

Artificial Intelligence in Accounting and Auditing: Creating Value with AI, Volume 5

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PREFACE

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This collection focuses on AI and Expert Systems applications in Accounting, Auditing, Tax and Finance, with the following five sections:

1. Introduction: Creating Value with Expert Systems
2. Auditing, Internal Auditing and Tax
3. Finance
4. Financial Decision Making Issues, and
5. System Quality Issues

"How expert systems can be used to create value?" is the focus of the first section and the only paper in that section. O'Leary finds that expert systems create value for a number of reasons, including reducing the risk of doing business, coordinating multiple actors and through generating economies of scale through development of multiple systems.

The second section discusses expert systems in accounting, auditing and tax. Bailey, Hann, Stansifer and Whinston discuss an extension to the original work on TICOM based on a logical specification of an auditing domain problem. As noted in the paper, this research has formed the basis of recent developments integrating AI and auditing at Price Waterhouse.

Han and Choi investigate the important problem of selection of appropriate tasks for expert systems development in auditing. This research relies heavily on previous research by academics and practitioners, and can play an important role in determining which audit tasks offer the primary potential for system development.

O'Leary and Watkins provide two views on adoption of expert systems in auditing, based on a survey sent to over 3,000 internal auditors. The first view is based on the economics of diffusion, while the second is based on the behavioral theory of exchange. Both views result in statistically significant results, offering a number of reasons for why internal auditors adopt expert systems technology.

Michaelsen and Swigger examine the question "What knowledge acquisition technique is more efficient and/or effective for the first step in eliciting knowledge for a given tax planning domain?" This is an important question since identification of appropriate knowledge acquisition approaches can save developers time and money in systems development.

Section 3 focuses on two distinctly different papers on AI in finance. The first paper, by Chu and Kim is concerned with knowledge generation about the stock market. They elicit expert heuristic knowledge, technical knowledge and fundamentals knowledge. Chu and Kan employ an empirical study to test their approach.

The second paper in section 3 by Bouwman and McQueen presents an in depth analysis of the loan granting task based on protocol analysis. Using an actual application, the loan

officer elicited decision making strategies, information usage and application of knowledge through an approach that stressed thinking aloud protocol.

Section 4 has three papers that generate systems for supporting economic decisions. Ezawa develops a Bayes' Net system designed to support decisions about dynamic random access memory (DRAM) chips. O'Leary and Watkins develop an expert system for supporting decisions about transborder data flows. Neuhaus and Lusti developed a system to support decisions about leasing vs. purchasing.

The final section 5 presents three papers concerned with system quality. Vanthienen and Wets discuss constructing and designing intelligent systems using decision tables for management applications. O'Leary and O'Keefe investigate the potential use of formal methods for specification of knowledge based systems for business. Finally, Webster et al. outline an approach for validating an expert system using consensus. Their approach is one of the first to apply rough sets to validation issues.