

► Financial Planning

Expert Systems to Provide Financial Planning Benefits

by **Norma L. Nielson, Mary Ellen Phillips and Carol E. Brown**

► For several years, personal financial planning as an employee benefit has been expanding for top management employees, with some growth into middle management ranks. Simultaneously, the use of computerized expertise has grown in the field of personal financial planning. These fields have grown to the point where they may merge. The expansion of expert systems for personal financial planning can provide a cost effective way for employers to provide financial planning as a benefit to more employees. This article discusses the use of financial planning as an employee benefit, the various integrated expert systems that are currently in use to provide personal financial planning, the characteristics that should be considered by an employer seeking a system to provide assistance to employees and special issues relating to the design of a financial planning benefit. ◀

Personal financial planning benefits for employees can take several different forms: group education, individual counseling, comprehensive personal financial plans or some combination of all three. The benefit may be as simple as providing a seminar for employees about the company's pension benefits or may be expanded to include individual counseling about options available upon retirement. Personal financial planning benefits may be provided for top management or for each employee. This article is concerned with the provision of comprehensive plans to employees.

A comprehensive personal financial plan starts with the collection and analysis of personal and financial information. The plan considers all aspects of an individual's personal finances, including assets, liabilities, sources of revenue and expenditures, pension benefits, insurance coverage, the goals and desires of the employee and his or her attitudes toward risk. Because no two people have the same financial position, sources of revenue, spending habits, goals and desires and risk attitudes, personal financial plans must be tailored to each individual. Until recently, personal financial planning has been available as an employer-sponsored benefit only to top management. In today's competitive human resources market, however, some employers are making personal financial planning assistance available to more employees.

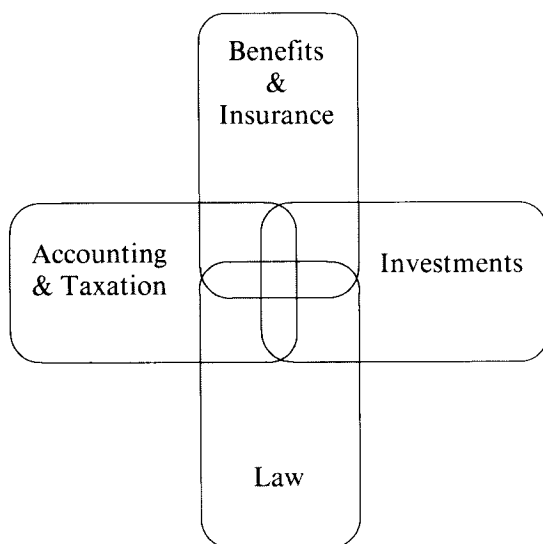
A comprehensive personal financial plan includes insurance planning, retirement planning, investment planning, income tax planning, estate planning, cash management, debt management and recommendations for choosing among nonsalary compensation options and employee benefits options. The comprehensive plan encompasses a wide range of topics, including income tax laws, pension benefits, insurance products, investment opportunities, asset valuations, cash flows, debt management, estate tax laws, the legal ramifications of divorces, wills, estates, trusts and property laws.

Figure 1 illustrates the overlap of the various disciplines encompassed in financial planning, with the square in the center showing the area that is personal financial planning. The constant changes occurring in the tax laws, insurance prod-

ucts and investment opportunities require a good planner to constantly be adding to his or her knowledge in these areas.

FIGURE 1

***The Disciplines
of Financial Planning***



The provider of financial planning advice may also help in preparing the information needed in the planning process, interpreting the plan and counseling regarding the plan's recommendation either on a group or individual basis. A good personal financial plan prepared by a qualified planner can cost \$2,000 to \$20,000 or more, depending on its completeness, the number of hours of personal assistance provided by the professional preparer and the method used to prepare the plan.¹

Personal financial planners may develop a plan manually or they may use a computer for assistance. The computer assistance can be general use programs that provide word processing or spreadsheet capabilities or can be programs specifically developed for the planning process that may or may not be expert systems. *Expert systems* employ a form of artificial intelligence, thereby substantially reducing the cost of comprehensive personal financial plans while providing more consistent quality. In some cases, this reduction in cost and increase in consistency of the plans

is sufficient to allow an employer to provide comprehensive personal financial planning to many more employees than have previously received this benefit.

This article discusses the reasons an employer might consider offering personal financial planning as an employee benefit, types of personal financial planning expert systems, factors to consider in selecting an expert system to provide personal financial planning to employees, the integrated personal financial planning expert systems currently in use and communication issues surrounding the offering of financial planning benefits to a broader base of employees. Expert systems designed to sell a specific product or group of products are not discussed, as they do not offer the objectivity required when a system is used to provide an employee benefit.

**DESIGNING A FINANCIAL
PLANNING BENEFIT**

Employee demand for financial planning assistance undoubtedly exists. The top executives of nearly one-third of the companies with sales of \$50 million or more have received comprehensive personal financial planning as an employee benefit, with that proportion climbing to 48% for companies with revenues of \$400 million or more.² Demand also exists among employees well below the executive levels. Fifty-five percent of employees participating in a 1987 survey conducted for IDS Financial Services, Inc. were interested in receiving personal financial planning as an employer-provided benefit. Evidence is growing that a company stands to receive some benefit if it meets that demand. The IDS survey reported that 38% of employees felt that financial worries affected their job performance at least part of the time.³ That demand materialized for one insurance company client of APEX's Client Profiling System. The insurer offered financial plans by direct mail to employees, with the \$125 fee to be paid by the employee. The response rate was 10% during the first three months of the offering—a tremendous success by any direct mail standards.⁴

In recent years, directors and managers, middle management, and even hourly employees of some companies, have received some personal financial planning as a benefit. Several trends well known to benefits professionals have contributed to the expansion of financial planning benefits:

- Increasing pension benefits and other forms of nonsalary compensation
- Increasing complexity and rate of change in the tax laws
- Shifting to flexible plans for employee benefits⁵
- Expanding requirements by the Financial Accounting Standards Board for measurement and disclosure of benefits costs⁶
- Expanding investment options available in the marketplace.

The dramatic reduction in the cost per employee for quality comprehensive personal financial plans that can be traced to the use of financial planning expert systems has contributed to decisions by some employers to expand financial planning benefits. The expert system generates consistent results, can be free from product bias and provides plans at substantially reduced cost. An expert system-prepared comprehensive personal financial plan costs from \$200 to \$500. If employees receive individual assistance either in the preparation of data or interpretation of the plan or its recommendations, the cost ranges from \$500 to \$2,000 per employee.

Personal financial planning benefits may be provided either throughout the course of an employee's career or at specific points in a career such as prior to retirement. An employer may include personal financial planning when it shifts from the traditional preselected specific benefits for all employees to a flexible benefit plan. If an employer is restructured as a result of a merger, acquisition or downsizing, personal financial planning may be provided to assist those employees who must decide whether they wish to retire early, change employers or transfer to a new location with the same employer. A company may provide the personal financial planning benefit to assist employees who are being released as a result of company changes.

THE MONSANTO CASE

Like other employers, Monsanto Company was becoming increasingly concerned that employees were unprepared to handle the greater responsibility for their own financial future when the company instituted a flexible benefit plan. A personal financial planning option was made available at the beginning of 1990 to nonunion employees after Monsanto instituted a flexible benefit plan. Approximately 30% of employees responding to a benefits survey expressed an interest

in the financial planning benefit previously available only to executives.⁷ Monsanto's employee benefits managers recommended the addition of the financial planning option because of a belief that the company had shifted a portion of the responsibility for the employees' financial future to the employees and needed to provide additional tools to assist employees in planning their own financial futures. Monsanto identified two vendors as possible providers and used an employee benefits plan committee to make the final system selection.

Monsanto's benefit allows employees to elect either a comprehensive plan or a specialized plan, such as a retirement plan. A followup survey will assess employee satisfaction with the financial planning service after the benefit has been available for a period of time. Over time, as employees implement the suggestions and recommendations contained in their financial plans, Monsanto expects to see changes in employees' choices from among the available flexible benefit plan options.

COMMUNICATION ISSUES

Increasingly, benefit decisions are tempered by concerns about the employer's ability to successfully communicate changes to employees. Financial planning as an employee benefit is no exception in that it faces several of the same barriers to communication as other benefits, e.g., language, selective appeal and message competition, as described by Davidson (1989). If carefully in-

The Authors

NORMA L. NIELSON, Ph.D., CLU, is a professor of insurance at Oregon State University College of Business. She received her Ph.D. in insurance in 1979 from the University of Pennsylvania's Wharton School. Dr. Nielson has done extensive research on many subjects in the field of retirement planning, including the advisability of using insurance to replace joint life annuities in retirement.

MARY ELLEN PHILLIPS, M.B.A., CPA, is an assistant professor of accounting at Oregon State University College of Business. She has public accounting experience with Deloitte & Touche. Professor Phillips is currently serving on the Estate Planning Committee of the Oregon Society of Certified Public Accountants.

CAROLE BROWN, Ph.D., CPA, is an assistant professor of accounting at Oregon State University College of Business. She received her Ph.D. in computer science in 1989 and her M.S. in accounting in 1977. Dr. Brown has written extensively on the use of expert systems for tax, auditing and accounting applications.

tegrated with the employer's benefit statement, the communication difficulties associated with a financial planning benefit can be minimized. In the extreme case, an employer offering financial planning to all of its employees would be able to integrate the benefit statement information into the financial plan and completely eliminate the need for a separate benefit statement. The employer may not exist today that is willing to extend so generous a financial planning benefit; however, the far-thinking benefits manager may want to keep this as part of a long term strategy to be implemented when the cost of financial planning has been further reduced by technology.

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For the benefit itself, communication may be difficult. The principal determinant of the difficulty to be encountered is the extent of modularization, i.e., the number of combinations of options available in the financial planning benefit. The provider selected to provide financial planning services should have communication materials developed to explain and assist employees in making their elections.

One critical point of communication is that the financial planning benefit is subject to a different tax treatment under current tax rules than most other benefits employees receive. An employee who elects to receive a personalized financial plan will have the price of that plan reported as additional taxable income to the Internal Revenue Service and may owe some additional income taxes. The employee's taxable income will increase by the plan's cost unless he or she has

miscellaneous deductions to report on Schedule A Form 1040 that exceed 2% of adjusted gross income and can itemize to receive the full benefit of that miscellaneous deduction. If the employee has sufficient itemized miscellaneous deductions, the amount reported as income can be fully offset by a miscellaneous deduction.

Finally, managers concerned with communication issues for financial planning should also be alert to *computerphobia*. If the financial plan is to be generated by computer system, some additional attention may be needed to reassure employees that the output is indeed tailored to their individual circumstances. Employers must be careful not to let a general mistrust of computers diminish the value of the benefit.

ENCOURAGING IMPLEMENTATION

The best financial plan is of no value unless the suggestions in that plan are implemented. To the extent that financial planning recommendations involve other benefits, the employer's human resources staff can assist with implementation. More often, however, implementation requires that the employee take some action outside the workplace, such as making an appointment with an attorney to have a will drawn, opening a savings account or seeking private insurance to cover contingencies not well covered in the benefit plan. The employer may be reluctant to recommend specific providers of such services. On the other hand, employees may become frustrated if too many hurdles are encountered as they attempt to implement plan suggestions.

Employees will undoubtedly turn to the employer for assistance in implementing their financial plans. Any assistance provided with implementation will have to be a very decentralized operation, with different information provided to employees at each location. Three approaches to providing employee assistance with selection of professional advice are presented here in decreasing order of employer involvement.

One approach to supporting employees with the implementation of their financial plans would be providing a list of qualified attorneys, accountants, financial planners and insurance advisers, along with descriptions of the capabilities and specialties of these professionals. Some screening of professionals would be needed before they could appear on the *recommended* list so that the due diligence used in selecting the financial planning service would not be wasted.

If an employer is not comfortable preparing such a list of qualified professionals, the employer could instead prepare a detailed questionnaire to be filled out by local professionals indicating their education, experience, any professional certifications and areas of practice specialty. Any and all professionals could be provided this form with the completed forms made available to employees in a notebook with adequate disclaimers that the employer is not responsible for the accuracy of the information provided. In this way, the employees could match the qualifications of a professional with their personal needs. This approach reduces the time required of the employee and should serve to maximize the employee's satisfaction with the process.

The third and least active role an employer could take is to provide a checklist that employees could use in selecting professionals to assist them with implementation of financial advice. With help to ask the right questions in the selection process, employees will be more likely to achieve satisfactory results.

POTENTIAL LIABILITY FOR THE PLANS

Much concern is expressed by plan sponsors about the legal liability associated with any proposed new benefit or change to benefits.⁸ All employers contacted in researching this article appeared not only to be aware of but extremely concerned about the potential liability. As expert systems become more pervasive, courts are likely to judge them as systems of knowledge and experience, not simply passive computer software. The employer that has selected the provider of the personal financial plans and is paying the cost of the plan either directly or indirectly may face some liability for the resulting financial plans.

Potential employer liability can best be mitigated by selecting the expert system with due diligence. *Due diligence* in the selection of personal financial planning services or systems includes determining the quality and completeness of the service and assuring the lack of product bias. The employer must determine that the personal financial plans provided to employees are of high quality based on its own evaluation of the results of the system and the reputation of the provider. Any limitations of the financial plan, such as its intent to deal only with specified areas such as retirement planning, must be clearly conveyed by the employer to the employees, preferably in

writing. If the service is to provide comprehensive personal financial plans, the plans must cover all the planning areas and not emphasize one area while ignoring or slighting another. The employer must ascertain that the personal financial plan provider is not promoting or selling a product. If a planner is also selling or promoting a product, the recommendations of the plan can contain product bias. Some employers may select the provider of the service based on the provider's reputation and, as Monsanto has done, require the provider of the service to provide limited indemnification for potential losses, such as illegal activities on the part of the planner.

In some instances, a plaintiff may find it easier to establish liability if the financial plan produced by an expert system is considered a *product* rather than a *service*. Designation as a *product* may remove the necessity of proving negligence in some situations by allowing suit for breach of an express or implied warranty under the Uniform Commercial Code or breach of a warranty under the Magnusen-Moss Warranty Act. An employer that contracts for financial planning *services* rather than *products* cannot be assured that its liability exposure or that of the vendor will be reduced. Legal tests for *products* versus *services* exist under Uniform Commercial Code cases and elsewhere. Courts will look behind the transactions and use the legal tests rather than the name used by the contracting parties.⁹

Another area of recovery not requiring proof of negligence relates to strict liability for ultrahazardous activities and defective products. These are unlikely, however, to be applied to financial planning.¹⁰

TYPES OF PERSONAL FINANCIAL PLANNING EXPERT SYSTEMS

Personal financial planning expert systems are classified as either *integrated* systems that provide solutions to all aspects of planning or *specialized* systems that focus on a smaller knowledge domain such as income tax planning. Four basic approaches are used by developers of expert systems for comprehensive personal financial planning: a custom expert system, a custom modification of an existing expert system, developer-provided personal financial plans and the purchase or license of an expert system for in-house use. The best approach for a particular employer depends upon the number of plans to be prepared, the expertise and staff of the organization in both

expert systems and personal financial planning and whether or not the firm wants to provide the service in-house or hire an outside entity to provide it.

If a company requires a large number of personal financial plans, the development of a proprietary customized expert system is cost effective. A customized expert system is expensive to develop because it requires experts in both

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computer programming and personal financial planning. In addition, the development can take two or three years before the system is operational. The company also must constantly update the knowledge bases that are used in analyzing the individual's information to incorporate changes in income tax laws, insurance and investment products and the environment. An employer may decide to use an existing personal financial planning expert system without modification or customize the system to include its own benefit plans and compensation packages. Alternatively, an employer could purchase or license a system for in-house use with periodic updates provided by the developer and prepare financial plans for employees using this system. For any of these alternatives, the employer must consider the appropriateness of making personal and confidential employee information available to another employee. In addition, the employees who will receive the benefit may be more reluctant to provide their personal and confidential information to their employer than to an outside service provider.

Finally, the employer may decide to enter into a contract for personal financial planning services with the expert system developer and provider of services. As discussed in the last sec-

tion of this article, such an approach offers additional protection against potential legal liability. When this approach is used, the information needed to develop the financial plans is entered on input forms by the employees and mailed to the operator of the expert system. For most employers, contracting with a personal financial planning expert system developer that is also a provider of the planning service is the most likely choice. If an employer uses an outside entity, it has not become the personal financial planning expert with the inherent risk of providing suggestions that prove incorrect or unprofitable. Nor has the employer invaded employees' personal and private information.

CRITERIA FOR SELECTING AN EXPERT SYSTEM

The following criteria should be considered when selecting a personal financial planning expert system preparer for employees. Some features may be more important to one employer than to another. The importance of a particular feature may depend on how a company views providing personal financial planning services for its employees and its assessment of the confidentiality of employees' information. The selection criteria for a personal financial planning expert system can be divided into the following categories: reliability of the system, suitability of the system, form of data input, support needed to prepare input, flexibility of the system and understandability of the output. If an employer decides to use an outside provider, competition assures that the cost per plan will vary little among providers.

Reliability of the System

If the expert system truly represents personal financial planning expertise, then reports generated by the expert system should be at least as high in quality as those created by a qualified personal financial planner who did not use an expert system. Regardless of the other beneficial features of the system, if the developer is not an expert, the reports generated by the system will be inferior. Thus, determining the expertise of the developer is critical in selecting an expert system. Two approaches can be taken. One approach is to rely on the professional reputation of the preparer, and the other approach is to test the product.¹¹ Simply reviewing sample reports will not provide sufficient information to make an

informed decision or constitute due diligence in the selection of a provider.

If the employer relies solely on the professional reputation of the provider of the planning service, the employer should require the provider to agree to indemnify the company for any resulting liability. Second, the employer should determine whether the provider has the financial resources to cover the indemnification agreement. To test the product, an employer should carefully evaluate the results produced from running test cases. The employee evaluating the results of the test cases must be qualified to determine the quality of the reports. If the employer does not have a qualified employee, the services of an outside professional planner will be needed. A natural conflict exists, however, between the financial planning professional evaluating an expert system used by other financial planners in providing the same service.

Another important dimension of reliability is the need to assure that the information and advice in the system will not become obsolete. The advantages of a personal financial planning expert system will rapidly disappear unless the system's knowledge base is constantly updated by the developer for changes in the environment. The pace of new product introductions by financial institutions and the frequency of modifications to the Internal Revenue Code make periodic updates to an expert system's knowledge base crucial. If the system developer is stable, financially sound and committed to the product, the employer can be reasonably certain the expert system will be updated over the foreseeable future, thus providing the best possible personal financial plans for its employees.

Form of Data Input

The preparation of personal financial plans requires information about the employer's benefit plans and compensation arrangements, other details about each employee's financial and personal situation, and his or her financial goals and attitude toward risk. The tools provided to gather needed data and the methods of providing the information are important considerations when choosing a provider. The information required may simply be entered on a form by the employees. A provider may gather the required information through individual meetings with employees and prepare the forms. If employees prepare their own information, the organization, read-

ability, understandability and user friendliness of the input form is vital to assuring that employees receive good personal financial plans.

A form that assists employees in determining the sources of information and the values to use is superior to one that does not. The input form can be customized to match the employer's benefit reports. For example, the form may refer the employees to a particular line on the benefit statement for a needed item. The provider of the personal financial planning service may provide assistance via a toll free telephone number or may provide personal counseling to employees in completing the form on an individual basis and/or through seminars and group help sessions. Some of the expert systems that are discussed later in this article store employees' data so that employees only need to update previous information once the first personal financial plans have been prepared.

Flexibility of the System

Expert system flexibility encompasses the ability to:

- Provide only a part of a comprehensive plan, such as cash management or income tax planning (modularization)
- Modify the assumptions inherent in the expert system, such as the rate of inflation anticipated (parameterization)
- Modify the recommendations and determine the effects ("what if" analysis).

Not all employees will be interested in or want a comprehensive personal financial plan. For example, some employees may only be interested in retirement planning and may not want cash and debt management. Also, some employers may be interested in providing only a limited (and thus less expensive) benefit. Employers and/or employees should be able to select only those aspects of a comprehensive plan that are relevant to their situations.

Some employees may prefer certain planning strategies, e.g., they may want certain types of investments that are not typical of the recommendations of the expert system. An expert system that allows these employee preferences to be incorporated into the plan is more beneficial to employees than a system that does not. An employee will not follow a plan that differs widely from his or her preferred choices. Some employees may have strong beliefs about the economic environment, such as expecting that the rate of inflation will remain above 5% for the foreseeable future,

which may conflict with the 2% inflation factored into the expert system's recommendations. The expert system that does not permit the employee's perceptions of the economic environment of the future to be included may produce a plan that is not of maximum benefit to the employee. If an employee's perceptions are out of normal bounds, however, they would have to be overridden by the system. For example, if the employee felt that inflation would exceed 20% per year for the foreseeable future, the expert system would not use this extreme belief in preparing the plan but would modify the inflation rate downward to the top of a reasonable range for preparation of the personal financial plan. An expert system that permits the setting of parameters to reflect the reasonable preferences and beliefs of individual employees is likely to provide more usable plans than a system that does not.

In planning for the future, employees may have questions, such as "What if I purchased shares of a mutual bond fund rather than individual corporate bonds?" If the expert system can compare the effects of the alternatives available, it provides the maximum benefit to employees in planning for the future. The price per employee of personal financial plans will affect the amount of "what if" sensitivity analysis that is available to employees. Because personal financial plans need to be implemented to be of benefit, the plans must provide the alternatives employees feel are important; otherwise, the plans will be filed away and result in little or no action by the employee.

Understandability of the Output

The planning horizon, the format and length of the reports and their readability are all important considerations. The employer and/or employee is paying a substantial sum for the financial planning service, and the only tangible evidence of that service is the report. If the reports cannot be understood by the employees, the employees have wasted the time spent in providing the information, and the company has not spent its benefits dollars wisely. Personal financial plans are just plans, and the benefit to the employees comes from executing the plans' suggestions. The reports prepared by the expert systems described below vary considerably in length and level of detail. If the employer selects an expert system or option of the system that generates an 80 page report, the employer must be willing to pay for the planner's interpretation of the

plans for the employees. This interpretation should examine the many issues addressed and explain the conclusions and recommendations of the report; otherwise, the employees will not execute the plans.

PERSONAL FINANCIAL PLANNING EXPERT SYSTEMS

Only personal financial planning expert systems that provide solutions to all aspects of financial planning (comprehensive systems) are discussed, together with the major features that differentiate the systems. Specialized systems that focus on a smaller knowledge domain, such as tax planning, are omitted. The reference list provides the targeted income levels, the time the system has been in use, the developer's name, address and phone number. An understanding of these features allows the potential purchaser of a personal financial planning expert system to determine the features that are important and unimportant in the selection of a system. Six systems are discussed: AAFINPLAN, Ayco Corporation, Client Profiling System, Personal Financial Planner, Personal Financial Analysis, and PLANMAN. The authors believe that these systems may be appropriate to provide financial planning benefits to employees of some firms. Because of the manner in which their services are provided, however, some may not be feasible as providers for employers having a large number of employees.

Ayco Corporation

In 1983, the Ayco Corporation upgraded the computer system begun two years earlier to an expert system. Ayco provides personal financial planning services on a fee basis to the top executives of Fortune 500 companies. Ayco specializes in analyzing very complex personal financial situations with as many as 100,000 recorded data items used in preparing a single client's plan. The Ayco Corporation's database-driven financial planning expert system is an integral part of its practice, with the output used to produce reports that average 60 to 80 pages. Personal financial plans prepared by the expert systems without human intervention are not marketed separately. The plans are always prepared by planning professionals assisted by the expert system.

For top executives with incomes of \$100,000 or more, the cost for a first year plan averages \$13,000, with subsequent years costing approximately 60% of the initial year's fee. Ayco also

offers a service for middle managers with incomes of \$60,000 to \$75,000 that is less intensive and costs approximately \$4,500 for the first year.

Contact Information—Linda Kempin, *The Ayco Corporation, One Wall Street, Albany, NY 12205. Phone (518) 869-2503.*

Client Profiling System

The development of Client Profiling System for financial institutions began in 1986, and the system was in use by 1987. Currently, more than a dozen financial institutions are using the system, including firms both in and outside the United States. Depending on the volume of personal financial plans prepared, the production system can be licensed for \$100,000 or more. Client Profiling is intended for customers with incomes between \$25,000 and \$200,000 per year. The system uses a client questionnaire that can be prepared with the assistance of the financial institution representative or by the employee. The questionnaire requires financial data and focuses on the customer's goals. The system generates a 15 to 20 page client report. In 1989, APEX began offering the system on a per-use fee basis to individual personal financial planners.

Contact Information—Steven R. Vandegrift, *vice president, APEX—Applied Expert Systems, Five Cambridge Center, Cambridge, MA 02142. Phone (617) 492-7322.*

Personal Financial Analysis

Personal Financial Analysis is a package of services available to Price Waterhouse clients for use by their employees. The three part package tailors results to the client company's benefit plans. First, the employees fill out a confidential questionnaire focusing on individual economic and family situations: income, taxes, investments, employee benefits, marital status, number of dependents and any special financial goals such as financing retirement or children's education. The questionnaire serves as the basis for a 40 to 50 page report that provides suggestions for asset management, investment strategies, tax saving strategies, planning for education savings, life insurance needs and retirement savings. Second, the report, prepared using a combination of human analysis and expert systems, includes financial action checklists to assist the employees in implementing their plans. Finally, the personal financial plan is cross-ref-

erenced to a 350 page volume of planning information to assist employees in implementing the recommendations.

Contact Information—George Barbee, *executive director of personal financial services, Price Waterhouse, 51 Sawyer Road, Waltham, MA 02154. Phone (617) 899-6500.*

PFPS—Personal Financial Planning System

PFPS, in use since 1987 by Chase Lincoln First Bank, is an integrated personal financial planning expert system. The system was developed more than six years ago by Chase in conjunction with the international consulting firm Arthur D. Little, Inc. PFPS is an integrated system covering investment planning, debt planning, retirement planning, education planning, life insurance planning, budget recommendations, income tax planning and savings achievement for other major financial goals. PFPS can be programmed to handle the details of a specific employer's benefit programs, including stock options and deferred compensation plans.

The system provides detailed reports of from 75 to 150 pages for individuals at all income ranges. Reports are provided to clients on a fee basis, with fees as low as \$300. Chase is now marketing the system to certified financial planners, other banks and to companies for use as an employee benefit.

Contact Information—Ross S. Cann, *Chase Lincoln First Bank, MC-5, Rochester, NY 14643. Phone (716) 258-6708.*

PLANMAN

PLANMAN is a PC-based personal financial planning expert system for use by professional financial planners. Quantitative and qualitative personal data about the planner's client are collected on preprinted fact finders. The client information is checked and analyzed by more than 7,500 decision rules in the system. The system generates comprehensive or modular plans with an option to create a pro forma report. The use of planning parameters allows the system to base conclusions and recommendations on the individual planner's philosophy as well as client-specific data. The client-specific conclusions and recommendations are used to select appropriate paragraphs of information, which are merged into a customized report. With the pro forma option, the financial planner can use the system to project

the long term impact of the system's recommendations on the financial condition of the client and to do "what if" analysis.

PLANMAN includes the following planning modules: income tax and cash flow, investment and portfolio, life insurance, disability income, retirement, education funding and estate. The planner can use one or a combination of several of these modules or the entire expert system. The system provides the financial planner with extensive report writing and graphics capabilities. PLANMAN has been in use for several years, and recommendations of users for improvements have continuously been included in the system.

Contact Information—Daniel L. Whittenburg, Sterling Wentworth Corporation, 2319 S. Foot-hill Dr., Suite 290, Salt Lake City, UT 84109. Phone (800) 752-6637.

AAFINPLAN

AAFINPLAN is a modified version of PLANMAN that Arthur Andersen & Co. has developed with Sterling Wentworth Corporation. In use since 1989, it covers all income ranges. The knowledge base received minor modifications and the text of the recommendations had extensive modifications. Arthur Andersen's approach is to include consultation with its personal financial planning professionals together with the expert system-produced plan. AAFINPLAN is available to Arthur Andersen's client companies in a package of services similar to that described above for Personal Financial Analysis.

Contact Information—Wallace Head, Arthur Andersen & Co., 69 W. Washington St., Chicago, IL 60602. Phone (312) 507-7236.

CONCLUSION

As benefit dollars become more scarce and the environment for financial decision making more complex, employees' access to professional financial planning services will become more valuable. As employers attempt to limit the cost of benefits, the ability of employees to make wise selections becomes more important. Increasingly, the providers of personal financial planning services will rely on expert systems technology to provide consistent and cost effective advice for employees.

Endnotes

1. Personal financial planning services are provided to the public by certified financial planners (CFPs), chartered financial consultants (ChFCs) and Securities and Exchange Commission registered investment advisers (RIAs). In addition, depending on the nature of their practice and experience, some certified public accountants (CPAs), certified life underwriters (CLUs), attorneys and others with substantial training and experience in the field may also provide personal financial planning advice. A company providing financial planning as a benefit can help the employees avoid an unqualified or dishonest planner by screening potential planners. While some states license financial planners, such professionals would be subject to federal regulation for the first time if a House bill (HR 4441) introduced April 2, 1990 passes.
2. "Financial Planning for Corporate Executives: Almost Half of Large Employers Offer this Service," *Spencer's Research Reports* #290-17, May 1989.
3. IDS Financial Services, *Employee Financial Planning Study*, March 1987.
4. Steven R. Vandegrift, APEX, May 2, 1990.
5. According to the Bureau of Labor Statistics (BLS), twice as many employees of medium and large companies were covered by flexible benefit plans in 1988 as in 1986. Still, this represents only 13% of workers covered by the BLS survey, and many more employers are considering changing to flexible benefit plans.
6. In 1984 the Financial Accounting Standards Board began requiring the cost of postretirement health and life insurance be recorded and disclosed, along with related information, in the financial statements of business entities. Death benefits included as part of pension plans were excluded from the 1984 standard.
7. This survey did not include costs, and thus no price sensitivity was measured.
8. The authors wish to thank W. Alfred Mukatis for his assistance in writing on the subject of liability.
9. "That which we call a rose by any other name will smell as sweet." See *Romeo and Juliet* by William Shakespeare.
10. Strict liability for ultrahazardous activities and for products are examples of cases in which claims of damages may result without proof of negligence. "Ultrahazardous activities" speaks for itself; it has been applied to injuries resulting from activities such as the keeping of wild animals, blasting activities, field burning, crops spraying and the like. Similarly, "strict product liability," in general, requires that the product be sold in a "defective condition unreasonably dangerous to the user or consumer or to his property." See Restatement (Second) of Torts §402(A)(1). It is difficult to imagine either of these legal claims being successfully applied to financial injury resulting from an imperfect computer system.
11. These authors are currently preparing a report for the International Foundation of Employee Benefit Plans that will provide a checklist of items to be considered when testing financial planning advice and describe how hypothetical cases can be used.

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