The Use of Microcomputer Software in the Audit Environment: The Implication for Accounting Education

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Abstract

The use of microcomputer software in auditing is becoming increasingly popular. This study reports the results of a survey on the utilization of microcomputer software in the audit environment. The survey results suggest that it is advisable to auditing students to become familiar with Lotus 1-2-3, Dbase, and Word Perfect or Multimate.

Introduction

The advancement of computer technology in the twentieth century has not only improved the planning and operation procedures of the corporate America, but it has also brought forth a corresponding change in the CPA firms to cope with the financial data generated from the increasingly utilized organizational electronic date systems. According to a survey by the American Institute of Certified Public Accountants (Hoffman, 1988), the use of computers in auditing has increased dramatically in recent years. The uses of audit software grew by almost four times compared to the results from a 1985 similar survey. Most firms use audit software in modeling spreadsheet, managing database files, producing graphics or scheduling.

The mushrooming of microcomputers and available software assists auditors in various areas such as designing analytical procedures, conducting statistical sampling or performing substantive test. It would surely be beneficial for those expected to perform audit functions to understand how and what microcomputer software used in the audit environment. Several articles (for example, Watson, 1988; Wiggins and Wolfe, 1988, Lin and Yang, 1990) address ways that microcomputers can be employed in auditing. However, the current literature has not examined what kind of microcomputer software have been used in the audit practice. Therefore, this paper intends to make an empirical study of the microcomputer software used most often and their usages by the auditors and auditing staff, and provide some references for accounting education.

Methodology and Results

A questionnaire was designed by separating software usage into five categories, as suggested by Porter and Perry (1988): administrative uses, planning uses, analysis uses, audit database uses, and workpaper uses. Of the 345 questionnaires distributed to auditors in the Los Angeles and Honolulu areas, 180 were returned. The end result was a 52% response rate.

A. Administrative Uses

The first part of the survey tests auditing software used in administration. The results in Table I shows that the top four microcomputer software are Lotus 1-2-3, Word Perfect (WP), DBase, and Multimate (MM). The software most favored by auditors in this area falls on Lotus 1-2-3. It is commonly used in preparing time budgets, designing annual audit plans and programs, and scheduling jobs for audit or other projects.

Perhaps due to its remarkable word processing functions, Word Perfect and Multimate are particularly useful in writing audit reports, and client correspondence necessary in the ordinary process of audit. It can also prepare annual audit plans and programs, and indexing documents in manual or electronic files. However, these two software are seldom used in preparing time budgets, and mailing log and receipts of conformation letters.

DBase functions satisfactorily in time budgets preparation, annual audit plan and programs design, and recording audit findings and information confirmation.

TABLE I — ADMINISTRATIVE USES

Applications	Lotus	WP	DBase	MM	Others*
1. Preparing time budgets of audit projects and monitoring actual time.	48 26.7%	3 1.7%	30 16.7%	1 0.6%	98 54.4%
2. Preparing annual audit plans and programs.	38 21.1%	22 12.2%	15 8.3%	17 9.4%	88 48.9%
3. Scheduling jobs for audit and other projects.	44 24.4%	5 2.8%	8 4.4%	4 2.2%	119 66.1%
4. Maintaining information on microcomputers to follow up the acceptance and implementation of audit findings and recommendations.	7 3.9%	11 6.1%	17 9.4%	14 7.8%	131 72.8%
5. Preparing audit reports, engagement letters, client representation letters, and management letters.	4 2.2%	36 20.0%	0 0.0%	30 16.7%	110 61.1%
6. Indexing documents in manual or electronic files.	9 5.0%	14 7.8%	8 4.4%	14 7.8%	135 75.0%
7. Mailing log and receipt of confirmation letters	15 8.3%	4 2.2%	9 5.0%	2 1.1%	150 83.3%
Subtotal	165 13.1%	95 7.5%	87 6.9%	82 6.5%	831 66.0%

* *including those did not respond or those did not use any microcomputer software to perform this application.*

But it is never used in writing reports of letters during audit procedures, as one might expect.

B. Planning Uses

The second part of the questionnaire deals with the planning use of microcomputer software in auditing; the result of which is represented in Table II. Overall Lotus 1-2-3 still ranks the top among the software surveyed (13.4% of all the responses). It is most instrumental in performing risk and ratio analyses, and scheduling budgets and resource allocation. It does not prove popular nevertheless in areas such as adjusting audit programs to various situations, and creating checklists for audit projects.

Word Perfect ranks the next commonly used software. In this section as well as the previous one Word Perfect functions well where Lotus 1-2-3 does not and vice versa. Whereas it proves to be useful in designing audit programs for specific audit situations, it fails in performing ratio analyses to indicate relationship between financial data. Most probably this results from its primary usage is designed in word processing rather than carrying mathematical functions for spreadsheet analysis. Multimate walks side by side with Word Perfect and is hardly used in conducting risk or ratio analysis.

Although Symphony is listed as the fourth commonly used, its usage accounts for only 3.3% of all responses. The data show that audit software utilized are more diversified in planning uses than in administrative uses. For the top four software account for 34% of total uses for administrative purposes, while the four most commonly used represent 27.9% of all planning uses.

TABLE II -- PLANNING USES

Applications	Lotus	WP	DBase	MM	Others*
1. Designing audit programs for specific audit situations based upon generalized audit program tasks.	3 1.7%	32 17.8%	24 13.3%	3 1.7%	118 65.6%
2. Creating checklists for audit projects from an inventory of internal control questions maintained on a computer file.	3 1.7%	15 8.3%	11 6.1%	1 0.6%	150 83.3%
3. Performing risk analsyes to define and weigh the risk attributes of a project.	27 15.0%	2 1.1%	3 1.7%	9 5.0%	139 77.2%
4. Performing ratio analyses to indicate relationships between financial data.	55 30.6%	0 0.0%	1 0.6%	10 5.6%	114 63.3%
5. Preparing schedules to allocate audit resources and budgets to complete the audit most effectively.	33 18.3%	6 3.3%	6 3.3%	7 3.9%	128 71.1%
Subtotal	121 13.4%	55 6.1%	45 5.0%	30 3.3%	649 72.1%

** including those did not respond or those did not use any microcomputer software to perform this application.*

C. Analysis Uses

The analytical functions of microcomputer software employed by auditors are tested in this section of the survey. The functions listed include downloading data from auditee's databases for analytical purposes, performing spreadsheet analyses, performing interaudit analyses, flowcharting and evaluating internal controls, and so forth. Not surprisingly Lotus 1-2-3 still outperforms all the other software in this section, as shown in Table III. Of all the uses listed it takes up 13.4%. The most remarkable aspect of Lotus' performance lies in its spreadsheet analyses, which is manifested by its 35.6% list rate (64 out of 180 responses). That could result from its well-developed and highly sophisticated spreadsheet functions, and market's long familiarity with it.

DBase does not impress auditors in analysis uses very much except in downloading data from databases for analysis or analyzing data directly in the microcomputer. For Symphony, the only area worth mentioning is its use in spreadsheet analysis. However, the 5.6% occurrence rate cannot compete with Lotus 35.6%.

Although Flowchart ranks the second most often used software for analytical purposes according to the data collected, the data gathered from the survey tend to be somewhat biased. For Flowchart is not listed as applicable in all the other questions under analysis uses with the exception of flowcharting and evaluating internal controls. In fact, its outstanding performances in flowcharting earn it the title of the second most favored software in this part of the questionnaire.

D. Audit Database Uses

The data in Table IV present the test results in what kind of software and in what aspect it is used for audit database purposes. This time Lotus 1-2-3, is unable to enjoy this prestingeous status alone as in the previous three sections, shares the crown with DBase. Together these two software take up over 10% of the total usages.

TABLE III - ANALYSIS USES

Applications	Lotus	WP	DBase	MM	Others*
1. Transferring data from auditee databases and analyzing them by using computer software.	18 10.0%	0 0.0%	15 8.3%	6 3.3%	141 78.3%
2. Using spreadsheets to perform various analyses.	64 35.6%	0 0.0%	3 1.7%	10 5.6%	103 57.2%
3. Inputing information directly into the microcomputer and then analyzing it.	43 23.9%	0 0.0%	11 6.1%	6 3.3%	120 66.7%
4. Tying microcomputer directly into auditee's network and performing analyses.	8 4.4%	0 0.0%	1 0.6%	1 0.6%	170 94.4%
5. Performing interaudit analysis, i.e., format all audit information in a similar manner so it may be easily compared to data from other audits.	8 4.4%	0 0.0%	3 1.7%	3 1.7%	166 92.2%
6. Performing flowcharting and internal control evaluation.	4 2.2%	44 24.4%	0 0.0%	0 0.0%	132 73.3%
Subtotal	145 13.4%	44 4.1%	33 3.1%	26 2.4%	832 77.0%

* *including those did not respond or those did not use any microcomputer software to perform this application.*

It should not be surprising that DBase ranks as the number one when software for database uses are being tested. However, the phenomenon deserves some thinking that Lotus can still maintain the title of the number one without giving it up all to DBase. One of the reasons could be that the database functions of Lotus, at least from the perception of auditors, prove to be as satisfactory as those of DBase. Or Lotus has created for itself an unreplaceable niche in the software market that once a customer selects it, he/she will stick with it.

Another explanation might be that this area in auditing is still a not-so-much-developed ground for software. Therefore, it is hard to tell the more favored from the less favored software. This could further be evidenced from the fact that the top four software, i.e., Lotus 1-2-3, DBase, Word Perfect, and Multimate, account for no more than 14.8% of total usage. Only in one instance do the four represent more than 20% of total responses: recording the history of the audited clients, the staff engaged in the audit tasks, the date of the audit, and the budget and the actual spending of the audit. There are two places where the listed rate of the top four represents less than 10% of all uses (performing trend analysis and creating scarf files).

E. Workpaper Uses

Workpapers are a very important part in the auditing procedure. Auditors usually use them to prepare checklists, generate lead schedules and financial statements, record audit findings, etc. It is expected that the microcomputer plays an indispensable part here. The four software used most often include Lotus 1-2-3, Word Perfect, Multimate, and Symphony. Taken together

there four stand for 32.7% of total usage listed in the survey. The most surprising result indicate that more than 50% of the auditors surveyed utilize these four software to design and print various kinds of workpapers for their audit tasks. Forty percent of the audit staff makes use of them to store and maintain workpapers on the microcomputers.

Overall Lotus 1-2-3 is still the top one, with a total usage rate of 13.8%. It is most favored in creating lead schedules, posted trial balances, and financial statements (38 out of 180 responses, equivalent to 21.1% usage rate). The only part it is least lies in developing check-lists of to-do items.

Both Word Perfect and Multimate perform rather well in the areas mentioned in the previous paragraph. But it does not impress auditors in generating necessary documents in auditing, and retrieving information from electronized workpapers to microcomputers for analysis. These two, as already noted in the "Administrative Uses" section, carry similar functions and features for most of the auditors surveyed.

Conclusion

The questionnaire survey reflects that microcomputers and appropriate microcomputer software are found to be most frequently used for administrative and work-

TABLE IV -- AUDIT DATABASES USES

Applications	Lotus	WP	DBase	MM	Others*
1. Listing and recording all individual findings and recommendations included in every report on the computer.	4 2.2%	14 7.8%	8 4.4%	7 3.9%	147 81.7%
2. Storing and recording the history of all organization segments that have been audited, assigned staff, audit date and resources budgeted and spent.	19 10.6%	21 11.7%	4 2.2%	1 0.6%	135 75.0%
3. Performing trend analysis of all relevant audit information in storage.	10 5.6%	3 1.7%	2 1.1%	0 0.0%	165 91.7%
4. Scaft (System Control Audit Review File). Collecting predominated items of information as a means of determining when, where, and what to audit in the organization.	8 4.4%	5 2.8%	0 0.0%	2 1.1%	165 91.7%
5. Recording ideas of anyone in the organization on what or how to audit for future reference.	5 2.8%	3 1.7%	8 4.4%	9 5.0%	155 86.1%
Subtotal	46 5.1%	46 5.1%	22 2.4%	19 2.1%	767 85.2%

* *including those did not respond or those did not use any microcomputer software to perform this application.*

TABLE V -- WORKPAPER USES

Applications	Lotus	WP	DBase	MM	Others*
1. Designing and printing workpapers on the mocrocompter for various audit tasks.	35 19.4%	29 16.1%	26 14.4%	5 2.8%	85 47.2%
2. Recording, maintaining, and storing workpapers on the microcomputer.	22 12.2%	25 13.9%	20 11.1%	5 2.8%	108 60.0%
3. Generating lead schedules, posted trial balances, and financial statements.	38 10.0%	2 1.1%	5 2.8%	8 4.4%	127 70.6%
4. Transferring information on workpapers elecronically to construct reports.	18 10.0%	12 6.7%	14 7.8%	3 1.7%	133 73.8%
5. Retrieving information stored on electronic workpapers for analysis on the microcomputer.	21 11.7%	4 2.2%	6 3.3%	1 0.6%	148 82.2%
6. Developing lists of to-do items.	15 8.3%	21 11.7%	14 7.8%	4 2.2%	126 70.0%
Subtotal	149 13.8%	93 8.6%	85 7.9%	26 2.4%	727 67.3%

** including those did not respond or those did not use any microcomputer software to perform this application.*

paper uses but least used for databases uses. Perhaps these two areas are where the auditing professionals find the microcomputer most helpful.

The most favored software is ubiquitously Lotus 1-2-3. It dominates in all of the five uses of the microcomputer in auditing. This constitutes two possible explanations. First, owing to its long standing in the market, the spreadsheet and other related functions of Lotus have already become the norm for other microcomputer application software. Also, Lotus has incorporated all the possible financial-oriented functions in its package through years of revisions. The next two software after Lotus are Word Perfect and Multimate. Its popularity might have something to do with its advanced word processing also plays a very important role. In this study, other popular microcomputer software mentioned are Microsoft Word, Wordstar, Enable, Displaywrite, Symphony, and Excel.

Although the results of this survey do not intend to be final, it is still advisable to accounting students to become familiar with these software (Lotus 1-2-3, DBase, Word Perfect or Multimate) especially for those interested in entering the auditing profession. The empirical data thus collected could be termed representation of real life situations to a certain extent, moreover, it is always safe to put the wager on the side of what the data manifest.

Suggestions For Future Research

Many firms have begun using microcomputer software to assist them in performing administrative and audit work. As technology increases, effective and powerful microcomputer software will become an increasingly important resource in the business world. To keep pace with the advancement of technology and the application of microcomputer software in the business world, periodic research, similar to that performed and presented in this paper, should be conducted to assist Accounting educators in directing the course of Accounting education.

*****References*****

1. Hoffman, Robin B. "Micros in Accounting," *Journal of Accountancy*, September, pp. 146-150, 1988.
2. Lin, Thomas W. and David C. Yang, "The Use of Microcomputers in Auditing: A Survey," *The EDP Auditor Journal*, Volume IV, pp. 73-79, 1990.
3. Porter, W. T. & Perry, W. E. *EDP Controls and Auditing*. Belmont: Wadsworth, pp. 42-43, 1987.
4. Watson, Robert, "The Use of Microcomputers in the Audit Environment," *The EDP Auditor Journal*, Volume I, pp. 31-42, 1988.
5. Wiggins, Casper and Christopher Wolfe, "Microcomputers in Auditing: A Primer," *Journal of Accounting and EDP*, Spring, pp. 47-50, 1988.