

Developments In Business Simulation & Experiential Exercises, Volume 20, 1993

USING THE IDEAFISHER IDEA GENERATION SYSTEM AS A
DECISION SUPPORT SYSTEM IN MARKETING STRATEGY COURSES

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ABSTRACT

Most computer-based decision support systems address the analytical component of problem solving. This study discusses using the *IdeaFisher* idea generation system as a tool for stimulating creativity in the development of strategic marketing alternatives. Drawing on principles of associative thinking, the system combines a large semantic network of concepts and search heuristics to retrieve and utilize semantic cues for stimulating new patterns of thinking.

INTRODUCTION

Most marketing decision models seek to aid marketers or marketing students in making high quality, analytical decisions from among an established set of alternatives. Early models used econometric modeling techniques (e.g. Kotler 1971). More recently, they have begun focusing on expert systems technology (e.g. Gatignon and Burke 1991). Both approaches address a process that Guilford (1956, 1967, 1977, 1988) calls convergent thinking or the use of individual intellectual capacity to arrive at a single, "right" answer.

But marketing decisions are only as good as the alternatives from which the "right" answer is selected. Guilford suggests that with a second pattern, or divergent thinking, one uses many associations to stimulate the formulation of new concepts (not necessarily "the" correct alternative). Wells, Burnett and Moriarty (1989, p.324) suggest that divergent thinking plays an important role in creativity in advertising. Kotler (1988, pp. 413-415) addresses techniques for stimulating divergent thinking in new product development. Of course, advertising and new product development are merely examples of strategic marketing decisions for which creative alternatives are at a premium. Creative, divergent thinking should be useful for virtually any type of marketing decision.

The purpose of this paper is to describe the nature and use of *IdeaFisher*, a computer-based decision support system that uses principles of expert system technology to stimulate divergent rather than convergent thinking. The paper will begin by describing the nature of the system. It will then present an illustrative application from a Marketing Strategy course.

STRUCTURED CREATIVITY: THE GENESIS OF LINKED-IDEA DATABASES AS TOOLS FOR IDEA GENERATION

Cannon (1987; Cannon and Alex 1990) suggests that structuring the marketing planning processes can actually increase student creativity. Identifying topics or problems provides a natural cue to stimulate thinking about relevant ideas. As noted earlier, Kotler (1988, pp. 413-415) summarizes several idea-generation techniques that have been applied to marketing problems. They all draw on the same principle of providing cues that stimulate memory.

For instance, in brainstorming, group members share ideas in completely unrestrained manner (Osborn 1963). The ideas of other group members provide powerful idea-stimulating cues. If the technique were being used to generate alternative marketing plans, each marketing approach would stimulate other group members to think of variations.

Attribute listing structures the creative process by using a list of problem characteristics as a starting point for creativity, looking for useful variations on the existing characteristics. Rather than considering alternative marketing approaches directly, the group would begin by identifying the characteristics of an existing marketing strategy, or perhaps of marketing strategy in general. For instance, if current strategy featured a high-quality, premium-priced product, heavily promoted, delivered through exclusive channels of distribution, the group would consider various alternatives along each of these strategic dimensions. Thus one might consider a high-quality, low-priced product, not heavily promoted, delivered through mass distribution. Osborn (1963, pp. 286-287) suggests additional structure by evoking classes of variations in the form of questions -- Can the product be put to other uses? Be adapted? Magnified? Minimized? Substituted? Used in combination with other products? Used in a different manner? And so forth.

Forced relationships takes ideas and forces group members to systematically consider them in different combinations. For instance, group members might be asked to identify a number of different products and product variations the company might produce. For a transportation company, this might be cars, trucks, motorcycles, airplanes, trains, buses, taxi's and so forth. Combining these might lead the company to develop a transportation pass through which a traveler could package airline tickets, rent-a-cars, taxis, and bus transportation into a single fare with guaranteed discount prices.

Morphological analysis takes a similar approach by developing idea matrices to systematically examine different aspects of a problem (Tauber 1972; Alford and Mason 1975). For instance, a group might use an attribute listing approach to develop different dimensions of sales productivity -- market information, effective presentation materials, rapid pricing capability, efficient transportation, effect sources of leads, etc. These would then be compared to a list of different types of technology, such as computers, telephones, cellular phones and video cassette players. The result would be a host of new ideas, such as a pocket computer with a built-in CD-ROM to provide data access, or a service that gives sales people telephone access to a computer-based expert system to qualify price quotes.

Of course the most direct idea generation technique is simply to identify the problem. Kotler (1988, pp. 413-414) identifies need/Problem identification as a specific technique for stimulating marketing creativity. Asking consumers to list their problems, or otherwise identifying them in very specific terms, provides a powerful creative cue.

IdeaFisher is a linked-idea computer database system that provides assistance using all of these approaches. It consists of three parts (Robbins 1990):

- o IdeaBank is a database of more than 60,000 words and phrases, grouped into 28 "Major Categories" which are subcategorized into 387 groups, called "Topical Categories," which are then broken down into "Section Titles." These are cross-referenced, providing a semantic network of more than 700,000 idea-associations. The system also allows the user to customize IdeaBank by adding both ideas and categories. The user will use IdeaBank in different ways to trigger new patterns of thought, spurred by the thousands of potential associations.

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- o QBank is a file of more than 6,000 questions, grouped according to purpose: - Orientation-Clarification,” “Modification, or “Evaluation” (see table 1). These, in turn, are divided into subcategories to facilitate question selection. The user will generally use QBank to begin each exercise, browsing through and answering a number of questions. The actual number of questions to be answered is left to the user’s discretion. From time to time during a session with *IdeaFisher*, the user may return to QBank in search of additional creative focus. Just as users can add concepts to the IdeaBank, they can also add questions to the QBank. Table 1 lists three customized question modules that have been added to this system.

Consistent with the QBank topics shown in table 1, *IDEAFISHER* has been used by practitioners in a host of different areas, from creative writing (Donovan 1990; Burt 1991) and music (Widders-Ellis 1991) to advertising (Winski 1991) and general marketing management (Bader 1991; Martin 1991). *IdeaFisher* is representative of a class of idea-generating software. Other products include Experience in Software’s *Idea Generator*, Mountain House Publishing’s *Idea Tree*, and Mustang Software’s *Brainstorm*. This paper addresses *IdeaFisher* because of its unique power. It is generally regarded as the most advanced package available (PC Week Labs 1991).

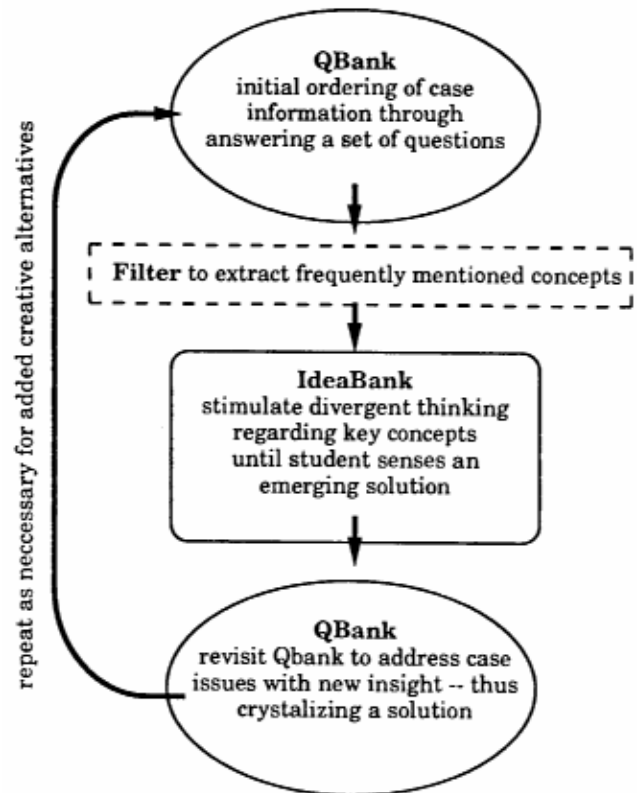
Table 1
QBank Question Categories

Orient-Clarify	Modify	Evaluate
Developing a Story or Script	Action - Motion	Taking Stock - Midproject
Developing a New Product or Service	Age	Review
Developing a Name, Title, Theme, or Slogan	Appearance - Color - The Senses	Aims - Purposes
Developing a Marketing Strategy	Combining - Synthesizing	Attractiveness - Interest - Appeal
Developing an Advertising Strategy	Comparing - Contrasting - Similarities	Costs - Benefits - Success
Developing a Solution to a General Problem	Decreasing - Subtracting - Shrinking	Failure - Risk
Adding a Personal Association	Increasing - Adding - Expanding	Ecology - Environment
	Emotions - Attitudes - Behavior	Efficiency - Effectiveness
	Mechanization - Automation - Power	Feasibility - Practicality
	Opposites - Reversals	Fruitfulness
	Perspective - Point of View	Human Concerns - Social Concerns
	Position - Location - Distance - Direction	Implementation
	Processes	Originality
	Purpose - Function	Simplicity - Complexity
	Removing - Eliminating	
	Separating	
	Sequence - Arrangement	
	Shape	
	Size - Weight	
	Speed	
	Strength	
	Substituting - Replacing	
	Temperature	
	Time - Timing	
	Transformation - Change	
Developing a Strategic Plan	Presentation Planning	Implementing a Strategic Plan
Understanding Your Purpose, Mission and Objectives	Orientation	General Implementation
Understanding Your Current Company Situation	Content and Structure	Considerations
Understanding Your Market	Delivery	Marketing and Promotional Considerations
Understanding Your Product/Service	Evaluation	Financial Considerations
Understanding Your Customers		Product/Service Considerations
Understanding Your Selling Efforts		Management/Personnel Considerations
Understanding Your Competition		Legal Considerations
Understanding Your Future Business Environment		Production and Facility Considerations
		Controls, Contingencies, Testing
		Evaluating Your Strategic Plan

AN EXAMPLE OF HOW *IDEAFISHER* CAN BE USED IN A MARKETING STRATEGY COURSE

Imagine a marketing class in which students are assigned a project to develop a marketing strategy based on a case study. Refer to figure 1 for a simple graphic representation of the process. To illustrate, consider a case involving *USA Today*.

Figure 1
Using *IdeaFisher* for Problem Solving



- o Notepads consist of two word processors: The first enables the user to trace the pathway of thinking through *IdeaBank*, and to keep track of ideas that come to mind through using the system. The second records answers to questions in QBank. The “Key Concepts Window” allows the user to call up a list of words (less non-filler words like a, and, or, the, etc.) noted in response to QBank questions, arranged in order of reply frequency by “filtering” the QBank notepad. Through this display, one can see clearly the semantic priority in QBank responses. Ideas from this window can be copied to the IdeaBank Notepad or selected for further exploration in the IdeaBank.
- o Compare takes similar topical categories or section titles, and cross-references them, displaying only the idea-associations that occur in both categories. This command allows the user to pare down a bulky list of ideas to one that is pertinent to the case in question.

The first problem a student has when doing a case is to ferret out the critical issues. *IdeaFisher* enters the picture with QBank. As noted earlier, in addition to 6,000 regular questions, the package also includes modules with more specialized questions for various applications, such as our marketing example.

Upon a reading of the case materials, the student would begin with QBank to help identify the central problem by browsing through and answering several of the of QBank questions. The student has the option of selecting which questions to answer, based on how helpful they seem to be. For instance, relative to the *USA Today* case, students might key on questions like:

In what specific areas do you feel a need for improvement? Why? Be specific.

By means of these system components, *IdeaFisher* incorporates the basic tools suggested by the aforementioned techniques for stimulating creativity. They all draw on the principle of using memory cues to stimulate the recall of ideas. *IdeaFisher* provides a database of ideas and a system for developing a host of different question cues.

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To this students respond by entering their response on the QBank notepad:

USA Today needs to develop profit and revenue by continuing to increase circulation and advertising, while cutting, or at least holding costs even. The company has earned no profit during its early years, although this is not unexpected in a new company entering a mature or perhaps declining industry. (Declining if you don't consider *USA Today*.)

The student now looks for further insights by filtering the response into the "Key Concepts Window." This process extracts all non-filler words and places them into a window, ordering them based on frequency of occurrence. Figure 2 illustrates the Key Concepts Window.

FIGURE 2
Key Concepts Window

profit
revenue
USA
Today
advertising
circulation
company
declining
increase
needs
develop
continuing
cutting
least
holding
costs
even
earned
early
years
unexpected
new
don't
entering
consider
mature

This window provides a summary of ideas generated by answering selected QBank questions that seemed germane from reading the case. More important, the ideas provide one of several paths into the 700,000 associations in IdeaBank. In our example, "profit" was one of the most frequently mentioned concepts in response to the questions. Students then input this word into IdeaBank. Figure 3 illustrates the system response listing "Topical Categories" associated with the word "profit."

FIGURE 3
Topical Categories for "profit"

agriculture/farms/farming/ranches/ranching
amount/intensity/degree
business/industry
competition/awards/prizes/winning/losing
cost/value/expensive/inexpensive
factories/manufacturing
income/wages
increase/decrease/enlarge/add on/reduce/subtract
achievement/success/failure/investing/investments
marketing/advertising/selling
money/banking/finance/economics

The students look over this list and select the "business/industry" topical category as a place to begin the search. By making this selection, IdeaBank provides the listing of section titles in the business/industry subgroup as shown in Figure 4:

FIGURE 4
Titles in the "business/industry" Topical Category

business/industry
VARIETIES/EXAMPLES (businesses)
VARIETIES/EXAMPLES (industries)
VARIETIES/EXAMPLES (business establishments)
VARIETIES/EXAMPLES (business services)
PEOPLE/ANIMALS
THINGS/PLACES
ABSTRACTIONS/INTANGIBLES
VERBS
ACTIVITIES/EVENTS/PROCESSES
DESCRIPTORS
MISCELLANEOUS
PERSONAL ASSOCIATIONS 1489 items

At this point, students choose ACTIVITIES/EVENTS/PROCESSES as a place to start searching for clues. From the list of 202 item-words that follow, they choose "mail order marketing." This leads back to a new list of 9 topical categories. From this list, students choose "marketing/advertising/selling, which reveals a new set of section titles including VARIETIES/EXAMPLES (advertising/ marketing). Upon this topical selection, the system displays 54 concepts. Two of them -- "telemarketing," and "promotional campaign" -- trigger ideas for our students, suggesting areas that might be explored by *USA Today*. Students then return to QBank for further guidance in fleshing out the ideas. QBank offers questions such as the following:

What are your company's weaknesses? What is going wrong? Where do you have problems?

Students respond:

Revenue and profits would be higher if the newspaper concentrated on carefully targeted telemarketing (\$28 per retained order less cost of promotions, or \$45 dollars per retained order.)

The beginnings of a solution to the case are forming. Returning to IdeaBank under the "marketing/advertising/selling" topical category, students find "research and development" under the section title "ACTIVITIES/EVENTS/PROCESSES." "R & D" is also in the "research/experiments/scientific method/scientist" topical category.

One can clearly see that student's thoughts and associations begin to fly free during this exercise. Interacting between IdeaBank and QBank have nearly framed a solution to the case. Our students believe that perhaps a "compare" command would help at this point. The two topical categories are "marketing+" and "research - t." "Comparing" marketing + and research + yields a list of 40 items, including those shown in the window illustrated by Figure 5:

FIGURE 5
A "Compare" Window
Compare: marketing/advertising/selling
To: research/experiments/scientific method/scientists

market research profit
new product
communications industry
statistics

These idea-elements prompt another look back to QBank, where they trigger response to additional questions such as:

What drives sales in this market? (such as impulse, quality, price, reputation, on-site service, availability.)

Students answer,

One opportunity to increase revenue from advertising sales is to have advertisers give the national newspaper more credit for the quality of "blue chip" circulation derived from those papers that are delivered in bulk to service-oriented organizations such as hotels, restaurants and airplanes. Advertisers tend to discount circulation derived from bulk sales thus increasing *USA Today's* apparent cost per thousand relative to competitive media.

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The students respond with an "AH-HAH" experience. As part of the solution to the *USA Today* Case our students now recommend doing a market research exercise with Blue Chip readers. A highly targeted direct response advertisement will encourage them to subscribe to the newspaper at their home or office, capitalizing on the exposure they get to free copies of the paper at hotels, restaurants, and on airplanes. This will accomplish an increase in paid circulation, and at the same time it provides a success story among blue chip circulation that the sales department can use as evidence of its value to the advertising customer.

Note that a solution came through a chain of associations. the initial questions assembled the facts of the case. These were then associated with other concepts until the students began to sense the germ of an answer. The students then returned to QBank as an aid to formulating an actual case solution. The process of answering the questions helped crystalize the students' thinking and led to a solution that was not apparent when the students first confronted the QBank questions during the first stage *IdeaFisher* process. As noted in Figure 1, the repetition of these steps is entirely possible and often helpful, at least until one feels comfortable with a solution.

SUMMARY AND IMPLICATIONS FOR EDUCATION AND TRAINING

One of the logical questions raised by this application of *IdeaFisher* is what value it has in the classroom. We have discussed and illustrated how *IdeaFisher* can help people develop creative marketing plans. But students do not need to write marketing plans. They need to learn how to write marketing plans.

Fortunately, to do is to learn. Using the *IdeaFisher* exercise not only teaches students how to use idea-generation software, but it also teaches students about the creative process. The entire process is based on an associative semantic network. As we have seen, extracting ideas from a computer database, and using these ideas to stimulate one's own creativity, is very similar to the process used in individual creativity and group idea-generation techniques. The software not only helps students develop creative solutions, but it teaches them a creative thinking discipline.

As with any computer-based or experiential learning technique, the exercise is not as important as the insights it produces. And the level of insight usually depends heavily on the debriefing process used by the teacher to help crystalize student learning. What this component of the exercise is important, the principles are discussed elsewhere in the literature (Crookall 1992; Lederman 1992a, 1992b; Petranek, Corey and Black 1992; Steinwachs 1992) and are beyond the scope of this study.

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