

The Business Protocol Expert System: An International Business Manners Advisor

ABSTRACT: Business applications of expert systems are continuing to increase in number and diversity. International business applications of expert systems, however, are few and far between. This paper describes an international business protocol expert system which is quite novel as an application. This mini-case study could benefit a variety of educators/trainers by: (1) allowing themselves and their students to become more familiar with international customs and cross-cultural differences; (2) presenting an interactive program that could be used in the information systems course as a way to internationalize the course; and (3) helping American students in international business courses to become better aware of their foreign colleagues and their customs.

Jay Liebowitz

Professor of Management Science
George Washington University
Washington, DC 20052

KEYWORDS: *Expert Systems, Applied Artificial Intelligence, International Business, Protocol*

INTRODUCTION

With global information systems, worldwide telecommunications networks, and increasing international business travel, the "business world" seems to be shrinking. Accessibility to computers and communications worldwide has allowed corporations to expand their operations overseas. In particular, American companies are looking to expand in such areas as the Pacific Rim, Mexico, Eastern Europe, the Middle East, and other regions. Sending the correct multi-cultural message is important for securing overseas business.

Knowing other cultures is a critical component of being able to succeed in doing business globally. Business people, international lawyers, and international business students must be aware of cross-cultural differences. Examples of international customs and protocol are (Torry, 1992):

- in Middle Eastern countries, pigs are considered unclean and a pigskin gift is the ultimate insult;
- the Germans are typically quite formal in their use of names;
- since the Japanese are reluctant to say no, a sixth sense is needed to determine when a Japanese "yes" means yes, when yes means maybe, and when yes means forget it.

Knowing what greetings to say, what gifts should be given and how they should be presented, business protocol and entertaining manners, conversational do's and don'ts, punctuality tips, and other considerations are necessary elements for succeeding in the international arena. Many international lawyers practicing in the U.S. and U.S. business people may not be familiar with the customs and practices in other countries. Many of these individuals will either hire consultants to acquaint them with these customs, take a "cultural checklist" seminar, or perhaps read books and view videotapes to learn more about foreign cultures.

Another way to help American business people, lawyers, and students learn these international norms is to use an expert system to interactively advise the user of various global business protocols. Relatively few software packages, like the Japan Tutor (AI Labs, 1992) and Interactive Japanese (Educational Technology Center, 1992), have focused on helping individuals learn about foreign customs.

The business protocol expert system described herein is geared for acquainting American students and business people with foreign business protocol. Interest in

this system has been expressed by the U.S. Department of State and companies providing educational/training tapes on international customs and business practices.

This system is particularly relevant to educators and trainers where a major emphasis in recent years has been on internationalizing the course material. In an information systems course, for example, this protocol advisor could be demonstrated to show how expert systems technology is used to help students better understand international customs and norms. In an international business course, many American students may not understand the similarities and differences between various cultures, and this protocol advisor may help the students become sensitized and more aware of these issues.

From an international angle, so many institutions and organizations are trying to bring cultural issues into their own cultures, and this paper shows one way of doing just that. Lastly, this system could have a profound impact in training State department foreign service officials and the military when going overseas. It would provide a quick, easy to use, interactive aid in learning about international protocol.

PROTOCOL EXPERT SYSTEM DEVELOPMENT

International business protocol lends itself well to expert systems technology. The domain is well-bounded, has experts, requires symbolic processing, is performed frequently, and contains heuristic knowledge. The domain is quite amenable to interactive computer aids, such as the protocol expert system, and this approach may have a greater payoff in the student's learning retention over traditional methods used (i.e., videotapes, books, guides, etc.) in understanding international protocol.

After identifying the "international business manners" domain as an appropriate problem for expert systems development, the next step involved knowledge acquisition (Liebowitz, 1990; Turban and Liebowitz, 1992; Medsker and Liebowitz, 1994; Liebowitz, 1991; Turban, 1993). Knowledge acquisition consisted of using various guides and books on international business protocol (Axtell, 1985; Baldrige, 1991). We also interviewed international business professors at George Washington University and State Department officials.

The knowledge base was segmented first by regions (Pacific Rim, Eastern Europe, Western Europe, and other), then by major protocol classes (e.g., greetings, punctuality, entertaining, business protocol, gift giving, conversational do's and don'ts, and general tips), and then by sub-categories of protocol (e.g., how to "receive" a gift, how to wrap a gift, when to open the gift, etc.). The handbooks were very useful with helpful hints such as "it's impolite to blow your nose in public in Korea". The domain experts added heuristics based on their experience, such as "bring your own soft toilet paper to particular countries".

The knowledge collected was put into IF-THEN rules. A rule-based representation was appropriate as the knowledge was categorical in nature, was mostly context-independent, and naturally represented the way the experts expressed their knowledge. An example of rules from the expert system is shown in Figure 1.

To facilitate rapid development of this expert system, Exsys Professional was used as the shell for a number of reasons: (1) it allowed for rules, (2) the experts reasoned in a goal-directed manner and Exsys allowed for this backward chaining, (3) it was affordable for the development version and run-time site license, (4) it allowed the developer to provide references and notes to rules for ease of updating, (5) it ran on

the IBM PC platform, and (6) it allowed the user to back up to previous questions during a user session. Thus far, the Pacific Rim component of the system has been encoded. Figure 2 shows a screen-by-screen user session of this protocol advisor.

Testing and evaluation have been performed on the expert system. This has been accomplished by having the domain experts and other users run through over 50 sample sessions with the expert system to check the accuracy of the results. The major combinations of paths in the knowledge base have also been verified. Some errors resulted from incomplete conclusions whereby the knowledge in the triggered rules had to be augmented and refined. Informal evaluation of the system has been conducted by international business students and American business people using the expert system. The preliminary evaluation of the system is that it is accurate, easy to use, has great utility, and should be further developed to include the other geographic regions.

FUTURE RESEARCH

The user evaluations of the international business protocol expert system are encouraging enough to further develop the protocol knowledge for the other geographic regions specified in the expert system. Besides completing the knowledge base, interactive multimedia will be

explored for incorporating video clips into the expert system. The video will be segments of international business customs, like exchanging business cards, hosting a business dinner abroad, and other conversations. Interactive multimedia is a useful way of enhancing learning effectiveness, such as shown by the KARTT (Knowledge Acquisition Research and Teaching Tool) system (Bland and Liebowitz, 1993). More formal testing and evaluation by university students, State Department officials, and business people will also be conducted in the near future. This protocol advisor will be used in the information systems course as an example of using information technology for international applications.

REFERENCES

1. Axtell, R. (1985), *Do's and Taboos Around the World*, John Wiley, New York.
2. AI (Artificial Intelligence) Labs (1992), *Japan: Your Guide and Tutor*, Ridgewood, New Jersey.
3. Baldrige, L. (1991), *Complete Guide to Executive Manners*, John Wiley, New York.
4. Bland, K. and J. Liebowitz (1993), "KARTT: A Multimedia Tool to Help Students Learn Knowledge Acquisition,"

Figure 1: SAMPLE RULE

Rule Number: 15

IF:

- (1) Are you traveling to: the Pacific Rim
- AND (2) You are visiting: People's Republic of China
- AND (3) You would like helpful tips on: Business Protocol

THEN:

- (1) Seniority and rank are both very important-Confidence=10/10
- AND (2) Dual-language business cards are recommended-Confidence=10/10
- AND (3) The Chinese usually have three names; first one is the family name-Confidence=10/10
- AND (4) The Chinese may ask very personal questions: income, value of your home, etc.-Confidence=10/10
- AND (5) The Chinese have difficulty saying "no"-Confidence=10/10
- AND (6) Any type of touching is uncommon in China—hugging, back-patting-Confidence=10/10
- AND (7) Among business people, personal relationships are very important-Confidence=10/10
- AND (8) Avoid talking about Taiwan Confidence=10/10

Journal of End-User Computing, Idea Group Publishing, Harrisburg, PA.

5. Educational Technology Center (1992), Interactive Japanese, University of California, Irvine.
6. Liebowitz, J. (ed.) (1990), Expert Systems for Business and Management, Prentice Hall, Englewood Cliffs, NJ.
7. Liebowitz, J. (ed.) (1991), Operational Expert System Applications in the United States, Pergamon Press, New York.
8. Medsker, L. and J. Liebowitz (1994), The Design and Development of Expert Systems and Neural Networks, Macmillan Publishing, New York.
9. Torry, S. (1992), "Sending the Correct Multi-Cultured Message," The Washington Post, Washington Business Section, October 19.
10. Turban, E. and J. Liebowitz (eds.) (1992), Managing Expert Systems, Idea Group Publishing, Harrisburg, PA.
11. Turban, E. (1993), Expert Systems and Applied Artificial Intelligence, Macmillan Publishing, New York.

AUTHOR'S BIOGRAPHY

Dr. Jay Liebowitz is Professor of Management Science at George Washington University. He is currently on leave, and is a Visiting Professor in the College of Integrated Science and Technology at James Madison University. Dr. Liebowitz has published 14 books and over 160 articles mostly relating to expert systems. He is the Editor-in-Chief of the international journal, Expert Systems With Applications, published by Pergamon Press. He is also the Congress Chairman of The World Congress on Expert Systems.

Figure 2: SAMPLE USER SESSION

Welcome to the INTERNATIONAL BUSINESS MANNERS ADVISOR. This program will help you in learning more about the business customs, protocol, and practices abroad, specifically in the Pacific Rim and Europe. Enjoy the session!

Are you traveling to:

1. the Pacific Rim
2. Eastern Europe
3. Western Europe
4. other than the Pacific Rim or Europe

1

You are visiting:

1. Japan
2. People's Republic of China
3. South Korea
4. Singapore
5. Taiwan
6. Hong Kong
7. Indonesia
8. Thailand
9. Philippines

1

You would like helpful tips on:

1. Greetings
2. Punctuality
3. Gift-Giving
4. Business Protocol
5. Conversational do's and don'ts
6. General Tips

3

Your questions about gift-giving refer to:

1. when should business gifts be given
2. what types of gifts are appropriate
3. how best to package/wrap the gift
4. how best to "receive" the gift being presented to you

2,4

Thank you for using the INTERNATIONAL BUSINESS MANNERS ADVISOR. Please press any key to display the conclusions.

RESULTS:

1. Avoid gifts in multiples of fours or giving the gift on the fourth day of the month. The number four has morbid connotations. VALUE=10
2. Because the Japanese typically open their presents privately, never give the Japanese an unwrapped object. Remember: STYLE IS JUST (IF NOT MORE) IMPORTANT THAN SUBSTANCE. VALUE=10
3. Perfunctory wrapping, however, is almost worse than none at all. If you do not have the knack (or the materials), either wait and buy your gifts at a Japanese department store or arrange for someone who knows

- how it is done to wrap what you have brought. VALUE=10
4. Never give tacky or jokey logo items such as imprinted matchbooks, T-shirts, caps, bumper stickers, cheap ballpoints, etc. Also, do not give anything with the company name printed tastelessly large. VALUE=10
 5. You will rarely if ever be invited to a Japanese home, but if you are, flowers are appropriate. Be sure to check with the florist that you are not arriving with the 16-petal chrysanthemums reserved for the Imperial Family crest. Avoid giving white flowers as these are traditionally for mourning. VALUE=10
 6. Other welcome gifts such as imported Scotch, cognac, and frozen steaks bought at tax-free airport shops are appropriate. VALUE=10
 7. If you give gold, make sure it is heavy in karats—the Japanese prefer white precious metals. VALUE=10
 8. In Japan, a gift depicting a fox would signify "fertility", while a badger signifies "cunning". VALUE=10
 9. It is redundant to give a Japanese colleague a gift that is readily available in his own country—give him something American. Typically, the Japanese will cherish a gift of art—a painting, weaving, sculpture, or ceramic by an American artist. VALUE=10
 10. The Japanese also appreciate ties (somber colors), and scarves and handbags for the women, particularly if they have trendy designers' names attached. Whenever possible, give a gift that shows that you did your homework. Get to know the recipient's personal preferences if you can. VALUE=10
 11. You should give and receive a gift with both hands and a slight bow. VALUE=10
 12. When a Japanese presents you with a gift, the nice thing to do is to thank him and make a small bow in appreciation. VALUE=10



STATEMENT OF PEER REVIEW INTEGRITY

All papers published in the Journal of Information Systems Education have undergone rigorous peer review. This includes an initial editor screening and double-blind refereeing by three or more expert referees.

Copyright ©1993 by the Information Systems & Computing Academic Professionals, Inc. (ISCAP). Permission to make digital or hard copies of all or part of this journal for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial use. All copies must bear this notice and full citation. Permission from the Editor is required to post to servers, redistribute to lists, or utilize in a for-profit or commercial use. Permission requests should be sent to the Editor-in-Chief, Journal of Information Systems Education, editor@jise.org.

ISSN 1055-3096