Chapter XVI

A Decision Support System for Prescriptive Academic Advising

Louis A. Le Blanc
Berry College, USA

Conway T. Rucks and W. Scott Murray
University of Arkansas at Little Rock, USA

A decision support system (DSS) was constructed to assist the academic advising staff of a college of business. The microcomputer-based system identifies any remaining unsatisfied degree program requirements, selects courses in which the student can enroll, and then prioritizes them. Advisors are then able to spend time on more substantive or developmental advising issues, such as choice of electives, career options and life career goals. Using this system, a student with a minimum of computer knowledge can obtain an optimized course listing without the assistance of a human advisor in less than five minutes.

A high-end spreadsheet (i.e., DSS generator) permits a workable and effective academic advising DSS. The database is the most significant part of this DSS. And, since the modeling component is difficult to separate from the structure of the data itself, a database management system might be a better choice as the DSS generator. This platform would provide a more flexible user interface as well as superior data handling capability but at some sacrifice in cost and implementation time.

A recent development in the management of university and college organizations is the integrated software system, known also as enterprise resource planning (ERP) software. This integrated administrative software for higher education (e.g., CMDS [Computer Management Development Services]), operating on various hardware platforms, provides student advising data for a variety of prototyping and application development tools, such as Powersoft’s Infomaker and Microsoft’s Access.

**INTRODUCTION**

This paper deals with computerized support for prescriptive or traditional advising. This type of advising conveys institutional requirements to college and university students. Presently, faculty and staff at the university usually perform this task. Designing and implementing a microcomputer system to aid in this process [4] [17] would permit the human advisors to pay more attention to substantive or developmental advising issues [8], such as career counseling.

There is a rather limited body of literature about decision support systems (DSS) in the higher education environment. Later in this initial section, that current DSS that literature will be referenced. However, the next paragraphs describe the most influential past research on this particular development effort.

Twenty years ago, a special issue of Decision Sciences that focused on higher education appeared. In that issue, Cox and Jesse (1981) applied a backward scheduling technique from manufacturing (i.e., material requirements planning or MRP) to the scheduling of university classes for each semester. In this prior study, a degree plan corresponded to a manufacturing “bill of material” (BOM). The objective was to determine which courses should be offered in each semester, over a multi-year planning horizon, based on the number and types of major fields of study. The study was macro in nature.

This field research project applies on an individual or micro level the same logic of backward scheduling but for the delivery of a “service” known as a business degree. Scheduling of the individual courses for an undergraduate accounting major, for example, is driven by the accounting curriculum as represented by the degree plan – the BOM. This prototype system determines which specific courses an accounting major should take in a particular semester or possibly over several semesters in order to meet the objective of graduating in the least amount of time.
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