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# USING COMPUTER ASSISTED CASES FOR MARKETING RESEARCH INSTRUCTION

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Case methods in marketing are most prevalent in introductory courses on marketing management but they can also be used advantageously in marketing research courses. When used for marketing research courses, the role of the case may change. Besides being used to put students in the position of an executive who must develop a corporate plan of action, marketing research cases frequently develop scenarios that provide an opportunity to use marketing research skills. Cases can be used to illustrate and supplement all phases of the marketing research process, from problem formulation and survey research through model building. In this paper, a particular kind of case, one that is computer assisted, is discussed. The paper does not pretend to be a review of computer assisted cases, instead it is merely a structured presentation of methods that the author has employed in teaching marketing research courses.

The paper is in two parts. First is a classification of different ways in which cases can be computer assisted. For the sake of order, these ways are described as Levels I, II, and III though this enumeration is not intended to imply a normative hierarchy. Following the presentation of case methods is a short comment on some issues which must be faced if a university decides to institutionalize computer assisted cases in their curriculum.

## A CLASSIFICATION OF COMPUTER ASSISTED METHODS

Computers can be used to assist case instruction in various ways. In some situations the computer is relatively passive, acting primarily as a data storage device. On other occasions, the computer may take center stage, totally transcending the historical situation portrayed in the case. The roles the computer may assume in a case analysis parallels the varying roles they may take in business, from information processors or data handlers to system analyzers and even hypothesis generators. The role or degree of involvement of the computer in a case is the basis for the classification presented here. The first stage, Level I, considers the computer as a data handler without any ability to analyze information. At Level II, the computer not only stores data but processes it as well, often using one or more of the multi-variate methods that are the focus of attention in most marketing research courses. Finally, Level III classifies those situations where the computer's unique abilities are required for defining the decision model used to analyze the problem portrayed in the case.

Level I: The Data Handler

For the sake of discussion, data handling is defined as being limited to those processes which stop short of data summarization. Despite the rather lowly nature of the data handling function, there are substantial differences in the types of data handling processes available.

The simplest data handling function is where the computer is simply a repository for information. In case analyses, this function is exemplified by the use of census tapes to supplement the materials given in the exhibits of a case. Census tapes can be used to contribute an additional dimension to many cases, particularly those that illustrate the use of simple multivariate procedures.

Census tapes and other commercially available data sources, such as those provided by Data Resources, Inc., enhance case analyses and discussions in several ways. Students benefit from the experience of using a commercially available data source and from seeing how a problem set in the case writer's unique historical domain can be generalized to other contextual domains. Since the number of variates as well as observations in commercial data bases usually exceeds those mentioned in a case, there is always the opportunity to expand case analyses by analyzing additional variables. A good example of such a case would be the Ajax Cement Case [10]. The experience of having to meet a case deadline and also budget your time to account for the vagaries inherent in computer based data sources provides another "real world" element into case analyses which, unfortunately, is usually not appreciated by students.

An alternative to using commercially available data sources is to use data obtained from marketing research firms or consulting relationships. This gives the added flavor of data that have been custom tailored to a particular managerial need. However, the custom nature of such data usually means that the educator must write a case to accompany the information if it is to be used effectively.

Data handling methods differ with respect to their ability to selectively retrieve information and their mode of access. Most data bases are designed to be used with batch processing but some, with the aid of a text editing software package, can be treated in an interactive manner if desired. However, the ability to interactively build new files by sorting and merging parts of a master file and then using this information as input for further analyses goes beyond the capacity of the average undergraduate or MBA marketing major.

There are, though, some data bases which are designed for interactive use and selective

retrieval. One such system, INDIRS (Indiana Information Retrieval System) is based at Indiana University and has been used successfully in a number of marketing cases [9].

INDIRS is an experimental time-sharing information system consisting of extensive socio-economic data files and a series of manipulative programs that permit the effective retrieval and display of the data. Information is available from the federal, state and local levels of government as well as from certain non-governmental sources. INDIRS presently has 138 data files which vary alphabetically from agricultural land use to vehicle registrations. The system has been designed for easy access through any conventional time sharing terminal. A self-teaching program obviates the need for any special training or knowledge of computer operations.

Information can be retrieved over standard voice-grade lines. This allows INDIRS terminals to be at a number of universities and libraries throughout the state. The data base has been maintained and developed by graduate students in the School of Business. INDIRS was developed with the support of several foundations and governmental organizations. While there is no firm figure on the investment in INDIRS, the amount is in excess of $100,000.

INDIRS was obviously not designed for the sole use of students using marketing research cases, but it does provide students with a rich, easily accessible, source of data. If students have had previous exposure to standard sources of secondary data, their initial impression of INDIRS is extremely favorable. INDIRS saves students the time required to search through volumes of census data. It also has the ability to perform some simple multiple option transactions. For example, you can ask for a data file, such as employment, and retrieve information for selected areas (SMSAs, counties, towns, or economic planning regions) for a particular time period. You cannot, though, presently select cases which agree with some prespecified Boolean expression. Despite the sophistication of INDIRS, student enthusiasm soon wains when It is discovered that data are not available for the last six months of the preceding year or that information is in some cases incomplete at the town level. This “limitation” is, in some respects, an advantage. Students, constrained to solve cases with imperfectly tailored data sets, gain an appreciation for the benefits and costs of additional information which is not always available in customized data banks.

One case with which INDIRS has been especially effective is the Hoosier Bank and Trust Company [8]. This case concerns a marketing research firm that has been hired by a law firm to provide information for a hearing before a board of bank commissioners as to why a group of citizens seeking a bank charter should (or should not) be granted the charter.

Students are provided with information on the legal procedures of obtaining a charter and on methods of bank location analysis. They are told the identity of the town and proposed location for the bank but are not provided with any other data. To add to the realism of the situation, the class is usually divided into two halves, one half favors the granting of the charter and the other opposes it. When the case analyses are completed, the teams make their presentations and cross examine the marketing experts put forward by the other side.

A distinctive characteristic of this case is its absence of data. Students are faced with the task of deciding what pieces of information they need from INDIRS. The dilemma of having to choose from one of several methodologies, deciding which of many pieces of information is relevant, and then having to tailor information to methods with which they are not completely compatible is a frustrating but worthwhile experience. The experience is thought to be more beneficial than one in which a limited set of data, designed to fit a specific technique is used.

It would, of course, be possible to conduct such a case without a computer assisted data base. The computer assisted data base has a number of limitations, as well as advantages. In the use of INDIRS, for example, where the main transactional unit is defined on a geographical and categorical basis, output can be quickly retrieved for individual pieces of data. However, the system is inefficient if one wants to list output across geographical units, such as would be the case if you wanted employment data for all 92 Indiana counties. This disadvantage could be mitigated by faster output devices or the ability to batch output which is not available. Despite this limitation, experience using INDIRS in case assignments has been beneficial. One secondary benefit of INDIRS is that students are provided with a good example of conversational programming. From informal observation, it appears that the conversational programming is attractive to students and they are willing to spend more time doing the required analyses with conversational programs than they are when the case is used without computer assistance or with batch processing.

Level II: The Manipulator

Methods described at Level I stop just short of data summarization. Level II programs provide for data summarization and multivariate analysis, inferential or Bayesian. There are two basic ways in which Level II programs can be incorporated into a case analysis. The first is to simply combine a relevant data base and general purpose canned statistical programs. These programs may be batch or interactive. The second way is to explicitly incorporate an analysis package into a program, usually conversational, that is designed to solve the specific problem presented in the case.

Using canned programs to analyze case data is probably the most common way of using computers to assist case analysis. Most case books have one or more cases that can be analyzed in a statistical or decision theory framework. Some case books--for example those by Mathews, Dolich and Wilson [10], Eskin and Montgomery [6], and Schultz, Zaltman and Burger [121--specialize in cases that are amenable to this type of analysis. There are also several packages of canned programs that can be used for data analysis. Some, like the BMD [5] and SPSS [11] programs, are batch while others, such as ISIS (Interactive Statistics Instructional System) [1~ are interactive and conversationally programmed. As with the Level I programs, students seem to prefer conversationally programmed packages. For the experienced computer user, most conversational programs are relatively inefficient. The time spent at a terminal, particularly for jobs with large amount of output or keyed input is often in. excess of the time required to submit a batch job. Students, however, are prone to make mistakes and the chance to catch their mistakes in an interactive environment compensates for the time required to print output.

Instead of using canned programs, it is also possible to build a program around a case and to include an appropriate data base and data processing routine. At Indiana University, this has been done with a number of the cases in Problems in Marketing [2] as well as other cases. For example, one program, built around the Aliad Case [3], allows the student to analyze the decision problem with either an inferential or Bayesian methodology. Another case, using a chemical company as a subject, simulates the sales of a new car care product under different marketing mixes [13]. These cases illustrate the advantages that customized programs offer over canned programs. They allow you to combine a number of statistical procedures which would at best be very awkward with canned programs. Input can be tailored for the particular problem at hand and output can be formatted in the form of financial statements, if desired, to emphasize the managerial nature of the problem and to make it seem less like an abstract statistical exercise.

Despite the apparent advantages of customized programs, there are a number of additional considerations that need to be kept in mind. First is the investment needed to write such programs. Often it seems that a case is not really worth the effort required to write a program to aid students in its analysis. A good program usually takes some time to write. Effort is needed not only in doing the statistical or logical modeling but in the conversational aspects as well. Cases can, of course, be interactive but not conversational, or else be quasi-conversational. Non-conversational cases can be very frustrating, particularly after a student has spent a significant period of time at the terminal only to see his program “bomb” because he spaced his

input incorrectly or else hit an alphabetic instead of numeric key. A second issue concerns the realism of customized cases. Al- most all businesses that have time-sharing capabilities have access to software packages that approximate the canned programs that students can use with ease analyses. However, most students do not have the talents to write programs that will answer their problems in a manner similar to those experienced with customized cases. While it is true that computing talents are usually available within large companies, the efforts of getting interdepartmental assistance for the simple problems included in most Level II cases may not be practical. Thus to the extent that cases are intended to put the subject in a realistic managerial atmosphere, the use of canned programs to supplement cases may be preferred to the adoption of custom programs.

Level III: The Model Builder

In Levels I and II, the purpose of the computer was to assist the case. In Level III, the case assists the computer. An example of such a case would be that of the Castle Coffee Company in Hewlett Packard's case book on marketing planning [4]. The Castle Coffee Company is used to illustrate the use of John Little's ADBUDG model [7]. This case, and others in the same book, are designed for a marketing management course but they can be used for marketing research instruction as well.

When using planning models in a marketing research course, the emphasis is not on how management should use the model to plan but instead is on how the model is designed. In fact for ADBUDG, the case is a better vehicle for instructing students in model design than is the parent article. The case puts the model into a realistic managerial setting. By having an opportunity to examine the source program, students become aware of the steps involved in making such a model operational. The explicit nature of the program also tends to clear up several unanswered questions that arise when reading Little's original article.

Students tend to have varied reactions to articles about mathematical models in marketing. Those who have had work experience and who can see the need for incorporating the complexities considered in such models will appreciate them. However, other students will view such models as introducing needless complexity - exemplifying how an academic institution makes easy things difficult. Having students actually work with such a model in a case setting tends to dispel such opinions.

Level III cases can be used in marketing research courses for things other than instruction on model design. Most advanced models are built around a rigorously defined conceptualization of how marketing variables operate. It is easy to

lecture on the differences between alternative views of the marketing process but it is difficult to illustrate the importance of these views in making decisions. Having a computer based model with a realistic data base lets the student see how important alternative conceptual schemes are in decision making. Using cases to demonstrate the sensitivity of decision inputs to different views of how the market operates is usually a disturbing but maturing experience.

## EVALUATING COMPUTER ASSISTED CASES

Computer assisted cases, particularly those at Level I, usually develop on their own without the benefit (or hindrance) of administrative planning. Computer assisted cases have a number of advantages, many of them are listed in this paper, but they also have a cost. These costs take many forms. First, there is a very substantial capital and operating cost. In a university, capital costs tend to be forgotten because the computer "is already there." The average running time of a computer assisted case is so small that the operating costs for equipment also tend to be dismissed. While these costs may be inconsequential on a per-use basis, they can soon escalate. If an institution goes heavily into computer assisted instruction (CAI), cases being just one part of such a system, "scientific" jobs will find their priority slipping for CAI jobs. At this point CAI should begin to share their burden of operating and capital costs. Besides operating and capital costs there are also the substantial software development costs as well as the less tangible interpersonal costs that can occur when one part of the faculty is teaching a machine oriented curricula and the other teaches in a more traditional manner.

In some ways, computer assisted cases should not be considered as part of CAI. Particularly in marketing research, the hardware demands of computer assisted cases are more aligned with those of the scientific users than those of the interactive educational users. Despite this difference, computer assisted cases are functionally in competition with a host of other educational techniques. It is, therefore, proper to turn to the educational technology literature to see how CAI methods compete on a cost effectiveness basis with other educational alternatives. The answer varies but on a cost effectiveness basis most CAI systems seem to be a failure. The reasons for this differ from situation to situation but a major factor appears to be the inability to compete on a cost basis with conventional teaching methods. Instructional efficiency is usually enhanced but not enough to offset costs. There are exceptions of course and it may be that computer assisted cases are one of the exceptions. However, the warnings in the literature should cause us to carefully evaluate major investments in this area.

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