# CORPORATE PLANNING MODELING LANGUAGES

Dr. Thomas H. Naylor
Duke University - Professor of Economics
SSI - President

This session deals with the software to develop corporate planning models. Basically, two alternatives are available. Corporate planning models can either be programmed in a general purpose scientific language like FORTRAN, PL/1, or APL or they can be coded in a planning and modeling language like the one used throughout this text - SIMPLAN.

There are at least two major benefits associated with the use of one of the scientific programming languages. First, they are extremely flexible. That is, most of the important elements of a planning and modeling system can be coded in FORTRAN, PL/1, or APL. Indeed, a recent survey showed that 50% of the corporate models had been written in FORTRAN. Second, these languages are quite well-known, particularly FORTRAN.

But there are some very serious limitations to the use of scientific programming languages for corporate planning models. First, corporate planners and financial analysts may not be familiar with any of these languages since they may not have previous computing experience. Second, database management and report generation are not the main strengths of FORTRAN and APL. (PL/1 has some features which facilitate file manipulation and report generation). Third, these languages offer little assistance in either formulating or coding corporate planning models, since they are general purpose scientific languages. Fourth, it is the rule rather than the exception for top management to make frequent changes in their requirements in terms of report formats, policy assumptions, external assumptions types of consolidations, etc. Mergers and acquisitions occur, new products are introduced, and old products are dropped. These types of changes are not easy to implement with scientific programming languages. A major reason for the demise of most of the large-scale models developed in the 1960's was their lack of flexibility. Without exception, the Sun Oil, Xerox, and New York Times models, as well as several others, were all written in FORTRAN. When Sun Oil merged with another oil company, the model was dropped rather than re-programming it in FORTRAN. Fifth, even if the model builders are accomplished programming languages.

Some have suggested that APL will be the wave of the future for corporate modeling. Although APL is one of the most powerful scientific languages available today, it has some unique disadvantages which are likely to render null and void the fantasy of corporate managers sitting at their APL terminals doing corporate planning. First, APL assumes the user is proficient at mathematics including matrix algebra. This assumption simply does not hold up in the real world. Very few managers have ever been exposed to matrix algebra. Second, the special characters and mathematical operators of APL are likely to be foreign to most managers, financial analysts, and corporate planners. In summary, APL is an excellent language for computer scientists and mathematicians, but its utility as a corporate planning tool is severely limited.

The alternative to scientific programming languages is to use one of the new planning and modeling languages designed specifically to facilitate the formulation and coding of corporate planning models. Among the benefits to be derived from using one of these planning and modeling systems are the following. First, they are easy to use. To do financial modeling with some of these systems, the user must be familiar with high school algebra, accounting, and finance. The user need not be familiar with modeling or computer programming. Second, some of these systems provide a conceptual framework for planning and modeling which makes it much easier to develop the model in the first place. Third, with a select few of these systems, it is possible to have all six of the following subsystems integrated within the planning and modeling system: (1) database management, (2) security, (3) report generation, (4) simulation modeling, (5) forecasting, and (6) econometrics. Fourth, many of these planning and modeling systems are quite flexible. Changes in databases, models, and reports are easy to implement. Fifth, econometrics, forecasting, and risk analysis are much easier to implement with one of these systems than with a scientific language. Sixth, an efficient planning and modeling system should lead to reduced costs for the total project.

Of course, the advantages of these planning and modeling software systems must be weighed against their costs. First, they are not available free of charge to the user. That is, the user must pay a fee for the use of one of these planning and modeling systems. A limited number of systems can be licensed for use on in-house computers. Nearly all of these systems are available on a surcharge basis on various time-sharing service bureaus. Second, since the computer is doing the work of many programmers, the computer running costs will definitely be higher than say similar models programmed in FORTRAN, but the project

costs should be considerably less. In the final analysis, it is the total project cost rather than the computer cost which is the most important consideration.

This panel contains presentations on three of the leading planning and modeling systems: EPS, SIMPLAN, and XSIM.