

# Organizational and Career Aspects of the EDP Audit Function: A Survey

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## ABSTRACT

This paper describes the results of a survey that focuses on the organization and personnel of the EDP audit effort by CPA firms.

It surveys 15 firms through 34 responses, arriving at the conclusion that there are considerable differences between the careers of EDP and generalist auditors. Their probability of promotion, salary scales, titles and background requirements are considerably different from generalists'. The survey also finds that most CPA organizations rely on some form of centralized EDP audit support but tend to use generalists for a substantial portion of this effort. EDP audits were found to be most frequently billed as part of the audit fee. A small but growing sector of the respondents had established or intended to develop EDP audit areas as a separate profit center.

The second paper of this series will focus on EDP audit practices by CPA firms using the same sample of 34 responses to an in depth questionnaire.

## INTRODUCTION

The EDP audit function slowly evolved from an isolated event on a particular audit engagement to an important element in the mainstream of the audit function. This evolution however presented different facets within different organizations.

The study of the development and current state of the EDP audit field can yield important information for practitioners. Unfortunately, at present, very little research has been done in this area.

This paper is the first of a two part series which surveys the EDP Audit practices of a small number of CPA firms in an effort to summarize the state-of-the-art in the field. This study used conjointly with the EDP Auditors Foundation studies on the Common Body of Knowledge and Control Objectives may allow auditors to ascertain: (1) where they are, (2) where they should be, and (3) how to get there in relation to EDP Audit.

This paper deals specifically with two key aspects of the EDP audit function:

1. The organizational structure of the EDP audit function
2. Career and skill patterns of EDP auditors

The specific issues of how EDP audit departments are organized, to whom they report, how they budget, and how they bill for their services are to be discussed. In addition, questions on EDP auditor selection, training, background and other behavioral characteristics are covered.

The following section of the paper deals with the methodology used in this study, its design, response rates, etc. The ensuing section covers the organizational aspects of the EDP audit function followed by the career and skill patterns of EDP auditors. The paper is concluded by a summary of findings and some suggestions for EDP auditors.

#### METHODOLOGY

The main objective of this paper is to perform an exploratory survey of the EDP audit field. Considering the still rather small number of EDP audit practitioners and engagements it was decided to strive for breadth of coverage rather than comprehensiveness. The sample was based on the listing of the EDP audit committee of the California CPA Society.

In order to detect different practices among offices of large firms, each large firm was sent 5 questionnaires, one to be answered by the national office, 2 by regional centers and 2 by local offices. Medium and small size firms (practitioners) were sent one questionnaire. All questionnaires were the same and respondents were assured confidentiality. Follow-up questionnaires were sent to non-respondents. The following sections relate the findings with regard to organization and personnel. Findings on practices are described in the second paper of this series.

#### Sample

Out of 70 questionnaires sent to 40

firms, 34 responses were received, corresponding to 15 CPA firms, 8 of which responded with one questionnaire while the remainder responded with 2 to 5 questionnaires.

Of the 34 responses 5 were from national offices (representing itself or the firm as a whole) and 29 from local offices (or firms). From the respondent population 37% related to large offices, 27% medium and 37% small.

#### ORGANIZATIONAL ISSUES OF THE EDP AUDIT FUNCTION

One of the areas addressed by the study was the placement of the EDP audit function in the firm's organizational structure. Questions here concerned whether the office had a separate EDP audit department, and if so what the budgeting and billing arrangements for this department were. Participants were surveyed as to the existence of a central support staff for EDP audit, and the division of responsibilities for EDP audit tasks between specialists and accountants-in-charge. In a final organizational area statistics were compiled on the application of various titles to specialists in EDP audit, and of the utilization and expectations firms held of such specialists.

#### EDP Audit Department: Budget and Billing

26% of the respondent offices had a separate EDP audit department, while 74% did not. There appeared to be no correlation between the size of the office and the existence of a separate EDP audit department. Small offices were at least as likely to have such a separate department as large offices.

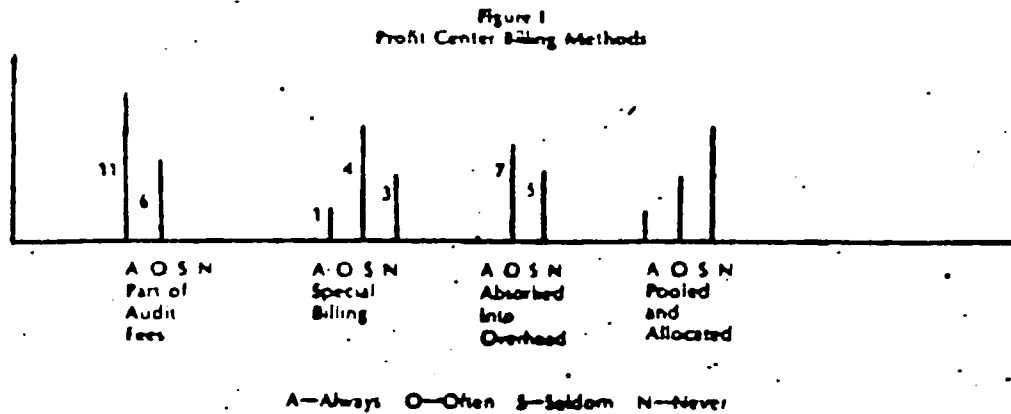
Of those offices with a separate department, 56% reported that this department had a separate budget, and 33% reported that this department was set up as a profit center. The most prevalent billing arrangement for the services of these departments was to incorporate EDP audit costs into the audit fee,

with an occasional special billing and very little tendency to absorb costs into overhead or to pool costs and allocate to the specific engagement. Distributions on these responses on an, always (A), often (O), seldom (S) and never (N) scale can be seen in Figure 1.

regional level. 10% of offices reported that their central support staff existed exclusively at the local level, while 23% indicated that at least some of the support function was locally based.

#### Division of Responsibilities for EDP Audit Tasks

Participants were asked to consider



Further breakdown in this rather small sample seems to indicate that with the increase of sophistication of the EDP audit function firms tend to incorporate EDP audit costs as a part of the audit fee but also perform and bill separately on special assignments.

#### Central Support Staff

Participants were asked whether a central support staff had been set up to assist with EDP audit functions, and if so what level of the organization (national, regional, or local) it was located on. 91% of respondents indicated that their office had access to some central support staff for computer audit. Of those reporting a central staff, 61% reported that this staff existed only on the national level, with 87% reporting at least some national input.

Only 3% reported a regional only location for this staff, but 26% indicated at least some support staff on the

four key tasks of EDP audit and to indicate whether the engagement accountant-in-charge or an EDP specialist was given primary responsibility for each of these tasks. Responses were further broken down by client size. Table I summarizes the results.

For all client sizes, the tasks most frequently assigned to a specialist were "Field EDP Audit Work" and "Supervision of EDP Audit." The most infrequent responsibility for the specialist was "Audit Analysis of Computer Audit Reports." Joint responsibility, while rare, was most frequently seen to occur with regard to SAS #3 Preliminary Review. Confirming a priori expectations, it was found that for all tasks except Audit Analysis, the number of offices giving primary responsibility to a specialist increased as the size of the client increased. This increase was most dramatic for SAS #3 review, apparently

Table I  
EDP Audit Task  
Assignment of Responsibility  
by Client Size

	Small Client	Medium Client	Large Client
SAS #3 Preliminary Review	I = 25 78% S = 5 16% B = 2 6% NR = 2 34	I = 18 56% S = 10 31% B = 4 13% NR = 2 34	I = 12 38% S = 14 44% B = 3 9% NR = 5 34
Conduct of Field EDP Audit Work	I = 17 53% S = 15 47% B = 0 NR = 2 34	I = 10 31% S = 22 69% B = 0 NR = 2 34	I = 9 28% S = 19 59% B = 1 3% NR = 5 34
Audit Analysis of Computer Audit Reports	I = 27 84% S = 4 13% B = 1 3% NR = 2 34	I = 24 75% S = 7 22% B = 1 3% NR = 2 34	I = 22 69% S = 5 16% B = 2 6% NR = 5 34
Supervision of EDP Audit	I = 20 63% S = 10 31% B = 2 6% NR = 2 34	I = 17 53% S = 13 41% B = 2 6% NR = 2 34	I = 14 44% S = 13 41% B = 2 6% NR = 5 34

Legend:  
I = Accountant-in-charge  
S = EDP Audit Specialist  
B = Both  
NR = No Response

reflecting the substantially more complex technology demanding comprehension at larger clients.

For small clients, the majority of offices made the accountant-in-charge responsible for EDP audit tasks. Even for Field EDP Audit 53% of offices gave primary responsibility to the accountant-in-charge.

With medium-size clients, a majority of offices gave the accountant-in-charge responsibility for all tasks except Field EDP, where specialists are given primary responsibility by almost 70% of offices. With large clients, the accountant-in-charge retains responsibility for Audit Analysis at most offices, and, at a slim plurality of offices, for "Supervision of EDP Audit." For SAS #3 review, however, more offices were now found to give primary responsibility to the specialist (44%) than to the accountant-in-

charge (38%) with a significant group (9%) considering the review a joint responsibility.

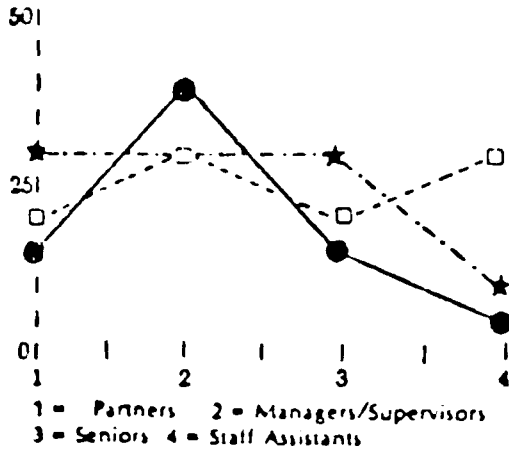
#### Application of Titles to EDP Specialists

Figure 2 summarizes the responses described later in Table II. Considering solely the professional personnel actually involved in running EDP audits, staff levels are tabulated against audit specialization.

Figure 2 shows EDP audit jobs to be top heavy requiring considerable partner/manager involvement. The figure also indicates that most staff assistants that are used in EDP audit work to be generalists.

In addition among those offices that had full-time EDP specialists, the most likely position for them to hold was manager (39% of offices) with a significant second being "other titles" (22%), perhaps as a holdover from the ten-

Figure 2  
EDP Audit Involvement  
By Staff Level and Specialization



dency to view these personnel as consultants outside the normal audit structure. Partner and senior tied at 17%, with staff assistant the least likely title for the fully dedicated specialist. The less than fully-dedicated specialist enjoyed a much more even distribution, with equal percentages of offices using them as partners, as managers, and as seniors. Staff assistant was again an infrequent use for these personnel. Offices using generalists did indeed use them generally—most frequently as staff assistants (31%), but with manager a close second at 28%, and partner and senior at 21% each.

#### Organization and Utilization of EDP Audit Specialists

Respondents were then asked some questions about utilization of EDP audit specialists. First a policy question. "Do your staff utilization standards provide for a variance from normal utilization rates for computer audit specialists?" Here the large majority of offices (81%) reported no policy difference, while 12% reported that their standards allowed for a variance on the high side and 6% accepting a low side variance.

Respondents were then asked for their actual experience on specialist as opposed to generalist utilization. Here a much slimmer majority reported no difference (55%) while those finding a difference were split evenly into finding higher or lower utilization for the specialist than for the generalist (23% each). As the final question in the sequence, respondents were asked for their experience of Computer Audit Specialists' participation in practice development activities. Here 78% of offices answered that specialists always or often took part in development activities, while 22% of firms indicated that they seldom took part.

Respondents were next asked to specify the EDP audit specialists reporting chain, together with the criteria and method for evaluating their performance. A variety of structures were reported. A number of these can be characterized as dual supervisor structures in which the EDP specialist reports to both the supervisor of the audit engagement and to a supervisor with special technical expertise. This technical supervisor was often based at the national or New York office, rather than working with the specific audit team. 38% of firms with EDP specialists reported a line and function division of supervision of this sort. While the remainder of firms indicated no special reporting structure for the EDP specialist, this group seems to contain both those firms that have moved very actively into the computer audit field and who are now able to have EDP trained teams, as well as those firms which have simply not formulated a structure to deal with the addition of specialized members to the engagement team. One firm specifically noted that while the EDP specialist currently had no special reporting chain, an alternative that would provide special supervision was being developed.

Table II  
Personnel Performing EDP Audit Tasks  
(out of 34 potential offices)

	Full-time EDP Spec	%	Not fully ded EDP Auditor	%	Generalist	%	% of personnel
Partner- Principal	offices 3 persons 6	(9%)	offices 12 persons 12	(35%)	offices 6 persons 12	(18%)	9%
Manager- Supervisor	offices 7 persons 70	(21%)	offices 12 persons 38	(35%)	offices 8 persons 42	(24%)	27%
Senior	offices 3 persons 129	(9%)	offices 12 persons 67	(35%)	offices 6 persons 52	(18%)	43%
Staff Asst	offices 1 persons 2	(30%)	offices 4 persons 7	(12%)	offices 9 persons 96	(26%)	19%
Other	offices 4 persons 6	(12%)	offices 3 persons 8	(9%)	offices 0 persons 0	(0%)	2%
Totals	offices 18 persons 213		offices 43 persons 126		offices 29 persons 222		

## PERSONNEL ASPECTS OF THE EDP AUDIT FUNCTION

### The Audit Function in the Organization

In the aggregate, respondents tended to use regular audit staff to perform computer audit functions (41% of the total effort). A core of computer specialists formed 29% of the manpower utilized while MAS personnel comprised 27%. In a few offices all EDP audit functions were performed by MAS or specialized groups. Considerable differences seem to exist between firms as to their organizational structures but specific practices seem to be rather similar in nature.

### Current EDP Audit Personnel Characteristics

Each respondent office was asked to characterize its computer audit personnel at each of four levels as either full-time EDP audit specialists, not fully dedicated EDP auditors or generalist auditors. The responses are summarized in Table II.

This table can be read in the following manner: 9% of respondents (3 offices out of 34) reported that their computer audit partners or principals were full-time specialists, 35% that these positions were held by less than fully

dedicated EDP auditors, and 18% that these roles were filled by generalists. At the computer audit manager/supervisor level 21% of respondents reported full-time specialists, 35% less than full-time, and 24% had generalists. At the level of computer audit senior, 9% of offices used full-time specialists, 35% used less than fully dedicated, and 26% used generalists. The data displayed in Table II may be explained by two factors: (1) specialization requires maturation and experience that staff-auditors do not possess and, (2) EDP auditors are still not fully accepted as "partners" in audit engagements.

### Career Path and Growth

The next question in the questionnaire related to career growth possibilities of EDP auditors in relation to general audit personnel. The question was broken down by job levels and respondents were asked to indicate how the opportunities of the EDP specialist compared with those of the generalist at each level. 55% of the respondents felt that opportunities for growth to the level of partner-in-charge were equal to those of other personnel, but a significant group of 35% felt that opportunities here were less for the specialist than for

others of the staff. Only 3% of the respondents indicated that opportunities here were increased for the specialist. The situation was more balanced for reaching the partner/principal level, with 48% indicating equal opportunities and 26% each indicating improved or diminished opportunities. As we would have expected from responses on actual personnel characteristics, opportunity perceptions were much more favorable at the manager/supervisor level, where 42% of offices reported increased opportunities, 58% equal opportunities and none reported decreased chances. A similar though less pronounced pattern was apparent at the senior level where 32% noted increased chances for the specialist, 55% said equal and none thought specialization decreased chances.

#### Salaries

The offices were then asked for comparisons between specialist and generalized audit salaries. 47% reported that salaries for specialists were higher, while 53% said that they were the same. None reported lower salaries for specialists. These findings might also be anticipated, as the decreased scope of promotion expectations for EDP specialists (which on the other hand must be highly skilled in EDP and audit issues) had to be compensated by financial rewards.

#### Educational and Background Requirements

The survey next examined in some detail the educational and background requirements expected for various levels of computer audit specialist. Subject offices were asked for their expectations as to type of degree, major,

experience and certification at the entry/senior level, for supervisor/manager positions and for partner/principal positions.

With regard to degree expected, 85% of respondents indicated that a Bachelor's degree was the basic degree required at any level. 7% responded that a Masters was the basic requirement for any level. Another 7% indicated that the expectation increased from Bachelor's to Masters for positions at the supervisor level and above. None of the respondents expected a Ph.D. at any job level.

Along with the degree respondents were asked to indicate the major field of study they expected. It was informative to construct a desirability quotient for comparison between majors. In the table below the percentage of respondents expecting a given major equally with other majors is added to the percentage expecting that major exclusively, in order to yield an index of relative desirability.

It is not surprising to find that the expectation of an accounting degree predominates here. Computer Science is lowest on the list of expectations, which while it does not necessarily mean that firms would not hire holders of this major, does seem to indicate that this degree is not on the shopping list for a substantial number of firms. Somewhat attenuating these findings is the 7% group whose exclusive expected major for an EDP audit specialist is Computer Science.

Survey participants were then asked the number of years of prior experience in public accounting and data processing that they would expect at each of the

Table III  
Major Field Desirability

	Accounting	Business	Computer Science
Major expected w/ others	69%	55%	41%
+ Major expected exclusively	24%	0%	1%
Desirability Quotient	93	59	46

Table IV  
 EDP Audit Staff Training  
 Specialists vs. Generalists  
 (average days of training)

	EDP Audit Specialists		Audit Staff	
	Required	Optional	Required	Optional
EDP Fundamentals	6.33	3.11	3.07	4.40
Low Level EDP Audit Software	10.06	5.00	3.00	12.90
EDP Auditing and Internal Control	5.86	1.80	5.96	5.00
Advanced EDP Technical Training	11.08	23.90	2.00	3.29
Advanced EDP Training	4.08	17.67	0	4.3

three levels. At the entry/senior level a full half of firms named 2 years of public accounting experience as their expectation, 33% expected 3 years experience, and 15% expected 1 year or less. At the supervisor/manager level the average length of public accounting experience expected rose to about 4.2 years, with 59% of firms falling in the 4-5 year range, and 91% of firms encompassed if we expand the range to 3-6 years. At the partner/principal level the average rose to 9 years, with 16% expecting a low of only 5 years, 32% clustered in the 7-9 years range and 47% expecting 10-12 years of public accounting experience.

As far as data processing experience was concerned only 60% of those answering this question had any DP experience expectations. Of those that held these expectations, the average at the entry/senior level was 4 years, and at the supervisor/manager level 6 years were expected. At the partner/principal level the percentage of respondents with DP expectations dropped to 40%, but for this 40% the average expectation was just over 7 years.

Participants were also asked for their expectations concerning certification, either CPA, CDP, or other, at the three levels posited. The results appear most useful as a comparison of interest in the two certificates for the entry/senior level of computer audit specialists 32%

of the firms interviewed expected a CPA, 6% expected a CDP. As for the supervisor/manager level 50% expected a CPA, while 9% expected a CDP. And at the partner/principal level 50% again expected a CPA to 9% who expected a CDP. The CDPAA was not mentioned as it was not available at the time of the survey.

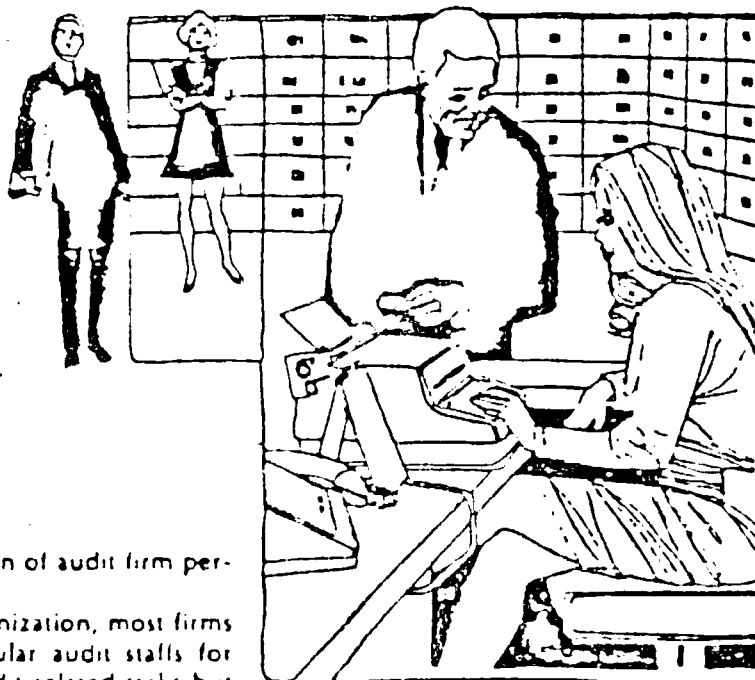
Another interesting dimension of EDP auditors is the average level of inhouse training they get. Table IV displays a comparison of average days of training given to staff involved in EDP audit relating different tasks to their classification of generalist vs. EDP audit specialist.

The above table seems to indicate that at the basic EDP training level both specialists and generalists get about the same training. However, at the more sophisticated tasks, specialists not only get more training but also have more optional training available to them. Also, the most advanced type of tasks involve considerable additional optional training.

#### CONCLUSIONS

In conclusion we must take these questionnaire responses at their face value and realize that many of the issues are generic in nature and relate to perceptions, policies and other subjective factors. Some improvement in the reliability of these results could be obtained





by direct examination of audit firm personnel files.

Concerning organization, most firms relied on their regular audit staffs for most of the EDP audit related tasks but used specialists for more complex or advisory roles. However, a non-trivial number of firms were found to base their EDP audit efforts exclusively on specialists.

With regard to the EDP auditor's career path it was found that significant differences existed between the specialists and the audit generalists. Specialists were higher paid, were promoted somewhat faster to medium ranking levels or given more substantial titles, but had a lower probability of reaching the highest levels of the firms.

Most EDP auditors were expected to have accounting BS degrees and some EDP experience/training. A trend of increased requirements for entry at the different levels in EDP may be developing.

The sequel study will describe the survey findings on the practice of EDP auditing and make suggestions from the findings of this research effort.

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