/sales revenues. The growth and leverage variables were correlated with the income variables for year one and two using a stepwise regression program.

It was found that market share and plant expansion were important determinants of profitability in the executive game in a manner consistent with the findings in the PIMS studies. However, increasing advertising and R&D levels seem to contribute to lower profitability, at least in the short run. In the business game environment, market share has a negative, short term impact on profitability whereas increasing advertising and research and development outlays seems to contribute to higher levels of profitability. The choice between the two games would seem to hinge on which set of factors users would like to emphasize.