ASSESSING THE VALUE OF LANGUAGE:
A JUDGMENT-ANALYTIC APPROACH

Krishna S. Dhir, Penn State Harrisburg, Middletown, PA17057, 717-730-9322, ksd3@psu.edu
Theresa Savage, Swinburne University of Tech., Australia, +3-9214-8872, tsavage@swin.edu.au

ABSTRACT

With increased globalization of business and economy, organizations find themselves having to choose from among alternatives that working language which offers the most effective economic means of knowledge creation and management within the context of the strategic environment in which they exist and operate. This paper introduces social judgment theory to linguists, economists, and strategic planners, as a potentially useful theoretical and methodological tool for the assessment of the value of language. A case study is provided as an illustration of how the judgment paradigm can be used for both research and decision making purposes.

INTRODUCTION

Consider a multinational business organization with its world headquarters in Switzerland, where about 10 languages are spoken. While 70 percent of the Swiss speak Schwyzerdütsch (Swiss German), Switzerland has 4 national languages. These are German, French, Italian, and Romansh. The firm, located in Basle, where Swiss German is spoken, is a pharmaceutical company. Its strategic environment includes North America, South America, Europe, South and Southeast Asia, Japan, Africa, and Australia. In this paper we will demonstrate how this Swiss multinational pharmaceutical organization may develop a judgment-analytic decision support system for the assessment of the economic value of languages. Coulmas [1, pp. 88-89] states, "...the value of language is determined by a number of factors, all of which contribute to make language not only a medium but also an element of economic process. By recapitulating the most important ones we can now approximate a more detailed specification of what is to be understood by the term "value of language," although the weighing of the factors is a difficult problem yet to be resolved." Indeed, different organizations may receive different value from delivered functions of a language. It is imperative that the assessed value account for not only the functions of the language resource, but also the strategic context in which the organization assessing it operates. Different managers may perceive the various delivered functions, and also the strategic environment differently. The assessment of value of a language, therefore, is a matter of individual judgment, which may be subjective in nature. The role of such judgments in the assessment of value has been well recognized [2]. We would, therefore, do well to briefly examine the nature of human judgment.

PARAMETERS OF HUMAN JUDGMENT

The process of human judgment may be explored by posing the following questions: (a) What factors influence the individual's judgments? (b) What relative emphasis or weight does the individual put on each of the factors? (c) How does the individual integrate the information regarding each factor to arrive at an overall judgment? This involves identification of the mathematical relationship that describes the dependence of the overall judgment on the factors considered. The relationship between each factor and the overall judgment may be linear or nonlinear, and the contribution of each factor to the overall judgment may be positive or negative. The nature of dependence of the overall judgment on each factor is referred to as that factor's function-form; and (d) What is the consistency with which the individual is able to make judgments?

AN ILLUSTRATIVE APPLICATION

Six PennState MBA students, in the Strategic Management capstone course during the last semester of their studies, played the role of the top management of this business organization, with the charge of making the language selection. The instructor played the role of an external consultant. The participants first reviewed "The Value of a Language: Factors of an Economic Profile of Languages," [1, Chapter 3]. The over-riding objective was to determine whether a decision support system could be developed to formulate an organizational policy for the assessment of the value of language. The specific objectives were to: (a) investigate the accuracy of the participants' knowledge of their own judgment policy pertaining to the valuation of language, (b) measure the nature and the degree of differences in the
The participants were asked: "What factors pertinent to the determination of the economic value of a language will you take into account to make the selection of a working language for this Swiss multinational organization?" They modified some of the factors identified by Coulmas [1] to arrive at the following five: (1) **Demographic Range:** This factor refers to the degree to which the language is used in the demographic community defining the multinational business organization's strategic environment relative to other available languages; (2) **Total Investment:** This factor refers to the degree to which the demographic community defining the multinational business organization's internal environment has collectively invested in the language relative to other available languages. This investment refers to the degree to which the community in question learns and prefers the language; (3) **Demand:** This factor refers to the degree to which the language is demanded as a commodity within the demographic community defining the multinational business organization's strategic environment (both external and internal) relative to other available languages; (4) **Knowledge Creativity:** This factor refers to the degree to which the demographic community defining the multinational business organization's strategic environment (both external and internal) creates knowledge in the language relative to other available languages; and (5) **Functional Potential:** This factor refers to the degree to which the language can be developed as the multinational business organization's economic means of production within the time frame of its strategic plan relative to other available languages.

Each participant was asked to distribute 100 points among the factors so as to indicate the relative importance of that factor in the assessment of value, and indicate the functional relationship between each factor and the value. They did this by selecting out of a menu of graph displays including linear negative function, J-function, reverse J-function, inverted J-function, inverted reverse J-function, U-function, inverted U-function, one which in their judgment best represented the relationship between each factor and the value. Thus we obtained the *a priori* description of each participant's policy for assessment of the value of language. Twenty different language profiles were now generated, each described in terms of the five factors. For this purpose, random values were assigned to each factor on a scale ranging from a low of 1 to a high of 10, where a measure of 1 for a factor indicated that the degree to which that factor is present in the particular language profile is extremely low, and a value of 10 indicated that the degree to which that factor is present in the particular language profile is extremely high. The profiles were then tested for orthogonality to minimize inter-correlation among the factors. A sample profile is shown below:

<table>
<thead>
<tr>
<th>Language Profile 11</th>
<th>Total Investment</th>
<th>Demand</th>
<th>Knowledge Creativity</th>
<th>Functional Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>XXXXXXX</td>
<td>XX</td>
<td>XXXX</td>
<td>XX</td>
</tr>
<tr>
<td></td>
<td>8 on a scale 1 to 10</td>
<td>5 on a scale 1 to 10</td>
<td>2 on a scale 1 to 10</td>
<td>4 on a scale 1 to 10</td>
</tr>
</tbody>
</table>

What is the economic value of this language, on a scale from 1 to 10, where 1 would indicate that the language has an extremely low economic value, and 10 would indicate that the language has an extremely high economic value: ___________

Each participant was now asked to assess each profile for its economic value, as indicated in the sample profile. When each participant was satisfied with the ratings they assigned, a nonlinear multiple regression analyses was performed, with the assessment ratings as dependent variable, and the factors as the independent variables. The model consisted of first- and second- order terms for each factor. The weights, as measures of the emphasis given to the different factors, and the function-forms for the different factors were derived from algebraic transformation of the regression model (see [3]. Cognitive consistencies were also obtained for each participant as nonlinear multiple regression coefficient, R. Each participant was now shown the relative weights associated with each factor obtained from the initial judgment policy of all participants, anonymously, except for their own, which was identified. They compared these with the *a priori* weights they had expected to use. They were also shown the corresponding function-forms in a similar fashion, and compared these as well. The participants were also provided feedback on their own cognitive consistency, but not on those of others. Each participant was now asked to revise their *a priori* estimates of relative weights and function-forms associated with each factor to indicate the policy they now felt *ought to be used*. They were encouraged to involve each other in a discussion, without a time constraint, which they did. After about 15 minutes, the participant again distributed 100 points among the five factors to indicate the reconsidered relative weight of the factor. As before, they also indicated the function-forms for each factor. Thus we obtained the *revised* description of each participant's policy regarding the assessment of value. The participants were now given a new set of 20 language profiles to rate for

746
the value. As before, the participants rated each profile in this new set, without any further discussion among themselves, until satisfied with their ratings. As before, analysis yielded the final policies, in terms of the relative weights, functional relationships, and cognitive consistency measures, for each participant. Once again, each participant was provided with feedback on the final judgment policy in terms of weights, function forms and consistency measures, as before. The participants were now asked to review the assessment ratings they assigned to each language profile in the set of 20 language profiles used to obtain their final judgmental policies. They were asked to engage in a discussion among themselves, without time limit, to arrive at a single assessment rating for each profile, if they could. As before, the ratings assigned to the profiles were analyzed to yield the "jointly discussed" policies. As before, the relative weights, functional relationships, and cognitive consistency measures were thus obtained for each participant. The participants adopted a policy for the assessment of the value of language which was the mean of the "jointly discussed" policies.

DISCUSSION

**Consistencies:** A high value for multiple correlation coefficient, near 1.0, for a participant would indicate that the participant was relatively consistent in making judgments and that the regression model used to describe the participant's judgmental ratings provided a good "fit" or description of those judgments. In this study, the mean of the cognitive consistencies corresponding to the participants' initial judgments was 0.966 (\(\sigma = 0.011\)). The corresponding mean for the final judgments was 0.968 (\(\sigma = 0.011\)). The mean for corresponding to jointly discussed judgments was 0.962 (\(\sigma = 0.002\)). No particular pattern of improvement or deterioration of consistency was observed through the study. Considering that consistency measures as low as 0.80 are not uncommon, the measures obtained in this study were high.

**Self-knowledge:** Using the a priori policies, ratings were computed for each language profile developed for the final judgment ratings. Similar sets of computed ratings were obtained for initial judgment policies, revised policies, final policies, and the jointly discussed policies, for each participant. Correlations were computed between the sets of computed ratings obtained from the a priori and the initial judgment policies. Thus we obtained a measure of "self-knowledge." Similar correlations were also computed between revised and the final policies. The results showed that the "self-knowledge" of the participants does not necessarily improve over iterations.

**Consensus:** Using the appropriate sets of computed ratings described above, correlations were now computed between the sets of ratings corresponding to pairs of participants. This was done for the a priori, initial, revised, final policies, and the jointly discussed policies, respectively. The mean of consensus among pairs of participants was higher for the a priori policies than for the initial judgmental policies. The consensus among the participants' revised policies was at a mean of 0.999 (\(\sigma = 0.001\)). Recall that the participants engaged in a discussion prior to specifying these policies. Apparently, the discussion yielded an agreement on what these policies ought to be. Nevertheless, when the participants exercised their judgments again, to yield their final judgmental policies, the consensus was only marginally better than at the initial levels. Recall, again, that the participants were then asked to jointly discuss and assess each language profile. The consensus measure for the jointly discussed policies was 0.999 (\(\sigma = 0.002\)).

In conclusion, the primary contribution of this paper is that it presents a promising approach to the development of a decision support system for the assessment of the value of language. The description of policies in terms of the parameters of the human judgment process provides an operational definition of the participants' cognitive sets about the domain of the value of language within the context of the strategic environment in which they operate. Investigation of the judgment's parameters enable the development of judgmental aids to assist the decision maker in the exercise of human judgment in the following manner: (a) the judgment process of the individual, though covert, internal and subjective, is clarified, externalized, and explained so that it can be examined and understood, and (b) desired changes in the judgment policy motivated by change of insights, self-understanding, group discussions, and feedback about judgment policy, can be specified and executed consistently as desired. A participant may therefore define "value" as well as "assess" it as defined by another.

REFERENCES

