THE MARKET ACCESS PLANNING SYSTEM (MAPS): A COMPUTER-BASED DECISION SUPPORT SYSTEM FOR FACILITATING EXPERIENTIAL LEARNING IN INTERNATIONAL BUSINESS

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ABSTRACT

This paper describes a computer based program, Market Access Planning System (MAPS), to assist in the teaching of international marketing. MAPS is an expert system for developing market entry strategy and plans. The paper discusses the system and how it can be used as an adjunct to case analyses in international marketing classes.

INTRODUCTION

The last decade has seen enormous changes in the economic environment of business. The fall of the former Communist Block in favor of a more democratic political structure and a more market-based economy, together with a rapid movement toward deregulation, privatization, and the reduction of international barriers to trade in more traditional economies, have combined to create a highly competitive market environment, one in which companies must make good decisions quickly, with little margin for error.

In this environment, computer-assisted simulations and expert systems will play a critical role in giving managers a competitive edge. Many international business simulations have been developed for this purpose (e.g. Thorelli and Graves 1964; Scott and Strickland 1984; Edge, Keys and Remus 1985). These provide an excellent opportunity for students to develop their international business decision-making skills. However, international business also requires a great deal of specific knowledge. For instance, a company that wants to enter a foreign market has a host of alternative entry-mode strategies available to it, including direct export, indirect export through agents, indirect exports through distributors, licensing, franchising, and so forth.

This paper describes an experiential learning approach that presents students with detailed case studies involving actual or hypothetical companies that are considering international trade. In order to help students solve the cases, the approach uses a computerized expert system called MAPS through which students can produce a plan for international market entry.

The Market Access Planning System (MAPS) is a computer-based decision-support system that guides students through research and analysis of case studies. We will begin by describing the basic structure of the MAPS system. We will then conclude by explaining how it can be used to structure their learning regarding international market entry strategies.

AN OVERVIEW OF MAPS

The MAPS system is an expert system that provides decision support for companies that are considering foreign market entry. It is sufficiently detailed that it can be used in both an academic learning or a practical business decision environment. It incorporates information and principles from a host of different sources to provide a comprehensive evaluation of success potential for various international marketing approaches.

For example, a company must decide whether it is ready for an international business commitment. Given that it is ready, it must make strategic deci-

sions about which market to enter (i.e. what country or region), how to enter that market (e.g. export, license, build a plant, etc.), and how to adapt the product or service according to market needs. It must then make decisions about setting up the appropriate type of partnership, selecting distributors and freight forwarders, evaluating the performance of expatriate personnel and foreign subsidiaries, and setting up legal contracts and pricing policies to fit the target market.

MAPS addresses all these major decisions by identifying all the ingredients of successful business planning such as the identification, evaluation, and selection from a set of decision alternatives regarding entry modes; in particular performing a S.W.O.T analysis and subsequently ranking the most appropriate entry strategies based on that S.W.O.T. analysis.

In order to visualize the kind of information included in the MAPS system, consider the more general expert system shell from which it was developed. The shell is called CEVAL, for Candidate Evaluator (Mitri 1995). It incorporates a number of general information categories that, in turn, provide the structure for MAPS. In this context, *candidates* refer to any decision alternatives from which the user is trying to choose. For MAPS, candidate evaluation addresses the suitability of candidate companies for alternative market entry strategies. The following are key concepts related to the MAPS system:

1. **Evaluation criteria**. Evaluation criteria consist of a hierarchical set of criteria containing rating by importance. By *hierarchical*, we mean that the system contains categories and subcategories, involving increasing levels of detail (See Figure 2). For instance, a criterion for evaluating licensing as a candidate method for market entry might be company characteristics. At a lower (more detailed) level of the hierarchy might be availability of resources, and below that company size. These characteristics would be relatively important as a criterion because licensing give the company a low

level of control, but it is relatively inexpensive, thus making it more appropriate for companies with low levels of resources.

2. **Evaluative questions**. These are multiple choice questions that score candidates in their performance of the criteria. For instance, in the case of company size, the system would prompt the user to indicate whether the company has 1-10 employees, 11-50, 51-100, and so forth, as shown in Figure 3.

3. **Interpretation Fragments**: These are text paragraphs based on criteria ratings that combine to form a report of recommendations to the user (See Figure 6).

4. **Plans**: These are decision alternatives for a particular candidate. Plans are ranked from least to most promising (See Figure 7), together with an analysis of the reasons (See Figure 8).

5. **Hypertext Tutorials**: These are tutorials that can help gain insight into the reason for a recommendation (See Figure 4).

USING MAPS IN CASE ANALYSIS

Figure 1 summarizes the manner in which MAPS would be used in a classroom, case analysis environment. Students would be given a case study describing either a fictional or real company and the product or service that the company provides, together with one or more potential target countries to which the company may want to market its product or services. The case should be written in such a way that the characteristics of the company and its product can be found by careful reading of the text. It should include as the target markets countries for which a significant amount of information is available from the school's library system or other accessible resources.

After a careful reading of the case, the student will run the MAPS system and begin to answer questions related to MAPS' S.W.O.T. analysis (see below). The questions will guide the student to look for pertinent information in the case's text or in other resources related to target countries. The student must do significant research, particularly in target market analysis, but is guided in

this effort via the MAPS structure.

FIGURE 1: STEPS IN A TYPICAL USE OF MAPS FOR INTERNATIONAL BUSINESS STRATEGY FORMATION

> 1) Student reads a case study
> 2) Student runs MAPS for S.W.O.T. analysis:
>   •Company assessment
>   •Target market assessment
>   •Assessment of product and marketing characteristics
> 3) MAPS presents interpretation and ranks plans
> 4) Students can compare results
> 5) Instructor reviews and provides feedback of students' work

As a result of the S.W.O.T analysis, MAPS will present an overall evaluation of the company, its product, and the target market. Then, MAPS will produce a ranked list of potential strategies for entering the target market (entry modes) based on the results of the S.W.O.T. analysis. Students can then review these entry modes in order to learn what they involve and the reasons that they may be appropriate of inappropriate given the company and target market.

The MAPS results can be collected in digital or hard copy form and turned into the instructor for review and evaluation. In addition, different students' (or teams') results can be compared to illustrate the commonalties and/or differences in their assessments of the company and market.

S.W.O.T. ANALYSIS IN MAPS

The S.W.O.T. Analysis phase provides input needed for selection of the appropriate entry modes for the company. MAPS assists in this by guiding the user through a series of multiple-choice questions regarding the major factors relevant for international market entry. Major factors include company, target market, and product and marketing characteristics interacting with each other in the global environment (See Figure 2). Each of these is a CEVAL evaluation criterion, and is composed of other sub-criteria.

FIGURE 2: THE HIERARCHY OF EVALUATION CRITERIA FOR THE MAPS SYSTEM IS COMPOSED OF COMPANY, TARGET MARKET, AND PRODUCT/MARKET CHARATERISTICS, AND FORMS THE BASIS FOR THE SWOT ANALYSIS
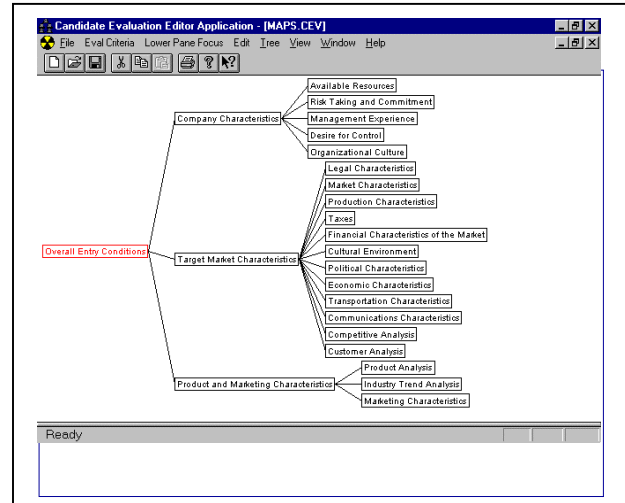
1. The Company, Target Market, and Product and Marketing Characteristics are divided into five, twelve, and three characteristics respectively, as displayed below. Thus, MAPS presents students with a structured set of overall market entry conditions relevant for selecting an appropriate foreign-market entry mode. For example, the **Company characteristics** are composed of

2. *Available resources*, which are constituted of (a) Company size; (b) Ownership; (c) Current Net Income; (d) Current Retained Earnings; and (e) Return on Assets;

3. *Risk taking and Commitment*; which are constituted of (a) Current Management Attitude; (b) Current Employee Attitude; (c) Projected Financial outlook; (d) Human Resources Allocation; and (e) International Business Plan Development;

4. *Management Experience*, which can be viewed in terms of (a) Work and Living Experience Outside Home Market; (b) International Transaction Experience; (c) Number of People Fluent in Host Language; and (d) Host Country Government Contact;

5. *Desire for Control*, which can be seen through the lens of (a) Desire for Strategic Control; (b) Level of Ownership Desired for Market; (c) Desired Operational Management Control; (d) Desired control Over Technology; and (e) Desired Control Over Manufacturing;

6. *Organizational Culture*, which can be seen in terms of (a) Management Style; (b) Organizational and Management Flexibility; (c) Priority Setting; and (d) Decision-Making Process;

The **Target Market Characteristics** are composed of

1. *Political Characteristics* which are composed of (a) Political Stability; (b) Regime Style; and (c) Political Risk;

2. *Economic Characteristics* which can be viewed in terms of (a) Balance of Payments; (b) Inflation Rates; (c) Currency Convertibility; (d) Status of Banking Systems; (e) Importance of Economic Assistance and Incentives; (f) Level of Economic assistance and incentives;

3. *Legal Characteristics* which can be seen in terms of (a) Intellectual Property Protection; (b) Ownership Laws and Regulations; (c) Contact Laws Regarding Sales, Agents etc.; (d) Labor Laws; (e) Local Content Requirements; (f) Environment Regulations and Standards;

4. *Taxes* which are consisted of (a) Corporate Tax Rates; (b) Individual Tax Rates; (c) Tax Treaties for Companies, Individuals; (d) Value Added Taxes; (e) Tariffs / Duties; (f) Surcharges; (g) Taxes on Dividends;

5. *Financial characteristics* of the Market which are consisted of (a) Repatriation of Capital Earnings; and (b) Availability of Local Credit;

6. *Transportation Characteristics* which can be seen in terms of (a) Types Available; (b) Extensiveness; (c) Reliability; (d) Cost; and (e) Distribution Channel;

7. *Communication Characteristics* which are consisted of (a) Mail and packages; (b) Telecommunications;

8. *Cultural Environment* which can be seen through the (a) Business / Personal Customs; (b) Management Styles and Practices; (c) Interpersonal interactions; (d) Ethics / morality of business; (e) Market Receptivity; (f) Percent of Host People Speaking English; (g) Ease of Learning Host Country Language (s);

9. *Production Characteristics* can be seen in terms of (a) Trade Secrets; (b) Local Supplier Scope/Strength; (c) Availability of Skilled Workers; (d) Availability of Professional Talent; (e) Availability of Natural resources; (f) Availability of Utilities; (g) Relative cost of Producing in Host Country(ies);

10. *Market Characteristics* can be seen in terms of (a) Market Size; (b) Market Segmentation; (c) Meet Existing Need or Create New Need; (d) Market Hub Capability; (e) Marketing Support Service Availability; (f) Methods of Distribution Available;

11. *Customer Analysis* which can be done in terms of (a) Demographics and Psychographics; (b) Purchasing Power; and (c) Decision Making Process;

The **Product and Marketing Characteristics** are composed of:

1. *Industry Trend Analysis* which is constituted of (a) Home Market Characteristics; and (b) Global Market Characteristics;

2. *Product Analysis* which can be seen in terms of (a) Level of Home Government Export Control; (b) Level of Home Government Export Support; (c) Product Labeling and Packaging Regulations; (d) Degree of Product Differentiation; (e) New Product Development; and (f) After-Sales Services Requirements;

3. *Competitive Analysis* which is constituted in terms of (a) Number of Competing Firms already Present; (b) Availability of Competitive Products and Products Substitutes; (c) Targeted Share of Home / Global Market; (d) Order of Entry into Market;

4. *Marketing Characteristics* can be identified in

terms of (a) Buyer Behavior; (b) Influential Advertising and Promotions; (c) Brand Recognition; and (d) Cost of Producing and Promoting Product.

FIGURE 3: THE STUDENT USER IS PRESENTED WITH A SERIES OF EVALUATIVE QUESTIONS IN MULTIPLE-CHOICE FORMAT. THESE QUESTIONS PROVIDE THE BASIS BY WHICH THE SWOT ANALYSIS EVALUATES THE CRITERIA FOR INTERNATIONAL MARKET ENTRY.
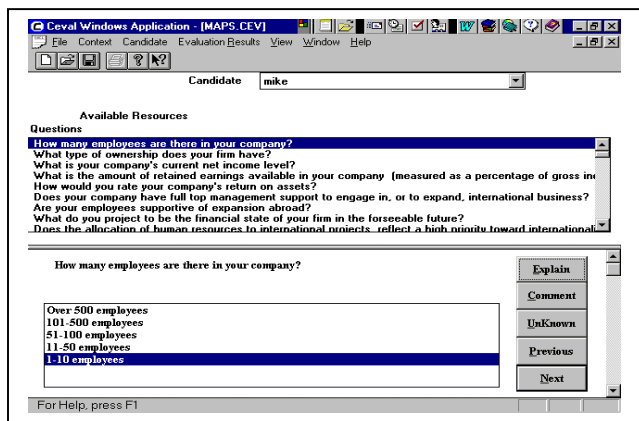
STUDENT'S INTERACTION WITH MAPS

As we have noted, the presentation to the students is based upon multiple choice answers to evalua-

FIGURE 4: THE STUDENT CAN REQUEST AN EXPLANATION FOR A QUESTION, AND FROM THERE CAN FOLLOW A SERIES OF HYPERTEXT LINKS TO OTHER RELATED TOPICS. THIS PROVIDES A TUTORIAL COMPONENT TO THE MAPS SYSTEM.
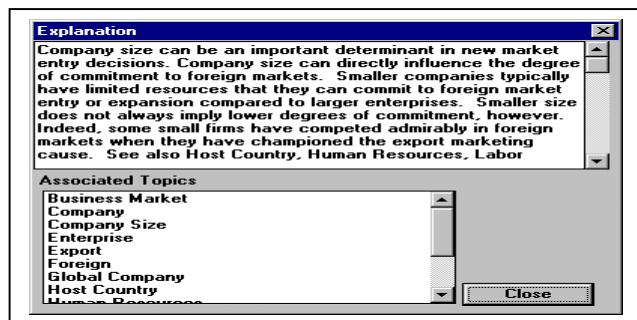

tive questions related to the twenty criteria de

scribed above. This provides a user-friendly interface that facilitates the case analysis. As the user

FIGURE 5: STUDENTS CAN ENTER COMMENTS TO DOCUMENT AND JUSTIFY THE ANSWERS THEY GIVE TO THE QUESTIONS.
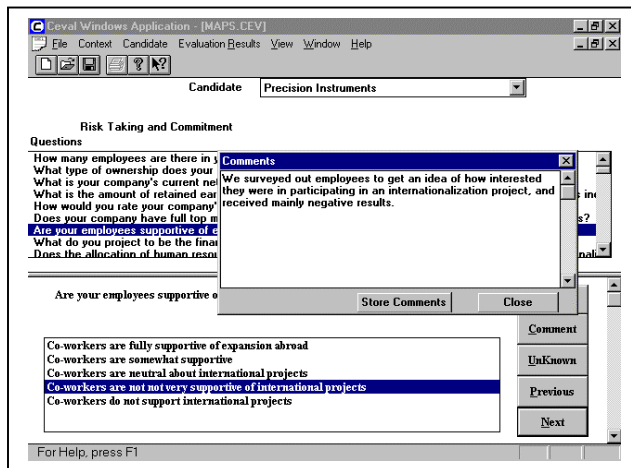
progresses through the question and answer process (Figure 3), his or her responses to the questions cause the assignment of quantitative scores and qualitative ratings to the evaluation criteria (Figures 7). Each question is also provided with

FIGURE 6: THE INTERPRETATION OF THE SWOT INCLUDE QUANTITATIVE SCORES AND QUALITATIVE RATINGS FOR EACH CRITERION, ALONG WITH PARAGRAPHS PROVIDING DETAILED EXPLANATIONS OF THE FINDINGS.
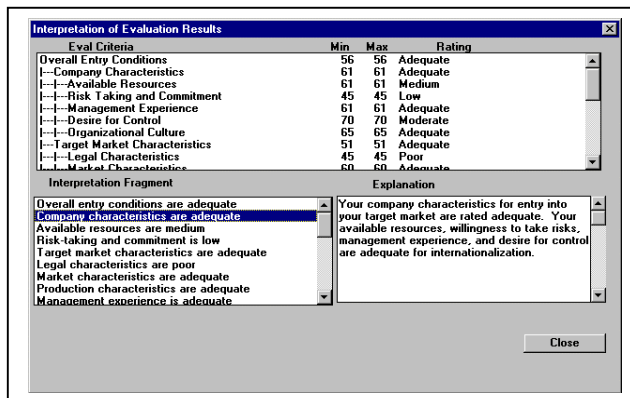
explanations and hypertext linkages, should the

student not be familiar with some terminology (Figure 4). Similarly, the final rankings and ratings are accompanied by explanations of the reasoning (Figure 8).

In addition, the user can enter comments regarding their answers to a question (as illustrated in Figure 5). This provides a feedback mechanism by which the instructor can ensure that the student is giving full consideration to the questions. As a result of the question-and-answer process, a report is generated which shows the quantitative scores and qualitative ratings, together with detailed interpretations of the results of the SWOT analysis.

ENTRY MODE SELECTION

Along with assessing the strengths and weaknesses of the company, and the opportunities and threats associated with the target market and product/marketing characteristics analysis, the S.W.O.T. serves as input for establishing the most appropriate strategy for entering the target market. We refer to this as entry mode selection.

FIGURE 7: THE PLANNING RANKING DISPLAYS ALL THE ENTRY MODES TO THE USER IN ORDER OF THEIR APPROPRIATENESS GIVEN THE RESULTS OF THE SWOT ANALYSIS.
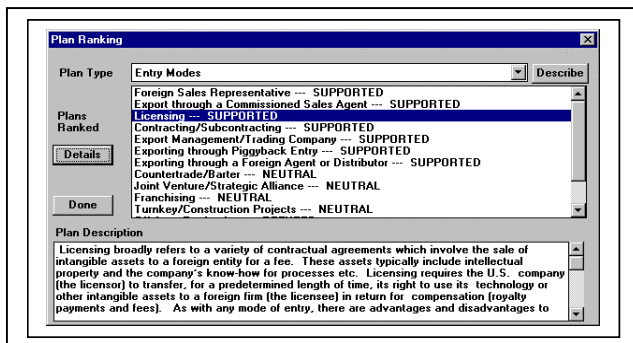
The different entry modes are implemented via CEVAL's planning feature. Each mode (plan) includes various export types (through trading intermediaries, distributors, or directly to customers), licensing, franchising, or contracting, various partnership arrangements (e.g. joint ventures), or

wholly owned subsidiaries/facilities. Each mode has certain factors that *support* it and other factors that *refute* it as an option. Based on these supporting and refuting factors, the entry modes are scored and ranked from most promising to least promising, and then presented to the user. The user can select one of the entry modes in order to get a description of that plan. In addition, the user can obtain details regarding the factors that support and/or refute any particular entry mode.

FIGURE 8: A PARTICULAR PLAN (ENTRY MODE) CAN BE QUERIED TO OBTAIN A DETAILED DESCRIPTION OF THE FACTORS THAT SUPPORT AND/OR REFUTE
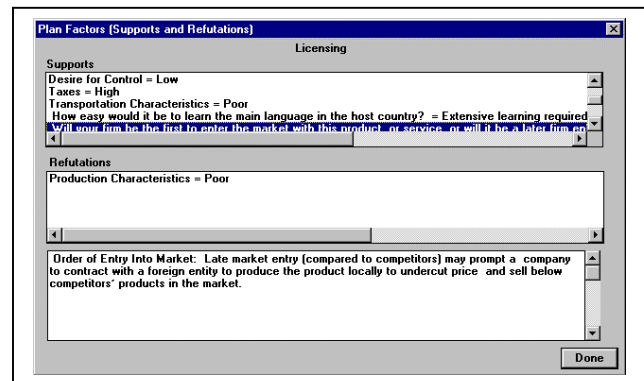
THE PLAN.

SUMMARY AND CONCLUSIONS

This article described an experiential learning approach that combines cases involving actual or hypothetical companies that are considering international trade combined with a computerized expert system called MAPS through which students can produce a comprehensive plan for international market entry. The Market Access Planning System (MAPS) is a computer-based decision-support system that guides students through their research and analysis of the case studies. We began by describing the basic structure of the MAPS system. We then described how it could be used by international business students to structure their learning regarding international market-entry strategies.

MAPS is sufficiently powerful to address the

needs of actual companies. However, when used in an educational setting, it teaches students the principles incorporated within the system, thus enriching their knowledge of export marketing. Its educational features include context specific tutorials and descriptions of the relationships between concepts through hypertext links. In this sense, it provides many of the same benefits as a conventional text book, or as library research, but in a much more applied and memorable setting.

One of the advantages of the MAPS approach is its ability to incorporate an ever increasing range of knowledge and principles. By testing it against new cases, and incorporating the output of new research findings, the system can continually increase its usefulness. By repeated use, students can continue to increase their mastery of the principles involved in market entry strategy. Furthermore, the underlying CEVAL system is not limited to the market entry decision. MAPS, then, can be expanded to address other international marketing decisions as well, ranging from such diverse topics as product strategy to cross-national segmentation, pricing, and the like. It can also be adapted to the needs of particular companies or industries, tailoring programs to address more specific bodies of international marketing expertise. Because it is computer-based, it can be easily applied in training programs in virtually any part of the world.

REFERENCES

Cavusgil, Tamer S. (1987) Qualitative Insights into Company Experiences in International Marketing Research, Journal of Business and Industrial Marketing 2(3):41-54.

Edge, Alfred G., Bernard Keys and William E. Remus (1985), The Multinational Management Game (2nd ed.), Plano, TX: Business Publications, Inc.

Green, Donna H., Barclay, Donald, W. Ryans, Adrian, B. (1995). Entry Strategy and Long-Term Performance: Conceptualization and Empirical Examination, Journal of Marketing, 59, 1-16

Mitri, Michel (1995). MAPS: A Planning System for International Market Entry, International Journal of Intelligent Systems in Accounting, Finance, and Management 5: 57-72.

Root, Franklin, R. (1994). Entry Strategies for International Markets. New York: Lexington Books.

Scott, C.R. Jr. And A.J. Strickland III (1985), Tempomatic IV: A Management Simulation, Third Edition, Boston, MA Houghton Mifflin.

Thorelli, Hans B., Grave, R.L., and Howells, L.T. (1964), INTOP (International operations Simulation), New York: The Free Press.

Yannopoulos, Peter (1997). The Use of Artificial Intelligence in Marketing Research, in Amin Sammy, Fullerton Sam, and Neumann ed. International Business Practices: Contemporary Readings, p. 496-504.

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