AI & ES in Accounting and Auditing: Progress, Regression and New Paradigms

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Two years have passed since the publication of Artificial Intelligence in Accounting and Auditing, Volume 1. In these two years, the technology and its implications have lost some of their novelty and myth. On the other hand, we are witnessing the emergence of a set of paradigms and an increased understanding of the strengths and weaknesses of particular approaches. Carol Brown, in her article entitled “Expert Systems in Public Accounting: Current Practices and Future Directions,” explores the applications of the paradigms within the major audit firms. In her evaluation she states, “The use of expert systems is rapidly pervading the field of accounting. All of the big six international accounting firms are either using expert systems in their practices or have systems under development.”

Introduction

This book is divided into three parts. In this first part, we position the field and describe the main articles in the book. This introductory note attempts to link a set of selected articles into a vision of the current state of the art in the field. First, it describes the frame of the ensuing articles to allow the reader to navigate through the readings. Then, it draws a few conclusions on the state of the art and proposes avenues for future research.

The second part focuses on methodological issues. Wensley’s article positions the evolving research issues in audit planning. Drawing on their CAPEX experience, he develops an agenda of research issues and approaches for such a complex domain as auditing. Abdolmohammadi and Bazaz prepare a systematic method of identifying applicable decision aids for a comprehensive inventory of audit tasks. Forty-nine experienced auditors identified tasks as candidates for knowledge-based expert system development from a list of 332 major audit tasks. Hsu recognizes the need to evolve conceptual schemi into database systems. This evolving view of the world would facilitate the construction of knowledge-based systems and their intrinsic database. McCarthy and Rockwell examine reconstructive expertise and implementation heuristics in a design tool. They base
their considerations on the REACH systems that was designed to aid in the process of database design in general in the sub-processes of view modeling and view integration. Wensley and Boritz, still in an audit planning context, use their CAPEX\(^3\) experience to review and examine validation issues. The last article of this session (Winkler & Massaad) introduces the evolving neural network paradigm to accountants and explores its implications.

The third part presents AI/ES in Accounting and Audit Practice. Brown surveys the field with particular concern for practices in public accounting. Vasarhelyi and Halper, as well as Vasarhelyi, Halper and Ezawa, propose a new “online auditing” paradigm and examine the implementation of the CPAS technology performed at AT&T. Two additional articles are included in this section as illustrations of potential application areas. Messier and Hansen deal with bankruptcy prediction. The paper reports on the results of an experiment designed to assess the effectiveness of an inductive algorithm for discovering predictive knowledge structures in financial data. Kandelin and Lin use object-oriented programming to help in the credit decision making process.

Volume 2 of this series opens the path for Volume 3, being published simultaneously, which includes sections on Knowledge Elicitation and Representation, Belief Nets and Bayesian Revisions, Accounting Applications and the Future in AI & ES.

ENDNOTES

We think AI is a great tool for controllers and internal audit departments. Controllers don't have time to look at all transactions posted by their staff, but I bet they would like to look at the high- and medium-risk transactions. Also, I am pretty sure the internal audit department wants to address the risk issues before the external auditors inquire about them. It's more of a total audit, and it's going to change the way we do auditing. The possibilities are endless, and I am excited to see what is around the corner. The applications of regression analysis in auditing and computer systems. Thesis. Presented to the Graduate Council of the North Texas State University in Partial Fulfillment of the Requirements. This thesis describes regression analysis and shows how it can be used in account auditing and in computer system performance analysis. The study first introduces regression analysis techniques and statistics. Then, the use of regression analysis in auditing to detect "out of line" accounts and to determine audit sample size is discussed. These applications led to the concept of using regression analysis to predict job completion times in a computer system. For example, audit expresses their disclaimer opinion when management refuses to provide supporting documents to verify capital injection to the entity. Normally, the modification of audit opinion is not what the client wants, and the auditor should strictly follow the standard and consult with highly experienced professional qualifications before issued such an opinion. Sometime, if the opinion is not proper, the auditor might be sued by the client. Summary: There are two factors that cause auditors to disclaim their opinion. Volume II: Progress, Regression and New Paradigms. Acknowledgements I. Introduction II. Methodology III. AI/ES in Audit Practice. Volume III: Knowledge Representation, Accounting Applications and the Future. Acknowledgements I. Introduction II. Knowledge Elicitation and Representation III. Belief Nets of Bayesian Revisions IV. Accounting Applications V. Future. Volume IV: Towards New Paradigms. Acknowledgements Introduction I. Surveys II. The Neural Net Paradigm III. International Applications IV. Audit Applications V. Merging Paradigm. Volume V: Creating Value with AI. Preface I. Introduction