

# Teaching & Learning Management Using Expert System Modeling Tools

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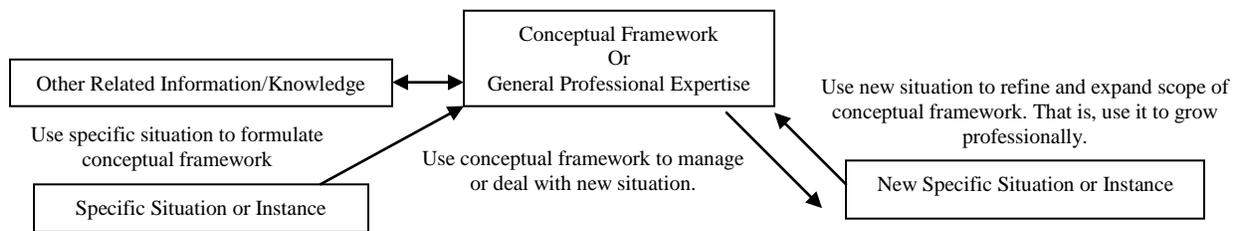
## ABSTRACT

*An essential key to success in managing effectively is to be able to develop one’s own solutions for one’s own task or situation, based on one’s experiences, the observed experiences of others, and guidelines provided by other experts in the field. One application of this entrepreneurial process is its applications to developing professional decision guidelines which are part of an individual’s professional expertise developed over the years using this conceptual process. This paper describes how this professional expertise development process can be applied by an individual to a small business planning situation.*

## INTRODUCTION

The process shown in Figure 1 represents the development one’s own solutions for one’s own task or situation, based on one’s experiences, the observed experiences of others, and guidelines provided by other experts in the field - an essential key to success in managing effectively. One application of this entrepreneurial process is its applications to developing professional decision guidelines which are part of an individual’s professional expertise developed over the years using this conceptual process.

**Figure 1**  
**Reconceptualization For Professional Growth**



## LESSONS LEARNED: DEVELOPING CONTINGENCY GUIDELINES

Even a cursory examination of company experiences shows the contingent nature of successful strategic leadership and management. For this reason, most specific guidelines or best practices for strategic leadership and management would be contingent on the situation. For example, when selecting the method of entry/operations in a multinational business situation the factors (such as political risks, market position, resources, competition, geographic considerations, etc.) affecting the decision can be identified. There are then, of course, possible alternatives (such as exporting, strategic alliance, wholly owned). The rules leading to the decision might be represented by a series of If-Then sets. The following sections describe how this approach was used in developing professional guidelines for a small business planning decision.

## **CONTINGENCY DECISION MODELING EXAMPLE: SMALL BUSINESS PLANNING SITUATIONS**

Robert London, age 31, is a single male interested in a retail fast-food franchise. Rob engaged a consultant (expert) in the field to help him in deciding whether or not to purchase a Burger King franchise near his home. The consultant first collected background information. In terms of general business prospects, the product was examined for growth potential and staying power. Since fast food products are common products consumed by many segments of the general population, ample demographic and market studies were available that showed that the overall growth prospects were modestly favorable in the geographic area under study. However, an analysis of the local area revealed several weak points. The consultant found that the location Rob was looking at was already saturated with competition, including a McDonald's, a Wendy's and a Roy Rogers, all within a mile radius of each other. In addition, the franchise Rob was interested in would be located near an exit ramp to a major highway, but would be the last eating place that travelers would reach coming off of the highway exit.

Although the demographic profile of the local area matched the franchise's target market, the market area was not expected to grow significantly in the future. The consultant talked with small business owners in the area and found that general indicators called for only modest overall growth. Although the other franchises in the area seemed busy, the consultant's research indicated that competitors' sales had been fairly flat over the prior three years. This phase is often called walking the territory from the customer's perspective, something most effective enterprise leaders do periodically. The consultant interviewed Rob to see if he was cut out to be an entrepreneur. Based on experiences Rob described from his past, he seemed capable of taking charge, organizing and handling multiple jobs, and dealing effectively with people. He had demonstrated determination and self-reliance to a high degree. Rob generally seemed competent enough to run his own business but lacked a willingness to take big risks. He had barely adequate financial resources to handle the franchise investment.

Next the consultant examined the franchise offering. Burger King provides substantial initial assistance at no additional cost in the areas of operations, equipment maintenance, and training. However, they have a relatively high annual franchise payment, provide no assistance with financing, and subject franchisees to a wide variety of controls. Burger King, in business since 1954, has maintained excellent relations with its franchisees and business contacts. The company is predicted to increase its 4,000 units substantially over the next decade. Although a very reputable franchisor, Burger King's contract gives no guarantees of exclusivity of territory and contains some supplier tie-in purchasing agreements.

The consultant summarized her evaluation as follows: Business prospects - The general prospects were favorable. However, because of a stagnating local market and poor location, the local business prospects were considered unfavorable. The business prospects were, therefore, rated unfavorable overall; Individual resources and capabilities - Because Rob had favorable personal, financial, and business skills and resources, the overall rating was favorable in this key factor area; and Franchisor offering - Franchisor support was favorable. However, due to the lack of financial assistance and the high fee schedule, the reasonableness of the deal was rated average. Although Burger King's reputation is excellent, the lack of exclusivity of territory and the tie-in agreements yielded an average rating for the contract. The overall rating for the franchise offering was average.

Based on this analysis and evaluation, the consultant's overall rating of the venture was only fair. Knowing that the local area was not well suited to the particular franchise because of heavy competition, and that Rob would probably need some assistance with financing, the expert recommended looking for a more generously financed offering, with a similar product but in a better location.

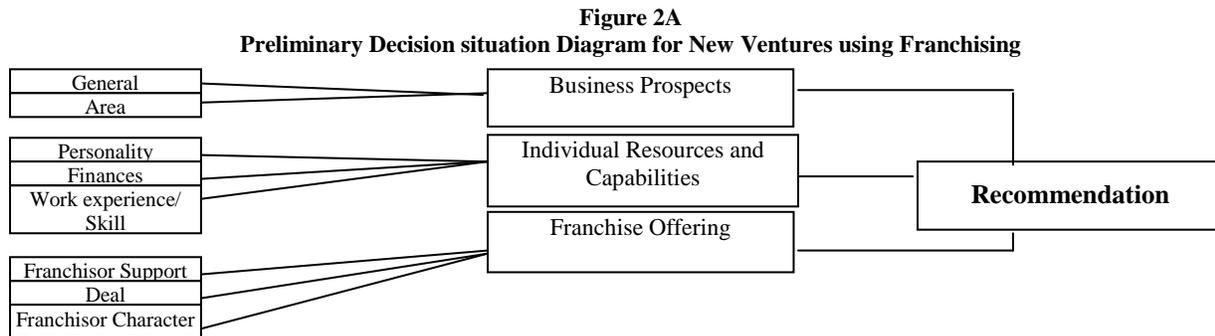
## **THE LESSONS LEARNED: THE BASIC GENERAL DECISION PROCESS INVOLVED**

Based on this experience and some reading he had done, Rob began to formulate his own version of the generalized approach to the franchising decision the consultant had used. This is a conceptualization task almost anyone with average intelligence can do once they see or are shown how it is done. It is a required cognitive process skill needed to manage and to grow professionally. The typical recommendations made when evaluating franchise offerings seemed to include: Superior - actively pursue the offering; Very good - pursue the offering, but commit to

it only after further analyses and evaluations are completed of factors such as local business prospects, and especially the competition; Fair - if the local business prospects are weak, examine a similar proposal in another location. If the franchise offering is a weak factor, look for another offering with a similar product and location, but through a different franchisor; and Poor - Abandon the proposal.

The critical factors considered when evaluating franchise offerings appeared to include: The business prospects - both general and local; Individual resources and capabilities - such as personality, financial position, and work experience and skills; and The franchisor contract - covering franchisor support, the reasonableness of the deal, and the franchisor character.

Based on this analysis, Rob prepared the outline shown in Figure 2A.



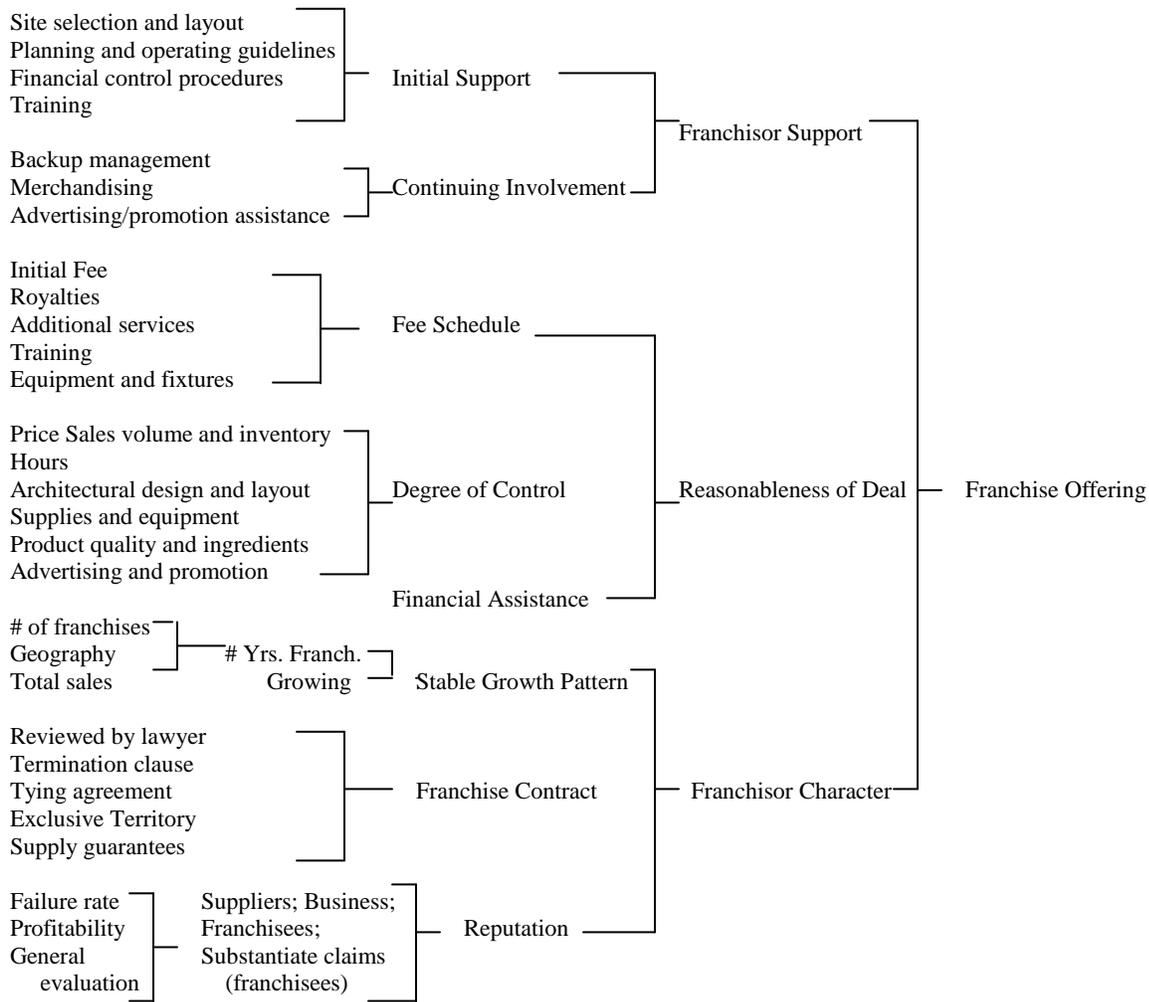
**THE LESSONS LEARNED: QUESTIONS FOR ANALYSIS**

In addition, Rob listed the questions the consultant asked and obtained answers to in investigating the factor areas. The following is a small sampling of them: For Business Prospects: "After examining demographic characteristics such as age, income, and size of the target market, what is your estimate of the potential for growth in the market in general?" For Individual Resources and Capabilities: "What amount of money do you have and how much are you able to borrow?" For the Franchise Offering: "What is the failure rate of new franchisees in the past?" and "Has the general evaluation of the franchisor by former and current franchisees been favorable?" After thinking more about the visit and reading more about franchising in general, Rob expanded the list of questions and drew the more detailed diagrams; one of them is shown in Figure 2B.

**THE LESSONS LEARNED: HEURISTIC GUIDELINES FOR MAKING DECISIONS**

In general, the way the consultant reasoned from these situation factors in reaching a conclusion seemed to be: (1) A franchise offering would be considered superior if both the business prospects and franchise contract were favorable and the individual's resources were favorable or average; (2) A franchise offering would be considered very good if both the business prospects and the individual's resources were favorable and the franchise contract was only average. It would also be considered good if the business prospects were average and both the franchise contract and the individual's resources were favorable; (3) A franchise offering would be considered fair if both the business prospects and the individual's resources were average and the franchise contract was average or favorable; (4) A franchise offering would be considered poor if any of the critical factors were considered unfavorable.

Figure 2B  
Franchise Offering Area



These conclusions of course could be modified in many instances through negotiation or through additional information. Although still in fairly rough form, Rob felt that he now had developed on his own with a little guidance the basis of a systematic approach (that is, a professional guideline) as to how to make these decisions in the future. He felt that he was beginning to develop a kind of professional expertise for making these decisions and concluded that he had wisely used his investment in the consultant's visit to grow professionally since he had increased his ability to make better decisions on his own, a cognitive management skill useful in other areas in which he worked. Rob had done this through systematically organizing the scenario of his experience along the lines suggested in Figure 3.

**Figure 3**  
**Helpful Steps In Developing Structured Decision Models**

- Write a very detailed scenario (story) of how the task or decision under study is carried out in a specific situation, including such specifics as time, place, people involved, and other actual events which would occur on a given day in a real situation.
- Identify the recommendations which can be made in the kind of situation under study (limiting your answer to no more than four or five)
- Specify the three or four critical factors which are considered in making these recommendations and describe how these factors affect which recommendation is made
- List ten or twelve specific questions which need answering in order to obtain information about the critical factors used to make a recommendation
- If you are dealing with a diagnostic situation, reduce it to a technical manual outline and describe alternative ways this manual might be used to answer three or four specific questions or problems
- Reexamine samples of existing KBS and transfer the structured information to an expert systems shell.

What he did basically is systematically reconceive or reconceptualize his story to enable him to develop a generalized model of the approach which he could use in making these kinds of decisions in the future. His approach covered the specific information he had to gather from the situation (questions to be asked in relevant key factor areas), the possible decisions (recommendations), and the reasoning or heuristics (if-then rules of thumb) that went into making that decision. In other words he appeared to have learned how to learn from his experiences and so grow professionally. He also clearly had learned how to learn from experts he comes in contact with. Essentially he learned to build his own professional expertise knowledge base, a key element of effective management.

## **CONCLUSION**

The process described in this paper is not some magic formula. It is a simple cognitive conceptual process we go through in our daily lives, for example, when we meet someone new and try to understand what they are like by comparing what we observe with our knowledge of other similar people we know. Most important, from a psychological perspective, was the fact that Rob now felt he could do it on his own and so had learned how to learn from experience. This gave him self confidence to keep doing it, as described in the general cognitive process outline given earlier in Figure 1. In essence he had learned how to learn professionally in small business planning situations.

NOTES