

Prior Surveys on Expert Systems in Accounting, Auditing and Related Areas

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There has been only limited survey research done on the use of expert systems in financial and accounting applications. The purpose of this paper is to discuss two of those studies.

Survey of Small and Medium Sized CPA Firms

Barbera [1988] surveyed 148 local New York CPA firms to determine, among other things the extent of their knowledge, use and interest in expert systems and artificial intelligence. After three mailings to the sample CPA firms only 28 out of 148 (19%) firms responded to the survey. This suggests at best limited interest in the expert systems and artificial intelligence.

The responses to the survey indicate that expert systems software was not used by any of the firms. However, 53% knew what expert systems were and 46% of the firms were aware of possible expert system uses. 20% of the firms said that they were monitoring possible expert system use by the firm and 18% said that they were contemplating use.

Only 9 of the 148 respondents (6%) replied to a portion of the survey that related to possible applications of expert systems. Four of those nine respondents (44%) indicated that they felt that expert systems were inappropriate for education/training and diagnosis. Since these areas are among the most frequently referenced "successes" for expert systems and since there is such a small sample of respondents there is some question as to the usefulness of this survey's results.

Survey of Financial Services Firms

In 1987, Coopers & Lybrand [1988a, 1988b, 1988c] surveyed 90 of the largest U.S. financial services institutions. These institutions include commercial banks, security firms, insurance companies, thrifts and investment companies. The comments that follow have not been made with the advantage of having seen the "numbers" -- most of which apparently are in Coopers & Lybrand [1988c]. That last report can be purchased from Coopers & Lybrand at a price of \$100. Instead, heavy use of Coopers & Lybrand [1988a and 1988b] are made.

Levels of Activity

The survey found that 60% of the commercial banks, over 50% of the security firms, just over 40% of the insurance

companies and virtually none of the thrifts and investment companies were either researching, developing or using expert systems. One third of the firms that have not yet started to develop an expert system, expect to do so by 1990.

Further, the survey (Coopers & Lybrand [1988a, 1988b]) found "...that 53% of the firms surveyed have applications that use expert systems, are in the process of developing such systems or are planning for them." In particular, the survey found that 12% were using, 31% were developing and 10% were planning expert systems. Percentages this large are not unexpected, particularly in light of the fact that financial institutions traditionally have used data processing applications to increase productivity and reduce costs.

Strategic Importance and Benefits

90% of the respondents who already have an expert system in use, 93% of those developing an expert system and 77% of those planning an expert system believe that the technology is a competitive necessity. The overall benefits to be derived from expert systems cited by the respondents include increased profits, broader distribution of scarce resources and higher quality and more consistency of employees. Those benefits are summarized in Table 1.

Table 1
BENEFITS OF EXPERT SYSTEMS AS REPORTED BY RESPONDENTS¹

Benefit ²	% Respondents with ES in Use	% Respondents Currently Developing ES
Increased Profits	56	15
Broader Distribution of Scarce Resources	33	14
Improved Quality/Consistency of Employee Output	22	7
Improved Training	11	14
Increased Experience with Expert Systems	11	29
No Benefits Derived Yet	22	57

¹Source: Coopers & Lybrand [1988a]

²Respondents were asked to cite three benefits

Applications

The survey found almost 55 expert systems being developed, evaluated or used. The applications differed across the financial industry, based on industry segment. The primary applications are summarized in Table 2.

Table 2

PRIMARY APPLICATIONS - BY INDUSTRY

- Banks
 - Loan Processing (55 expert systems are being evaluated, developed or used)
 - Business Loan Processing
 - Consumer Loan Processing
 - Mortgage Loan Processing
 - Trading (Over 40 are being used or developed)
- Securities Industry
 - Trading (6 in use and 13 being evaluated or developed)
 - Trading Risk Assessment
 - Stock Option Trading
- Investment Companies
 - Portfolio Management

Responsibility for Development

The survey found that currently almost 75% of all expert systems activity in the financial services industry involves both the end user department and the data processing department. However, over the next three to five years the companies surveyed expect a movement toward end user based systems.

Development Environment

Over 50% of the respondents who have developed or are currently developing expert systems used an expert system shell, augmented by custom programming. 33% used a shell exclusively and only 10% of the respondents did not use a commercial shell.

Although respondents indicated that about 33% of the applications had been developed using LISP work stations, they also indicated that they will dramatically reduce their use of LISP for development and delivery. Instead, they indicate that they prefer PC's and mainframes.

Who is Doing the Development

50% of those companies actively pursuing expert systems use both internal personnel and external developers to produce the system. However, 40% are using only their firm's personnel. Slightly over 33% report that end-user groups are responsible for the maintenance of the knowledge base.

Obstacles

Skepticism by top management may lead some firms to not receive the necessary support. Participants reported that

34% of their top management believes that expert systems are necessary for competitive positioning. 53% felt that it was too early for their companies to be able to assess the need for expert systems. Thus, it is not surprising that the respondents found that the most important future development in expert systems technology would be a track record of success stories in the industry. The availability of software on conventional hardware and connectivity between expert systems and databases were perceived as a major difficulties. Those with expert systems suggested that the complexity of existing expert systems tools is a major difficulty. Surprisingly, cost was not found to be a major deterrent to expert system use. The relative importance of various reasons is summarized in Table 3.

Table 3

Obstacles to Development

1. Track Record of Success
2. Conventional Hardware for Expert Systems
3. Connectivity of AI Hardware and Software
4. Ease of Use
5. "Off the Shelf" Availability
6. Easier to Identify Applications
7. Lower Cost of Delivery
8. Availability of Knowledge Engineers
9. Lower Cost of Development

Source Coopers & Lybrand [1988a]

References

Barbera, A., "Personal Computer and Expert System Usage by Small and Medium Sized CPA Firms," Unpublished paper, July, 1988.

Coopers & Lybrand, "Expert Systems Catching On With Financial Services Firms," Executive Briefing, May 1988a.

Coopers & Lybrand, Expert Systems in the Financial Services Industry, Coopers & Lybrand 1988b.

Coopers & Lybrand, Expert Systems in the Financial Services Industry: Survey Report, Coopers & Lybrand 1988c (Cost is \$100).