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Business Strategy Formulation with Expert System Support

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Introduction

This research is concerned with the question "Can knowledgebased
systems (KBS) help in business strategy formulation?" More
specifically, it focuses on a subset of the area to explore how
knowledgebased, also called expert, systems can help a user to
formulate a new venture business plan.

A prototype KBS was built that focuses on helping a user explore
new venture opportunities in the travel industry. Although the
prototype is still evolving, some observations are possible. A KBS for
new venture planning could, for example:
Help to support idea generation by providing scenarios of successful
businesses in a selected industry and market segment. In the prototype
KBS, the scenarios are called competitive success profiles.
Evaluate and provide instant feedback on a user's potential for
successful entrepreneurship.
Guide a user through a systemic and thorough risk analysis of all the
key factors involved in a new venture.
Provide an initial business plan that can be used as a starting point
for implementing the new venture.

The longrange goal of this project is to help a user to create a
truly new business venture that is, one for which there is no existing
competitive success profile. This paper gives some background on this
project, then
discusses the focus and design of the prototype KBS for the travel
industry. A look at research plans for the next phase concludes this
paper.

Background

The authors began in 1986 to develop KBS as a way to gain insight
into the enterprisewide strategic planning process, one of the most
general of the management decisionmaking areas. A KBS for strategic
corporate planning that emerged from this period is discussed in
Mockler and Dologite [1987] and Dologite [1987]. It has affinities
with the KBS described in Schumann [1989], and Maybury and Belardo
[1992].

While the first KBS was a generic system, a later prototype focused on helping to determine where use of computer information technology would help provide a competitive advantage. It is described in Mockler [1989] and builds on the work of Krcmar [1985].

The authors' current research focuses on to the original problem of strategy "formulation" versus the
strategy "implementation" focus of earlier research. The shift is supported by a change from rulebased to objectbased KBS. The object-oriented approach provides a natural way to map knowledge in chunks that closer match a strategy planner's mental map of the strategy planning process. Maybury and Belardo [1992], as well as Hiddings [1989], make similar observations about using this approach for building KBS for strategy planning purposes. The special focus of this phase turned to new venture planning which is discussed in the following section.

Focus of the prototype

The overall decision area selected for this project is new venture planning. It is operationalized in a prototype for planning the startup of a new travel agency. The travel industry is characterized by low startup costs and intense competition. In 1989 there were about 35,000 travel agencies in the United States, and the market was expected to expand at a steady rate throughout the 1990s. The competitiveness of the industry dictates the importance of careful planning.

When generalized, the new venture planning area is suitable for KBS implementation because the planning process requires decisions based on business planning expertise and the number and complexity of tasks involved in the planning process are definable for mapping into a KBS.

Design of the prototype

The decision situation handled by the prototype, called the Business Planning Analyst (BPA), is characterized by a process the initial prototype follows to provide guidance to an entrepreneur interested in starting a new venture within the travel industry. The steps the BPA follows can be briefly summarized as:

1. User selects an industry and market segment of interest.
2. User selects a model, called a competitive success profile, for the new venture.
3. User provides input on personal characteristics and capabilities.
4. BPA compares user information with the model and provides feedback on potential entrepreneurial success in the industry and market segment of interest.
5. User provides input on competition.
6. BPA compares competitors with the model and provides a risk analysis and startup business plan.

The prototype, when completed, is expected to address the major design objectives of idea generation, entrepreneurship evaluation, risk analysis, and business plan generation for new venture planning.

Idea generation

The first step in the new venture planning process is to select an industry sector, such as the travel industry,
and a market segment, such as a travel agency. The KBS has value as an idea generator at this level. A user can select to browse industry and market segment possibilities, based on a variety of characteristics or attributes available along the industry class inheritance structure. Generally, characteristics identified with Porter's [1980] five forces model are planned candidate selection criteria.

At the end of any selection, a user browses appropriate competitive success profiles. These profiles
consolidate inherited characteristics and combine them with other characteristics unique to the individual profile. These profiles represent a way business consultants organize new venture opportunity ideas when working with clients.

For the KBS prototype, several competitive success profiles were developed for each of twelve industries. These profiles are expected to be generalized enough eventually to be automated as much as feasible. They will become populated and periodically updated by access to commercial, government, and other online databases. The automation of the profile is a separate, later project. For this prototype, a dBASE database file simulates online input to populate and update profiles.

After browsing competitive success profiles, a user selects one, in the current implementation, as a model for starting a new venture. In future implementations, a user may browse profiles to brainstorm a new venture idea that does not exist and then proceed to create a new profile or model. The logistics of this process need to be explored in subsequent phases.

Entrepreneurship evaluation

BPA is designed to provide feedback on a user's potential for successful entrepreneurship. A series of questions help to evaluate factors such as personality, management and marketing skills, and financial resources.

The plan is to link into another KBS prototype designed in an earlier phase of this project. It deals exclusively with recommending career possibilities, among which is entrepreneurship. For the present, this prototype mimics a subset of the careers KBS. If there is a strong match, the user is determined to have good prospects as an entrepreneur.

This evaluation is followed by another on how the potential entrepreneur matches each key factor required for success, as listed in the competitive success profile selected. The evaluation provided becomes part of the user's business plan, if there is potential for success with a new venture. If the match is not strong enough, the user is encouraged to study other competitive success profiles.

Risk analysis and business plan generation

A final risk analysis addresses competitive threats to the new venture. This is not implemented in the BPA initial prototype, but has been done in earlier rulebased versions. As before, this phase will ask direct user questions about potential competitors who provide the same products or services as the planned new venture.

Like a live consultant, BPA systematically guides a user through analysis of the competition. The goal is to provide a detailed comparative analysis for each keytosuccess and opportunity area found in the competitive success profile.

BPA then generates a business plan for the potential entrepreneur. It converts the last two columns of the risk analysis spreadsheet into a presentation script. The script gives the results of the comparison of the selected competitive success profile against the profiles of potential competitors. It estimates the risk of a new business succeeding given the selected profile and considers the reactions of strong potential competitors to the new venture.

The business plan also covers the steps to take to meet personal and keytosuccess requirements. This comes from information prepared earlier during the entrepreneurial evaluation phase discussed above.

Summary and the next phase

This paper has reported on the progress of a research project designed to explore an answer to the question "Can KBS help in business strategy formulation?" The application area focus is new venture planning for which an objectoriented prototype, the Business Planning Assistant, was developed and is described. The prototype is still evolving and needs work before it can be verified and validated.

BPA is expected to demonstrate several results, such as:

The adaptability of the objectoriented paradigm to model and support a strategy formulation problem.
The ability to support idea generation by providing browsing capabilities through the industry/market segment/competitive success profiles object hierarchy.
The ability to provide feedback on a user's potential for successful entrepreneurship and an initial business plan that can be used as a starting point for implementing a new venture.
The ability to guide a user through a systematic and thorough risk analysis of all the key factors involved in new venture planning.

One of the lessons learned on this project, that has not changed since this work began in 1986, is that addressing strategy formulation problems remains a difficult area to model and implement. The problems are illstructured and require a substantial knowledge base to be useful, even for tutoriallevel systems.

Modeling a strategy formulation problem in objects, however, holds more promise than modeling in rules.
Objects provide a modeling method that closer approximates how a planner thinks in logic chunks, when dealing with a strategy formulation problem. Objects also provide the structure to enable

designing ideageneration browsing capabilities that are observed to be
essential in designing a strategy formulation support environment.

Of course, more work remains in the next phase in many areas.
Developing a KBS such as BPA or an
extended version, has specific relevance as we move in the 1990s. Some
see this as the period when individuals shun the corporate life in
favor of entrepreneurship. Often new enterprises are started by people
who are visionaries in their specialty area, but who are hopelessly
incompetent about developing a systematic approach to creating their
new venture. BPA has potential to provide help here. On a broader
scale, it could be a base on which to build more sophisticated KBS to
support the decisionmaking processes involved in strategy formulation
and
implementation planning.

References available upon request from the first author.

A full version of this paper is also available.