1971

An Evaluation of Services and Satisfaction of Edp (Electronic Data Processing) Service Bureau Clients and the Implications to the Accounting profession.

Michael Joseph Cerullo
Louisiana State University and Agricultural & Mechanical College

Follow this and additional works at: https://digitalcommons.lsu.edu/gradschool_disstheses

Recommended Citation
https://digitalcommons.lsu.edu/gradschool_disstheses/2037

This Dissertation is brought to you for free and open access by the Graduate School at LSU Digital Commons. It has been accepted for inclusion in LSU Historical Dissertations and Theses by an authorized administrator of LSU Digital Commons. For more information, please contact gradetd@lsu.edu.
CERULLO, Michael Joseph, 1940-
AN EVALUATION OF SERVICES AND SATISFACTION OF
EDP SERVICE BUREAU CLIENTS AND THE IMPLICATIONS
TO THE ACCOUNTING PROFESSION.

The Louisiana State University and Agricultural
and Mechanical College, Ph.D., 1971
Accounting

University Microfilms, A XEROX Company, Ann Arbor, Michigan

THIS DISSERTATION HAS BEEN MICROFILMED EXACTLY AS RECEIVED
AN EVALUATION OF SERVICES AND SATISFACTION OF EDP
SERVICE BUREAU CLIENTS AND THE IMPLICATIONS
TO THE ACCOUNTING PROFESSION

A Dissertation

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

in

The Department of Accounting

by

Michael Joseph Cerullo
B.S., Northeastern University, 1963
M.S., Louisiana State University, 1966
August, 1971
ACKNOWLEDGMENT

The writer wishes to express grateful appreciation to Dr. C. W. Elliott whose suggestions and criticisms have been of great value in the completion of this work.

Acknowledgment is also extended to Drs. F. A. McCammon, W. E. Swyers, E. R. Gray, and D. L. Woodland for their helpful comments.

Finally, the writer wishes to express greatful appreciation to his wife Virginia. Her suggestions, criticisms, and advice have greatly contributed to the completion of this work.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>ACKNOWLEDGMENT</th>
<th>ii</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIST OF TABLES</td>
<td>vii</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>xiii</td>
</tr>
<tr>
<td>ABSTRACT</td>
<td>xiv</td>
</tr>
</tbody>
</table>

## CHAPTER

### I. INTRODUCTION ........................................ 1
- Statement of the Problem .......... 1
- Purposes of the Study ........ 2
- Method of Approach .......... 3
- Limitations of the Study .... 9
- A Survey of the Study .... 13
- Definitions of Frequently Used Terms .. 15

### II. DEVELOPMENT OF ELECTRONIC DATA PROCESSING (EDP) SERVICE BUREAUS .......... 18
- Introduction ........ 18
- Early Development of Service Bureaus .... 18
- Third Generation of Service Bureau
  - Development .......... 22
  - Summary .......... 32

### III. A DESCRIPTION OF SERVICES OFFERED BY SERVICE BUREAUS .......... 34
<table>
<thead>
<tr>
<th>CHAPTER</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>34</td>
</tr>
<tr>
<td>Categories of Services Offered By</td>
<td></td>
</tr>
<tr>
<td>Service Bureaus</td>
<td>35</td>
</tr>
<tr>
<td>Specific Services Offered By Service Bureaus</td>
<td>48</td>
</tr>
<tr>
<td>Services That Service Bureaus Most Often Provide</td>
<td>54</td>
</tr>
<tr>
<td>Areas of Planned Service Bureau</td>
<td></td>
</tr>
<tr>
<td>Expansion</td>
<td>61</td>
</tr>
<tr>
<td>Summary</td>
<td>63</td>
</tr>
<tr>
<td>IV. AN EVALUATION OF SERVICES AND SATISFACTION</td>
<td></td>
</tr>
<tr>
<td>RECEIVED BY SERVICE BUREAU CLIENTS</td>
<td>65</td>
</tr>
<tr>
<td>Introduction</td>
<td>65</td>
</tr>
<tr>
<td>The Types of Companies That Use</td>
<td></td>
</tr>
<tr>
<td>Service Bureaus</td>
<td>66</td>
</tr>
<tr>
<td>The Reasons Why Companies Use</td>
<td></td>
</tr>
<tr>
<td>Service Bureaus</td>
<td>67</td>
</tr>
<tr>
<td>An Evaluation of Services That Clients</td>
<td></td>
</tr>
<tr>
<td>Receive From Service Bureaus</td>
<td>70</td>
</tr>
<tr>
<td>An Evaluation of Satisfaction of Responding Clients With Service Bureaus</td>
<td>92</td>
</tr>
<tr>
<td>Summary</td>
<td>100</td>
</tr>
<tr>
<td>V. METHODS OF IMPROVING SATISFACTION OF SERVICE BUREAU CLIENTS</td>
<td>103</td>
</tr>
<tr>
<td>CHAPTER</td>
<td>PAGE</td>
</tr>
<tr>
<td>-----------------------------------------------------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>Introduction</td>
<td>103</td>
</tr>
<tr>
<td>Pre-Selection Planning</td>
<td>105</td>
</tr>
<tr>
<td>Improve Techniques of Selecting A Service Bureau</td>
<td>122</td>
</tr>
<tr>
<td>Factors to Consider After A Service Bureau Has Been Selected</td>
<td>163</td>
</tr>
<tr>
<td>Summary</td>
<td>172</td>
</tr>
<tr>
<td>VI. THE IMPACT OF SERVICE BUREAUS ON PUBLIC ACCOUNTING FIRMS</td>
<td></td>
</tr>
<tr>
<td>Introduction</td>
<td>175</td>
</tr>
<tr>
<td>The Favorable Impact of Service Bureaus</td>
<td></td>
</tr>
<tr>
<td>On Public Accounting Firms</td>
<td>176</td>
</tr>
<tr>
<td>The Unfavorable Impact of Service Bureaus</td>
<td></td>
</tr>
<tr>
<td>On Public Accounting Firms</td>
<td>181</td>
</tr>
<tr>
<td>Methods for Meeting The Increasing Competition from Service Bureaus</td>
<td>188</td>
</tr>
<tr>
<td>The Problems of Auditing Clients Who Use Service Bureaus</td>
<td></td>
</tr>
<tr>
<td>Service Bureaus</td>
<td>208</td>
</tr>
<tr>
<td>Summary</td>
<td>219</td>
</tr>
<tr>
<td>VII. SUMMARY AND CONCLUSIONS</td>
<td>225</td>
</tr>
<tr>
<td>Development of Electronic Data Processing Service Bureaus</td>
<td>225</td>
</tr>
<tr>
<td>Services Offered By Responding Service Bureaus</td>
<td>226</td>
</tr>
</tbody>
</table>
CHAPTER

Services Received By Responding
Service Bureau Clients ............... 227
How To Improve Satisfaction of
Service Bureau Clients ............... 230
Service Bureaus and Public Accounting
Firms ..................................... 236
SELECTED BIBLIOGRAPHY ................. 241

APPENDICES

APPENDIX A. Metropolitan Areas Surveyed . 255
APPENDIX B. Questionnaire Sent To Public
Accounting Firms ................. 259
APPENDIX C. Questionnaire Sent To
Service Bureau Clients .......... 265
APPENDIX D. Questionnaire Sent To
Service Bureaus .................... 274
VITA ................................ 282
# LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.</td>
<td>Summary of Questionnaire Analysis, South Central and New England</td>
<td>6</td>
</tr>
<tr>
<td>II.</td>
<td>Questionnaire Analysis, South Central</td>
<td>7</td>
</tr>
<tr>
<td>III.</td>
<td>Questionnaire Analysis, New England</td>
<td>8</td>
</tr>
<tr>
<td>IV.</td>
<td>Determination of the Number of Estimated Service Bureau Clients, South Central and New England</td>
<td>10</td>
</tr>
<tr>
<td>V.</td>
<td>Growth in Number of U.S. Service Bureaus</td>
<td>24</td>
</tr>
<tr>
<td>VI.</td>
<td>Per Cent of Responding Batch-Processing Service Bureaus Offering or Planning to Offer Time-Sharing Services</td>
<td>29</td>
</tr>
<tr>
<td>VII.</td>
<td>Gross Revenues of the Electronic Data Processing Service Bureau Industry</td>
<td>30</td>
</tr>
<tr>
<td>VIII.</td>
<td>Size of Responding Service Bureaus</td>
<td>31</td>
</tr>
<tr>
<td>IX.</td>
<td>Number of Categories of Services Offered by Responding Service Bureaus</td>
<td>36</td>
</tr>
<tr>
<td>X.</td>
<td>Categories of Services Offered by Responding Service Bureaus, South Central and New England</td>
<td>38</td>
</tr>
<tr>
<td>XI.</td>
<td>Categories of Services Offered by Responding Service Bureaus, South Central</td>
<td>39</td>
</tr>
<tr>
<td>XII.</td>
<td>Categories of Services Offered by Responding Service Bureaus, New England</td>
<td>40</td>
</tr>
<tr>
<td>XIII.</td>
<td>Routine Services Offered by Responding Service Bureaus, South Central and New England</td>
<td>49</td>
</tr>
<tr>
<td>Table</td>
<td>Page</td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>------</td>
<td></td>
</tr>
<tr>
<td>XIV. Routine Services Offered by Responding Service Bureaus, South Central</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>XV. Routine Services Offered by Responding Service Bureaus, New England</td>
<td>51</td>
<td></td>
</tr>
<tr>
<td>XVI. Number of Routine Services Offered by Responding Service Bureaus</td>
<td>52</td>
<td></td>
</tr>
<tr>
<td>XVII. Non-Routine Services Offered by Responding Service Bureaus, South Central and New England</td>
<td>56</td>
<td></td>
</tr>
<tr>
<td>XVIII. Non-Routine Services Offered by Responding Service Bureaus, South Central</td>
<td>57</td>
<td></td>
</tr>
<tr>
<td>XIX. Non-Routine Services Offered by Responding Service Bureaus, New England</td>
<td>58</td>
<td></td>
</tr>
<tr>
<td>XX. Number of Non-Routine Services Offered by Responding Service Bureaus</td>
<td>59</td>
<td></td>
</tr>
<tr>
<td>XXI. Services Most Often Provided by Responding Service Bureaus</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>XXII. Areas in Which Responding Service Bureaus are Planning to Expand Services</td>
<td>62</td>
<td></td>
</tr>
<tr>
<td>XXIII. Service Bureau Users: By Industry and Sales Volume</td>
<td>68</td>
<td></td>
</tr>
<tr>
<td>XXIV. Routine Services Received by Responding Service Bureau Clients</td>
<td>73</td>
<td></td>
</tr>
<tr>
<td>XXV. Non-Routine Services Received by Responding Service Bureau Clients</td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>XXVI. Number of Routine and Non-Routine Services Received by Responding Service Bureau Clients</td>
<td>76</td>
<td></td>
</tr>
<tr>
<td>XXVII. Areas in Which Responding Clients Plan to Expand Services Received From Service Bureaus</td>
<td>77</td>
<td></td>
</tr>
</tbody>
</table>
Table

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>XXVIII</td>
<td>Yearly Direct Dollar Savings From Using Service Bureaus</td>
<td>81</td>
</tr>
<tr>
<td>XXIX</td>
<td>Profile of an IBM 360/Model 20 Computer Installation</td>
<td>89</td>
</tr>
<tr>
<td>XXX</td>
<td>Number of Different Service Bureaus Used by Responding Clients</td>
<td>93</td>
</tr>
<tr>
<td>XXXI</td>
<td>Length of Time Responding Clients Have Used Service Bureaus</td>
<td>94</td>
</tr>
<tr>
<td>XXXII</td>
<td>Per Cent of Service Bureaus that Could Not Provide Clients with Requested Services</td>
<td>99</td>
</tr>
<tr>
<td>XXXIII</td>
<td>Services Received by Responding Clients When Different Personnel are Responsible for Selecting Jobs to Process at a Service Bureau</td>
<td>110</td>
</tr>
<tr>
<td>XXXIV</td>
<td>Personnel Responsible for Selecting Service Bureaus in Responding Companies</td>
<td>116</td>
</tr>
<tr>
<td>XXXV</td>
<td>Key Items Considered When Selecting Service Bureaus, South Central</td>
<td>118</td>
</tr>
<tr>
<td>XXXVI</td>
<td>Key Items Considered When Selecting Service Bureaus, New England</td>
<td>119</td>
</tr>
<tr>
<td>XXXVII</td>
<td>Personnel Responsible for Selecting Service Bureaus</td>
<td>123</td>
</tr>
<tr>
<td>XXXVIII</td>
<td>Number of Service Bureaus Considered by Responding Clients Before Final Selection</td>
<td>126</td>
</tr>
<tr>
<td>XXXIX</td>
<td>Apparent Satisfaction of Responding Service Bureau Clients as Evidenced by Number of Service Bureaus Considered, New England</td>
<td>127</td>
</tr>
<tr>
<td>XL</td>
<td>Type of Service Bureau Used by Clients Responding to a Research Institute of America Survey</td>
<td>129</td>
</tr>
</tbody>
</table>
Table | Page
--- | ---
XLI. Key Characteristics of Responding Service Bureaus Who Have Been in Business for Different Lengths of Time, South Central and New England | 135
XLII. Number of Years Responding Independent Service Bureaus Have Been in Operation | 136
XLIII. Composition of Responding Service Bureaus' Professional Staffs, South Central and New England | 138
XLIV. Composition of Responding Service Bureaus' Professional Staffs, South Central | 139
XLV. Composition of Responding Service Bureaus' Professional Staffs, New England | 140
XLVI. Number of Different Types of Professionals Employed by Responding Service Bureaus | 141
XLVII. Techniques Used by Responding Service Bureaus for Internal Decision Making | 144
XLVIII. A Comparison of Responding Service Bureaus Offering Systems Design and Analysis to Those Not Offering Systems Design and Analysis | 145
XLIX. Per Cent of Responding Clients Requiring Cost Bids Before Final Selection of a Service Bureau | 151
L. Degree of Importance Given by Responding Service Bureau Clients to Specific Items When Selecting a Service Bureau | 153
LI. How to Rate an Electronic Data Processing Service Bureau | 160
<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>LII. Title or Position of Responding Service Bureau Clients' Liaison Men</td>
<td>169</td>
</tr>
<tr>
<td>LIII. Average Number of Different Service Bureaus Used by Responding Clients Having Liaison Men with Different Backgrounds</td>
<td>170</td>
</tr>
<tr>
<td>LIV. How Often Responding Public Accounting Firms Help Clients Select Service Bureaus</td>
<td>179</td>
</tr>
<tr>
<td>LV. How Often Responding Public Accounting Firms Help Clients Evaluate Services They are Receiving From Service Bureaus</td>
<td>180</td>
</tr>
<tr>
<td>LVI. Per Cent of Responding Public Accounting Firms Who Own or Lease Computers</td>
<td>191</td>
</tr>
<tr>
<td>LVII. Per Cent of Responding Public Accounting Firms Who Plan to Purchase or Lease Computers Within the Next Five to Ten Years</td>
<td>192</td>
</tr>
<tr>
<td>LVIII. Types of Computer Systems Used by Responding Service Bureaus and the Average Monthly Costs to Rent These Computers</td>
<td>193</td>
</tr>
<tr>
<td>LIX. Annual Operating Costs of a Typical Small Computer System, Such as the IBM System 360/Model 20 Installation</td>
<td>196</td>
</tr>
<tr>
<td>LX. Per Cent of Responding Public Accounting Firms Who Are Considering the Formation of a Cooperative Service Bureau for Processing Clients' Data</td>
<td>197</td>
</tr>
<tr>
<td>LXI. How Often Service Bureaus Engage Certified Public Accounting Firms To Help Provide More Types of Services for the Service Bureaus</td>
<td>203</td>
</tr>
</tbody>
</table>
LXII. How Often Service Bureaus are Engaged by Responding Certified Public Accounting Firms to Help Provide More Types of Services for the Certified Public Accountant's Clients ........................................ 204

LXIII. Per Cent of Responding Public Accounting Firms That Audit Clients Who Use Service Bureaus ............... 209
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Services Most Often Provided by Responding Service Bureaus, South Central and New England</td>
<td>55</td>
</tr>
<tr>
<td>2.</td>
<td>Example of an Auditor's Opinion Reviewing a Service Bureau's Organization and System</td>
<td>220</td>
</tr>
</tbody>
</table>
ABSTRACT

This study is an empirical investigation and evaluation of electronic data processing (EDP) service bureaus' relationships with their clients and their implications to the accounting profession. The study points out the strengths and weaknesses of service bureaus, discusses ways in which internal accountants and public accountants who are involved with service bureaus can more effectively help their companies or clients use service bureaus, and discusses the impact of service bureaus on public accounting firms.

The primary research tools employed in conducting this study were the personal interview and the mail questionnaire techniques. The three groups surveyed are EDP service bureaus, service bureau clients and certified public accounting (CPA) firms. Interviews with a sample of each of the three groups were conducted in Baton Rouge and New Orleans, Louisiana. Each of the three groups were also sampled by sending questionnaires to the major metropolitan areas of the South Central and New England states.

Chapter I presents the purposes, the methods of approach, and the limitations of this study. Chapter II discusses the development of service bureaus. Chapter
III describes the types of services offered by service bureaus. Chapter IV presents an evaluation of services offered by service bureaus and an evaluation of the satisfaction received by service bureau clients. Chapter V discusses ways that current and prospective service bureau clients can improve planning before selecting a service bureau, improve techniques of selecting a service bureau, and improve planning after selecting a service bureau. Chapter VI examines the favorable and unfavorable impacts of service bureaus on public accounting firms, the methods that can be used by public accounting firms to meet the increasing competition from service bureaus, and the problems of auditing clients who use service bureaus. Chapter VII presents the summary and conclusions of this study.

This study concludes that most responding service bureau clients receive few, if any, of the major advantages of EDP by using service bureaus. In fact, most responding service bureau clients receive only routine services, plan to receive only more routine services, and receive no direct or indirect cost savings or benefits resulting from the automation of routine or non-routine applications. Also, an examination of the major factors affecting client satisfaction leads to the conclusion that many clients in varying degrees are
not satisfied with the services they receive from service bureaus.

There are at least three major reasons why service bureau clients are not satisfied with their service bureaus. First, they use poor planning techniques before selecting a service bureau. Second, they use poor methods of selecting a service bureau. Third, they use poor planning techniques after selecting a service bureau.

Service bureaus now have a favorable impact on public accounting firms. Accounting firms can offer their clients additional management services and can process their clients' bookkeeping work at service bureaus. In the future, service bureaus may have an unfavorable impact on CPA's because the competition for clients should increase. This study concludes that presently the competition for clients between the two industries is not intense. However, if public accounting firms do not offer their clients many types of automated accounting and management advisory services, the intensity of this competition should increase.

Public accounting firms can offer their clients automated data processing services and thereby meet the service bureau competition by: (1) the purchase or lease of a computer, (2) the formation of a co-operative
service bureau, (3) the establishment of a significant working relationship with a service bureau, or (4) the operation as a service bureau by hiring a computer specialist and by renting computer time.
CHAPTER I

INTRODUCTION

I. STATEMENT OF THE PROBLEM

Little empirical research has been undertaken on the electronic data processing service bureau industry, especially the industry's impact on the accounting profession. This study is intended to be an empirical investigation and evaluation of EDP service bureau (or service center) relationships with clients and the implications to the accounting profession.

The study tests the following hypotheses:

1. Public accounting firms will experience increasing competition from service bureaus.

2. The problems of auditing clients who use service bureaus will increase.

3. Controllers or other accounting personnel often have the responsibility for selecting a service bureau, for determining which applications to automate at a service bureau, for acting as a liaison between their company and the service bureau, and for evaluating the services their companies receive from a service bureau. The manner in which these services are performed can be improved.

Before these three hypotheses can be tested, one
must be thoroughly familiar with the types of services offered by service bureaus and received by service bureau clients. Accordingly, the study tests the following additional hypotheses:

1. Most service bureau clients receive strictly routine services from service bureaus.
2. Few service bureau clients receive direct cost savings from using service bureaus.
3. Most service bureau clients in varying degrees are dissatisfied with the services they receive from using service bureaus.

II. PURPOSES OF THE STUDY

The major purposes of this study are:

1. To point out the strengths and weaknesses of the service bureau industry.
2. To discuss ways in which internal accountants and public accountants who are involved with service bureaus can more effectively help their companies or clients plan before selecting a service bureau, improve their techniques of selecting a service bureau, and more effectively plan after selecting a service bureau.
3. To discuss the impact—both favorable and unfavorable—of service bureaus on public accounting firms.
III. METHOD OF APPROACH

The study is mainly an empirical analysis using the personal interview\(^1\) and the mailed questionnaire\(^2\) techniques. Mailed questionnaires were sent to a sample of South Central and New England\(^3\) service bureaus, service bureau clients, and certified public accounting firms.\(^4\) Valid statistical techniques were used to determine sample size and sample selection.\(^5\)

---

\(^1\)Interviews with data processing service bureaus, service bureau clients, and certified public accounting firms were conducted in Baton Rouge and New Orleans, Louisiana.

\(^2\)This was the main technique used.

\(^3\)The South Central and New England regions are to be compared. The South Central states include: Alabama, Kentucky, Louisiana, Mississippi, and Tennessee. The New England States include: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.

\(^4\)Because of limited time and financial resources, only the major metropolitan areas were surveyed. See Appendix A, pages 255-257.

\(^5\)The formula used for determining both service bureau and service bureau client sample size (for a finite population) was:

\[
n \geq \frac{P \cdot Q}{E^2} \frac{P \cdot Q}{Z^2} + \frac{1}{N}
\]

Once the sample size was determined, random number tables
Service Bureau Questionnaire

The sample size of the questionnaire sent to service bureaus, as Table I discloses, achieved an overall ninety per cent confidence\(^6\) with a maximum error\(^7\) of six per cent. An overall sixty-one per cent response was achieved. Table II and Table III present summaries for the South Central and New England regions, respectively.

were used to select the client sample. A judgement random sample was used to select the service bureau sample. The formula used to select the C.P.A. firms' sample size (for an infinite population) was:

\[ n > \frac{z^2 \cdot P \cdot Q}{E^2} \]

Once the sample size was determined, a systematic random sample was used to select the sample.

\(^6\)Confidence intervals (Z value in formulas) indicate how close the sample estimate may be to the true population value. For example, with a ninety per cent confidence, the sample estimate should be correct ninety times in one hundred. See Eugene L. Grant, Statistical Quality Control, Third Edition (New York: McGraw-Hill Book Co., 1964), p. 287.

\(^7\)Error (E values in formulas) refers to the standard error of the estimate. For example, a ninety per cent confidence with a six per cent error means that one can be ninety per cent confident that the error of the sample estimate will not exceed six per cent. See Murray R. Spiegel, Theory and Problems of Statistics (New York: Schaum Publishing Co., 1961), p. 161.
Certified Public Accountant Questionnaire

The sample size of the questionnaire sent to public accounting firms, as Table I reveals, achieved an overall eighty per cent precision with a maximum error of five per cent. An overall seventy-five per cent response was achieved. Table II and Table III present summaries for both geographical regions surveyed.

Service Bureau Client Questionnaire

The population of the questionnaires sent to service bureau clients was limited to medium-sized companies with sales between three to ten million dollars that were listed in the Dun and Bradstreet Million Dollar Directory 1969. The population excluded service organizations such as banks, insurance companies, utilities, real estate agents, brokerage firms and consultants. The 30,000 companies listed in the directory account for more than seventy per cent of all United States sales and represent the

---


9 Ibid., p. iv.
<table>
<thead>
<tr>
<th>Questionnaire Sent to:</th>
<th>Population (N)</th>
<th>Confidence (Z)</th>
<th>Maximum Tolerable Error (E)</th>
<th>Sample Size (n)</th>
<th>Number of Respondents</th>
<th>Per Cent Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Bureaus</td>
<td>230</td>
<td>90%</td>
<td>6%</td>
<td>144</td>
<td>88</td>
<td>61%</td>
</tr>
<tr>
<td>Potential Service Bureau Clients</td>
<td>496</td>
<td>90%</td>
<td>5%</td>
<td>258*</td>
<td>47</td>
<td>63%**</td>
</tr>
<tr>
<td>Known Service Bureau Clients</td>
<td>71</td>
<td>100%</td>
<td>0%</td>
<td>71</td>
<td>38</td>
<td>54%</td>
</tr>
<tr>
<td>C.P.A. Firms</td>
<td>∞</td>
<td>80%</td>
<td>5%</td>
<td>160</td>
<td>120</td>
<td>75%</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>633</strong></td>
<td></td>
<td><strong>293</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*258 x .29 = 75, the estimated actual number of service bureau clients (See Table IV).

**This figure was derived by dividing forty-seven by seventy-five.
<table>
<thead>
<tr>
<th>Questionnaire Sent to</th>
<th>Population Size (N)</th>
<th>Confidence (%)</th>
<th>Maximum Tolerable Error (%)</th>
<th>Sample Size (n)</th>
<th>Number of Respondents</th>
<th>Per Cent Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Bureaus</td>
<td>110</td>
<td>90%</td>
<td>6%</td>
<td>70</td>
<td>42</td>
<td>60%</td>
</tr>
<tr>
<td>Potential Service Bureau Clients</td>
<td>283</td>
<td>90%</td>
<td>5%</td>
<td>138**</td>
<td>26</td>
<td>65%***</td>
</tr>
<tr>
<td>Known Service Bureau Clients</td>
<td>27</td>
<td>100%</td>
<td>0%</td>
<td>27</td>
<td>18</td>
<td>67%</td>
</tr>
<tr>
<td>C.P.A. Firms</td>
<td>∞</td>
<td>*</td>
<td>*</td>
<td>85</td>
<td>64</td>
<td>75%</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>320</strong></td>
<td><strong>150</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*The total overall confidence for both regions was 80% with a maximum tolerable error of 5%.

**138 x .29 = 40, the estimated actual number of service bureau clients. (See Table IV.)

***This figure was derived by dividing twenty-six by forty.
### TABLE III

**QUESTIONNAIRE ANALYSIS (NEW ENGLAND)**

<table>
<thead>
<tr>
<th>Questionnaire Sent to:</th>
<th>Population Confidence (N)</th>
<th>Maximum Tolerable Error (E)</th>
<th>Sample Size (n)</th>
<th>Number of Respondents</th>
<th>Per Cent Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Bureaus</td>
<td>120</td>
<td>90%</td>
<td>6%</td>
<td>74</td>
<td>46</td>
</tr>
<tr>
<td>Potential Service Bureau Clients</td>
<td>213</td>
<td>90%</td>
<td>5%</td>
<td>120**</td>
<td>21</td>
</tr>
<tr>
<td>Known Service Bureau Clients</td>
<td>44</td>
<td>100%</td>
<td>0%</td>
<td>44</td>
<td>20</td>
</tr>
<tr>
<td>C.P.A. Firms</td>
<td>∞</td>
<td>*</td>
<td>*</td>
<td>75</td>
<td>56</td>
</tr>
</tbody>
</table>

**Totals**

<table>
<thead>
<tr>
<th>Population Confidence</th>
<th>Maximum Tolerable Error</th>
<th>Sample Size</th>
<th>Number of Respondents</th>
<th>Per Cent Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>313</td>
<td>143</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*The total overall confidence for both regions was 80% with a maximum tolerable error of 5%.

**120 x .29 = 35, the estimated actual number of service bureau clients (See Table IV.)

***This figure was derived by dividing twenty-one by thirty-five.
largest and most profitable businesses.\textsuperscript{10} A study conducted by the Research Institute of America (RIA) concluded that approximately twenty-nine per cent of manufacturers, wholesalers, retailers, industrial suppliers, construction and mining firms and the like with sales between $3,000,000 and $10,000,000 use an outside data processing service bureau.\textsuperscript{11}

A determination of the potential number of companies using service bureaus with sales between $3,000,000 and $10,000,000 is presented in Table IV. Table I indicates that for these potential service bureau users, the sample size achieved an overall ninety per cent confidence with a maximum error of five per cent. For the known service bureau clients shown in Table I, a one hundred per cent confidence was achieved. Table II and III present summaries for both regions surveyed.

IV. LIMITATIONS OF THE STUDY

First, due to time and financial restrictions, the study was limited to selected metropolitan areas

\textsuperscript{10}Ibid., p. v.

### TABLE IV
**DETERMINATION OF THE ESTIMATED NUMBER OF SERVICE BUREAU CLIENTS**
**(SOUTH CENTRAL AND NEW ENGLAND)**

<table>
<thead>
<tr>
<th>Region</th>
<th>Total Companies in Regions*</th>
<th>Companies Reviewed in Selected Metropolitan Regions**</th>
<th>Per Cent Reviewed (C ÷ B)</th>
<th>Column C Companies With Sales of $3-10 Million</th>
<th>Sample Size</th>
<th>Estimated Per Cent of Column F Companies Using Service Bureaus</th>
<th>Estimated Service Bureau Clients (F x G)</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Central</td>
<td>1750</td>
<td>1051</td>
<td>60%</td>
<td>283***</td>
<td>138****</td>
<td>29%</td>
<td>40</td>
</tr>
<tr>
<td>New England</td>
<td>2000</td>
<td>1240</td>
<td>62%</td>
<td>213***</td>
<td>120****</td>
<td>29%</td>
<td>35</td>
</tr>
<tr>
<td>Totals</td>
<td>3750</td>
<td>2291</td>
<td></td>
<td>496</td>
<td>258</td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>Averages</td>
<td></td>
<td></td>
<td></td>
<td><strong>61%</strong></td>
<td></td>
<td><strong>29%</strong></td>
<td></td>
</tr>
</tbody>
</table>

*From Dun and Bradstreet Million Dollar Directory 1969.

**See Appendix A, p. 250

***An Additional 283 companies in the Baton Rouge, New Orleans, and Boston and vicinity areas were telephoned. The 71 companies using service bureaus, representing 25 per cent of the 283 companies, were sent questionnaires.

****See Tables II and III, respectively, for the confidence and error of the samples.
of the South Central and New England states. The major advantage of studying two regions which vary greatly in population and degree of industrialization is that the study is not restricted to one particular section of the country. However, the conclusions reached in this study would apply mainly to the regions surveyed.

Second, the analysis of questionnaire responses was not subjected to statistical tests. For this reason, conclusions drawn from the data require qualification.

Third, the study was concerned only with service bureaus that own or lease electronic computer equipment. Service bureaus that owned or leased unit record or punched card equipment were not studied.

Fourth, the study is primarily concerned with batch processing rather than with time-sharing service bureaus. Since the use of time-sharing service bureaus for processing business applications is not at all certain at this time,¹² the discussion is thus limited to batch processing service bureaus. On the one hand, some authorities feel that in the future, an increasing number of business transactions will be processed

¹²Direct correspondence with the research partner of management advisory services, employed by one of the largest public accounting firms.
using time sharing systems. On the other hand, some authorities feel that batch processing systems for processing business applications will be considerably more prevalent than time shared systems.

Fifth, although authoritative lists were used to select the samples, there is the possibility that some firms were not included on the lists.

Sixth, the formulas used to determine sample size, confidence, and standard error were at best only statistical approximations.

Seventh, possible errors in response to the questionnaire are: (1) poor recall, (2) errors of observation, (3) errors of arithmetic miscalculations, (4) errors because of poor questionnaire construction, and (5) errors due to a combination of the above.13

The eighth and final limitation arises when the proportion of non-respondents to the questionnaire is high because it is felt that they possess characteristics different from respondents. This limitation, however, is most serious when the questionnaire is sent to heterogeneous groups. Groups, such as service bureaus, service bureau clients, and public accounting firms, are homogeneous in nature and

surveys of homogeneous groups indicate that non-respondents to mailed questionnaires do not differ from respondents. When dealing with such groups, bias may be relatively unimportant— even where the proportion of returns is quite small.  

V. A SURVEY OF THE STUDY

Chapter XI discusses the development of electronic data processing service bureaus. The first section of the chapter describes the early development of service bureaus and the second section describes and examines the third or current generation of service bureau development.

Chapter III describes four aspects of services offered by service bureaus. These aspects are: (1) the categories of services offered— hardware and software, (2) the specific applications offered— routine and non-routine, (3) the services most often provided, and (4) the areas in which service bureaus plan to expand services in the future.

Chapter IV is concerned with clients who receive

---

the types of services offered by service bureaus and covers the following topics: (1) the kinds of companies that use service bureaus, (2) the reasons why companies use service bureaus, (3) an evaluation of the services received by clients, and (4) an evaluation of the satisfaction received by clients.

Chapter V discusses ways that current and future service bureau clients can improve the services they are receiving from service bureaus. The chapter is divided into three sections. The first section, concerned with planning before selecting a service bureau, examines the following topics: (1) appointing a competent feasibility committee, (2) examining the duties of the feasibility committee, and (3) appointing a committee to select a service bureau. The second section, concerned with techniques of selecting a service bureau, examines the following topics: (1) consider several service bureaus, (2) know the limitations of the major types of service bureaus, (3) consider the types of services offered, (4) consider the availability of backup computer equipment, (5) require service bureaus to submit cost bid proposals, (6) consider the reputation of the service bureau, (7) consider the financial and banking references of the service bureau, and (8) consider other miscellaneous
items. The third section of Chapter V, concerned with planning after selecting a service bureau, discusses: (1) the signing of a contract, (2) the appointing of a liaison man, and (3) the periodic evaluation of services received from a service bureau.

Chapter VI is concerned with the impact of service bureaus on public accounting firms, and examines the following topics: (1) the favorable impact which service bureaus have on public accounting firms, (2) the unfavorable impact which service bureaus have on public accounting firms, (3) the ways in which public accounting firms can meet the increasing competition from service bureaus, and (4) the problems of auditing clients who use service bureaus.

Chapter VII presents the summary and conclusions of the study.

VI. DEFINITIONS OF FREQUENTLY USED TERMS

To help the reader to understand the subject matter, the following items are defined: (1) electronic computer, (2) electronic data processing service bureau, (3) batch processing service bureau, and (4) time-sharing service bureau.

**Electronic Computer**

An electronic computer is an automatic machine
which accepts instructions (i.e., a computer program) and data. Following the instructions, the computer performs operations on the data and reports the results. An electronic computer manipulates quantitative data only, contains no moving parts in its central processing unit and operates on electrical impulses at tremendous speeds.

**Electronic Data Processing (EDP) Service Bureau**

An EDP service bureau, hereafter referred to as a service bureau or service center, is a company which owns or leases or has access to an electronic computer and provides computer services to the general public.

**Batch Processing Service Bureau**

A batch processing service bureau is one that operates in the following manner. Service bureau clients accumulate business transactions until enough batches are accumulated to economically process through the computer. Batches of transactions are then delivered to the service bureau, converted to machine readable input, processed through the computer, and the results of the processing run are returned to the client.

**Time-Sharing Service Bureau**

Time-sharing is the use of a computer by many.
service bureau clients seemingly at the same time. Each client has located at his place of business a point of origin device (POD) or terminal which is connected via conventional telephone lines to the service bureau's computer. When a client wishes to use the computer, he does so by depressing the keys on the terminal and the computer, which may be located hundreds of miles from the terminal, responds to the user's request.
CHAPTER II

DEVELOPMENT OF ELECTRONIC DATA PROCESSING
SERVICE BUREAUS

I. INTRODUCTION

The first section of this chapter describes the early development of service bureaus (1945-1959) and the second section describes and examines the current generation of service bureaus (1960 to present). The second section includes a discussion of the Association of Data Processing Service Organizations (ADAPSO), the types of service bureaus, the growth in the number of United States service bureaus, the growth in service bureau revenues, and the size of service bureaus.

II. EARLY DEVELOPMENT OF SERVICE BUREAUS

The early development of service bureaus, covering the years 1945-1959, included the first and second generations of service bureaus.

First Generation of Service Bureaus: 1945 to 1953

The first generation of service bureau development began in 1945 and ended in 1953. In 1945, Mauchly
and Eckert completed the Electronic Numerical Integrater and Calculater (ENIAC), the first truly electronic computer.\textsuperscript{1} ENIAC was installed at the Ballastic Research Laboratory Center at Aberdeen, Maryland, and was rented from its owners by the United States Army and Air Force to compute ballistic firing tables. Other government agencies began using the computer facilities at Aberdeen to solve various scientific and mathematical problems. As a result, the laboratory center became "the first Service Center for Electronic Data Processing."\textsuperscript{2}

In addition to the service bureau at Aberdeen, the only other service bureaus which existed during this period were formed and operated by manufacturers of electronic computers. These service bureaus were used mainly to provide training for new computer purchasers, to act as backup centers in case purchasers' computer equipment broke down, and to serve as showrooms.


for attracting prospective customers.

Second Generation of Service Bureaus: 1954 to 1959

The second generation of service bureau development covered the years 1954 to 1959. During these years, there were two important developments which resulted in the widespread use of electronic computers. First, the development of solid state components increased a computer's operating reliability and capability and decreased its operating costs. Second, in 1954, an electronic computer was first used to process a business application. As a result of these two developments, many companies began to purchase or lease electronic computers for the purpose of solving their data processing problems.

Only large companies, however, could afford to purchase or lease the expensive computer equipment. Companies unable to afford computers began to use service bureaus for solving their data processing problems. Two of the earliest second generation service bureaus used by companies were the Corporation

\[3\] Elliott and Wasley, op. cit., p. 228.
for Economic and Industrial Research (C-E-I-R) and the Service Bureau Corporation (SBC), a subsidiary of International Business Machines (IBM). C-E-I-R, founded by Dr. Herbert W. Robinson, a renowned mathematician and economist, quickly became the largest United States non-manufacturer operated service bureau. During its early years, C-E-I-R increased revenues more than thirty-fold. As a result of C-E-I-R's phenomenal success, many manufacturer operated service bureaus were expanded, and many non-manufacturer operated service bureaus were formed.

In addition to the success of C-E-I-R, developments in 1956 led to the formation of many new service bureaus. In 1956, the United States Justice Department, through its consent decree with IBM, gave the service bureau industry a new birth by requiring IBM to separate its service bureau activities from all other IBM operations. No longer could IBM's subsidiary, Service Bureau Corporation, use the marketing organization of IBM. IBM was required to treat SBC just like any other customer for its equipment. This development set off an explosive growth for the non-manufacturer operated service bureau.
which continues unabated today. Late in the second generation, there were about two hundred service bureaus operating in the United States.

III. THIRD GENERATION OF SERVICE BUREAU DEVELOPMENT

The third generation of service bureau development covers the years 1960 to present.

Formation of ADAPSO

The year 1960 marks the beginning of the third generation of service bureaus; for in that year, the service bureau trade association, the Association of Data Processing Service Organizations (ADAPSO) was formed. ADAPSO's early objectives were concerned with securing new members and determining future objectives. Its current objectives are:

1. To exchange service center management know-how with the ultimate aim of providing even

---


more effective service to the business community.

2. To develop member appreciation for high performance and ethical standards.

3. To create an atmosphere of general public acceptance of the service bureau concept.

4. To provide mutual assistance in times of company emergency.

5. To offer a forum for the discussion of difficult areas, and the mechanism necessary for resolving problems of significance to the business.

**Number of United States Service Bureaus**

The growth of ADAPSO, however, has been slow. As Table V discloses, the number of United States service bureaus increased from 300 in 1961, to over 2,270 in 1969, a growth of over 750 per cent. During this same time period, membership in ADAPSO has increased from fifty-one members to four hundred members. Only 17.6 per cent of the 2,270 service

---

7Proceedings of the Sixth ADAPSO Management Symposium, Paoli, Pennsylvania, October 15, 1962. The fifty-one members were listed on the back cover.

8ADAPSO Directory of Data Processing Service Organizations, op. cit., pages 87-98.
<table>
<thead>
<tr>
<th>Year</th>
<th>Number</th>
<th>Per Cent Increase Since 1959</th>
</tr>
</thead>
<tbody>
<tr>
<td>1959</td>
<td>200</td>
<td>-0-</td>
</tr>
<tr>
<td>1961</td>
<td>300</td>
<td>50.0</td>
</tr>
<tr>
<td>1964</td>
<td>650</td>
<td>325.0</td>
</tr>
<tr>
<td>1965</td>
<td>1000</td>
<td>500.0</td>
</tr>
<tr>
<td>1966</td>
<td>1700*</td>
<td>850.0</td>
</tr>
<tr>
<td>1967</td>
<td>1875</td>
<td>937.5</td>
</tr>
<tr>
<td>1968</td>
<td>2000</td>
<td>1000.0</td>
</tr>
<tr>
<td>1969</td>
<td>2270**</td>
<td>1137.5</td>
</tr>
</tbody>
</table>

*Estimates from 1959-1965 included only firms specifically set up as service bureaus. Estimates beginning in 1966 include such companies as colleges and universities, banks, insurance companies, and others not specifically set up as service bureaus.

**Includes 870 home offices with 1400 branch offices.
bureaus are currently ADAPSO members.

The reasons for the growth in the number of service bureaus from 200 in 1959, to 2,270 in 1960, are: (1) Gross revenues in the service bureau industry have increased rapidly because of the tremendous demand for services performed by service bureaus. Thus, the formation of a service bureau may mean large profits. (2) Since the mid-1960's, many small inexpensive computers have been developed. Consequently, service bureaus may be opened by simply leasing some inexpensive computer equipment and by renting some office space.

**Types of Service Bureaus**

Practically all service bureaus opened are independent service bureaus. Independents are in business to provide data processing services primarily for the benefit of organizations other than their own. No two independent service bureaus are exactly alike, but are as individualistic as law firms or medical doctors operating in the same building. Most independents are small in size, provide services mainly to local businesses, offer a full range of data processing services, and are not affiliated with computer equipment manufacturers. Some independent service bureaus specialize in offering only
one type of application, such as payroll, accounts receivable, or billing and invoicing, and others offer services to a particular type of industry, such as hospitals, banks, retailers, or insurance companies. The majority of the 2,270 services bureaus which existed in 1969 were operating as independent service bureaus.

A second major type of service bureau included in the 2,270 total is called manufacturer affiliate service bureau. This type of service bureau is owned and operated by computer equipment manufacturers, such as International Business Machines (IBM), National Cash Register (NCR), Sperry Rand, Honeywell, Burroughs, General Electric (GE), or Control Data Corporation (CDC).

Another type of service bureau, called bank operated service bureau, is not specifically set up as a service bureau, but is set up as a division or affiliate of a bank. The bank's computer is mainly used to process its own data processing needs, and any slack computer time is used to provide data processing services to the public.

A fourth type of service bureau, called time-sharers, are similar to bank operated service bureaus because they also are not specifically set up as service bureaus. Time-sharers consist of organizations,
such as colleges and universities, insurance companies, or other organizations which own computers. These organizations, unlike the other types of service bureaus, do not offer a full range of data processing services, but only offer users excess computer time. The users do their own computer flowcharting, computer programming, systems analysis, and so on.

The fifth and final type of service bureau, called cooperative service bureau, provides services to three or four sponsoring companies, who jointly own or lease a computer system and share in the system's operating expenses. Cooperative service bureaus have been organized mainly in the banking, insurance, and brokerage industries.

Almost all of the five types of service bureaus operate as batch processing service bureaus. These batch processing service bureaus have a major disadvantage—the results of the computer processing run are often returned too late to help the client's managers facilitate their functions of planning and control.

**Time-Sharing**

In an attempt to overcome the disadvantages of receiving late and often useless reports, some batch processing service bureaus also offer time-sharing
services. Moreover, many newly formed service bureaus only offer time-sharing services. Since the first commercial time-sharing service bureau opened in 1965, time-sharing services have greatly expanded. As Table VI shows, a total of thirty-seven per cent of responding batch processing service bureaus either offer or plan to offer time-sharing services. If one could project these percentages for the entire United States, approximately 501 of the 2,270 home office and branch office service bureaus would be currently offering time-sharing and another 342 would be planning to offer this service.

Service Bureau Revenues

In 1969, it was estimated that over $100 million was spent by service bureau clients for time-sharing services. This amount is approximately 5.3 per cent of the expected 1969 $1.5 billion revenue for the entire service bureau industry (Table VII), and ADAPSO figures that this expected revenue will grow by twenty-five per cent or more per year.  

---


### TABLE VI
PER CENT OF RESPONDING BATCH-PROCESSING SERVICE BUREAUS OFFERING OR PLANNING TO OFFER TIME-SHARING SERVICES

<table>
<thead>
<tr>
<th>Region</th>
<th>Total</th>
<th>Currently Offering</th>
<th>Planning To Offer</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Central</td>
<td>38%</td>
<td>21%</td>
<td>17%</td>
</tr>
<tr>
<td>New England</td>
<td>36%</td>
<td>24%</td>
<td>12%</td>
</tr>
<tr>
<td><strong>Averages</strong></td>
<td><strong>37%</strong></td>
<td><strong>22%</strong></td>
<td><strong>15%</strong></td>
</tr>
</tbody>
</table>

This anticipated 1969 $1.5 billion gross revenue represents an increase of over 576 per cent since 1964 (Table VIII). The 1969 gross revenue is divided among batch processing service bureaus as follows:  

<table>
<thead>
<tr>
<th>Per Cent of Service Bureaus</th>
<th>Amount of Gross Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>65%</td>
<td>Less than $1 million</td>
</tr>
<tr>
<td>28%</td>
<td>$1 - $6 million</td>
</tr>
<tr>
<td>7%</td>
<td>Over $6 million</td>
</tr>
</tbody>
</table>

---

### TABLE VII

GROSS REVENUES OF THE ELECTRONIC DATA PROCESSING SERVICE BUREAU INDUSTRY

<table>
<thead>
<tr>
<th>Year</th>
<th>Gross Revenues (Billions of Dollars)</th>
<th>Per Cent Increase Since 1964</th>
</tr>
</thead>
<tbody>
<tr>
<td>1964</td>
<td>.260</td>
<td></td>
</tr>
<tr>
<td>1965</td>
<td>.350</td>
<td>134.6</td>
</tr>
<tr>
<td>1966</td>
<td>.532</td>
<td>204.6</td>
</tr>
<tr>
<td>1967</td>
<td>.665</td>
<td>251.9</td>
</tr>
<tr>
<td>1968</td>
<td>1.100</td>
<td>423.1</td>
</tr>
<tr>
<td>1969*</td>
<td>1.500</td>
<td>576.9</td>
</tr>
</tbody>
</table>

*Estimated


Thus, a typical batch processing service bureau grosses less than $1 million per year and its net income averages eight per cent of gross revenues. As the following analysis shows, the typical batch processing service bureau in 1967, the latest year for

TABLE VIII
SIZE OF RESPONDING SERVICE BUREAUS
( PERCENT OF RESPONDENTS )

<table>
<thead>
<tr>
<th>Professional Staff Size*</th>
<th>Both Regions</th>
<th>New England Service Bureaus</th>
<th>South Central Service Bureaus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 5</td>
<td>21%</td>
<td>10%</td>
<td>31%</td>
</tr>
<tr>
<td>5 - 10</td>
<td>23</td>
<td>24</td>
<td>21</td>
</tr>
<tr>
<td>11 - 25</td>
<td>26</td>
<td>24</td>
<td>27</td>
</tr>
<tr>
<td>26 - 50</td>
<td>19</td>
<td>31</td>
<td>9</td>
</tr>
<tr>
<td>51 - 75</td>
<td>6</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>More than 75</td>
<td>5</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Totals</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

*Excludes keypunch operators, clerical, and secretarial personnel.

which statistics are available, had gross revenues and net income before taxes as follows (see page 32).

Size of Service Bureaus

Table VIII discloses that no one size category of service bureaus dominates the industry. However, the table points out that approximately one-third of

\[^{13}\text{Ibid.}\]
### Affiliation With Trade Association

<table>
<thead>
<tr>
<th>Affiliation With Trade Association</th>
<th>Gross Revenue A</th>
<th>Net Income Before Taxes B</th>
<th>Net Income To Gross Revenues $B / $A</th>
</tr>
</thead>
<tbody>
<tr>
<td>No affiliation</td>
<td>$300,000</td>
<td>$24,000</td>
<td>8%</td>
</tr>
<tr>
<td>Member of ADAPSO</td>
<td>550,000</td>
<td>44,000</td>
<td>8%</td>
</tr>
<tr>
<td>Member of ADAPSO and at least one other trade association</td>
<td>650,000</td>
<td>52,000</td>
<td>8%</td>
</tr>
</tbody>
</table>

South Central service bureaus compared to only ten per cent of New England service bureaus have a professional staff size of less than five.

**IV. SUMMARY**

The service bureau industry is currently in its third stage of development. Some of the notable industry developments during this generation include the formation of a trade association, called ADAPSO; the rapid increase in the number of service bureaus, particularly in the number of independent batch-processing service bureaus; the formation of time-sharing service bureaus; and the rapid increase in the gross revenues of the service bureau industry. Most third generation service bureaus offer a full
range of services, including computer consulting, computer programming, input data preparation, and systems analysis. In addition, these service bureaus usually offer both routine and non-routine specific data processing services, such as payroll processing, accounts receivable processing, billing services, inventory control and production control.
CHAPTER III

A DESCRIPTION OF SERVICES OFFERED
BY SERVICE BUREAUS

I. INTRODUCTION

This chapter describes the types of services offered by service bureaus and provides essential background material for later discussions, analyses, and evaluations. The material should be of interest to all accountants since certified public accountants (CPA's), in order to determine if they are competing with service bureaus, must know what services these companies offer. Furthermore, controllers and other accountants responsible for selecting jobs to process through service bureaus need to know what types of services are offered.

Four aspects of services offered by service bureaus are discussed in this chapter. They are:

1. The categories of services offered--hardware and software.
2. The specific applications offered--routine and non-routine.
3. The services most often provided.
4. The areas in which service bureaus plan to
II. CATEGORIES OF SERVICES OFFERED BY SERVICE BUREAUS

The two categories of services offered by service bureaus are hardware and software. Of the nine sub-categories of services offered by responding service bureaus (see Table X), the typical responding service bureau offers five (Table IX). On the average, larger service bureaus offer more of these categories than do smaller service bureaus.

Hardware Services

The two types of hardware services are computer time-sales and input data preparation.

Computer time-sales. Computer time-sales are offered by companies such as colleges and universities, insurance companies, or service bureaus, who rent slack computer time to clients. The client's staff computer specialists prepare input data and computer programs, and process the data through the service bureau's computer. Since the majority of service bureau clients do not employ computer specialists, most clients must contract for a full range of computer services.

---

\[^{1}\] For the reasons large companies may rent a service bureau's computer, see pages 67, 69.
<table>
<thead>
<tr>
<th>Size of Professional Staff</th>
<th>Both Regions Combined</th>
<th>South Central</th>
<th>New England</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than five</td>
<td>4.1</td>
<td>4.6</td>
<td>3.0</td>
</tr>
<tr>
<td>Five - ten</td>
<td>4.4</td>
<td>4.9</td>
<td>4.0</td>
</tr>
<tr>
<td>Eleven - twenty-five</td>
<td>5.2</td>
<td>5.7</td>
<td>4.8</td>
</tr>
<tr>
<td>Twenty-six - fifty</td>
<td>5.1</td>
<td>7.0</td>
<td>4.7</td>
</tr>
<tr>
<td>More than fifty</td>
<td>6.4</td>
<td>5.5</td>
<td>7.3</td>
</tr>
<tr>
<td>Average number</td>
<td>5.0</td>
<td>5.2</td>
<td>4.7</td>
</tr>
</tbody>
</table>

Rental of computer time is thus mainly limited to large companies owning or leasing computers.

These large companies or other companies who request computer time-sales should have no difficulty finding organizations which offer this service because many service bureaus, in addition to other organizations, offer computer time-sales. Seventy-six per cent of all responding service bureaus offer this service (Table X). On the average, as the size of a service bureau's professional staff increases, the percentage of service bureaus offering computer time-sales
increases. A per cent breakdown by regions of the service bureaus offering this service is presented in Tables XI and XII.

**Input data preparation.** Preparation of input data is the second and final type of hardware service to be examined. Before a computer can be used, a company must convert source documents into an input form which can be processed by the computer. Acceptable input forms include punched cards, punched paper tape, magnetic tape, or a special magnetic ink printed on documents.

Service bureaus usually perform the conversion of source documents to an acceptable input form because most companies cannot afford the special equipment required for conversion. Table X points out that eighty-two per cent of all responding service bureaus offer input data preparation. Service bureaus who offer this service most likely own or rent the special equipment required to convert source documents to an acceptable input. If they do not, they may contract with another service bureau to prepare input data or they may contract with a firm which specializes in converting source documents into computer input.
TABLE X
CATEGORIES OF SERVICES OFFERED BY RESPONDING SERVICE BUREAUS
SOUTH CENTRAL AND NEW ENGLAND
(Per Cent of Respondents)

<table>
<thead>
<tr>
<th>Size of Service Bureau Professional Staff</th>
<th>Total</th>
<th>Less Than 5</th>
<th>5-10</th>
<th>11-25</th>
<th>26-50</th>
<th>More Than 50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Service</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer Consulting</td>
<td>61%</td>
<td>40%</td>
<td>57%</td>
<td>70%</td>
<td>60%</td>
<td>88%</td>
</tr>
<tr>
<td>Computer Programming</td>
<td>92%</td>
<td>87%</td>
<td>93%</td>
<td>85%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Computer Time-Sales</td>
<td>76%</td>
<td>67%</td>
<td>71%</td>
<td>75%</td>
<td>93%</td>
<td>75%</td>
</tr>
<tr>
<td>Facilities Management</td>
<td>30%</td>
<td>20%</td>
<td>21%</td>
<td>50%</td>
<td>20%</td>
<td>38%</td>
</tr>
<tr>
<td>Input Data Preparation</td>
<td>82%</td>
<td>80%</td>
<td>79%</td>
<td>80%</td>
<td>80%</td>
<td>100%</td>
</tr>
<tr>
<td>Management Consulting</td>
<td>45%</td>
<td>53%</td>
<td>43%</td>
<td>35%</td>
<td>33%</td>
<td>75%</td>
</tr>
<tr>
<td>Real-Time Systems</td>
<td>17%</td>
<td>0%</td>
<td>0%</td>
<td>25%</td>
<td>20%</td>
<td>50%</td>
</tr>
<tr>
<td>Systems Analysis</td>
<td>71%</td>
<td>67%</td>
<td>57%</td>
<td>70%</td>
<td>80%</td>
<td>75%</td>
</tr>
<tr>
<td>Time-Sharing</td>
<td>22%</td>
<td>0%</td>
<td>21%</td>
<td>30%</td>
<td>27%</td>
<td>38%</td>
</tr>
<tr>
<td>Type of Service</td>
<td>Total</td>
<td>Less Than 5</td>
<td>5-10</td>
<td>11-25</td>
<td>26-50</td>
<td>More Than 50</td>
</tr>
<tr>
<td>---------------------------</td>
<td>-------</td>
<td>-------------</td>
<td>------</td>
<td>-------</td>
<td>-------</td>
<td>---------------</td>
</tr>
<tr>
<td>Computer Consulting</td>
<td>65%</td>
<td>45%</td>
<td>43%</td>
<td>89%</td>
<td>100%</td>
<td>75%</td>
</tr>
<tr>
<td>Computer Programming</td>
<td>97</td>
<td>91</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Computer Time-Sales</td>
<td>76</td>
<td>73</td>
<td>86</td>
<td>67</td>
<td>100</td>
<td>75</td>
</tr>
<tr>
<td>Facilities Management</td>
<td>38</td>
<td>27</td>
<td>43</td>
<td>56</td>
<td>33</td>
<td>25</td>
</tr>
<tr>
<td>Input Data Preparation</td>
<td>82</td>
<td>73</td>
<td>86</td>
<td>78</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Management Consulting</td>
<td>53</td>
<td>64</td>
<td>43</td>
<td>44</td>
<td>33</td>
<td>75</td>
</tr>
<tr>
<td>Real-Time Systems</td>
<td>15</td>
<td>0</td>
<td>0</td>
<td>22</td>
<td>67</td>
<td>25</td>
</tr>
<tr>
<td>Systems Analysis</td>
<td>76</td>
<td>82</td>
<td>57</td>
<td>78</td>
<td>100</td>
<td>75</td>
</tr>
<tr>
<td>Time-Sharing</td>
<td>21</td>
<td>0</td>
<td>29</td>
<td>33</td>
<td>67</td>
<td>0</td>
</tr>
<tr>
<td>Type of Service</td>
<td>Total</td>
<td>Less Than 5</td>
<td>5-10</td>
<td>11-25</td>
<td>26-50</td>
<td>More Than 50</td>
</tr>
<tr>
<td>---------------------------</td>
<td>-------</td>
<td>-------------</td>
<td>------</td>
<td>-------</td>
<td>-------</td>
<td>--------------</td>
</tr>
<tr>
<td>Computer Consulting</td>
<td>58%</td>
<td>25%</td>
<td>71%</td>
<td>55%</td>
<td>50%</td>
<td>100%</td>
</tr>
<tr>
<td>Computer Programming</td>
<td>87</td>
<td>75</td>
<td>86</td>
<td>73</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Computer Time-Sales</td>
<td>76</td>
<td>50</td>
<td>57</td>
<td>82</td>
<td>92</td>
<td>75</td>
</tr>
<tr>
<td>Facilities Management</td>
<td>26</td>
<td>0</td>
<td>0</td>
<td>45</td>
<td>17</td>
<td>50</td>
</tr>
<tr>
<td>Input Data Preparation</td>
<td>82</td>
<td>100</td>
<td>71</td>
<td>82</td>
<td>74</td>
<td>100</td>
</tr>
<tr>
<td>Management Consulting</td>
<td>37</td>
<td>25</td>
<td>43</td>
<td>27</td>
<td>33</td>
<td>75</td>
</tr>
<tr>
<td>Real-Time Systems</td>
<td>18</td>
<td>0</td>
<td>0</td>
<td>27</td>
<td>8</td>
<td>75</td>
</tr>
<tr>
<td>Systems Analysis</td>
<td>63</td>
<td>25</td>
<td>57</td>
<td>64</td>
<td>74</td>
<td>75</td>
</tr>
<tr>
<td>Time-Sharing</td>
<td>24</td>
<td>0</td>
<td>14</td>
<td>27</td>
<td>17</td>
<td>75</td>
</tr>
</tbody>
</table>
Software Services

The second and most important category of services offered by service bureaus are software services. Traditional software services include computer programming and systems analysis. In addition, progressive service bureaus may offer more sophisticated software services, such as computer consulting, facilities management, management consulting, real-time systems, and time-sharing.

Computer programming. The software service of preparing a computer program involves coding a set of instructions indicating how the computer is to perform certain operations on data. Two types of computer programming may be offered by service bureaus--application programming and application programming packages.

Application programming consists of programs written for a particular client's precise needs, while application programming packages are prewritten programs that have "generalized capabilities to permit adoption to most organizations with little or no modification." An example of an application programming package is provided by Robert J. Atkins, "Packages vs. Tailor Made Jobs", ADAPSO Management Guidon, VII, March 1967, p. 6.
package would be a payroll program written for a particular industry. By slightly modifying this program, a service bureau could use it for many different clients within the industry. Packages thus require less programming than applications programs and as a result, usually lower the service bureau's programming charge.\(^3\)

Both types of computer programming, as Table X discloses, are offered by ninety-two per cent of all responding service bureaus. Although all South Central service bureaus with a professional staff size of five or more offer computer programming (Table XI), only the largest two size categories of New England service bureaus all offer computer programming (Table XII). There are basically two reasons which explain why more South Central than New England service bureaus offer computer programming. First, more New England than South Central service bureau clients do some or all of their own computer programming. Second, New England service bureaus, due to the larger concentration of businesses in New England, apparently use application programming

---

\(^3\)For an evaluation of the usefulness of application programming packages, see pages 142, 143, 146, 147.
packages more than do South Central service bureaus. In the South Central region which has a thinner concentration of businesses, service bureaus depend more on application programming than on application programming packages.

**Systems analysis.** Systems analysis, the second traditional software service offered by service bureaus, is offered by seventy-one per cent of all responding service bureaus (Table X). There are, however, significant differences existing between the regions since seventy-six per cent of South Central service bureaus compared to sixty-three per cent of New England service bureaus offer systems analysis. This difference is a result of the more extensive offering of applications programming by South Central service bureaus. This type of programming requires more systems analysis and modification than package programs. Accordingly, more South Central service bureaus must offer systems analysis.

**Computer consulting.** A third type of software service is computer consulting. Service bureaus offering this service provide advice on all aspects of electronic computer systems. For instance, a qualified service bureau may provide advice to a client planning to purchase a computer or a client
with a particular data processing problem may consult a qualified service bureau for a solution. In addition, service bureaus may offer the following other types of computer consulting services:

1. Design and analysis of computer systems.
2. Design of on-line, real-time systems.
3. Design of information retrieval systems.
4. Business applications of computers.
5. Advice on purchasing vs. leasing of computers.
6. Advice on the type of computer needed.
7. Advice on methods of financing electronic systems.
8. Advice on the type of computer programming language to use.
9. Training of computer personnel.

Some or all of these nine types of computer consulting services, as Table X reveals, are offered by sixty-one per cent of the total responding service bureaus. On the average, more large service bureaus than small ones offer this service and more South Central than New England service bureaus offer this service (Table XI and XII).

Facilities management. Fourth in the list of software services to be discussed is facilities
management. Service bureaus have only recently begun to offer this service. A service bureau will assume complete responsibility for operating a client's computer installation. This responsibility includes designing and implementing a computerized system, applications programming, program maintenance, management and staffing of the client's data processing department, and a complete array of data processing and special services.4

Although facilities management is quite new, it is currently offered by thirty per cent of all the responding service bureaus (Table X). The significant differences between the two regions, as seen in Tables XI and XII, may be explained by the fact that facilities management was first offered in Dallas, Texas and has grown faster in the region in which it was founded. As this concept becomes more familiar to businessmen throughout the United States, the regional differences probably will decrease.

Management consulting. Management consulting services, a fifth type of software service offered by some service bureaus, includes advice on matters

4For a good description of this new service, see an untitled booklet distributed by International Data Systems, New Orleans, Louisiana, no date.
indirectly related to the service bureau's primary function. These services include advice relating to:

1. Marketing
2. Personnel
3. Management information systems
4. Production
5. Market research
6. Quality control
7. Insurance
8. Inventory control
9. Executive recruitment
10. Forms design
11. Labor negotiations
12. Management audits
13. Mergers and business acquisitions
14. Plant layout

Some or all of these fourteen services, as Table X points out, are offered by forty-five percent of all responding service bureaus. However, a substantially higher percentage of South Central service bureaus compared to New England service bureaus offer this service. Perhaps the reason for this difference is that New England service bureaus are competing with many types of New England firms which offer management consulting and therefore, may have
difficulty obtaining such assignments. Although there is no apparent relation between the size of a service bureau and whether or not they offer management consulting, the large service bureaus may offer more types of management consulting services.  

Real-time systems. Real-time systems, a sixth type of software service offered by some service bureaus, provide managers with information which is continuously updated to facilitate the functions of planning and control. This service is offered by seventeen per cent of all responding service bureaus (Table X). Large service bureaus are more actively engaged in real-time services than are small service bureaus for two reasons. First, they have a more diversified staff which is capable of handling the problems of designing real-time systems, and second, they can afford the expensive computer equipment needed to offer this service.

Time-sharing. Time-sharing is the seventh and final type of software service to be discussed. As previously mentioned, time-sharing means the multiple use of a computer by many clients who seemingly

5For the composition of service bureau staffs, see pages 136-142.
use the computer at the same time. Time-sharing is offered by twenty-two per cent of all responding service bureaus (Table X). Overall, more large than small service bureaus offer time-sharing because the former group can afford the expensive computer equipment needed and have a more diversified staff.

III. SPECIFIC SERVICES OFFERED BY SERVICE BUREAUS

The categories of hardware and software services can be further divided into specific routine and non-routine services. To illustrate a software service, a computer program written to process a payroll would be a routine service, while one written to simulate future economic conditions would be a non-routine service. Specific services may be provided on a one time basis or on a continuing basis. In the former case, the service bureau is asked to solve a problem or process data for a client and after the assignment is complete, the client may never return. In the latter case, the service bureau provides either periodic routine or periodic non-routine services or both for the client. Most service

6For additional characteristics of time-sharing, see pages 27-28.
TABLE XIII
ROUTINE SERVICES OFFERED BY RESPONDING SERVICE BUREAUS
SOUTH CENTRAL AND NEW ENGLAND REGIONS
(Per Cent of Respondents)

<table>
<thead>
<tr>
<th>Type of Service</th>
<th>Total</th>
<th>Less Than 5</th>
<th>5-10</th>
<th>11-25</th>
<th>26-50</th>
<th>More Than 50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounting—General Ledger, Financial Statements</td>
<td>82%</td>
<td>93%</td>
<td>93%</td>
<td>85%</td>
<td>67%</td>
<td>75%</td>
</tr>
<tr>
<td>Accounting—Accounts Receivable, Accounts Payable</td>
<td>85</td>
<td>80</td>
<td>79</td>
<td>95</td>
<td>87</td>
<td>75</td>
</tr>
<tr>
<td>Billing and Invoicing</td>
<td>83</td>
<td>93</td>
<td>86</td>
<td>90</td>
<td>73</td>
<td>63</td>
</tr>
<tr>
<td>Expenses—Analysis and Reports</td>
<td>58</td>
<td>47</td>
<td>71</td>
<td>55</td>
<td>53</td>
<td>75</td>
</tr>
<tr>
<td>Inventory Level and Control</td>
<td>71</td>
<td>67</td>
<td>57</td>
<td>80</td>
<td>73</td>
<td>75</td>
</tr>
<tr>
<td>Labor and Cost Distributions</td>
<td>74</td>
<td>60</td>
<td>86</td>
<td>75</td>
<td>73</td>
<td>75</td>
</tr>
<tr>
<td>Marketing—Order Entry</td>
<td>38</td>
<td>20</td>
<td>43</td>
<td>50</td>
<td>40</td>
<td>25</td>
</tr>
<tr>
<td>Payroll</td>
<td>79</td>
<td>67</td>
<td>86</td>
<td>90</td>
<td>80</td>
<td>63</td>
</tr>
<tr>
<td>Production—Scheduling</td>
<td>31</td>
<td>20</td>
<td>21</td>
<td>30</td>
<td>40</td>
<td>50</td>
</tr>
<tr>
<td>Purchase Order Writing</td>
<td>26</td>
<td>13</td>
<td>36</td>
<td>30</td>
<td>27</td>
<td>25</td>
</tr>
<tr>
<td>Sales Analysis, Forecasting</td>
<td>67</td>
<td>60</td>
<td>57</td>
<td>75</td>
<td>67</td>
<td>75</td>
</tr>
<tr>
<td>Other</td>
<td>15</td>
<td>2</td>
<td>14</td>
<td>18</td>
<td>22</td>
<td>25</td>
</tr>
</tbody>
</table>
## TABLE XIV

**ROUTINE SERVICES OFFERED BY RESPONDING SERVICE BUREAUS**  
**SOUTH CENTRAL**  
*(Per Cent of Respondents)*

<table>
<thead>
<tr>
<th>Type of Service</th>
<th>Total</th>
<th>Less Than 5</th>
<th>5-10</th>
<th>11-25</th>
<th>26-50</th>
<th>More Than 50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounting—General Ledger, Financial Statements</td>
<td>94%</td>
<td>91%</td>
<td>100%</td>
<td>100%</td>
<td>67%</td>
<td>100%</td>
</tr>
<tr>
<td>Accounts Receivable, Accounts Payable</td>
<td>92%</td>
<td>91%</td>
<td>86%</td>
<td>100%</td>
<td>67%</td>
<td>100%</td>
</tr>
<tr>
<td>Billing and Invoicing</td>
<td>94%</td>
<td>100%</td>
<td>86%</td>
<td>100%</td>
<td>67%</td>
<td>100%</td>
</tr>
<tr>
<td>Expenses—Analysis and Reports</td>
<td>71%</td>
<td>64%</td>
<td>86%</td>
<td>56%</td>
<td>67%</td>
<td>100%</td>
</tr>
<tr>
<td>Inventory Level and Control</td>
<td>85%</td>
<td>82%</td>
<td>71%</td>
<td>100%</td>
<td>67%</td>
<td>100%</td>
</tr>
<tr>
<td>Labor and Cost Distribution</td>
<td>74%</td>
<td>64%</td>
<td>86%</td>
<td>89%</td>
<td>67%</td>
<td>50%</td>
</tr>
<tr>
<td>Marketing—Order Entry</td>
<td>35%</td>
<td>18%</td>
<td>28%</td>
<td>44%</td>
<td>67%</td>
<td>50%</td>
</tr>
<tr>
<td>Payroll</td>
<td>82%</td>
<td>73%</td>
<td>86%</td>
<td>100%</td>
<td>67%</td>
<td>75%</td>
</tr>
<tr>
<td>Production—Scheduling</td>
<td>24%</td>
<td>9%</td>
<td>0%</td>
<td>44%</td>
<td>67%</td>
<td>25%</td>
</tr>
<tr>
<td>Purchase Order Writing</td>
<td>26%</td>
<td>18%</td>
<td>43%</td>
<td>33%</td>
<td>0%</td>
<td>25%</td>
</tr>
<tr>
<td>Sales—Analysis, Forecasting</td>
<td>68%</td>
<td>64%</td>
<td>71%</td>
<td>67%</td>
<td>67%</td>
<td>75%</td>
</tr>
<tr>
<td>Other</td>
<td>17%</td>
<td>4%</td>
<td>14%</td>
<td>16%</td>
<td>33%</td>
<td>25%</td>
</tr>
<tr>
<td>Type of Service</td>
<td>Total</td>
<td>Less Than 5</td>
<td>5-10</td>
<td>11-25</td>
<td>26-50</td>
<td>More Than 50</td>
</tr>
<tr>
<td>--------------------------------------------------</td>
<td>-------</td>
<td>-------------</td>
<td>------</td>
<td>-------</td>
<td>-------</td>
<td>--------------</td>
</tr>
<tr>
<td>Accounting—General Ledger, Financial Statements</td>
<td>71%</td>
<td>75%</td>
<td>86%</td>
<td>73%</td>
<td>67%</td>
<td>50%</td>
</tr>
<tr>
<td>Accounts Receivable, Accounts Payable</td>
<td>79</td>
<td>50</td>
<td>71</td>
<td>91</td>
<td>92</td>
<td>50</td>
</tr>
<tr>
<td>Billing and Invoicing</td>
<td>74</td>
<td>75</td>
<td>86</td>
<td>82</td>
<td>75</td>
<td>25</td>
</tr>
<tr>
<td>Expenses—Analysis and Reports</td>
<td>47</td>
<td>0</td>
<td>57</td>
<td>55</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Inventory Level and Control</td>
<td>58</td>
<td>25</td>
<td>43</td>
<td>64</td>
<td>75</td>
<td>50</td>
</tr>
<tr>
<td>Labor and Cost Distribution</td>
<td>74</td>
<td>50</td>
<td>86</td>
<td>64</td>
<td>75</td>
<td>100</td>
</tr>
<tr>
<td>Marketing—Order Entry</td>
<td>39</td>
<td>25</td>
<td>57</td>
<td>55</td>
<td>33</td>
<td>0</td>
</tr>
<tr>
<td>Payroll</td>
<td>76</td>
<td>50</td>
<td>86</td>
<td>82</td>
<td>83</td>
<td>50</td>
</tr>
<tr>
<td>Production—Scheduling</td>
<td>37</td>
<td>50</td>
<td>43</td>
<td>18</td>
<td>33</td>
<td>50</td>
</tr>
<tr>
<td>Purchase Order Writing</td>
<td>26</td>
<td>0</td>
<td>29</td>
<td>27</td>
<td>33</td>
<td>25</td>
</tr>
<tr>
<td>Sales—Analysis, Forecasting</td>
<td>66</td>
<td>50</td>
<td>43</td>
<td>82</td>
<td>67</td>
<td>75</td>
</tr>
<tr>
<td>Other</td>
<td>13</td>
<td>0</td>
<td>14</td>
<td>18</td>
<td>14</td>
<td>25</td>
</tr>
</tbody>
</table>
TABLE XVI
NUMBER OF ROUTINE SERVICES OFFERED BY RESPONDING SERVICE BUREAUS

<table>
<thead>
<tr>
<th>Size of Professional Staff</th>
<th>Both Regions Combined</th>
<th>South Central</th>
<th>New England</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than five</td>
<td>6.2</td>
<td>7.1</td>
<td>4.8</td>
</tr>
<tr>
<td>Five - ten</td>
<td>7.3</td>
<td>7.7</td>
<td>7.2</td>
</tr>
<tr>
<td>Eleven - twenty-five</td>
<td>7.7</td>
<td>8.8</td>
<td>7.3</td>
</tr>
<tr>
<td>Twenty-six - fifty</td>
<td>7.0</td>
<td>7.4</td>
<td>7.2</td>
</tr>
<tr>
<td>More than fifty</td>
<td>7.0</td>
<td>8.5</td>
<td>6.0</td>
</tr>
<tr>
<td>Average number</td>
<td>7.1</td>
<td>7.9</td>
<td>6.6</td>
</tr>
</tbody>
</table>

bureaus derive the bulk of their revenue from these periodic services.

Routine Services

The types of periodic routine services or applications that service bureaus offer are shown in Tables XIII-XV. The typical responding service bureau as Table XVI discloses offers an average of 7.1 routine services. There are significant differences between the regions surveyed since responding South Central service bureaus offer 7.9 routine services compared to 6.6 offered by New England
service bureaus.

The most common routine services offered for both regions combined are:

1. Accounts receivable, accounts payable (85%)
2. Billing and invoicing (83%)
3. Accounting—general ledger, financial statements (82%)
4. Payroll (79%)

While accounts receivable or accounts payable was the routine service most often offered by service bureaus, purchase order writing was the routine service least often offered.\(^7\)

Non-Routine Services

The second type of specific service that service bureaus offer are non-routine in nature. The sixteen non-routine services offered are shown in Tables XVII–XIX.\(^8\) The tables show that the following are the non-routine services offered by the most service bureaus:

1. Accounting—cash control, budget control (63%)

\(^7\) The "other" category is excluded because it includes several types of miscellaneous routine services.

\(^8\) The "other" category is excluded.
2. Production—cost control (46%)
3. Production—output reporting system (28%)
4. Marketing—customer service system (20%)

Tables XVII - XIX also disclose that transportation routing and forecasting of money market conditions are the two non-routine services offered by the fewest number of service bureaus.

Of the sixteen non-routine services shown in the tables, the typical responding service bureau offers an average of three. For both regions combined, this average increases as a service bureau's professional staff size increases (Table XX).

IV. SERVICES THAT SERVICE BUREAUS MOST OFTEN PROVIDE

Although a service bureau may offer a particular routine or non-routine service, this does not necessarily mean that any client is receiving or demanding the service. Even though eighty-five percent of responding service bureaus claim to offer accounts receivable or accounts payable, this service is not necessarily the one demanded by eighty-five percent of service bureau clients. The six services most often demanded by clients and provided by service bureaus are shown in Figure I. The first five services shown are strictly routine and accounting
FIGURE I
SERVICES MOST OFTEN PROVIDED BY RespondING SERVICE BUREAUS
SOUTH CENTRAL AND NEW ENGLAND
(Per Cent of Respondents)

Types of Services

Payroll
Accounts Receivable, Accounts Payable
Billing and Invoicing
Sales—Analysis
Accounting—General Ledger, Financial Statements
Inventory Level and Control

<table>
<thead>
<tr>
<th>Service</th>
<th>Per Cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payroll</td>
<td>66%</td>
</tr>
<tr>
<td>Accounts Receivable, Accounts Payable</td>
<td>65%</td>
</tr>
<tr>
<td>Billing and Invoicing</td>
<td>51%</td>
</tr>
<tr>
<td>Sales—Analysis</td>
<td>46%</td>
</tr>
<tr>
<td>Accounting—General Ledger, Financial Statements</td>
<td>44%</td>
</tr>
<tr>
<td>Inventory Level and Control</td>
<td>34%</td>
</tr>
</tbody>
</table>
## TABLE XVII

NON-Routine SERVICES OFFERED BY RESPONDING SERVICE BUREAUS
SOUTH CENTRAL AND NEW ENGLAND REGIONS
(Per Cent of Respondents)

<table>
<thead>
<tr>
<th>Type of Service</th>
<th>Size of Service Bureau Professional Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
</tr>
<tr>
<td>Accounting—Cash Control, Budget Control</td>
<td>63%</td>
</tr>
<tr>
<td>Capital Budgeting</td>
<td>18</td>
</tr>
<tr>
<td>Cash Management</td>
<td>15</td>
</tr>
<tr>
<td>Distribution—Carrier Selection</td>
<td>8</td>
</tr>
<tr>
<td>Distribution—Route Optimization</td>
<td>14</td>
</tr>
<tr>
<td>Economic Forecasts</td>
<td>15</td>
</tr>
<tr>
<td>Forecasting of Money Market Conditions</td>
<td>3</td>
</tr>
<tr>
<td>Marketing—Customer Service System</td>
<td>20</td>
</tr>
<tr>
<td>Personnel—Skills Inventory, Skills</td>
<td>7</td>
</tr>
<tr>
<td>Forecasting</td>
<td>7</td>
</tr>
<tr>
<td>Preparation of Budgets</td>
<td>24</td>
</tr>
<tr>
<td>Production—Cost Control</td>
<td>46</td>
</tr>
<tr>
<td>Production—Output Reporting System</td>
<td>28</td>
</tr>
<tr>
<td>Purchasing—Replenishment Orders</td>
<td>15</td>
</tr>
<tr>
<td>Purchasing—Material Selection</td>
<td>8</td>
</tr>
<tr>
<td>Purchasing—Vendor Selection</td>
<td>10</td>
</tr>
<tr>
<td>Transportation—Routing</td>
<td>4</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
</tr>
<tr>
<td>Type of Service</td>
<td>Size of Service Bureau Professional Staff</td>
</tr>
<tr>
<td>-----------------------------------------------------</td>
<td>------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>Total</td>
</tr>
<tr>
<td>Accounting—Cash Control, Budget</td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>79%</td>
</tr>
<tr>
<td>Capital Budgeting</td>
<td>18</td>
</tr>
<tr>
<td>Cash Management</td>
<td>15</td>
</tr>
<tr>
<td>Distribution—Carrier Selection</td>
<td>6</td>
</tr>
<tr>
<td>Distribution—Route Optimization</td>
<td>12</td>
</tr>
<tr>
<td>Economic Forecasts</td>
<td>15</td>
</tr>
<tr>
<td>Forecasting of Money Market Conditions</td>
<td>0</td>
</tr>
<tr>
<td>Marketing—Customer Service System</td>
<td>23</td>
</tr>
<tr>
<td>Personnel—Skills Inventory, Skills</td>
<td></td>
</tr>
<tr>
<td>Forecasting</td>
<td>6</td>
</tr>
<tr>
<td>Preparation of Budgets</td>
<td>26</td>
</tr>
<tr>
<td>Production—Cost Control</td>
<td>38</td>
</tr>
<tr>
<td>Production—Output Reporting System</td>
<td>15</td>
</tr>
<tr>
<td>Purchasing—Replenishment Orders</td>
<td>24</td>
</tr>
<tr>
<td>Purchasing—Material Selection</td>
<td>9</td>
</tr>
<tr>
<td>Purchasing—Vendor Selection</td>
<td>9</td>
</tr>
<tr>
<td>Transportation—Routing</td>
<td>6</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
</tr>
</tbody>
</table>
TABLE XIX

NON-ROUTINE SERVICES OFFERED BY RESPONDING SERVICE BUREAUS
NEW ENGLAND
(Per Cent of Respondents)

<table>
<thead>
<tr>
<th>Type of Service</th>
<th>Size of Service Bureau Professional Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
</tr>
<tr>
<td></td>
<td>%</td>
</tr>
<tr>
<td>Accounting--Cash Control, Budget Control</td>
<td>47%</td>
</tr>
<tr>
<td>Capital Budgeting</td>
<td>17%</td>
</tr>
<tr>
<td>Cash Management</td>
<td>16%</td>
</tr>
<tr>
<td>Distribution--Carrier Selection</td>
<td>11%</td>
</tr>
<tr>
<td>Distribution--Route Optimization</td>
<td>16%</td>
</tr>
<tr>
<td>Economic Forecasts</td>
<td>16%</td>
</tr>
<tr>
<td>Forecasting of Money Market Conditions</td>
<td>5%</td>
</tr>
<tr>
<td>Marketing--Customer Service System</td>
<td>16%</td>
</tr>
<tr>
<td>Personnel--Skills Inventory, Skills Forecasting</td>
<td>8%</td>
</tr>
<tr>
<td>Preparation of Budgets</td>
<td>23%</td>
</tr>
<tr>
<td>Production--Cost Control</td>
<td>52%</td>
</tr>
<tr>
<td>Production--Output Reporting System</td>
<td>39%</td>
</tr>
<tr>
<td>Purchasing--Replenishment Orders</td>
<td>8%</td>
</tr>
<tr>
<td>Purchasing--Material Selection</td>
<td>8%</td>
</tr>
<tr>
<td>Purchasing--Vendor Selection</td>
<td>11%</td>
</tr>
<tr>
<td>Transportation--Routing</td>
<td>3%</td>
</tr>
<tr>
<td>Other</td>
<td>8%</td>
</tr>
</tbody>
</table>
TABLE XX

NUMBER OF NON-ROUTINE SERVICES OFFERED
BY RESPONDING SERVICE BUREAUS

<table>
<thead>
<tr>
<th>Size of Professional Staff</th>
<th>Both Regions Combined</th>
<th>South Central</th>
<th>New England</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than five</td>
<td>2.2</td>
<td>2.4</td>
<td>1.8</td>
</tr>
<tr>
<td>Five - ten</td>
<td>2.5</td>
<td>2.7</td>
<td>2.3</td>
</tr>
<tr>
<td>Eleven - twenty-five</td>
<td>2.6</td>
<td>3.4</td>
<td>2.0</td>
</tr>
<tr>
<td>Twenty-six - fifty</td>
<td>3.3</td>
<td>4.0</td>
<td>3.1</td>
</tr>
<tr>
<td>More than fifty</td>
<td>5.9</td>
<td>3.8</td>
<td>5.9</td>
</tr>
<tr>
<td>Average number</td>
<td>3.0</td>
<td>3.0</td>
<td>3.0</td>
</tr>
</tbody>
</table>

related whereas the last service, inventory level and control, is non-routine.

A breakdown of these six services by regions is given in Table XXI. The letters in this table refer to the following services:

1. Routine Services:
   A. Accounting—general ledger, financial statements
   B. Accounts receivable, accounts payable
   C. Billing and invoicing
   D. Labor and cost distribution
   E. Payroll
   F. Sales analysis
TABLE XXI
SERVICES MOST OFTEN PROVIDED BY RESPONDING SERVICE BUREAUS

<table>
<thead>
<tr>
<th>Size of Service Bureau Professional Staff</th>
<th>Less Than 5</th>
<th>5-10</th>
<th>11-25</th>
<th>26-50</th>
<th>More Than 50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rank</td>
<td>SC</td>
<td>NE</td>
<td>SC</td>
<td>NE</td>
<td>SC</td>
</tr>
<tr>
<td>First</td>
<td>B</td>
<td>B</td>
<td>E</td>
<td>B</td>
<td>E</td>
</tr>
<tr>
<td>Second</td>
<td>C</td>
<td>X</td>
<td>E</td>
<td>C</td>
<td>B</td>
</tr>
<tr>
<td>Third</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>C</td>
</tr>
<tr>
<td>Fourth</td>
<td>E</td>
<td>E</td>
<td>C</td>
<td>B</td>
<td>Y</td>
</tr>
<tr>
<td>Fifth</td>
<td>F</td>
<td>G</td>
<td>Y</td>
<td>D</td>
<td>F</td>
</tr>
</tbody>
</table>

SC = South Central
NE = New England
The symbols A-G, X-Z are explained on pages 59 and 61 of this chapter.
G. Production Scheduling

2. Non-Routine Services:

X. Accounting—cash control, budget control

Y. Inventory level and control

Z. Cash management

Table XXI implies that there is no correlation between the services most often provided and the size of service bureaus. Large and small service bureaus usually provide the same types of services which are typically routine in nature.

V. AREAS OF PLANNED SERVICE BUREAU EXPANSION

In the future, most service bureaus will expand both their offering of routine and non-routine services. The percentages of responding service bureaus planning to expand services are:

South Central ...................... 97%
New England ...................... 92%
Average .......................... 95%

These service bureaus will expand into an average of one additional new area of service. The areas of planned expansion are shown in Table XXII. Many of the services shown in the tables are non-routine and will enable service bureaus to offer clients
### TABLE XXII

**AREAS IN WHICH RESPONDING SERVICE BUREAUS ARE PLANNING TO EXPAND SERVICES**

(Per Cent of Respondents)

<table>
<thead>
<tr>
<th>Area of Service</th>
<th>Average</th>
<th>South Central</th>
<th>New England</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Routine Services:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accounting Applications</td>
<td>17%</td>
<td>18%</td>
<td>16%</td>
</tr>
<tr>
<td>Packaged Applications</td>
<td>17</td>
<td>7</td>
<td>28</td>
</tr>
<tr>
<td>Accounts Payable, Accounts Receivable</td>
<td>4</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Payroll</td>
<td>4</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>Billing</td>
<td>2</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Mailing Lists</td>
<td>2</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td><strong>Non-Routine Services:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Real-Time</td>
<td>17%</td>
<td>14%</td>
<td>20%</td>
</tr>
<tr>
<td>Time-Sharing</td>
<td>14</td>
<td>17</td>
<td>12</td>
</tr>
<tr>
<td>Simulations, Model Building</td>
<td>8</td>
<td>11</td>
<td>4</td>
</tr>
<tr>
<td>Management Consulting</td>
<td>6</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Facilities Management</td>
<td>5</td>
<td>11</td>
<td>0</td>
</tr>
<tr>
<td>Inventory Control</td>
<td>4</td>
<td>7</td>
<td>0</td>
</tr>
</tbody>
</table>
more sophisticated services.

VI. SUMMARY

This chapter has described: (1) the categories of services offered by service bureaus, (2) the specific types of services offered, (3) the services most often demanded by clients and provided by service bureaus, and (4) the services service bureaus are planning to expand into in the future.

The two categories of services which service bureaus offer are hardware and software services. The former includes computer time-sales and input data preparation, and the latter includes computer programming, systems analysis, computer consulting, facilities management, management consulting, real-time, and time-sharing services. Of these nine sub-categories of hardware and software services, the typical responding service bureau offers five sub-categories.

Hardware and software services can be further divided into specific routine and non-routine services. Of the eleven routine services discussed, the typical responding service bureau offers approximately seven. In addition, the typical responding service bureau offers an average of three out of the sixteen non-routine services discussed.
Five out of the six services most often demanded by clients and provided by service bureaus are routine in nature and include payroll; accounts receivable, accounts payable; billing and invoicing; sales analysis; and accounting—general ledger, financial statements. The sixth service—inventory level and control—is non-routine in nature.

An average of ninety-five per cent of responding service bureaus are planning to expand their offering of routine or non-routine services. The most often mentioned areas of planned expansion include: (1) accounting applications, (2) packaged applications, (3) real-time services, (4) time-sharing services, (5) simulations and model building, and (6) Management consulting.
CHAPTER IV

AN EVALUATION OF SERVICES AND SATISFACTION RECEIVED BY SERVICE BUREAU CLIENTS

I. INTRODUCTION

Previously, several aspects of services offered by service bureaus were examined. This chapter is concerned with the client who receives these services and covers the following topics:

- The types of companies that use service bureaus.
- The reasons why companies use service bureaus.
- An evaluation of the services received by responding service bureau clients.
- An evaluation of the satisfaction of responding service bureau clients.

Although the last two of the above topics—an evaluation of services and satisfaction—are only concerned with responding service bureau clients having sales between three to ten million dollars, much of this discussion may be applied to clients of all sizes who use service bureaus exclusively for processing their data. Information collected from interviews with service bureau personnel, from questionnaires received from clients having sales less than
three million dollars or greater than ten million dollars,\textsuperscript{1} and from other sources indicate that clients of all sizes possess similar characteristics and receive similar services.

The topics covered in this chapter should be useful to all kinds of accountants. By following the advice presented in this chapter certified public accountants (CPA's) or controllers (or other internal accountants) should be more competent to evaluate services performed by service bureaus and to make suggestions for improving these services. Furthermore, CPA's providing management advice to potential service bureau users should have a better understanding of the applications which provide maximum benefits to these potential users.

\section*{II. THE TYPES OF COMPANIES THAT USE SERVICE BUREAUS}

All sizes and types of companies use service bureaus. A study conducted by the Research Institute of America (RIA) concluded that more than one out of five (twenty-three per cent) companies uses a service bureau exclusively for processing its data.\textsuperscript{2}

\textsuperscript{1}These questionnaires were not included in this study.

This percentage of users increases if one includes companies both owning or leasing computers and using service bureaus.3

The sizes and types of industries using service bureaus is shown in Table XXIII. This table shows the percentage, by industries and sales volume of companies using service bureaus. For example, twenty-one per cent of distributors with sales volume of less than one million dollars and twenty-four per cent of distributors with sales volume of one to three million dollars use service bureaus.

III. THE REASONS WHY COMPANIES USE SERVICE BUREAUS

For a number of reasons, many companies, particularly small and medium size ones, do not install their own computers, but use service bureaus. The major reasons why these companies do not own computers are:4

1. Computer equipment is too costly.

2. Requirements too limited.

---

3Ibid.

TABLE XXIII

SERVICE BUREAU USERS: BY INDUSTRY AND SALES VOLUME
(Per Cent of Respondents)

<table>
<thead>
<tr>
<th>Industry</th>
<th>Manufacturing</th>
<th>Distribution*</th>
<th>Services**</th>
<th>Other***</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under $1 Million</td>
<td>10%</td>
<td>21%</td>
<td>25%</td>
<td>15%</td>
</tr>
<tr>
<td>$1-3 million</td>
<td>25</td>
<td>24</td>
<td>24</td>
<td>22</td>
</tr>
<tr>
<td>$3-5 million</td>
<td>28</td>
<td>37</td>
<td>42</td>
<td>33</td>
</tr>
<tr>
<td>$5-7 million</td>
<td>31</td>
<td>32</td>
<td>29</td>
<td>34</td>
</tr>
<tr>
<td>$7-10 million</td>
<td>21</td>
<td>25</td>
<td>38</td>
<td>29</td>
</tr>
<tr>
<td>$10-25 million</td>
<td>20</td>
<td>31</td>
<td>24</td>
<td>30</td>
</tr>
<tr>
<td>$25-50 million</td>
<td>15</td>
<td>5</td>
<td>10</td>
<td>22</td>
</tr>
<tr>
<td>$50 million and over</td>
<td>2</td>
<td>6</td>
<td>8</td>
<td>0</td>
</tr>
</tbody>
</table>

* Includes wholesalers, retailers, and industrial suppliers.

** Excludes banks, insurance companies, and utilities.

*** Includes manufacturers with distribution operations, construction and mining firms and the like.

3. Difficulties in finding space for the installation.

4. Problems involved in obtaining and retaining trained staff.

5. The low proportion of available computer time which can be used with the consequent high cost of unutilized time.

6. Difficulties of keeping up with changes and improvements in equipment and methods.

7. The complex nature of the work to be automated requiring the use of equipment more expensive than that which the company could otherwise consider.

These companies, if they correctly use service bureaus, should obtain all the advantages of electronic data processing (EDP) without owning any computer equipment or without employing any computer specialists. To enumerate, possible major reasons for using service bureaus include:

- Direct cost savings resulting from automating applications designed to reduce accounting and clerical costs.
- Increase in speed and accuracy in processing data.
- Indirect benefits and savings resulting from
automating applications designed to reduce items affecting cost of goods sold.

• Indirect benefits and savings resulting from automating applications designed to improve management information for decision making.

In addition to the advantages which small and medium size companies obtain from using service bureaus, large companies that own or lease computers may advantageously use service bureaus in four types of situations. They are:

1. Breakdown of the company's computer.
2. Overloaded equipment during certain peak periods.
3. Use for repetitive applications. Large companies may contract to a service bureau such applications as accounts receivable, accounts payable, or payroll. The company's computer is then used for more sophisticated, higher-payoff applications.
4. Use in special types of situations, such as conversion of data, or management or computer consulting services.

IV. AN EVALUATION OF SERVICES THAT CLIENTS RECEIVE FROM USING SERVICE BUREAUSR

This section will evaluate the services that
responding clients receive from using service bureaus. 5
This study concludes that most responding clients
are receiving few, if any, of the previously cited
advantages of using service bureaus. As a result,
these clients are not receiving optimum services
from using service bureaus. Specifically, most
responding clients are:

- Receiving only routine services.
- Planning to receive only more routine
  services.
- Not receiving any direct cost savings
  resulting from automating applications reducing
  accounting and clerical costs.
- Not receiving any indirect benefits or
  savings resulting from automating applications
  either reducing cost of goods sold or improving
  management information.

Services Received by Responding
Service Bureau Clients

Questionnaire replies reveal that the over-
whelming majority (eighty per cent) of responding

5 The discussion will refer only to service
bureau users who do not own or lease electronic
computers. Respondents that own or lease computers
and use service bureaus require a separate evaluation
and this evaluation is outside the scope of this
study.
clients receive strictly routine services from service bureaus. Of the eleven routine services listed in Table XXIV, for both regions combined, responding clients receive an average of 2.1 services (see Table XXVI). The routine services most often received are:

1. Payroll
2. Accounts receivable or accounts payable
3. Billing and invoicing
4. Sales analysis

The routine service least often received is purchase order writing.

In addition to the various types of routine services which responding clients receive, about twenty per cent of all clients receive some type of more sophisticated, non-routine service. More New England respondents receive non-routine services (twenty-seven per cent) compared to South Central respondents (twelve per cent). Since New England respondents have been using service bureaus longer than South Central respondents, they have had more time to automate accounting applications and thus

6Questionnaire tabulations reveal that New England respondents have used service bureaus an average of 4.1 years compared to 3.0 years for South Central respondents.
<table>
<thead>
<tr>
<th>Type of Service</th>
<th>Average</th>
<th>South Central</th>
<th>New England</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounting—General Ledger, Financial Statements</td>
<td>23%</td>
<td>34%</td>
<td>13%</td>
</tr>
<tr>
<td>Accounts Receivable, Accounts Payable</td>
<td>31</td>
<td>41</td>
<td>23</td>
</tr>
<tr>
<td>Billing and Invoicing</td>
<td>28</td>
<td>43</td>
<td>13</td>
</tr>
<tr>
<td>Expenses—Analysis and Reports</td>
<td>11</td>
<td>14</td>
<td>8</td>
</tr>
<tr>
<td>Labor and Cost Distribution</td>
<td>24</td>
<td>29</td>
<td>20</td>
</tr>
<tr>
<td>Marketing—Order Entry</td>
<td>9</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>Payroll</td>
<td>43</td>
<td>58</td>
<td>30</td>
</tr>
<tr>
<td>Sales Analysis</td>
<td>28</td>
<td>26</td>
<td>30</td>
</tr>
<tr>
<td>Production Scheduling</td>
<td>6</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Purchase Order Writing</td>
<td>2</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Other*</td>
<td>6</td>
<td>5</td>
<td>8</td>
</tr>
</tbody>
</table>

*Most often mentioned was mailing lists.
expand into other areas. A list of non-routine services and the percentages of responding clients that receive these services is shown in Table XXV. The non-routine services most often received are:

1. Production—cost control
2. Inventory control
3. Production—output reporting system
4. Accounting—cash control, budget control

The non-routine services least often received are:

1. Capital budgeting
2. Economic forecasts
3. Purchasing—vendor selection

Areas in Which Responding Clients Plan To Expand Services

Even though only approximately twenty per cent of responding clients receive non-routine services, there will only be a slight increase in the number of clients receiving non-routine services in the future. In fact, approximately twenty-two per cent of the clients plan to receive non-routine services, while the remaining seventy-eight per cent plan to receive more routine services (See Table XXVII for the areas in which responding clients plan to expand services). Sixteen per cent of this twenty-two per cent, however, represent respondents currently
TABLE XXV
NON-ROUTINE SERVICES RECEIVED BY
RESPONDING SERVICE BUREAU
CLIENTS
(Per Cent of Respondents)

<table>
<thead>
<tr>
<th>Type of Service</th>
<th>Average</th>
<th>South Central</th>
<th>New England</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounting—Cash Control,</td>
<td>8%</td>
<td>10%</td>
<td>8%</td>
</tr>
<tr>
<td>Budget Control</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capital Budgeting</td>
<td>1</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Cash Management</td>
<td>2</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Distribution—Carrier Selection</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Economic Forecasts</td>
<td>1</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Inventory Control</td>
<td>10</td>
<td>6</td>
<td>15</td>
</tr>
<tr>
<td>Marketing—Customer Service System</td>
<td>3</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Personnel—Skills Inventory</td>
<td>4</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Skill Forecasting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preparation of Budgets</td>
<td>4</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Production—Cost Control</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Production—Output Reporting</td>
<td>8</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>System</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purchasing—Replenishment Orders</td>
<td>5</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Purchasing—Vendor Selection</td>
<td>1</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Transportation—Routing</td>
<td>2</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>
TABLE XXVI

NUMBER OF ROUTINE AND NON-ROUTINE SERVICES RECEIVED BY RESPONDING SERVICE BUREAU CLIENTS

<table>
<thead>
<tr>
<th>Type of Service</th>
<th>Both Regions Combined</th>
<th>South Central</th>
<th>New England</th>
</tr>
</thead>
<tbody>
<tr>
<td>Routine services</td>
<td>2.1</td>
<td>2.6</td>
<td>1.7</td>
</tr>
<tr>
<td>Non-routine services</td>
<td>0.6</td>
<td>0.5</td>
<td>0.8</td>
</tr>
<tr>
<td>Total routine and non-routine services</td>
<td>2.7</td>
<td>3.1</td>
<td>2.5</td>
</tr>
</tbody>
</table>
### Table XXVII

**Areas in which Responding Clients Plan to Expand Services Received from Service Bureaus**

(Per Cent of Respondents)

<table>
<thead>
<tr>
<th>Area of Service</th>
<th>Average</th>
<th>South Central</th>
<th>New England</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Routine Services:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inventory level</td>
<td>20%</td>
<td>25%</td>
<td>15%</td>
</tr>
<tr>
<td>Accounting applications</td>
<td>29</td>
<td>41</td>
<td>8</td>
</tr>
<tr>
<td>Payroll</td>
<td>26</td>
<td>32</td>
<td>17</td>
</tr>
<tr>
<td>Accounts receivable</td>
<td>15</td>
<td>14</td>
<td>17</td>
</tr>
<tr>
<td>Production scheduling</td>
<td>12</td>
<td>9</td>
<td>17</td>
</tr>
<tr>
<td>Invoicing</td>
<td>12</td>
<td>9</td>
<td>17</td>
</tr>
<tr>
<td>Labor and cost distribution</td>
<td>9</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>Accounts payable</td>
<td>9</td>
<td>5</td>
<td>17</td>
</tr>
<tr>
<td>Sales analysis</td>
<td>6</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td><strong>Non-Routine Services:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inventory control</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
</tr>
<tr>
<td>Sales forecasting</td>
<td>9</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>Budget control</td>
<td>6</td>
<td>0</td>
<td>17</td>
</tr>
<tr>
<td>Production control</td>
<td>3</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Cash management</td>
<td>3</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Marketing</td>
<td>3</td>
<td>5</td>
<td>0</td>
</tr>
</tbody>
</table>
receiving non-routine services. This means that only six per cent represent respondents actually expanding into non-routine services for the first time. Added to the approximately twenty per cent now receiving non-routine services results in a total of about twenty-six per cent of responding clients that will be receiving non-routine services in the future.

More New England respondents than South Central respondents, as revealed in questionnaire tallies, plan to ask their service bureaus for an expansion of non-routine services and the opposite is true for routine services. Having, on the average used service bureaus for a longer period than South Central respondents, New England respondents apparently have successfully automated most of their routine clerical and accounting procedures and are now concerned with automating non-routine applications. These New England respondents may represent a future trend for South Central clients. As South Central clients successfully automate routine applications, they may begin processing more sophisticated, potentially higher payoff applications at service bureaus.
Direct Cost Savings

Service bureau clients who have automated routine applications should be receiving the advantages of direct cost savings, and increased speeds in processing data. The advantage of direct cost savings should result from automating applications designed to reduce accounting and clerical costs, such as accounts receivable systems, accounts payable systems, billing and invoicing systems, sales analysis systems, and the like. Most responding clients who have automated routine applications are not receiving any direct cost savings. In fact, some respondents commented that by using a service bureau they had actually increased clerical costs. Only thirteen per cent of the respondents, as Table XXVIII points out, indicate direct cost savings from using service bureaus and another fifty-nine per cent do not know if they are receiving direct cost savings.

Included in this fifty-nine per cent were some respondents who remarked that they had not used a service bureau long enough to calculate any direct cost savings. This remark appears to be a weak argument because any direct savings could
have easily been computed prior to using a service bureau.  

Direct cost savings should be computed by every prospective service bureau client because these savings are the major benefit which result from the automation of routine applications. These savings include reduction of accounting costs, clerical worker costs, and general and administrative expenses. Since only thirteen per cent of responding clients report any direct savings, Table XXVIII implies that the majority of the clients failed to investigate the feasibility of EDP; in fact, many may not need automated systems. Their manual system may do as well, if not better than a mechanized system and cost less.

Increase in Speed and Accuracy of Processing Data

Direct cost savings alone is not the sole reason for converting to EDP. Other advantages, such as

7For an excellent discussion on how to compute direct cost savings, see The Computer--Small Business Tool? (New York: Research Institute of America, February 24, 1965), 24 pages.

8For a comprehensive discussion of pre-service bureau planning, see pages 105-122.
TABLE XXVIII

YEARLY DIRECT DOLLAR SAVINGS FROM USING SERVICE BUREAUS
(Per Cent of Respondents)

<table>
<thead>
<tr>
<th>Region</th>
<th>Average Savings</th>
<th>Per Cent of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Saving Money</td>
</tr>
<tr>
<td>South Central</td>
<td>$13,500</td>
<td>14%</td>
</tr>
<tr>
<td>New England</td>
<td>7,600</td>
<td>12%</td>
</tr>
<tr>
<td>Average</td>
<td>10,820</td>
<td>13%</td>
</tr>
</tbody>
</table>

increased accuracy and speed in processing data, may compensate for higher service bureau costs. For most responding clients, these additional advantages will not compensate for direct savings. The fact that most clients receive increased accuracy and speed in processing data without also receiving direct savings is not reason enough to justify the automation of routine applications. If a service bureau client cannot calculate any direct dollar savings from processing routine applications, he should not use a service bureau, unless indirect benefits and savings can be received from processing non-routine applications.
Indirect Benefits and Savings
By Reducing Cost of Goods Sold

Since the overwhelming majority of responding service bureau clients automate strictly routine accounting applications, they are not realizing the real profit potential of using a service bureau's computer. Clients will realize this potential by receiving indirect benefits and savings resulting from automation of applications designed either to reduce items affecting cost of goods sold or to provide management with improved information for decision making.

Due to rising clerical costs and the desire to cut clerical staffs, most responding service bureau clients are concerned with automating routine applications that will reduce general and administrative expenses. These applications, however, will not reduce cost of goods sold, which for many companies, is perhaps where the greatest profit potential of the computer lies.\(^9\) For example, a typical breakdown of one dollar of sales is:

---

Cost of Goods Sold .................. $ .70
General & Administrative Expense .......... .10
Profit Before Tax .......................... .20
Total ........................................ $1.00

A ten per cent reduction in cost of goods sold ($ .07) increases before tax profit from $.20 to $.27, but a ten per cent reduction in general and administrative expenses ($ .01) only increases before tax profit from $.20 to $.21. Consequently, until the computer is used for applications in which the leverage on profits is high—applications reducing cost of goods sold—the penalty of lost opportunities and lost profits will continue to mount.10

Representative applications which reduce cost of goods sold include:

1. Inventory control systems
2. Purchase order writing
3. Purchasing—material selection
4. Purchasing—replenishment orders
5. Purchasing—vendor selection
6. Production—cost control
7. Production—planning and scheduling

10 Ibid.
8. Transportation—scheduling and routing

9. Distribution—carrier selection

The purpose of automating these and similar types of applications is to provide a service bureau client with indirect benefits and savings which can be accurately measured. For example, by automating applications that reduce cost of goods sold, service bureau clients could receive the following representative indirect benefits and savings: (1) increased profit on the investment in inventory, (2) improved purchasing, and (3) improved transportation scheduling and routing.

One way in which service bureau clients can receive indirect benefits and savings is through an automated inventory control system. This type of system should increase the profit on the investment in inventory in two ways. First, it should provide savings due to a lower inventory level by avoiding an accumulation of surplus items in the warehouse. This should result in lower inventory carrying charges,

---

11 For an excellent article on criteria used to analyze indirect benefits and cost savings resulting from automating applications designed to reduce cost of goods sold, see John Diebold, "Bad Decisions on Computer Use", The Harvard Business Review, XLVII, Jan.-February, 1969, pp. 14-16, 21-28, 176.
insurance, and materials handling. Second, an automated inventory control system provides for an automatic re-ordering of items which should result in an increased inventory turnover. An increased inventory turnover should increase cash flow and improve the return on inventory investments.\textsuperscript{12}

A second way in which service bureau clients can receive indirect benefits and savings is through an automated purchasing system. The biggest savings resulting from this system is the reduction in time that purchasing agents spend on routine purchase orders.\textsuperscript{13} By eliminating most of the routine purchase order writing, an automated purchasing system frees the purchasing department personnel to do a more thorough job on those purchases that account for most of a company's purchasing dollar.

Another way in which service bureau clients can receive indirect benefits and savings is through an automated transportation scheduling and routing system. An automated transportation system automatically considers: (1) the size of shipment—how much space the order requires in the truck, (2) size of the truck—the computer should not overload a truck, (3) distance between customers—the computer


\textsuperscript{13}The Computer—Small Business Tool, op. cit., p. 23.
attempts to group in a truck the shipments of customers who are close together, and (4) number of customers per truck—this limits the number of shipments per truck, since a fixed time must be associated with a shipment no matter what its size. This type of automated transportation system can schedule routine delivery vehicles so that both fastest delivery and lowest overall delivery cost can be balanced, resulting in maximization of profits.

In spite of the indirect benefits and savings that service bureau clients should receive by automating inventory systems, purchasing systems, transportation systems, or other types of systems designed to reduce cost of goods sold, few responding clients automate any of these systems. Practically all service bureau clients responding to this survey derive their revenues from sales of goods or merchandise and accordingly, could automate applications reducing cost of goods sold. Yet, only one out of seven respondents automate any of these applications. These respondents have the following characteristics:

---

14 Computers: An Introduction to Their Use in Small and Medium Sized Businesses, op. cit., p. 18.

15 Ibid., p. 28.
1. Type of industry represented:
   Manufacturer ............................ 47%
   Wholesale or retail ...................... 24%
   Mining, oil, production .................. 24%
   Transportation, communication, and public utilities ......................... 5%

2. Average number of applications automated 5.6
3. Average number of applications designed to reduce cost of goods sold 2.0
4. Range of yearly costs of using the service bureau ................................. $1,500 - $100,000
5. Average yearly cost of using the service bureau ................................. $31,400
6. Average annual cost per application ............................................ $5,607

There is no reason why the other six out of seven responding clients cannot also automate applications that reduce cost of goods sold. All clients included in this study could benefit from properly automating these applications and thereby receive many indirect benefits and savings—all for costs well within their budgets. Indeed, service bureau charges for automating applications that reduce cost of goods sold are not prohibitively high. Companies that own or lease computers and that have the same approximate sales
volume as responding clients included in this study have the characteristics shown in Table XXIX.

According to Table XXIX, a company that owns or leases a small computer, such as the IBM 360/Model 20, spends between $12,769 - $14,131 per application per year compared to $5,607 per application spent by responding service bureau clients. The latter group thus is in an enviable position. This group, by properly automating applications that reduce cost of goods sold, along with other routine applications, should be able to tap the real profit potential of their service bureau's computer— at less than one-half the annual cost per application to own or lease a computer.

Indirect Benefits and Savings:
By Automating Applications That Improve Management Information

Another way in which service bureau clients can realize the profit potential of their service bureau's computer and receive indirect benefits and savings is to automate applications designed to provide management with improved information for decision making. While there is a certain amount of overlap that exists between applications that improve management information and that reduce cost
<table>
<thead>
<tr>
<th></th>
<th>Average</th>
<th>Lower Quartile*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales Volume</td>
<td>$10,000,000</td>
<td>$6,000,000</td>
</tr>
<tr>
<td>Number of applications</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>processed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual Cost of operating</td>
<td>$84,783</td>
<td>$63,845</td>
</tr>
<tr>
<td>the computer system</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average annual cost per</td>
<td>$14,131</td>
<td>$12,769</td>
</tr>
<tr>
<td>application</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Defined as the midpoint of the lower half.

of goods sold, the following applications are representative of the former group:

1. Budgeting systems
2. Performance measurement systems
3. Variance analysis systems
4. Capital budgeting systems
5. Economic forecasting systems
6. Forecasting of money market conditions
7. Sales forecasting
8. Personnel—skills forecasting

All of the above applications are designed to provide managers with improved information to make better decisions. These and other types of similar applications are intended to provide managers with so-called total systems or management information systems.16

The payoff of a management information system is in indirect benefits and savings which are usually impossible to quantify and compare to the cost of developing such a system. Intangible benefits and savings include improvements in customer service, corporate planning and forecasting, and "other advantages which may not be present without the system, but which depend on management's astuteness in using it."\textsuperscript{17}

Only about one out of fourteen responding service bureau clients automate any applications specifically designed to provide managers with improved information. Even though a total mechanized management information system may not be feasible for any sized company, all respondents included in this study need improved information for decision making. These respondents are large enough to consider automating at least the following applications: (1) budgeting systems, (2) sales forecasting systems, (3) variance analysis systems, and (4) performance measurement systems.

\textsuperscript{17}Diebold, op. cit., p. 27.
V. AN EVALUATION OF SATISFACTION OF RESPONDING CLIENTS WITH SERVICE BUREAUS

Although the preceding sections evaluated the services that responding clients receive from service bureaus, there was no indication of satisfaction with these services. Whether clients receive both routine and non-routine services does not indicate if these services are satisfactorily provided. An examination of the following factors should disclose the degree of client satisfaction with their service bureau:

- The number of different service bureaus used.
- The per cent of service bureaus unable to provide clients with requested services.
- The per cent of clients planning to expand services.
- The per cent of clients planning to continue using service bureaus.

The Number of Different Service Bureaus Used

The first factor which indicates the degree of satisfaction of clients is the number of different service bureaus used. Even though an average of sixty-four per cent of responding clients have used only one
service bureau (Table XXX), significant differences exist between the two regions surveyed. Only fifty-one per cent of New England respondents have used one service bureau, while a surprising one out of four have used three or more different ones.

The number of different service bureaus used by responding clients becomes more significant when one realizes that forty-nine per cent of all respondents have used service bureaus for two years or less and seventy-six per cent for four years or less (Table XXXI). Differences in the first three categories shown in Table XXXI reveal that New England respondents have used service bureaus longer than South Central respondents. \(^{18}\)

\(^{18}\)Refer to footnote 6, page 72.
### TABLE XXXI

LENGTH OF TIME RESPONDING CLIENTS HAVE USED SERVICE BUREAUS  
(Per Cent of Respondents)

<table>
<thead>
<tr>
<th>Region</th>
<th>Less Than 1</th>
<th>2 or Less</th>
<th>4 or Less</th>
<th>7 or Less</th>
<th>10 or Less</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Central</td>
<td>17%</td>
<td>53%</td>
<td>81%</td>
<td>89%</td>
<td>92%</td>
</tr>
<tr>
<td>New England</td>
<td>5%</td>
<td>42%</td>
<td>68%</td>
<td>84%</td>
<td>95%</td>
</tr>
<tr>
<td>Average</td>
<td>12%</td>
<td>49%</td>
<td>76%</td>
<td>88%</td>
<td>94%</td>
</tr>
</tbody>
</table>

Consequently, South Central respondents have not had time to fully assess the services they are receiving. For this reason, seventy-three per cent of South Central respondents are still using their original service bureau.

The per cent of responding clients that have requested an expansion of services, is a second indicator of client satisfaction. In an attempt to increase satisfaction, many respondents have changed service bureaus, looking for one able to provide satisfactory services. However, as many respondents have discovered, it is difficult
to find a service bureau that can provide the requested services. The following percentages of respondents have already requested services from service bureaus:

- South Central: 48%
- New England: 35%
- Average: 41%

Many service bureaus, as Table XXXII discloses, could not provide clients with requested services. A much higher percentage of South Central respondents were able to receive the requested services. Since the majority of these respondents have used service bureaus for a shorter time than New England respondents, they are requesting to expand into mainly routine services which most service bureaus can provide. On the other hand, many New England respondents are requesting to expand into more sophisticated non-routine services which many service bureaus cannot provide.

The Per Cent of Responding Clients Planning to Expand Services

Third in the list of factors which indicates client satisfaction is the percentages of responding clients that plan to expand services. These percentages are:
South Central . . . . . . . . . . . . . . 64%
New England . . . . . . . . . . . . . . 37%
Average . . . . . . . . . . . . . . . . . . 50%

Since most South Central responding clients are newer to the service bureau movement than New England clients, a high percentage of them plan to expand services. Although only slightly over one-third of New England responding clients plan to expand services, they have by no means reached the saturation point of services they can receive. Of the thirty-seven per cent of New England clients that plan to expand services, only about six per cent represent respondents that plan to expand into non-routine services for the first time. And, as previously mentioned, about twenty-seven per cent of New England clients now receive non-routine services. Thus, approximately sixty-seven per cent of New England clients apparently have no plans to automate higher-payoff applications, such as those that reduce cost of goods sold or those that improve management information. Nevertheless, all clients that responded to this survey could profitably automate these higher payoff applications and at a fraction of what it would cost to own a computer.
The fourth and final factor which indicates client satisfaction is the percent of responding clients that plan to continue using service bureaus. Clients were asked the question: "Does the company plan to continue using a service bureau in the foreseeable future?" The responses were:

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Central</td>
<td>82%</td>
<td>18%</td>
</tr>
<tr>
<td>New England</td>
<td>70%</td>
<td>30%</td>
</tr>
<tr>
<td>Average</td>
<td>75%</td>
<td>25%</td>
</tr>
</tbody>
</table>

A significant thirty percent of New England clients plan to discontinue using service bureaus. Perhaps as South Central clients gain in user experience, they like many New England clients, will become dissatisfied with service bureaus and discontinue use.

For the most part, those responding clients that plan to discontinue using service bureaus will purchase or lease computers. Service bureau clients were asked: "Does the company anticipate purchasing or leasing its own electronic computers within the next 5 to 10 years?" The responses were:
Questionnaire tallies indicate that most clients that plan to purchase or lease a computer will not have enough initial applications to justify their own computer. Responding clients to this survey are all small and medium in size and if they were to purchase or lease a computer, it probably would be a small computer, such as an IBM 360/Model 20.

The Research Institute of America indicates that companies who own or lease such a computer, process an average of five or six applications. However, as the following analysis discloses, responding clients who anticipate the purchase or lease of a computer, will only have an average of four applications to process on it.

<table>
<thead>
<tr>
<th>Region</th>
<th>Currently</th>
<th>Anticipated</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Central</td>
<td>3</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>New England</td>
<td>3</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Average</td>
<td>3</td>
<td>1</td>
<td>4</td>
</tr>
</tbody>
</table>

TABLE XXXII

PER CENT OF SERVICE BUREAUS THAT COULD
NOT PROVIDE CLIENTS WITH
REQUESTED SERVICES

<table>
<thead>
<tr>
<th>Region</th>
<th>Unable to Provide Requested Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Central</td>
<td>15%</td>
</tr>
<tr>
<td>New England</td>
<td>50%</td>
</tr>
<tr>
<td>Both Regions</td>
<td>30%</td>
</tr>
</tbody>
</table>

Hence, the processing of an average of four applications will not be profitable enough to initially offset the high operating costs of the computer system. Responding clients that plan to purchase or lease a computer have no choice except to continue using an automated system because a return to a unit record or manual system would be as "unthinkable as giving up the typewriter for the quill pen."  

Summary

An examination of the number of different service  

---

20 Of course, after the client properly learns how to use the computer, he should eventually have enough profitable applications to offset these high operating costs.  

21 Unlocking the Computer's Profit Potential, op. cit., pages 2 and 3.
bureaus used, the per cent of service bureaus unable to provide clients with requested services, the per cent of clients planning to expand services, and the per cent of clients planning to continue using service bureaus leads to the conclusion that many responding clients are, in varying degrees, dissatisfied with the services they are receiving from service bureaus.

VI. SUMMARY

If properly used, service bureaus operating throughout the country should provide almost any size and type of business with the advantages of electronic data processing. However, the routine services received by most responding clients indicate that service bureaus are used strictly for help in routine administrative and financial areas. In fact, a very limited number of respondents plan to expand into more sophisticated higher-payoff areas.

The strict mechanization of routine applications by the overwhelming majority of responding clients does not provide them with the major benefit of direct cost savings. Only thirteen per cent of respondents report any direct savings from automating routine applications. For most clients the other main advantage of automating routine applications, increase
in accuracy and speed in processing data, in itself is not important enough to justify mechanizing routine applications. Since direct cost savings resulting from the automation of routine applications are easily quantifiable, many clients apparently failed to fully investigate the feasibility of electronic data processing. In fact, their routine manual systems may do as good a job as an automated system and cost less.

In addition to automating routine applications, some responding clients mechanize non-routine higher-payoff applications. These applications should provide clients with many indirect benefits and savings. These indirect benefits and savings result from the automation of applications that either reduce cost of goods sold or provide managers with improved information for making decisions. For many companies, automating applications that reduce cost of goods sold could provide them with the most profitable use of a service bureau's computer. All companies included in this study could profitably automate such applications. In spite of this, only about one in seven responding clients automate any applications that reduce cost of goods sold. Practically any sized company could profitably automate certain applications that are designed to improve management information, such as budgeting systems, variance analysis systems,
sales forecasting systems, or capital budgeting systems. Yet, only about one in fourteen responding clients automate any of these applications.

Whether responding clients receive both routine and non-routine services does not indicate if these services are satisfactorily provided. An examination of the four major factors that affect satisfaction of clients leads to the conclusion that many clients, in varying degrees, are dissatisfied with service bureaus. These four factors were (1) the number of different service bureaus used, (2) the per cent of service bureaus unable to provide clients with requested services, (3) the per cent of clients planning to expand services, and (4) the per cent of clients planning to continue using service bureaus. There may be three reasons why service bureau clients are dissatisfied with service bureaus: (1) poor planning before selecting a service bureau, (2) poor methods of selecting a service bureau, and (3) poor planning after the service bureau has been selected.
CHAPTER V

METHODS OF IMPROVING SATISFACTION OF
SERVICE BUREAU CLIENTS

I. INTRODUCTION

The preceding chapter pointed out that most service bureau clients receive strictly routine services, do not plan to receive non-routine services, do not save money by using service bureaus, and do not receive applications that either reduce cost of goods sold or improve management information. Furthermore, most clients, in varying degrees, are dissatisfied with services which they receive from service bureaus.

This chapter discusses ways in which current and future service bureau clients can improve the services received from service bureaus. A discussion of these ways should be useful to accountants employed by companies considering the use of service bureaus. Since accountants often are partly or solely responsible for deciding if a service bureau is needed, for selecting applications to automate, for choosing a service bureau, and for working as a liaison between their company and the service bureau, the material in this chapter should help these accountants to more efficiently perform their duties. Equally important is the fact
that accountants who work for companies now using service bureaus can benefit from this material if it is used to evaluate the services their companies receive.

Finally, many Certified Public Accountants (CPA's) provide their clients with management advice concerning the use of service bureaus. This advice might include determining which applications to automate, analyzing and modifying manual systems prior to automation, helping clients select service bureaus, and helping them evaluate services received from service bureaus. These CPA's should be able to more satisfactorily provide this advice by following the suggestions included in this chapter.

The material in this chapter is presented in three main sections. They are:

1. Ways of improving planning before selecting a service bureau, hereafter referred to as pre-selection planning.

2. Ways of improving techniques of selecting a service bureau.

3. Ways of improving planning after selecting a service bureau, hereafter referred to as post-selection planning.
II. PRE-SELECTION PLANNING

In order to increase the probability of receiving optimum services from service bureaus, much proper pre-selection planning is needed to send even a few routine accounting applications to a service bureau. Poor pre-selection planning may be a major reason why many service bureau users are not receiving worthwhile services.

Proper pre-selection planning involves three steps. First, a competent feasibility committee should be appointed. Second, the feasibility committee should discharge the following duties:

1. Analyze accounting sub-systems.
2. Analyze non-accounting sub-systems.
3. Suggest possible modifications of all systems analyzed.
4. Measure the amount and type of savings or benefits resulting from the mechanized system.
5. Develop a five to ten year plan for applications to be automated at a service bureau.

Third, a committee should be appointed to select a service bureau. The three planning steps, if properly performed, and the selection of a service bureau could take from four months to one and one-half
years or longer, depending on a company's size and the number and complexity of applications to be initially automated at a service bureau.

**Composition of Feasibility Committee**

Appointing a feasibility committee is the least time consuming planning step, but it is very important. To successfully perform its duties, the feasibility committee should include at least a member of management, preferably top management, and an accountant, preferably the controller.

The feasibility committee needs management's leadership to provide direction in selecting applications to automate at a service bureau. In this regard, prospective service bureau clients can profit from the mistakes of companies who own computers. Many in-house computer systems fail because of management's lack of exposure to the planning or feasibility stage.

In the past, management has rarely concerned itself with the issue of feasibility when making a decision regarding the automation of accounting and administrative systems.¹ When a company had an

¹"Unlocking the Computer's Profit Potential", *Computers and Automation*, XVIII, April, 1969, p. 29.
efficient manual system, the feasibility of an application focused on the technical problem of programming the computer. Any savings resulting from automating the application could easily be determined in terms of clerical cost reductions. Once a company had learned how to realistically estimate the costs of converting to an automated system, determining economic feasibility—how much expected dollar returns would exceed expected costs—was relatively simple. Moreover, operational feasibility—successful use of the new system—was assured when a single executive, such as the controller, had charge of both developing and operating the new system.\textsuperscript{2}

In the past, operational feasibility was not hindered when a member of management was not involved in planning for the EDP system, but the situation is different today. Since the real profit potential of using a service bureau lies in automating applications which either reduce cost of goods sold or provide management with improved information for decision making, it is doubtful that the controller alone could set the future course of the corporate

\textsuperscript{2}Ibid.
computer effort; management involvement is needed to assess the benefits of proposed non-routine applications. This assessment, which requires a full understanding of operations effected and the policies that govern them, can best be determined by management. In addition, to achieve its full profit potential, a computer application may also require substantial operational changes—changes in company policy, staff reorganization, construction of new facilities and the phasing out of old facilities. These operational changes certainly will require the support of management and their staff. 3 EDP specialists or other specialists, such as the controller, cannot really judge the necessity of such changes, much less implement them. 4

Although the controller should not be given the sole authority regarding computer applications, he is an essential member to include on the feasibility committee for three reasons. First, his knowledge of the accounting system, which is perhaps the most important single system in a company, is


4Ibid.
indispensable. The information provided by this system serves as the data base for developing other major systems, such as management information and control systems. Some of the most fruitful types of information and control systems relating to the accounting system include budgeting systems, variance analysis systems, performance measurement systems, and capital budgeting systems. Second, the controller's advice is needed to help automate applications which reduce cost of goods sold. Third, and as will be discussed later, most service bureau clients appoint a liaison man to work closely with the service bureau. Men with an accounting background usually make the best liaison men. Thus, if the controller is chosen as the liaison man, he will be able to perform his duties more efficiently because he served on the feasibility committee.

When at least one member of management and the controller are included on the feasibility committee and jointly select jobs for processing, more of their companies receive non-routine services, plan to expand into non-routine services, and process a larger number of applications at service bureaus (Table XXXIII).

---

5For the reasons why, see page 167.
TABLE XXXIII
SERVICES RECEIVED BY RESPONDING CLIENTS
WHEN DIFFERENT PERSONNEL ARE
RESPONSIBLE FOR SELECTING
JOBS TO PROCESS AT A
SERVICE BUREAU
(South Central and New England)

<table>
<thead>
<tr>
<th>Personnel Responsible</th>
<th>Controller or Accountant</th>
<th>Both Management And Accountant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Services Received</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Currently receiving</td>
<td>80%</td>
<td>70%</td>
</tr>
<tr>
<td>exclusively routine</td>
<td></td>
<td>60%</td>
</tr>
<tr>
<td>applications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Currently receiving</td>
<td>20%</td>
<td>30%</td>
</tr>
<tr>
<td>non-routine applications</td>
<td></td>
<td>40%</td>
</tr>
<tr>
<td>Planning to expand</td>
<td>30%</td>
<td>23%</td>
</tr>
<tr>
<td>into non-routine</td>
<td></td>
<td>60%</td>
</tr>
<tr>
<td>services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Number of</td>
<td>3.0</td>
<td>2.5</td>
</tr>
<tr>
<td>applications processed at a service bureau</td>
<td></td>
<td>4.3</td>
</tr>
</tbody>
</table>
Duties of Feasibility Committee

The second planning step—the discharging of the duties of the feasibility committee—is the most time consuming since it involves the development of a long range plan of applications to be mechanized at a service bureau.

Systems analysis. Before the feasibility committee can develop a plan of applications to be automated, it must analyze and, where possible, modify all of its company's systems—both accounting and non-accounting. The costs of the best possible manual systems should be compared to estimated service bureau costs. If prospective service bureau users simply analyze, but do not modify, existing systems they may minimize initial systems costs and begin processing their data earlier at the service bureau. However, "the company which has a poorly conceived inventory system, maintained manually, will hardly solve the management information problem relating to inventories by automating the manual process."^6

In an attempt to justify their actions, some

---

prospective service bureau clients who only analyze systems replied that they will modify the system in the future. This rationalization may result in one of two occurrences:  

1. The system is not redesigned.  

2. When the system is redesigned, reprogrammed, and reconverted, excess costs will be incurred. Consequently, to avoid either of the two occurrences, any systems analyzed, if necessary, should be modified.  

**Analysis of routine accounting sub-systems.**

The feasibility committee should begin its systems analysis duty by analyzing routine accounting sub-systems, such as the accounts receivable system, the accounts payable system, the payroll system, and the billing and invoicing system. Automating these types of systems should result in direct cost savings, which can be easily quantified.  

The costs of the accounting sub-systems should be compared to a service bureau's

---


8 For an excellent discussion on ways to analyze accounting sub-systems and ways to determine resulting direct cost savings from automating these systems, see The Computer--Small Business Tool? (New York: Research Institute of America, File No. 33, February 24, 1965), 24 pages.
estimated costs of converting the proposed applications to an automated system. The committee can then determine if any clerical savings will result from automation.

A service bureau should present estimated conversion costs in the form of a cost bid proposal. The proposal should then be compared to current accounting sub-system costs and if it is lower, the prospective client should consider automating these applications.

On the other hand, if all the bids are higher than current manual accounting systems costs, the feasibility committee has not wasted its time analyzing these systems; their analysis may pinpoint bottlenecks which can be eliminated and lower the manual accounting sub-system costs.

Analysis of non-routine sub-systems. After determining the feasibility of automating routine accounting applications, the committee should then proceed to analyze non-routine systems. However, most service bureau clients interviewed were interested only in determining the feasibility of automating traditional routine accounting applications. Prospective service bureau clients, nevertheless, should analyze non-routine systems for at least three reasons.

First, their analysis often results in an
improvement of the manual systems and this improvement should help managers make better decisions.

Second, service bureau clients who initially automate only routine applications, may later desire to automate more sophisticated applications. Accordingly, a service bureau which can provide a full range of both routine and non-routine applications should be selected. Thus a client will not have to change to another service bureau when more sophisticated services are desired.9

Third, since the greatest profit potential of using a service bureau's computer system lies in the automation of non-routine applications, all prospective service bureau clients should consider automating these types of applications. Even though routine applications may not initially be justified, a prospective service bureau user could receive some of

---

9 A few clients interviewed began using a service bureau for processing only routine applications. Later, when they decided to automate more sophisticated applications and their service bureau could not provide the services, these clients considered using a second service bureau for processing only non-routine applications. Thus, they would be using two service bureaus simultaneously. However, because of the many problems involved, these clients discontinued using the original service bureau and transferred all their data processing applications to the service bureau able to provide both routine and non-routine services.
the most important advantages of EDP by automating non-routine applications. The Research Institute of America states that "a growing number of companies considering their first move to EDP are asking to start with relatively tough jobs like inventory control instead of the traditionally easier ones like billing."\(^1\) Hence, there is no reason why prospective service bureau clients should not consider the feasibility of using service bureaus to initially automate higher payoff applications.

**Committee To Select A Service Bureau**

After determining possible non-routine applications to automate, the feasibility committee's final duty is to develop a long range plan of applications—both routine and non-routine—to automate at a service bureau. Once this plan is completed, the prospective service bureau client should appoint a committee to select a service bureau.

Table XXXIV shows what personnel were responsible in participating companies for selecting the service bureau. In both columns, the percentages add up to over one hundred per cent because in some

\(^{10}\) The Computer—Small Business Tool? op. cit., p. 3.
<table>
<thead>
<tr>
<th>Personnel</th>
<th>South Central</th>
<th>New England</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top managers (or owner)</td>
<td>53%</td>
<td>38%</td>
</tr>
<tr>
<td>Other managers</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>Controller or financial officer</td>
<td>48</td>
<td>60</td>
</tr>
<tr>
<td>Accountant (other than controller)</td>
<td>10</td>
<td>13</td>
</tr>
<tr>
<td>Company computer specialist</td>
<td>0</td>
<td>13</td>
</tr>
<tr>
<td>Outside consultant</td>
<td>12</td>
<td>5</td>
</tr>
</tbody>
</table>
responding companies, more than one person had this responsibility. In the majority of companies, as the following percentages show, only one person selected the service bureau:

<table>
<thead>
<tr>
<th>Number Responsible</th>
<th>Average</th>
<th>South Central</th>
<th>New England</th>
</tr>
</thead>
<tbody>
<tr>
<td>One person responsible</td>
<td>62%</td>
<td>68%</td>
<td>58%</td>
</tr>
<tr>
<td>More than one person responsible</td>
<td>38%</td>
<td>32%</td>
<td>42%</td>
</tr>
</tbody>
</table>

For the purpose of determining whether one or more than one person did a better selection job, seven key factors affecting selection were examined. Service bureau clients were asked: "In your selection of a service bureau, indicate the degree of importance given to each item below. Indicate whether the item was Not Considered, received Some Consideration, or received Very Important Consideration." Of the eleven items referred to in the question, only seven were determined to be key or major items that should be carefully considered in selecting a service bureau.\(^{11}\)

As seen in Tables XXXV and XXXVI, two categories were considered for each item, depending on the number of persons responsible for selecting the service bureau. Each response was assigned a point value.

\(^{11}\)For a complete list of all items, see Appendix C page 271, question C-9.
TABLE XXXV

KEY ITEMS CONSIDERED WHEN SELECTING SERVICE BUREAUS
(SOUTH CENTRAL)

<table>
<thead>
<tr>
<th>Key Items</th>
<th>No. of Personnel Responsible For Selecting the Service Bureau</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>One</td>
</tr>
<tr>
<td>1: Advantages and disadvantages of service bureaus</td>
<td>4.1 points</td>
</tr>
<tr>
<td>2. Financial and banking references</td>
<td>1.4 points</td>
</tr>
<tr>
<td>3. Past experience of service bureau</td>
<td>1.7 points</td>
</tr>
<tr>
<td>4. Recommendations and experience of other users</td>
<td>3.0 points</td>
</tr>
<tr>
<td>5. Reputation of service bureau</td>
<td>3.0 points</td>
</tr>
<tr>
<td>6. Types of services offered</td>
<td>2.8 points</td>
</tr>
<tr>
<td>7. Technical knowledge of service bureau personnel</td>
<td>3.6 points</td>
</tr>
</tbody>
</table>

as follows:

<table>
<thead>
<tr>
<th>Answer</th>
<th>Point Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Important Consideration</td>
<td>.5 points</td>
</tr>
<tr>
<td>Some Consideration</td>
<td>.3 points</td>
</tr>
<tr>
<td>Not Considered</td>
<td>.0 points</td>
</tr>
</tbody>
</table>
TABLE XXXVI
KEY ITEMS CONSIDERED WHEN SELECTING
SERVICE BUREAUS
(NEW ENGLAND)

<table>
<thead>
<tr>
<th>Key Items</th>
<th>One</th>
<th>Two or More</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Advantages and disadvantages of service bureaus</td>
<td>2.8 points</td>
<td>3.4 points</td>
</tr>
<tr>
<td>2. Financial and banking references</td>
<td>1.0 points</td>
<td>1.9 points</td>
</tr>
<tr>
<td>3. Past experience of service bureau</td>
<td>2.6 points</td>
<td>3.5 points</td>
</tr>
<tr>
<td>4. Recommendations and experience of other users</td>
<td>2.9 points</td>
<td>3.5 points</td>
</tr>
<tr>
<td>5. Reputation of service bureau</td>
<td>3.6 points</td>
<td>3.6 points</td>
</tr>
<tr>
<td>6. Types of services offered</td>
<td>2.9 points</td>
<td>3.1 points</td>
</tr>
<tr>
<td>7. Technical knowledge of service bureau personnel</td>
<td>2.2 points</td>
<td>3.5 points</td>
</tr>
</tbody>
</table>

Tables XXXV and XXXVI clearly show that, for either region surveyed, when two or more persons selected a service bureau, they did a more thorough job of considering the major items listed. Because of this thoroughness, their companies should be more satisfied with services received. In order to
determine if these companies were in fact more satisfied, New England responding service bureau clients were grouped into two categories, depending on the number of personnel responsible for the selection. The following percentages show that when two or more persons share the selection responsibility, a much higher percentage of their companies plan to continue using service bureaus:

<table>
<thead>
<tr>
<th>Number of Personnel Responsible</th>
<th>For Selecting a Service Bureau</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>Two or More</td>
</tr>
</tbody>
</table>

Per cent of clients planning to continue using service bureaus: 67% 82%

Although the preceding analysis indicates that two or more persons do a better selection job, it does not disclose which persons should be appointed to select the service bureau. For respondents stating that two or more persons selected a service bureau,

12 Only the answers of New England responding service bureau clients were used. Since fifty-six per cent of South Central responding clients compared to only thirty-five per cent for New England responding clients have used service bureaus two years or less, they have not used service bureaus long enough to fully access the services received. This means that, in most cases, it is too early for South Central respondents to give a meaningful answer to the question of whether they plan to continue using service bureaus.
Table XXXVII discloses the title or position of these persons. Although in the majority of these companies at least one member of management and an accountant or controller most often shared the responsibility, no reliable statistics could be compiled to demonstrate that this is the best combination.

It would seem that at least one member of management and an accountant or controller should be included on the selection committee. As was discussed earlier, an assessment of applications requires a full understanding of operations affected and the policies that govern them. Members of management and accountants are needed to evaluate the manual systems and to choose applications to automate. Now these representatives are needed to ensure that present and possible future applications could be adequately automated.

Summary

Proper pre-selection planning by a prospective service bureau client should result in maximum benefits from using a service bureau. The first step in pre-selection planning is to appoint a feasibility committee, which should be composed of at least one member of management, preferably top
management, and an accountant, preferably the controller.

After the feasibility committee is appointed, it should discharge its duties. Performance of these duties which constitute the second step of pre-selection planning involves analyzing routine and non-routine systems, modifying these systems where necessary, determining the amount and type of savings resulting from using a service bureau, and developing a five to ten year plan of applications to automate at a service bureau.

After the feasibility committee completes its duties, the prospective service bureau client should appoint a committee composed of at least two persons to select a service bureau. The selection committee should immediately begin to select the best possible service bureau so that its company receives maximum usefulness from its automated system.

III. IMPROVED TECHNIQUES OF SELECTING SERVICE BUREAUS

The prospective service bureau client's committee to select a service bureau must carefully discharge its duty; if it does not, even the best pre-selection planning is useless. A poorly selected service bureau can result in a client receiving marginal services which often causes a
TABLE XXXVII
PERSONNEL RESPONSIBLE FOR SELECTING SERVICE BUREAUS

<table>
<thead>
<tr>
<th>Title or Position of Personnel</th>
<th>South Central</th>
<th>New England</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management and an accountant or controller</td>
<td>59%</td>
<td>52%</td>
</tr>
<tr>
<td>Controller and accountant</td>
<td>17%</td>
<td>7%</td>
</tr>
<tr>
<td>Management and outside consultant</td>
<td>9%</td>
<td>0%</td>
</tr>
<tr>
<td>Top manager and other manager</td>
<td>15%</td>
<td>20%</td>
</tr>
<tr>
<td>Management and company computer specialist</td>
<td>0%</td>
<td>14%</td>
</tr>
<tr>
<td>Management, company computer specialist, and outside consultant</td>
<td>0%</td>
<td>7%</td>
</tr>
</tbody>
</table>

disillusionment with the service bureau, followed by either a purchase or lease of an unneeded computer or a return to the manual system. Because service bureaus vary greatly in terms of size, services offered, experience, etc., a prospective client should consider the following factors when selecting a service bureau:

- Consider several different service bureaus.

\[13\] For other characteristics of service bureaus, see pages 16, 25-27.
• Know the limitations of the major types of service bureaus.

• Consider the types of services offered.

• Consider the availability of backup computer equipment.

• Require service bureaus to submit cost bid proposals.

• Consider the reputation of the service bureau.

• Consider the financial and banking references of the service bureau.

• Consider other miscellaneous items.

Consider Several Service Bureaus

In order to increase the probability of receiving quality services, the selection committee should consider at least three service bureaus. The committee should have ample service bureaus from which to choose because at least ninety per cent of all service bureaus as well as most prospective

\[\text{\textsuperscript{14}}\]

For a list of prospective service bureaus from which to choose, the selection committee should refer to the following references: The Yellow Pages of the Telephone Directory; ADAPSO Directory of Data Processing Service Centers (New York: ADAPSO, published annually); "Data Center Survey and Directory" Data Systems News (New York: James S. Watkins, each annual August issue); and "Computer Directory and Buyers Guide", Computers and Automation (Newtonville, Mass.: Berkeley Enterprises, Inc., each annual June issue).
clients are located in large metropolitan areas.

Although there are many service bureaus available, forty per cent of the total participating clients considered only one service bureau before final selection (Table XXXVIII) and this limited number reviewed is unquestionably one reason for the dissatisfaction of many clients. On the other hand, the more service bureaus considered, the more opportunities the selection committee has for comparing each service bureau's financial and banking references, past experience, types of services offered, and costs of services. These comparisons increase the chances of finding a service bureau that can provide satisfactory services.

The direct correlation between the number of service bureaus considered and the receiving of satisfactory services is illustrated in Table XXXIX.\(^\text{15}\) The table shows that for certain key factors which indicate satisfaction, responding clients considering three or more service bureaus are apparently more satisfied with service bureaus than those clients considering only one or two because they are more

\(^{15}\) Only the answers of New England responding service bureau clients were included in this table. Refer to footnote twelve, page 120.
TABLE XXXVIII
NUMBER OF SERVICE BUREAUS CONSIDERED BY RESPONDING CLIENTS BEFORE FINAL SELECTION
(PER CENT OF RESPONDENTS)

<table>
<thead>
<tr>
<th>Region</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>More Than 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Central</td>
<td>45%</td>
<td>12%</td>
<td>19%</td>
<td>19%</td>
<td>5%</td>
<td>0%</td>
</tr>
<tr>
<td>New England</td>
<td>34%</td>
<td>10%</td>
<td>28%</td>
<td>15%</td>
<td>10%</td>
<td>3%</td>
</tr>
<tr>
<td>Average</td>
<td>40%</td>
<td>11%</td>
<td>23%</td>
<td>17%</td>
<td>7%</td>
<td>2%</td>
</tr>
</tbody>
</table>

likely to continue using service bureaus and to expand services in the future.

The selection committee should consider at least three service bureaus for further screening. But, since many metropolitan areas have ten or more service bureaus, the committee cannot possibly consider every one located in the area. If it did, each service bureau would be required to submit a cost bid proposal. Each proposal, along with other factors affecting selection, would have to be evaluated; such a process would be both time consuming and costly. The selection committee, therefore, should screen each service bureau contacted.
TABLE XXXIX

APPARENT SATISFACTION OF RESPONDING SERVICE BUREAU CLIENTS, AS EVIDENCED BY NUMBER OF SERVICE BUREAUS CONSIDERED NEW ENGLAND

<table>
<thead>
<tr>
<th>Key Factors Indicating Client Satisfaction</th>
<th>Number of Service Bureaus Considered</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 or 2</td>
</tr>
<tr>
<td>Per cent of Responding Clients Planning:</td>
<td></td>
</tr>
<tr>
<td>--to continue using service bureaus</td>
<td>60%</td>
</tr>
<tr>
<td>--to expand services in the future</td>
<td>27%</td>
</tr>
</tbody>
</table>

business interests, they do have potential limitations. Their major potential limitations are:

1. They sometimes have a high turnover of key personnel.
2. They sometimes employ incompetent technical and managerial personnel.
3. They sometimes have a weak capital structure.

If an independent is carefully chosen, these potential limitations can be overcome.

Bank operated service bureau. There are basically three reasons why the limitations of bank operated
before it is added to a list of service bureaus subject to further screening. Preliminary screening involves a consideration of: (1) the limitations of the three major types of service bureaus, (2) the types of services each service bureau contacted offers, and (3) whether the service bureau has adequate backup computer equipment available.

**Limitations of the Major Types of Service Bureaus**

The first preliminary screening factor is to know the limitations of independent, bank, and manufacturer operated service bureaus. Although all three types of service bureaus have limitations, this study concludes that prospective service bureau clients should select an independent service bureau.

**Independent service bureau.** The independent service bureau, as Table XL discloses, is used by more than twice as many clients as is its nearest rival, the bank operated service bureau. The majority of clients use independents because these service bureaus are in business to provide data processing services exclusively to their clients rather than to provide a sideline promoting the banking business or the sale of computer equipment.

Although independents do not promote other
### TABLE XL

**TYPE OF SERVICE BUREAU USED BY CLIENTS RESPONDING TO A RESEARCH INSTITUTE OF AMERICA SURVEY**

<table>
<thead>
<tr>
<th>Type</th>
<th>Per Cent of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent service bureau</td>
<td>62%</td>
</tr>
<tr>
<td>Bank operated service bureau</td>
<td>29%</td>
</tr>
<tr>
<td>Manufacturer affiliate</td>
<td>14%</td>
</tr>
<tr>
<td>Other*</td>
<td>9%</td>
</tr>
<tr>
<td><strong>Total (Multiple Answers)</strong></td>
<td><strong>114%</strong></td>
</tr>
</tbody>
</table>

*Includes companies such as colleges and universities or other corporations renting excess computer time.

**The total 114% means that a few respondents use more than one type of service bureau.

service bureaus cannot be overcome, even by using careful selection techniques. First, banks are not specifically set up as service bureaus; their computer's main job is to process the bank's paper work. As a result, any outside data processing services a bank offers is secondary to the bank's business.

Second, since outside computer services are secondary, banks are seldom interested in providing clients with a full range of services, particularly non-routine services. If a client decides to expand into non-routine services, a change to another service bureau capable of providing these services will be required.

Third, and probably the most important reason why prospective clients should by-pass bank operated service bureaus is that banks may shortly have to divest themselves of all outside data processing services. Bank operated service bureaus are currently being sued by representatives of the Association of Data Processing Service Organizations (ADAPSO) who have filed with Congress United States House of Representatives Bill Number 6778 to prevent banks from offering data processing services outside the scope of their strict banking functions. As Herbert
W. Robinson has stated: 16

The (client's data processing) needs can readily be satisfied without the banks—and can moreover, be satisfied by professionals (independent service bureau personnel) whose primary mission is to completely satisfy all the customers' needs, not merely to provide a sideline to promote the banking business.

In fact, the main reason many bank operated service bureaus charge small prices for data processing services is to increase their banking profits by attracting customers from other banks. By obtaining more customers, their deposits will increase, and therefore, the profits from their total banking operations will increase.

Manufacturer affiliate operated service bureau. The third major type of service bureau is operated by computer equipment manufacturers. Although its limitations are less severe than the limitations of bank operated service bureaus, there are two good reasons for avoiding the use of manufacturer affiliates. First, they are organized around their manufacturer's computer equipment and this limitation may affect


17 Ibid.
service. For example, their systems analysts may have a bias toward designing a clerical procedure that suits their equipment, which may not necessarily be the best equipment for the client's needs.\textsuperscript{18}

Second, computer manufacturers operate service bureaus mainly to sell equipment, to provide training for new computer purchasers, and to provide backup equipment for purchasers' computer equipment. Thus, a service bureau client may be treated more as a potential computer buyer than as a service bureau user.

Types of Services Offered

Because the limitations of bank and manufacturer operated service bureaus usually cannot be overcome, even by careful selection techniques, the selection committee should consider for further screening only independent service bureaus. An independent, however, should not be considered further unless it offers the types of services desired by the prospective client. To determine whether an independent can offer desirable services, the selection committee should

\textsuperscript{18}\textit{How to Choose and Use an Outside EDP Center, Management Report #32} (New York: Research Institute of America, September 4, 1963), p. 6.
know the major factors affecting the types of services offered. They are:

1. The length of time the service bureau has been in business.

2. The size of the service bureau's professional staff.

3. The composition of the service bureau's professional staff.

4. The extent to which the service bureau uses application programming packages.

5. The type of computer(s) used by the service bureau.

The length of time in business. One factor which affects the types of services offered by a service bureau is the length of time that the service bureau has been in business. The first four years of a service bureau's life appear to be the most critical because about forty per cent of service bureaus fail during these years.\(^{19}\) For example, in 1963, Chicago's Red Book listed thirty-two firms doing business as data processing service bureaus. Four years later, only sixty per cent of these

---

\(^{19}\)T. Lowell Dent, "The First Four Years Are the Hardest", ADAPSO Management Guidon, VI, March 1966, p. 10.
firms\textsuperscript{20} were still listed as being in business.\textsuperscript{21}

Therefore, prospective service bureaus clients should consider selecting service bureaus that have been operating for at least four years. These service bureaus, compared to shorter lived ones, have larger professional staffs, offer more categories of services, and offer more routine services (see Table XLI). However, as Table XLI points out, there is no direct correlation between length of time in business and the number of non-routine services a service bureau offers. One reason why all service bureaus offer a small number of non-routine services is because, currently, few clients demand these services.

The rule of considering only independents that have been in business for four or more years should not restrict the committee's selection process. As Table XLII reveals, an average of fifty-five per cent (sum of last three columns) of the total responding independent service bureaus meet this minimum time standard.

\textsuperscript{20}The actual failure rate may be somewhat lower since some of these service bureaus may have merged with other service bureaus and thus have a new firm name.

### TABLE XLI

**KEY CHARACTERISTICS OF RESPONDING SERVICE BUREAUS WHO HAVE BEEN IN BUSINESS FOR DIFFERENT LENGTHS OF TIME**

(South Central and New England)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Number of Years in Business</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3 or Less</td>
</tr>
<tr>
<td>1. Average size of professional staff:</td>
<td></td>
</tr>
<tr>
<td>- less than five</td>
<td>58%</td>
</tr>
<tr>
<td>- five to ten</td>
<td>0%</td>
</tr>
<tr>
<td>- eleven to twenty-five</td>
<td>28%</td>
</tr>
<tr>
<td>- twenty-six to fifty</td>
<td>0%</td>
</tr>
<tr>
<td>- greater than fifty</td>
<td>14%</td>
</tr>
<tr>
<td>2. Average number of categories of services offered</td>
<td>4</td>
</tr>
<tr>
<td>3. Average number of routine services offered</td>
<td>5</td>
</tr>
<tr>
<td>4. Average number of non-routine services offered</td>
<td>3</td>
</tr>
</tbody>
</table>
TABLE XLII

NUMBER OF YEARS RESPONDING INDEPENDENT SERVICE BUREAUS HAVE BEEN IN OPERATION. (PER CENT OF RESPONDENTS)

<table>
<thead>
<tr>
<th>Regions</th>
<th>Less Than 1</th>
<th>1-2</th>
<th>3-4</th>
<th>5-7</th>
<th>8-10</th>
<th>More Than 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Central</td>
<td>0%</td>
<td>32%</td>
<td>15%</td>
<td>23%</td>
<td>15%</td>
<td>15%</td>
</tr>
<tr>
<td>New England</td>
<td>2%</td>
<td>13%</td>
<td>29%</td>
<td>18%</td>
<td>23%</td>
<td>15%</td>
</tr>
<tr>
<td>Average</td>
<td>1%</td>
<td>22%</td>
<td>22%</td>
<td>21%</td>
<td>20%</td>
<td>14%</td>
</tr>
</tbody>
</table>

Size of service bureau staff. In addition to the length of time a service bureau has been in business, the size of its professional staff affects the types of services offered. Normally, large service bureaus offer more types of services than do their smaller counterparts. Accordingly, by considering large service bureaus, prospective clients are likely to find one that can provide all types of services requested.

Composition of service bureau professional staff. Large service bureaus can offer more categories

22See Table IX, page 36; Table XVI, page 52; and Table XX, page 59.
of services because they have more diversified professional staffs than the staffs of small service bureaus (Tables XLIII - XLVI). This diversification is a major factor affecting the types of services offered by a service bureau. Of the ten types of professionals included on service bureau staffs shown in Tables XLIII - XLVI, the "less than five" size category employs 2.8 different types of professionals compared to 4.6 for the "greater than 50" size category (see Table XLVI). The three types of professionals most frequently employed by service bureaus are: computer programmers, systems analysts, and professional managers.

While computer programmers and systems analysts traditionally have been employed, service bureaus recently have begun to employ professional managers. Service bureaus that currently employ managers apparently have learned from the experience which almost bankrupted The Corporation for Economic and Industrial Research (C-E-I-R)\(^\text{23}\) in the early 1960's. Dr. Herbert W. Robinson, the founder of C-E-I-R, felt the service bureau could be both operated and

\(^{23}\)At that time C-E-I-R was the largest independent service bureau operating in the United States. In 1969, it became an affiliate of Control Data Corporation.
### TABLE XLIII

**COMPOSITION OF RESPONDING SERVICE BUREAUS' PROFESSIONAL STAFFS**  
**SOUTH CENTRAL AND NEW ENGLAND**  
*(Per Cent of Respondents)*

<table>
<thead>
<tr>
<th>Types of Professionals</th>
<th>Less Than 5</th>
<th>5-10</th>
<th>11-25</th>
<th>26-50</th>
<th>More Than 50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineers</td>
<td>20%</td>
<td>28%</td>
<td>15%</td>
<td>20%</td>
<td>50%</td>
</tr>
<tr>
<td>Mathematicians</td>
<td>20%</td>
<td>7%</td>
<td>25%</td>
<td>40%</td>
<td>50%</td>
</tr>
<tr>
<td>Economists</td>
<td>7%</td>
<td>7%</td>
<td>5%</td>
<td>0%</td>
<td>13%</td>
</tr>
<tr>
<td>Statisticians</td>
<td>7%</td>
<td>0%</td>
<td>10%</td>
<td>27%</td>
<td>37%</td>
</tr>
<tr>
<td>Operation Research Experts</td>
<td>13%</td>
<td>0%</td>
<td>5%</td>
<td>20%</td>
<td>13%</td>
</tr>
<tr>
<td>Systems Analysts</td>
<td>100%</td>
<td>78%</td>
<td>75%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Financial Analysts</td>
<td>7%</td>
<td>14%</td>
<td>30%</td>
<td>20%</td>
<td>25%</td>
</tr>
<tr>
<td>Physical Scientists</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>13%</td>
</tr>
<tr>
<td>Computer Programmers</td>
<td>93%</td>
<td>93%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Professional Managers</td>
<td>13%</td>
<td>50%</td>
<td>55%</td>
<td>74%</td>
<td>75%</td>
</tr>
<tr>
<td>Types of Professionals</td>
<td>Less Than 5</td>
<td>5-10</td>
<td>11-25</td>
<td>26-50</td>
<td>More Than 50</td>
</tr>
<tr>
<td>------------------------</td>
<td>-------------</td>
<td>------</td>
<td>-------</td>
<td>-------</td>
<td>--------------</td>
</tr>
<tr>
<td>Engineers</td>
<td>9%</td>
<td>14%</td>
<td>11%</td>
<td>33%</td>
<td>25%</td>
</tr>
<tr>
<td>Mathematicians</td>
<td>18</td>
<td>0</td>
<td>22</td>
<td>33</td>
<td>25</td>
</tr>
<tr>
<td>Economists</td>
<td>9</td>
<td>14</td>
<td>11</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Statisticians</td>
<td>0</td>
<td>0</td>
<td>22</td>
<td>0</td>
<td>25</td>
</tr>
<tr>
<td>Operation Research Experts</td>
<td>9</td>
<td>0</td>
<td>11</td>
<td>0</td>
<td>25</td>
</tr>
<tr>
<td>Systems Analysts</td>
<td>100</td>
<td>85</td>
<td>78</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Financial Analysts</td>
<td>9</td>
<td>28</td>
<td>33</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Physical Scientists</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Computer Programmers</td>
<td>91</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Professional Managers</td>
<td>18</td>
<td>71</td>
<td>56</td>
<td>67</td>
<td>100</td>
</tr>
</tbody>
</table>
TABLE XLV

COMPOSITION OF RESPONDING SERVICE BUREAUS' PROFESSIONAL STAFFS
NEW ENGLAND
(Per Cent of Respondents)

<table>
<thead>
<tr>
<th>Types of Professionals</th>
<th>Less Than 5</th>
<th>5-10</th>
<th>11-25</th>
<th>26-50</th>
<th>More Than 50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineers</td>
<td>50%</td>
<td>43%</td>
<td>18%</td>
<td>17%</td>
<td>75%</td>
</tr>
<tr>
<td>Mathematicians</td>
<td>25</td>
<td>14</td>
<td>33</td>
<td>42</td>
<td>75</td>
</tr>
<tr>
<td>Economists</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>25</td>
</tr>
<tr>
<td>Statisticians</td>
<td>25</td>
<td>0</td>
<td>0</td>
<td>33</td>
<td>50</td>
</tr>
<tr>
<td>Operation Research Experts</td>
<td>25</td>
<td>0</td>
<td>0</td>
<td>25</td>
<td>0</td>
</tr>
<tr>
<td>Systems Analysts</td>
<td>100</td>
<td>71</td>
<td>73</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Financial Analysts</td>
<td>0</td>
<td>0</td>
<td>27</td>
<td>25</td>
<td>50</td>
</tr>
<tr>
<td>Physical Scientists</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>25</td>
</tr>
<tr>
<td>Computer Programmers</td>
<td>100</td>
<td>85</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Professional Managers</td>
<td>0</td>
<td>28</td>
<td>55</td>
<td>75</td>
<td>50</td>
</tr>
</tbody>
</table>
TABLE XLVI

NUMBER OF DIFFERENT TYPES OF PROFESSIONALS EMPLOYED BY RESPONDING SERVICE BUREAUS

<table>
<thead>
<tr>
<th>Size of Professional Staff</th>
<th>Both Regions</th>
<th>South Central</th>
<th>New England</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than five</td>
<td>2.8</td>
<td>2.6</td>
<td>3.3</td>
</tr>
<tr>
<td>Five to ten</td>
<td>2.8</td>
<td>3.1</td>
<td>2.3</td>
</tr>
<tr>
<td>Eleven to twenty-five</td>
<td>3.2</td>
<td>3.4</td>
<td>3.0</td>
</tr>
<tr>
<td>Twenty-six to fifty</td>
<td>4.0</td>
<td>3.3</td>
<td>4.2</td>
</tr>
<tr>
<td>Greater than fifty</td>
<td>4.6</td>
<td>4.0</td>
<td>5.5</td>
</tr>
</tbody>
</table>

managed by his technical specialists—economists, scientists, mathematicians, programmers, and other computer-oriented personnel. Many of these technicians were leaders in their field and Dr. Robinson felt they were equally versatile in business affairs. From 1960-1962, however, the financial condition of C-E-T-R began to seriously deteriorate. The situation was remedied by hiring three well known executives who were skilled in operations, finance, and administration.
The C-E-I-R case clearly illustrates that management leadership is needed to prevent service bureau failure. The computer personnel may be excellent technicians, but they usually lack the ability to plan and control the service bureau's day-to-day and long term operations. Since most large service bureaus employ professional managers (Tables XLIII - XLV), a prospective client who selects a large service bureau will probably find that the service bureau employs a professional manager and uses up-to-date management principles and techniques. Columns two and five to Table XLVII disclose that responding service bureaus which employ managers do in fact use up-to-date management tools. Service bureaus that employ managers should be more efficient, and this should result in a more stable service bureau operation. The following analysis shows that service bureaus employing managers are more stable than other service bureaus because, on the average, the former group has been in business almost one year longer than the latter group (see page 138).

The use of application programming packages. Fourth in the list of factors affecting the type of services a service bureau offers is the extent to which it uses application programming packages. Since packages require less programming and systems
<table>
<thead>
<tr>
<th>Region</th>
<th>Length of Time in Business</th>
<th>Service Bureaus Not Employing Managers</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Central</td>
<td>6.3 years</td>
<td>5.4 years</td>
</tr>
<tr>
<td>New England</td>
<td>6.8 years</td>
<td>6.0 years</td>
</tr>
<tr>
<td>Average</td>
<td>6.6 years</td>
<td>5.7 years</td>
</tr>
</tbody>
</table>

analysis than programs which are tailored to each client's precise needs, they are frequently used. 24

An average of seventy-one per cent of all responding service bureaus offer systems design and analysis. 25 The remaining twenty-nine per cent of service bureaus must provide clients exclusively with routine accounting applications through the use of application programming packages. These bureaus that do not offer systems services are probably weak in other types of services. Indeed, Table XLVIII discloses that service bureaus which do not offer systems design and analysis are considerably weaker in their offerings of computer programming, computer consulting, routine services and non-routine services.

24 The reader may wish to refer back to the discussion on computer programming. See pages 41-43.

25 See Table X, page 38.
<table>
<thead>
<tr>
<th>Technique</th>
<th>Service Bureaus Employing Professional Managers</th>
<th>Service Bureaus Not Employing Professional Managers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A*</td>
<td>SC*</td>
</tr>
<tr>
<td>Breakeven Analysis</td>
<td>49%</td>
<td>45%</td>
</tr>
<tr>
<td>Capital Budgeting</td>
<td>42</td>
<td>34</td>
</tr>
<tr>
<td>Cost of Capital</td>
<td>10</td>
<td>23</td>
</tr>
<tr>
<td>Direct or Variable Costing</td>
<td>52</td>
<td>34</td>
</tr>
<tr>
<td>Discounted Cash Flow</td>
<td>13</td>
<td>6</td>
</tr>
<tr>
<td>Incremental Cost Analysis</td>
<td>23</td>
<td>11</td>
</tr>
<tr>
<td>Linear Programming</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Payback Analysis</td>
<td>23</td>
<td>17</td>
</tr>
<tr>
<td>PERT, CPM</td>
<td>13</td>
<td>17</td>
</tr>
<tr>
<td>Regression Analysis</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Return on Investment</td>
<td>55</td>
<td>67</td>
</tr>
<tr>
<td>Variance Analysis</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td>None of the Above</td>
<td>13</td>
<td>17</td>
</tr>
</tbody>
</table>

* A means Average  
SC means South Central  
NE means New England
### TABLE XLVIII

**A COMPARISON OF RESPONDING SERVICE BUREAUS OFFERING SYSTEMS DESIGN AND ANALYSIS TO THOSE NOT OFFERING SYSTEMS DESIGN AND ANALYSIS**

<table>
<thead>
<tr>
<th>Types of Services Compared</th>
<th>Service Bureaus Offering Systems Analysis</th>
<th>Service Bureaus Not Offering Systems Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Per cent or responding service bureaus offering:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Application Program Packages</td>
<td>90% 86% 95%</td>
<td>98% 100% 95%</td>
</tr>
<tr>
<td>Computer Programming</td>
<td>97% 100% 95%</td>
<td>78% 85% 71%</td>
</tr>
<tr>
<td>Computer Consulting</td>
<td>80% 82% 78%</td>
<td>27% 33% 21%</td>
</tr>
<tr>
<td>Non-routine Services</td>
<td>90% 95% 85%</td>
<td>57% 56% 57%</td>
</tr>
<tr>
<td>2. Average number of routine services offered</td>
<td>8.6 9.5 8.0</td>
<td>5.7 5.3 6.0</td>
</tr>
<tr>
<td>3. Average number of non-routine services offered</td>
<td>4.6 5.0 4.0</td>
<td>1.6 1.3 2.0</td>
</tr>
</tbody>
</table>

* A means Average  
SC means South Central  
NE means New England
For the most part, service bureaus that do not offer systems design and analysis offer routine accounting applications which are the types of applications best adaptable to standardized application programming packages. One author states that:

In the commercial area package programming systems have been traditionally developed for accounting type applications (such as payroll and inventory control), or for overall accounting systems for certain industries (such as accounting systems for hospitals or brokerage houses), or for production oriented applications (such as automatic typesetting). The usual and sensible use of package programming systems has been in application areas which are uniform and lend themselves readily to standardization.

A service bureau's main reason for using packages should not be to maximize profits, but to provide worthwhile services to clients. This service aspect of packages has apparently been ignored by service bureaus. One client interviewed complained: "We are not getting the personal attention and reports that we feel we should be getting from these packages." John Diebold has indicated that application programming packages are not necessarily efficient for the day to day operation of a specific


27Ibid., p. 6
application. In general, modification of a package is expensive; a large part of this expense involves education in an unfamiliar set of techniques. The cost of modification, maintenance, and inefficiency must be carefully weighed against the alternate cost of developing a non-package program.²⁸

Since service bureaus seldom, if ever, modify programming packages to fit a client's exact data processing needs, a prospective service bureau client should not select a service bureau which extensively uses such packages. Furthermore, service bureaus that extensively use packages usually offer only routine accounting services. As a result, if a client wanted to receive non-routine services, he would probably have to switch to another service bureau.

Type of computer used by the service bureau.
The final factor affecting the type of services offered by a service bureau is the type of computer(s) it uses. Computers designed mainly for business use have large memory capacities which are needed to process the voluminous amounts of business data, and computers

designed mainly for processing scientific and mathematical problems have small memory capacities, which are unsuitable for business applications. The selection committee should determine if the service bureaus under consideration for selection have equipment suitable for processing commercial or business applications. A service bureau using a scientifically oriented computer should not be selected because even though a client may receive satisfactory services for his present volume of data, as his business expands, the computer may become unsuitable.

When the selection committee determines whether a service bureau has a business oriented computer, it should also determine if the service bureau has more than one type of business computer. Since each type of computer performs differently on any given job, the service bureau, if it has more than one type of computer, should process the job with equipment best suited for the particular application.

Prospective clients can determine the suitability of a service bureau's computer for business applications by checking each June issue of Computers and Automation, published by Berkeley Enterprises, Inc., Newtonville, Massachusetts. The annual June issue presents the operating characteristics of all known United States computer systems.
Availability of Backup Computer Equipment

The selection committee should also determine if the service bureau has adequate backup computer equipment available. Clients whose service bureaus do not have adequate backup computer equipment often complain that they receive late reports. This complaint could have been minimized by considering only service bureaus that have available adequate backup equipment. Yet, many responding service bureau clients do not know if their service bureaus have backup equipment. Clients were asked, "Does your service bureau have adequate backup equipment in case of a computer breakdown?" The responses were:

<table>
<thead>
<tr>
<th>Region</th>
<th>Yes</th>
<th>No</th>
<th>Don't Know</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Central</td>
<td>53%</td>
<td>15%</td>
<td>32%</td>
</tr>
<tr>
<td>New England</td>
<td>50%</td>
<td>25%</td>
<td>25%</td>
</tr>
<tr>
<td>Average</td>
<td>51%</td>
<td>20%</td>
<td>29%</td>
</tr>
</tbody>
</table>

The selection committee, therefore, should demand that backup equipment be available in one of the following forms:

1. Parallel computer system.
2. Access to the computer manufacturer's computer.
3. Access to another service bureau's computer.
4. Access to a bank, university, or other corporate computer.
The most desirable form of backup computer equipment from the prospective client's standpoint is a parallel computer system because the system is available whenever needed. The other forms of backup equipment may not be available because of priorities on its use, and these priorities may result in work delays and other inconveniences for clients.

Require Cost Bid Proposals

If it is determined that an independent service bureau contacted has available adequate backup computer equipment and can offer the types of services desired, the service bureau should be required to submit a cost bid proposal. But, as Table XLIX points out, only thirty-nine per cent of responding service bureau clients required cost bid proposals. The significant differences which exist between the regions show that more New England respondents than South Central respondents require cost bids. The former group must realize that from carefully prepared bids "you can usually tell which bureau really understands your application from what they propose."³⁰

³⁰Notaro, op. cit., p. 34.
### TABLE XLIX
PER CENT OF RESPONDING CLIENTS REQUIRING COST BIDS BEFORE FINAL SELECTION OF A SERVICE BUREAU

<table>
<thead>
<tr>
<th>Region</th>
<th>Yes</th>
<th>No</th>
<th>No Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Central</td>
<td>31%</td>
<td>59%</td>
<td>10%</td>
</tr>
<tr>
<td>New England</td>
<td>48%</td>
<td>43%</td>
<td>9%</td>
</tr>
<tr>
<td>Average</td>
<td>39%</td>
<td>51%</td>
<td>10%</td>
</tr>
</tbody>
</table>

After requesting a service bureau to submit a bid, the selection committee should allow the service bureau two to three weeks to complete its bid proposal. Service bureaus are usually committing themselves for a one year contract; therefore, they must be given enough time to consider all cost factors.

**Factors Besides The Lowest Cost Bid**

When all cost bid proposals are received, they should be compared to see which one is lowest. The low bid, however, should not automatically be chosen because there are more important factors to consider in selecting a service bureau. Nevertheless, the following figures reveal that a high
percentage of responding bureau clients accept the lowest bidding service bureau:

<table>
<thead>
<tr>
<th>Region</th>
<th>Per Cent Accepting Lowest Bid</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Central</td>
<td>58%</td>
</tr>
<tr>
<td>New England</td>
<td>50%</td>
</tr>
<tr>
<td>Average</td>
<td>53%</td>
</tr>
</tbody>
</table>

The above percentages probably include some responding clients who considered selection factors more important than cost of services. However, Table I substantiates the fact that cost is considered the most important single selection factor.

In the long run, clients who make their selection solely on the basis of costs, and ignore other more important factors, may find that they are dissatisfied with the quality of services they receive. For this reason, the selection committee should give more consideration to various technical, administrative, and procedural considerations, including the limitations of the major types of service bureaus and the types of services offered. Other considerations are: the reputation of the service bureau, the financial and banking references and other miscellaneous considerations.
TABLE L

DEGREE OF IMPORTANCE GIVEN BY RESPONDING SERVICE BUREAU CLIENTS TO SPECIFIC ITEMS WHEN SELECTING A SERVICE BUREAU

<table>
<thead>
<tr>
<th>Specific Items</th>
<th>South Central</th>
<th>Rank</th>
<th>New England</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advantages and limitations of service bureaus</td>
<td>154</td>
<td>2</td>
<td>120</td>
<td>5</td>
</tr>
<tr>
<td>Costs of the services</td>
<td>158</td>
<td>1</td>
<td>157</td>
<td>1</td>
</tr>
<tr>
<td>Financial and banking references</td>
<td>61</td>
<td>9</td>
<td>51</td>
<td>9</td>
</tr>
<tr>
<td>Geographic location of the service bureau</td>
<td>96</td>
<td>7</td>
<td>111</td>
<td>6</td>
</tr>
<tr>
<td>Literature and advertisements by the service bureau</td>
<td>15</td>
<td>10</td>
<td>23</td>
<td>10</td>
</tr>
<tr>
<td>Past experience of the service bureau</td>
<td>79</td>
<td>8</td>
<td>98</td>
<td>7</td>
</tr>
<tr>
<td>Recommendations and experience of other users</td>
<td>116</td>
<td>6</td>
<td>124</td>
<td>4</td>
</tr>
<tr>
<td>Reputation of service bureau</td>
<td>120</td>
<td>4</td>
<td>142</td>
<td>2</td>
</tr>
<tr>
<td>Technical knowledge of the service bureau personnel</td>
<td>132</td>
<td>3</td>
<td>125</td>
<td>3</td>
</tr>
<tr>
<td>Types of services offered</td>
<td>118</td>
<td>5</td>
<td>73</td>
<td>8</td>
</tr>
<tr>
<td>Other</td>
<td>10</td>
<td>11</td>
<td>5</td>
<td>11</td>
</tr>
</tbody>
</table>

*See appendix C, page 271, question C-9. Points were assigned as follows: Each response received 5 points if Very Important Consideration was checked; 3 points for Some Consideration; and 0 points for No Consideration.
Reputation of the Service Bureau

Although a service bureau has passed the preliminary screening tests and seems to offer desirable services at a competitive cost, the selection committee must try to determine how well the service bureau performs its services. A major indicator of this performance is the bureau's reputation, and this reputation can be determined by examining the following items: recommendations and experience of other users and resumes of key personnel.

Recommendations and experience of other users. The principal way to determine a service bureau's reputation is through the recommendations and experiences of its clients. The selection committee should request from the service bureau the names and addresses of several clients who preferably have used the service bureau for at least two to three years, who are in the same industry as themselves and who are the same approximate size as the selection committee's company. Rather than lose a contract, a reputable service bureau should readily comply with the committee's wishes.

As these clients are contacted, the committee should ask them as a minimum, the following questions:

1. How long has the service bureau been used?
2. What types of services are received?
3. Have additional services ever been requested? If so, could the service bureau provide these additional services?

4. Will this service bureau continue to be used?

5. Are report deadlines frequently missed?

6. Has there been any problems over leakage of confidential information?

7. Does the service bureau have adequate computer equipment?

8. Does the service bureau maintain adequate controls over data?

9. Do key employees know their business?

Answers to the above questions should indicate if the service bureau can provide competent services. However, favorable recommendations and experiences of users may be misleading if key employees are no longer employed by the service bureau.

**Obtain resumes of key service bureau personnel.**

The selection committee can judge the capabilities of the bureau by requesting resumes of key personnel. Since the reputation of some service bureaus may be riding on the laurels of departed employees, only the qualifications of current employees should be considered. The selection committee, thus, should determine if
the service bureau has hired competent replacements for departed employees.

**Financial and Banking References**

After determining the quality of the service bureau's reputation, the selection committee should determine the quality of the bureau's financial and banking references. This factor, which should indicate the financial stability of a service bureau, is one of the most important selection factors and, as Table L shows, one of the most often ignored. Out of eleven selection factors considered by responding clients, financial and banking references ranked ninth. However, the quality of these references is important to clients because a conversion to a service bureau involves changes in procedures and changes in forms and cost of programs. If the service bureau that is being used goes bankrupt, subsequent changes to another service bureau can be expensive. ³¹

The selection committee can evaluate a service bureau's financial and banking references in the following ways (see page 152).

1. The service bureau's financial statements for the past two to three years, if made available, should be analyzed by an accountant.

2. The service bureau's credit rating should be obtained from its bank.

3. The experience gathered from users contacted when determining a service bureau's reputation should be reviewed.

4. Any information contained in Dun and Bradstreet reports should be considered.

5. The service bureau's annual reports, if their stock is publicly traded, should be studied. Valuable financial information may also appear in the financial services, such as Moody's, Standard and Poor's or in the reports published by regulatory agencies, such as the Securities and Exchange Commission.

Miscellaneous Considerations

In addition to all the preceding factors which affect service bureau selection, there are a few miscellaneous factors that should be considered. Among the factors to consider are the following:

1. Does the service bureau have adequate insurance to cover the loss of important client documents?
2. Does the service bureau use fireproof vaults or containers to store important documents?
3. How conveniently located is the service bureau to the prospective client's place of business?
4. Is the service bureau a member of the Association of Data Processing Service Organizations (ADAPSO)?

The selection committee should view favorably affirmative answers to any of the above questions.

Summary

The selection committee, in order to choose the best possible service bureau, must consider all factors affecting the types of services a service bureau offers. Specifically, the selection committee should consider several independent service bureaus, all of whom have adequate backup computer equipment available, and all of whom can offer the types of services desired by the prospective client.

Furthermore, any independent service bureau that has backup computer equipment available and offers desirable services should be asked to submit cost bid proposals. However, since there are other more important factors to consider in addition to costs of services, the selection committee should not
choose the lowest bidding service bureau unless it also ranks high in those more important factors. These more important factors include the types of services offered, the reputation of the service bureau, and the quality of the service bureau's financial and banking references.

For the purpose of choosing the best possible service bureau, Table LI has been prepared to help rate service bureaus that are under consideration for selection. The ten factors affecting service bureau selection that could logically be quantified are included in this table. Each factor has been assigned a point value, with important factors more heavily weighed than less important ones. For each service bureau, after a factor is considered, it should be rated as outstanding, good, fair, or poor. For some items, such as 3C, "offers computer consulting", the service bureau being rated either offers this service or it does not offer it. If offered, the service bureau gets an outstanding rating; if not offered, it gets a poor rating.

After all factors for each service bureau have been rated, the total points for each one should be determined. Normally, the service bureau scoring highest should be selected. In cases where
### TABLE LI
**HOW TO RATE AN ELECTRONIC DATA PROCESSING SERVICE BUREAU**

<table>
<thead>
<tr>
<th>Factors to Consider When Selecting a Service Bureau</th>
<th>Outstanding</th>
<th>Good</th>
<th>Fair</th>
<th>Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Type of Service Bureau</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. Independent</td>
<td>4 □</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. Manufacturer affiliate</td>
<td></td>
<td>2 □</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. Other</td>
<td></td>
<td></td>
<td>0 □</td>
<td></td>
</tr>
<tr>
<td><strong>2. Length of Time the Service Bureau Has Been in Operation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. Nine years or longer</td>
<td>5 □</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. Four to nine years</td>
<td></td>
<td>3 □</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. Two to four years</td>
<td></td>
<td></td>
<td>1 □</td>
<td></td>
</tr>
<tr>
<td>D. Less than two years</td>
<td></td>
<td></td>
<td></td>
<td>0 □</td>
</tr>
<tr>
<td><strong>3. Types of Services the Service Bureau Offers</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. Non-Routine services</td>
<td>10 □</td>
<td>7 □</td>
<td>3 □</td>
<td>0 □</td>
</tr>
<tr>
<td>B. Routine services</td>
<td>6 □</td>
<td>4 □</td>
<td>2 □</td>
<td>0 □</td>
</tr>
<tr>
<td>C. Computer consulting</td>
<td>4 □</td>
<td></td>
<td></td>
<td>0 □</td>
</tr>
<tr>
<td>D. Extensively uses application programming packages</td>
<td></td>
<td></td>
<td></td>
<td>0 □</td>
</tr>
<tr>
<td>E. Does not extensively use application programming packages</td>
<td></td>
<td>2 □</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### TABLE LI (continued)

<table>
<thead>
<tr>
<th>Factors to Consider When Selecting a Service Bureau</th>
<th>Rating of the Factor*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Outstanding</td>
</tr>
<tr>
<td>4. Composition of Professional Staff</td>
<td></td>
</tr>
<tr>
<td>A. Diversity of staff</td>
<td>4</td>
</tr>
<tr>
<td>B. Professional manager on staff</td>
<td>8</td>
</tr>
<tr>
<td>C. Technical personnel on staff</td>
<td>6</td>
</tr>
<tr>
<td>5. Reputation of Service Bureau</td>
<td></td>
</tr>
<tr>
<td>A. Satisfaction of users contacted</td>
<td>8</td>
</tr>
<tr>
<td>B. Experience in the company's industry</td>
<td>4</td>
</tr>
<tr>
<td>C. Resumes of key personnel</td>
<td>2</td>
</tr>
<tr>
<td>6. Financial and Banking References</td>
<td>13</td>
</tr>
<tr>
<td>7. Costs of the Services</td>
<td></td>
</tr>
<tr>
<td>A. Lowest bid</td>
<td>13</td>
</tr>
<tr>
<td>B. Other low bids</td>
<td></td>
</tr>
<tr>
<td>C. Reasonable bids</td>
<td></td>
</tr>
<tr>
<td>D. Relatively high bids</td>
<td></td>
</tr>
<tr>
<td>8. Availability of Backup Equipment</td>
<td></td>
</tr>
<tr>
<td>A. Parallel computer</td>
<td>3</td>
</tr>
<tr>
<td>B. Other</td>
<td></td>
</tr>
<tr>
<td>C. None</td>
<td></td>
</tr>
<tr>
<td>Factors to Consider When Selecting a Service Bureau</td>
<td>Rating of the Factor*</td>
</tr>
<tr>
<td>---------------------------------------------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td></td>
<td>Outstanding</td>
</tr>
<tr>
<td>9. Type of Computer Used</td>
<td></td>
</tr>
<tr>
<td>A. General purpose or business oriented</td>
<td>4 □</td>
</tr>
<tr>
<td>B. Scientifically oriented</td>
<td></td>
</tr>
<tr>
<td>10. Miscellaneous Factors</td>
<td></td>
</tr>
<tr>
<td>A. Adequacy of insurance to cover loss of important records</td>
<td>1 □</td>
</tr>
<tr>
<td>B. Use of fireproof vaults or containers to protect documents</td>
<td>1 □</td>
</tr>
<tr>
<td>C. Convenience of location to company</td>
<td>1 □</td>
</tr>
<tr>
<td>D. Member of ADAPSO</td>
<td>3 □</td>
</tr>
</tbody>
</table>

*The number to the left of each box represents the points for that factor.*
the point totals of two or more service bureaus are close, the selection committee must use judgment in making the final selection.

If the selection committee has carefully examined all the preceding factors affecting selection, the service bureau chosen should provide satisfactory services now and in the future. However, after a service bureau has been selected, there are additional factors that the client must consider to assure that he continues to make the most effective use of his service bureau.

IV. FACTORS TO CONSIDER AFTER A SERVICE BUREAU HAS BEEN SELECTED

Planning before selecting a service bureau and improving the technique of selecting a service bureau are only two steps which may be taken to assure a service bureau client that he will receive maximum results from using a service bureau's computer system. A third important step concerns what the client should do after the service bureau is selected and involves: the signing of a contract, the appointing of a liaison man, and the regular reevaluating of services received.
Signing of A Contract

Immediately after a service bureau is selected, the client should sign a contract with the service bureau. A written contract is needed to prevent possible misinterpretations of verbal contracts, to avoid many unnecessary frustrations at billing time, and to provide a convenient reference for settling disputes. However, as the following percentages indicate, slightly over one-half of responding service bureau clients have written contracts with their service bureaus:

South Central .................. 50%
New England .................... 58%
Average .......................... 53%

All service bureau clients should have contracts with their service bureau containing a statement covering at least the following points:

1. How the following items will be costed: (1) designing the system and programming the applications, (2) preparing input data, (3) computer time for processing the data, (4) special reports, and (5) materials, such as punch cards, magnetic tape, and the like.

2. The client's responsibilities in the project—for example, batching of source, supplying
balance tapes, or any coding to be done on input documents.\footnote{32}

3. The service bureau's responsibilities, usually called specifications. These specifications include the reports the service bureau will prepare for the company and the dates the reports will be received.

4. Protection of the client against any rework resulting from the service bureau's error or omission. The service bureau should redo work caused by its own errors, at no extra cost. Conversely, the client should pay for its errors that cause rework.

5. The length of the contract period. The client should not be obligated to use the service bureau for an unreasonable length of time. Generally, most reputable service bureaus want a one year contract and to most clients this period is reasonable.

6. The client should be allowed to purchase or have gratuitously any software the service bureau develops for him. This software includes computer programs, specification sheets, card layouts, flow charts, control panels, master cards, and so on.

\footnote{32}Items two through five were adopted from Notaro, \textit{op. cit.}, p. 32.
Thus, if the client transfers to another service bureau or installs a computer, the costs of duplicating these items will be saved.

In order to avoid future difficulties, the selection committee should make certain that the above six provisions are contained in a written contract. In addition, a client's attorney may add other items to the contract.

**Liaison Man**

After the client signs a contract with the service bureau, the client's liaison man should begin working closely with the service bureau. One person should be made responsible for dealing with the service bureau and his main duties should include:

1. Seeing that all material is properly prepared and checked before being sent to the service bureau.
2. Establishing close contact with the service bureau official handling the company's account.
3. Settling any disputes which develop between the service bureau and the company.
4. Learning as much about electronic data processing as possible. If his company someday installs a computer, the liaison man's experience will be invaluable.
5. Helping determine which applications will be sent to the service bureau for processing.
6. Periodically appraising or evaluating the services being received from the service bureau.

Because of the importance of the above duties, all service bureau clients should appoint a liaison man to work closely with the service bureau. As the following percentages disclose, practically all responding service bureau clients use liaison men:

- South Central .................. 95%
- New England .................... 92%
- Average .......................... 93%

The title or position of these liaison men as shown in Table LII reveals that the majority of them are accountants. It seems that an accounting trained liaison man performs his duties more effectively for two reasons. First, since most of the material coded and processed at a service bureau is accounting related, an accounting trained liaison man can save his company valuable time and rerun costs by quickly spotting any input errors before they reach the service bureau. Second, many communication problems which arise between the client and the service bureau deal with accounting procedures, such as the types of financial reports to prepare, their form, their content, and the like. A liaison man who has an accounting background can quickly
resolve these communication problems.

Questionnaire results seem to support the conclusion that an accounting trained liaison man more effectively performs his duties. As Table LIII discloses, the average number of different service bureaus used by New England responding clients with accounting trained liaison men compared to those without accounting trained liaison men, was considerably less. This table also seems to indicate that company personnel trained as computer programmers, systems engineers or analysts make the least effective liaison men because they, like service bureau personnel, are computer oriented and usually know little, if anything, about accounting.

**Periodically Reevaluate Services Received**

One of the liaison man's most important duties is to regularly review or assess the services his company is receiving from the service bureau. By periodically evaluating services, he will assure that his company is making the most effective use of its service bureau. When the liaison man is evaluating services, he should seek answers, if

---

Footnote 12, page 120 explains why only New England responding clients were considered.
TABLE LII

TITLE OR POSITION OF RESPONDING SERVICE BUREAU CLIENTS' LIAISON MEN

<table>
<thead>
<tr>
<th>Title or Position</th>
<th>Per Cent of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average</td>
</tr>
<tr>
<td>Accountant</td>
<td>29%</td>
</tr>
<tr>
<td>Controller</td>
<td>34%</td>
</tr>
<tr>
<td>Mathematician, economist, statistician, scientist or engineer</td>
<td>2%</td>
</tr>
<tr>
<td>Systems engineer or analyst</td>
<td>6%</td>
</tr>
<tr>
<td>Management</td>
<td>22%</td>
</tr>
<tr>
<td>Computer programmer</td>
<td>7%</td>
</tr>
</tbody>
</table>

applicable, to the following questions:

- Is the service bureau saving the company money?
- Is the service bureau providing the company with improved management information?
- Should usage be expanded? If so, into what areas?
- Is the service bureau meeting report deadlines?
- Is the company charged for costs not specified
TABLE LIII

AVERAGE NUMBER OF DIFFERENT SERVICE BUREAUS USED BY RESPONDING CLIENTS HAVING LIAISON MEN WITH DIFFERENT BACKGROUNDS

<table>
<thead>
<tr>
<th>Background of Liaison Man</th>
<th>Average Number of Different Service Bureaus Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounting</td>
<td>1.5</td>
</tr>
<tr>
<td>Management</td>
<td>2.5</td>
</tr>
<tr>
<td>Computer programmer, systems engineer, or systems analyst</td>
<td>4.0</td>
</tr>
</tbody>
</table>

in the contract?

- Are managers using the reports received from the service bureau?

- Does the service bureau make many errors, such as misreading data when source documents are keypunched or failing to follow instructions?

- Is the company getting the personal services that it desires?

- Is the service bureau experiencing any serious financial difficulties? If so, will this affect services?

- Does the service bureau still have adequate backup equipment available?
• Has the service bureau lost any key personnel? If so, will this affect services?

• If the company is about to renew its contract with the service bureau, should any new provisions be included in the contract?

• Does the service bureau still have adequate insurance to protect any loss resulting from destruction or loss of records?

• Has the service bureau leaked any confidential company information to outsiders?

• Are the service bureau controls over data adequate? In addition to the above questions, the liaison man may wish to add others. Unfavorable answers to many of the above questions may mean that a client should consider either changing to another service bureau or purchasing or leasing a computer.

Summary

To assure satisfaction after a service bureau has been selected, the client must sign a contract with the service bureau, appoint a liaison man to work closely with the service bureau, and periodically evaluate or access the services it is receiving from the service bureau. This post-selection planning will assure that the client continues to receive satisfactory services.
V. SUMMARY

In order to obtain maximum usefulness from using a service bureau, a prospective service bureau client must plan before selecting a service bureau, must use proper techniques in selecting a service bureau, and must consider certain factors after selecting a service bureau.

Proper planning before selecting a service bureau involves three steps. They are:

1. A feasibility committee consisting of at least one member of management, preferably a member of top management, and an accountant, preferably the controller, should be appointed.

2. After the feasibility committee is appointed, it should discharge the following duties: analyze all routine and non-routine systems; modify, if necessary, any systems; determine the type and amount of savings or benefits resulting from using the service bureau; and develop a five to ten year plan of applications to automate at a service bureau.

3. A committee consisting of at least a member of management and an accountant should be appointed to select a service bureau.

After the selection committee is appointed,
it should begin the selection process which involves the following steps:

1. Consider only independent service bureaus that have been in business for at least four years.

2. When an independent service bureau is contacted, determine if it can provide a full range of routine and non-routine services and if it has adequate backup computer equipment available. If the service bureau cannot meet these preliminary screening tests, it should no longer be considered.

3. Any service bureau added to a list of potential selectees should be required to submit a cost bid proposal. The selection committee, however, should not necessarily choose the lowest bidding service bureau because there are other factors to consider, some of which are more important than cost of services.

4. Factors to consider other than costs of services include the types of services offered, the reputation of the service bureau, and the quality of its financial and banking references.

To assure that optimum services are received after selecting a service bureau, the following steps must be taken:

1. Sign a written contract with the service bureau.
2. Appoint a liaison man to work closely with the service bureau.

3. Periodically evaluate or assess the services being received from the service bureau.

If a prospective service bureau client follows the procedures outlined in this chapter, he should receive all the major advantages of electronic data processing. These advantages include direct cost savings, improved accuracy and speed of processing data, and indirect benefits and savings resulting from automating applications designed either to reduce cost of goods sold or to provide management with improved information for decision making.
CHAPTER VI

THE IMPACT OF SERVICE BUREAUS ON
PUBLIC ACCOUNTING (CPA) FIRMS

I. INTRODUCTION

Earlier chapters have described services that service bureaus offer, have evaluated services that service bureau clients receive, have evaluated satisfaction of these clients, and have suggested methods for improving services and satisfaction. Many internal accountants work for companies that are either users or potential users of service bureaus and these accountants, at one time or another, are involved in selecting applications to automate at service bureaus, in acting as liaison men between their companies and service bureaus, or in helping to evaluate the services their companies receive from service bureaus. Consequently, the advice and recommendations presented in earlier chapters should be helpful to internal accountants. The previous material is also good background knowledge for CPA's in their contacts with service bureaus.

Many public accounting firms provide management services to users or potential users of service bureaus. In this type of situation, the service bureau industry
has a favorable impact on public accounting firms. The service bureau industry, however, can have an unfavorable impact on public accounting firms because if these firms do not meet the increasing competition from service bureaus, they may lose many clients to service bureaus.

Additional problems between CPA's and service bureaus are created when public accounting firms perform audits for companies that use service bureaus. A company which uses a service bureau presents to the independent auditor, in addition to the usual audit problems of EDP systems, the complicating factor of an outside organization which enters into the company's scheme of processing, internal control, and record retention.

The purpose of this chapter is to examine: (1) the favorable impact which service bureaus have on public accounting firms, (2) the unfavorable impact which service bureaus have on public accounting firms, (3) the ways that public accounting firms can meet the increasing competition from service bureaus, and (4) the problems of auditing clients that use service bureaus.

II. THE FAVORABLE IMPACT WHICH SERVICE BUREAUS HAVE ON PUBLIC ACCOUNTING FIRMS

The two most favorable impacts that service bureaus have on public accounting firms are that they enable
CPA firms to offer clients additional management services and to provide more sophisticated, non-writeup services to clients.

Management Advisory Services

In addition to offering the usual types of management advisory services, public accounting firms can offer the following management advisory services related to service bureaus:

1. The analysis and modification of systems prior to use of a service bureau.

2. The determination of which applications to automate at a service bureau.

3. The function of a liaison between the company and the service bureau.

4. The selection of a service bureau.

5. The evaluation of services being received from service bureaus.

Public accounting firms can best provide these services to small and medium size clients who do not employ full time accountants or controllers. The accounting firm takes the place of a staff accountant and works closely with his client's management to provide these five services.

An accounting firm should have little difficulty in providing most of the above listed services. Public
accounting firms have traditionally been involved in systems analysis and modification and practically all routine and non-routine applications automated at service bureaus are accounting related, including applications designed to reduce cost of goods sold and to improve management information. Also, since persons with an accounting background make the most effective liaison men, public accountants should be able to competently perform this service. The management services of selecting a service bureau and evaluating services received are indirectly related to accounting. Even though indirectly related, Tables LIV and LV disclose that public accounting firms often provide these services. If accounting firms follow the advice and recommendations presented in earlier chapters, they should be able to competently provide these services.

Processing of a Public Accounting Firm's Writeups

The second favorable impact that service bureaus have on public accounting firms is that CPA's can process their clients' writeups at service bureaus. This allows

---

1 For the reasons why, see page 167.

2 The reader may wish to refer back to Chapter V, pages 122ff.
### TABLE LIV

**HOW OFTEN RESPONDING PUBLIC ACCOUNTING FIRMS HELP CLIENTS SELECT SERVICE BUREAUS**

<table>
<thead>
<tr>
<th>Size of the Accounting Firm's Professional Staff</th>
<th>How Often Service is Performed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequently</td>
</tr>
<tr>
<td></td>
<td>SC</td>
</tr>
<tr>
<td>Less than five</td>
<td>5%</td>
</tr>
<tr>
<td>Five to fifteen</td>
<td>12%</td>
</tr>
<tr>
<td>Sixteen to thirty-five</td>
<td>12%</td>
</tr>
<tr>
<td>More than thirty-five</td>
<td>0%</td>
</tr>
<tr>
<td>Average</td>
<td>11%</td>
</tr>
</tbody>
</table>

Key: SC means South Central  
NE means New England

CPA's to spend more time providing management advisory services to their clients. Many public accounting firms by acting as a middleman between their clients and the service bureau establish a working relationship with service bureaus. These CPA's use some type of punched paper-tape adding machine while working in a client's office and periodically, the special perforated paper-tape, containing summaries of the client's financial transactions, is sent to the service bureau. The tape
### TABLE LV

**HOW OFTEN RESPONDING PUBLIC ACCOUNTING FIRMS HELP CLIENTS EVALUATE SERVICES THEY ARE RECEIVING FROM SERVICE BUREAUS**

<table>
<thead>
<tr>
<th>Size of the Accounting Firm's Professional Staff</th>
<th>Frequently (SC NE)</th>
<th>Occasionally (SC NE)</th>
<th>Never (SC NE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than five</td>
<td>23% 12% 55% 71%</td>
<td>22% 17%</td>
<td></td>
</tr>
<tr>
<td>Five to fifteen</td>
<td>12% 33% 68% 67%</td>
<td>20% 0%</td>
<td></td>
</tr>
<tr>
<td>Sixteen to thirty-five</td>
<td>12% 33% 82% 67%</td>
<td>6% 0%</td>
<td></td>
</tr>
<tr>
<td>More than thirty-five</td>
<td>50% 30% 50% 70%</td>
<td>0% 0%</td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td>17% 26% 67% 69%</td>
<td>16% 5%</td>
<td></td>
</tr>
</tbody>
</table>

Key: SC means South Central, NE means New England

is then processed through the computer and returned to the CPA. As the following representative comments indicate, public accounting firms willingly permit service bureaus to process writeups:

> Let the service bureaus have writeup work. It is of a type best done by less expensive methods than the labor cost involved in manual effort (either by hand or by use of bookkeeping machines).

---

<sup>3</sup>Written-in comments on returned CPA questionnaires.
We will work closely with service bureaus and our clients, letting service bureaus do the clerical operations while we render tax advice, business advice, auditing service, and various management services.

III. THE UNFAVORABLE IMPACT OF SERVICE BUREAUS ON PUBLIC ACCOUNTING FIRMS

Service bureaus may have an unfavorable impact on public accounting firms. Although there is presently little, if any, competition between the two industries, this competition for clients may increase. In the future, if public accounting firms do not offer their clients many types of data processing services, competition, particularly for small to medium size clients who do not own or lease computers, will increase, and as a result, CPA's will lose business to service bureaus.

Current Competition from Service Bureaus

There are several reasons why the current competition for clients between public accounting firms and service bureaus is practically non-existent. The main reason is that approximately eighty per cent of responding clients receive exclusively routine services from service bureaus and most public accounting firms gladly send their clients' routine accounting jobs to service bureaus.  

4 See pages 71-72.
bureaus so that they can spend more time providing other services.

Another reason for the moderate competition is that many service bureaus use application programming packages which require service bureaus to perform a limited amount of systems analysis. Also, less than ten per cent of all responding service bureaus employ full-time staff accountants to help provide clients with accounting systems analysis. For this reason, if clients who do not employ staff accountants decide to automate sophisticated accounting applications, few service bureaus could competently provide design, analysis, and modification of sophisticated accounting systems. Fortunately for service bureaus, a very limited number of clients currently demand the automation of sophisticated accounting systems.

A final indication that a moderate amount of competition exists between the two industries is revealed in comments received from public accounting firms. The following percentages disclose that a minority of responding CPA's who do not offer EDP services experience competition from service bureaus (see page 183).

There were no significant differences in the amount of

---

5 See pages 142, 143, 146, 147.
6 Tallies from returned questionnaires.
competition experienced among the various staff sizes. Furthermore, size does not influence the areas in which these CPA's experience competition. These five areas are:

<table>
<thead>
<tr>
<th>Area</th>
<th>Average</th>
<th>South Central</th>
<th>New England</th>
</tr>
</thead>
<tbody>
<tr>
<td>Writeup work</td>
<td>25%</td>
<td>36%</td>
<td>11%</td>
</tr>
<tr>
<td>Design and installation</td>
<td>19%</td>
<td>18%</td>
<td>21%</td>
</tr>
<tr>
<td>of accounting systems</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management services</td>
<td>8%</td>
<td>9%</td>
<td>6%</td>
</tr>
<tr>
<td>Design and installation</td>
<td>5%</td>
<td>5%</td>
<td>6%</td>
</tr>
<tr>
<td>of non-accounting systems</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
</tr>
</tbody>
</table>

Of the thirty-three per cent of New England public accounting firms who do not own or lease computers and experience competition from service bureaus, eleven per cent experience competition in the area of writeup work. This area is also the only one in which the percentages between the two regions are significant. A
much higher percentage of South Central accounting firms experience competition in the area of writeup work. This area is also the only one in which the percentages between the two regions are significant. A much higher percentage of South Central accounting firms experience competition in writeups apparently because more South Central firms derive a higher percentage of gross billings from this service.

Future Competition from Service Bureaus

Although the current competition for clients between service bureaus and public accounting firms is not intense, the competition is likely to increase. In the future, an estimated twenty-six per cent of responding service bureau clients will be automating non-routine services\(^7\) and thus will be receiving many types of indirect benefits and savings. These services include the automation of applications designed: (1) to reduce cost of goods sold, such as automated inventory control systems, purchasing systems, and transportation systems, and (2) the automation of applications designed to provide managers with improved information for decision making, such as automated budgeting systems, variance analysis systems, and performance measurement systems.

\(^7\)See pages 71, 72, 75.
This study concludes that in the near future, small and medium size service bureau clients should have automated most of their routine applications and consequently, should begin automating non-routine applications. Since most small businesses and most responding service bureaus do not employ full-time staff accountants, few service bureaus could help these businesses to analyze and modify accounting systems as a prelude to the automation of non-routine accounting applications. But, service bureaus can provide small clients with automated non-routine accounting applications if they begin to employ full-time staff accountants, and many comments on returned questionnaires and conversations with service bureau personnel disclose that service bureaus are beginning to hire full-time accountants.

When service bureaus employ qualified staff accountants, most of the systems analysis and modification work required to automate accounting applications could be performed by service bureaus. Once clients begin to receive writeups and design, analysis, modification, and installation of routine and non-routine accounting systems from service bureaus, what is to prevent these clients from also receiving management advisory services and other types of services traditionally performed by public accounting firms?

However, if CPA's meet the service bureau
challenge, they should not lose systems work, management services or other types of accounting services to service bureaus. To meet the challenge, public accounting firms must begin to offer clients automated data processing services. Fortunately, the majority of responding public accounting firms, as the following percentages disclose, realize that they will experience increasing competition from service bureaus:

- South Central . . . . . . . . 60%
- New England . . . . . . . . 50%
- Average . . . . . . . . . . . 55%

Typical responses as to why these firms feel competition will increase follow:

8Comments on returned CPA questionnaires.
Service bureaus must sell in volume to keep their computers going. This will make them competitive and they run their businesses in such a fashion. CPA's can't.

The better service bureaus will offer broader services not only in processing but in systems design and installation, programming, controls, etc. They can become highly professional in this field.

My experience has been that service bureaus are low on price, poor on quality and service; it will become increasingly difficult for CPA's to compete on a strict price basis, at least until the client has been stung by the service bureau.

I feel that service bureaus will eventually force all small CPA firms to go into data processing to survive.

Service bureaus are getting increasingly interested in all phases of accounting.

The above responses illustrate that many public accounting firms recognize the seriousness of the problem posed by service bureaus. But comments received from responding CPA's who feel that competition will not increase imply that these firms do not understand the nature of the service bureau challenge or the capabilities of the service bureau industry. Typical comments from this group follow: 9

The high professional work of CPA's will not be usurped by service bureaus; perhaps bookkeeping work will.

---

9Ibid.
We are talking about two entirely different fields, and both are needed.

Our services are primarily in auditing, management advisory services, and taxes, which are not offered by service bureaus.

Since we do no bookkeeping or writeup work at all, there does not seem to be any areas for competition.

The services performed by service bureaus are outside the realm of CPA's.

CPA's should continue to render only services they are qualified to render, and stay out of the EDP areas.

Computer services offered by service bureaus will only increase in areas where we want to decrease, such as write-up work.

We feel that service bureaus complement our work because they only offer bookkeeping services. We welcome anything which helps to reduce detail work.

IV. METHODS FOR MEETING THE INCREASING COMPETITION FROM SERVICE BUREAUS

A few comments received from public accounting firms imply that they tend to ignore service bureaus. This position may be hazardous because service bureaus and EDP are a very real part of today's world.

Eighteen per cent of responding CPA's plan to meet any competition from service bureaus by continuing to offer quality services or by attempting to liberalize the AICPA's code of professional ethics. The following representative comments illustrate
these two viewpoints:¹⁰

We will continue to offer quality product and service, without a significant drop in price.

Their (service bureaus) promotion tactics are not inhibited by rules or professional conduct. We must publicize our experience more effectively by liberalization of ethical restrictions.

Neither of these two viewpoints will solve the problem posed by service bureaus. Regardless of the quality of services a client is receiving, if he demands but cannot receive data processing services from his accountant, he will use a service bureau. Furthermore, public accounting firms should not attempt to lower their professional standards of conduct since such action could destroy the reputation which public accountants have built-up over the years. CPA firms must use an approach which is forward looking.

CPA firms—particularly small and medium size ones—must attempt to meet any increasing competition from service bureaus by offering, in addition to the usual accounting services, electronic data processing services. Several methods are available to public accounting firms for offering EDP services,

¹⁰Ibid.
and since no one method is necessarily superior, a public accounting firm should choose the method, which under the circumstances, it feels is best. A public accounting firm's main purpose in meeting service bureau competition is not to eliminate service bureaus but to provide clients with the advantages of automated accounting data processing services.

There are four concrete ways by which public accounting firms can solve the problem of meeting increasing competition from service bureaus. They are:

- To purchase or lease computer equipment.
- To form a cooperative service bureau.
- To form a significant working relationship with service bureaus.
- To hire a computer specialist and rent computer time.

Purchase Or Lease Computer Equipment

One way to meet increasing competition from service bureaus is for a public accounting firm to purchase or lease computer equipment and thus form a combined public accounting-service bureau operation. Table LVI discloses that nineteen per cent of all responding public accounting firms own or lease some
TABLE LVI
PER CENT OF RESPONDING PUBLIC ACCOUNTING FIRMS WHO OWN OR LEASE COMPUTERS

<table>
<thead>
<tr>
<th>Size of Professional Staff</th>
<th>Both Regions Combined</th>
<th>South Central</th>
<th>New England</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than five</td>
<td>10%</td>
<td>14%</td>
<td>6%</td>
</tr>
<tr>
<td>Five to fifteen</td>
<td>18%</td>
<td>16%</td>
<td>21%</td>
</tr>
<tr>
<td>Sixteen to thirty-five</td>
<td>26%</td>
<td>24%</td>
<td>33%</td>
</tr>
<tr>
<td>More than thirty-five</td>
<td>45%</td>
<td>40%</td>
<td>50%</td>
</tr>
<tr>
<td>Average</td>
<td>19%</td>
<td>18%</td>
<td>20%</td>
</tr>
</tbody>
</table>

type of computer equipment. Table LVII shows that an additional six per cent plan to purchase or lease computers in the future.

More large than small public accounting firms own/lease or plan to own/lease computers since they usually have more financial resources available. Table LVIII indicates the expenses involved when a firm owns or leases computers. This table discloses the types of computers used by responding service bureaus and the computer's average monthly rental costs (i.e., hardware costs). In addition, software costs to operate the computer will amount to one hundred to one hundred and fifty per cent of the average monthly rental costs.
### TABLE LVII

**PER CENT OF RESPONDING PUBLIC ACCOUNTING FIRMS WHO PLAN TO PURCHASE OR LEASE COMPUTERS WITHIN THE NEXT FIVE TO TEN YEARS**

<table>
<thead>
<tr>
<th>Categories of Responses</th>
<th>Yes</th>
<th>No</th>
<th>Undecided</th>
<th>No Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Regions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>South Central</td>
<td>5%</td>
<td>61%</td>
<td>11%</td>
<td>5%</td>
</tr>
<tr>
<td>New England</td>
<td>6%</td>
<td>50%</td>
<td>23%</td>
<td>1%</td>
</tr>
<tr>
<td>Average</td>
<td>6%</td>
<td>55%</td>
<td>17%</td>
<td>3%</td>
</tr>
</tbody>
</table>

The size of a computer's average rental costs determines whether the computer system is classified as small, medium or large.\(^{11}\) Only three per cent of responding service bureaus use large computers and practically all others use small computers. The three most popular computer systems used by service bureaus are small in size and include the IBM 360/Model 20, the IBM 360/Model 30, and the Honeywell H-120.

---

\(^{11}\)Computer systems are classified as small, medium or large depending on their average monthly rental costs as follows: small—$0-$8,000; medium—$8,000-$30,000; large—greater than $30,000. See Gordon B. Davis, *An Introduction to Electronic Computers* (New York: McGraw Hill Book Company, 1965), p. 508.
### TABLE LVIII

**TYPES OF COMPUTER SYSTEMS USED BY RESPONDING SERVICE BUREAUS* AND THE AVERAGE MONTHLY COSTS TO RENT THESE COMPUTERS**

<table>
<thead>
<tr>
<th>Make and Model</th>
<th>Per Cent of Responding Service Bureaus Using The Computer</th>
<th>Average Monthly Rental Costs***</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>International Business Machines (IBM):</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>360/20</td>
<td>11%</td>
<td>Information on individual system/360 models was not furnished by the manufacturer. The monthly rental range for these models is from $1359 to $115,000.</td>
</tr>
<tr>
<td>360/25</td>
<td>3</td>
<td>$2,700</td>
</tr>
<tr>
<td>360/30</td>
<td>19</td>
<td>3,200</td>
</tr>
<tr>
<td>360/40</td>
<td>3</td>
<td>3,500</td>
</tr>
<tr>
<td>360/50</td>
<td>3</td>
<td>6,000</td>
</tr>
<tr>
<td>360/65</td>
<td>1</td>
<td>9,500</td>
</tr>
<tr>
<td>360/75</td>
<td>1</td>
<td>10,000</td>
</tr>
<tr>
<td>1401</td>
<td>8</td>
<td>15,000</td>
</tr>
<tr>
<td><strong>Honeywell:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>110</td>
<td>1%</td>
<td>$2,700</td>
</tr>
<tr>
<td>120</td>
<td>11</td>
<td>3,200</td>
</tr>
<tr>
<td>125</td>
<td>1</td>
<td>3,500</td>
</tr>
<tr>
<td>200</td>
<td>7</td>
<td>6,000</td>
</tr>
<tr>
<td>1200</td>
<td>4</td>
<td>9,500</td>
</tr>
<tr>
<td>1250</td>
<td>1</td>
<td>10,000</td>
</tr>
<tr>
<td>2200</td>
<td>1</td>
<td>15,000</td>
</tr>
<tr>
<td><strong>Univac (Division of Sperry Rand Corp.):</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1004</td>
<td>3%</td>
<td>$1,400</td>
</tr>
<tr>
<td>1050</td>
<td>3</td>
<td>5,500</td>
</tr>
<tr>
<td>9300</td>
<td>3</td>
<td>3,750</td>
</tr>
<tr>
<td><strong>Burroughs:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>300</td>
<td>3%</td>
<td>$6,700</td>
</tr>
<tr>
<td>Make and Model Number of Computer</td>
<td>Per Cent of Responding Service Bureaus Using The Computer</td>
<td>Average Monthly Rental Costs***</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>----------------------------------------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>500</td>
<td>3%</td>
<td>$5,000</td>
</tr>
<tr>
<td>2500</td>
<td>1</td>
<td>9,200</td>
</tr>
<tr>
<td>3500</td>
<td>1</td>
<td>9,200</td>
</tr>
<tr>
<td>General Electric (GE):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>225</td>
<td>2%</td>
<td>$8,000</td>
</tr>
<tr>
<td>420</td>
<td>1</td>
<td>23,000</td>
</tr>
<tr>
<td>625</td>
<td>1</td>
<td>41,000</td>
</tr>
<tr>
<td>National Cash Register (NCR):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>315</td>
<td>2%</td>
<td>$6,775</td>
</tr>
<tr>
<td>Control Data Corporation (CDC):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3300</td>
<td>2%</td>
<td>$22,200</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>

*Includes South Central and New England regions.

**The average monthly software costs of operating the computer are at least equal to the monthly rental figure shown.

***Taken from Computer's and Automation's annual computer directory and buyer's guide, June 1969, pages 122-150.
A small or medium size public accounting firm contemplating the opening of a combined public accounting-service bureau operation is most likely to purchase or lease one of these three small size computer systems. The annual average, minimum, and maximum operating costs of a small computer, such as the IBM system 360/Model 20 is presented in Table LVIX. As the figures point out, even a small computer system which is adequate to furnish data processing services is very expensive. Therefore, the owning or leasing of computers as a means to meet service bureau competition may not be practical for all sizes of public accounting firms.

Form A Cooperative Service Bureau

Another way for accounting firms to provide EDP services is for a few small or medium size public accounting firms to jointly own or lease a computer and share in its operating costs. In this way the firms operate the computer at a fraction of the cost to individually own the computer. A cooperative service bureau would be formed to provide data processing services to the clients of sponsoring public accounting firms. Even though cooperative service bureaus could be formed by all size accounting firms,
### TABLE LVIX

ANNUAL OPERATING COSTS OF A TYPICAL SMALL COMPUTER SYSTEM, SUCH AS THE IBM SYSTEM 360/MODEL 20 INSTALLATION

<table>
<thead>
<tr>
<th>Operating Costs</th>
<th>Average Costs</th>
<th>Minimum Costs</th>
<th>Maximum Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware Costs*</td>
<td>$36,000</td>
<td>$29,000</td>
<td>$48,000</td>
</tr>
<tr>
<td>Software Costs**</td>
<td>48,783</td>
<td>34,845</td>
<td>62,721</td>
</tr>
<tr>
<td>Total Costs</td>
<td>$84,783</td>
<td>$63,845</td>
<td>$110,721</td>
</tr>
</tbody>
</table>

*Annual computer equipment costs.

**The main annual software cost is for personnel. For the IBM 360/20, an average of seven persons are needed to run the system. These personnel are: one data processing manager, one operations supervisor, one programmer, one key-punch supervisor, one console operator, and two key-punch operators.


they are perhaps most feasible for small or medium size firms unable to afford computers. The two and one half per cent of responding public accounting firms who are members of cooperatives all have a professional staff size of less than five.

Five per cent of responding CPA firms have considered forming cooperatives but later rejected the idea as not feasible and another ten per cent
(see Table LX) are still considering this possibility. Although there are still many uncertainties concerning cooperatives, this study concludes that such a venture, if carefully planned, could provide the sponsoring firms with the usual advantages of EDP, plus the following additional advantages.

1. The computer purchased would be tailored to the sponsoring public accounting firms' needs.

2. The sponsoring firms would have exclusive use of the computer.

3. The computer would be available to the sponsors whenever they wished to use it.
4. The costs of any computer programs developed for clients could be shared by the sponsoring firms.

5. The costs of any application programming packages purchased could also be shared.

6. The sponsoring CPA firms would have available for their exclusive use a staff of data processing experts and a computer—at a fraction of the cost to own the computer system individually.

In order to receive the six advantages and to increase the chance of forming a successful operation, public accounting firms who plan to form a cooperative service bureau should carefully consider many important factors.

First, it is necessary to determine if a sufficient number of public accounting firms are interested in joining the cooperative. Four responding public accounting firms in different cities who attempted to form a cooperative failed because they could not get enough firms interested in the venture. Their comments follow:¹²

We tried to organize one several years ago—the firms contacted were not interested.

We would like to explore this possibility but we can't get anyone else interested.

¹² Comments on returned CPA questionnaires.
At present there appears to be a tragic lack of interest locally by other CPA firms.

I contacted some fifteen firms in our area, a crosssection of small, medium, and large local firms, about the idea of a CPA Data Processing Co-op. The thought being to have more updated and sophisticated equipment available instead of each of us with our own installation or using service bureaus, unfortunately, I never got it off the ground. One of the big problems apparently was reluctance on the part of the smaller CPA's; to let anyone know who their clients are, and I guess concerned that the co-op would be controlled by the larger firms. On the other hand, it appeared the larger firms were reluctant to admit they had any type of write-up work to need the use of such a co-op.

But, if too many public accounting firms join a cooperative, the venture can also fail. A cooperative should probably have no more than five or six members. A larger number may create operating problems, such as communication problems, control problems, problems of how operating costs are to be shared, problems of scheduling available computer time, and problems of managing the operation.

Second, the methods of sharing the cooperative's costs must be considered. There are two categories of costs to consider:

1. Start-up costs. This category includes all costs incurred prior to the time that the cooperative commences operations. Perhaps each sponsoring public accounting firm should pay an equal portion
of these charges or some other formula should be worked out.

2. Operating costs. This category includes the hardware and software costs to operate the cooperative. Hardware costs refer to the periodic rental charge for the computer equipment. Software costs include personnel costs,\textsuperscript{13} programming costs, testing costs, and debugging costs. These operating costs could be shared equally or the total cost could be allocated to each firm based on the number of transactions processed or the actual computer time used during the period. In addition, a sponsor could be required to pay a minimum or maximum monthly charge.

Third, a decision must be made regarding the management of the cooperative. The sponsoring firms should decide if each member regardless of size should have one vote or if another basis for voting should be used. Also, the members should form a committee to manage and operate the cooperative. This step will assure participating firms that no one firm will dominate or control the cooperative.

Fourth, a procedure should be established

\textsuperscript{13}For the types of personnel involved in operating a computer system, the reader may wish to refer back to Table LVIX, page 196.
for withdrawal from the cooperative. If the withdrawing firm has not been a member for a predetermined period of time, perhaps one year, a penalty fee for withdrawal should be established. The members should also determine how far in advance a firm should give of its intention to withdraw.

Finally, procedures must be determined to govern the admission of new members into the cooperative. Perhaps a unanimous affirmative vote by current members should be required to admit a new member. The current members should also decide if a newly admitted member should be required to pay a predetermined portion of the cooperative's startup costs and if the cooperative should limit membership to firms of the same approximate size as current members.

Establish A Working Relationship With A Service Bureau

If a group of sponsoring public accounting firms carefully plan for a cooperative service bureau, the venture should be successful and provide them with many advantages. For public accounting firms who do not wish to own or lease a computer or to join a cooperative, a third way to meet increasing competition from service bureaus is to establish a significant working relationship with a service
A public accounting firm and a service bureau by combining their resources can provide a full range of services to clients. By pooling the public accounting firm's knowledge of EDP, the two firms could help a small client automate the following types of applications:

- Routine applications, such as accounts receivable, accounts payable, payroll, or invoicing, all designed to provide direct cost savings.
- Non-routine applications, such as inventory systems, purchasing systems, or transportation systems, all designed to reduce cost of goods sold.
- Non-routine applications, such as budgeting systems, variance analysis systems, or performance measurement systems, all designed to provide management with improved information for decision making.

Few public accounting firms and service bureaus pool their resources in order to provide a full range of the above services to their clients. Presently, the working relationship between the two groups is one-sided (see Tables LXI and LXII). Ninety-five

---

TABLE LXI

HOW OFTEN RESPONDING SERVICE BUREAUS ENGAGE CERTIFIED PUBLIC ACCOUNTING FIRMS TO HELP PROVIDE MORE TYPES OF SERVICES FOR THE SERVICE BUREAU'S CLIENTS

<table>
<thead>
<tr>
<th>Region</th>
<th>Regularly</th>
<th>Occasionally</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Central</td>
<td>0%</td>
<td>8%</td>
<td>92%</td>
</tr>
<tr>
<td>New England</td>
<td>0%</td>
<td>4%</td>
<td>96%</td>
</tr>
<tr>
<td>Average</td>
<td>0%</td>
<td>5%</td>
<td>95%</td>
</tr>
</tbody>
</table>

per cent of responding service bureaus never engage public accounting firms to help provide more types of services for the service bureau's clients (Table LXI). Apparently, most service bureaus simply do not want to get involved with CPA's. In fact, the general tenor of responses received from a sample of Michigan service bureaus were uncomplementary to the accounting profession.  

On the other hand, fifty per cent of responding public accounting firms (Table LXII) occasionally

---

engage service bureaus to help provide more types of services for the CPA's clients. Presently, however, there is no significant working relationship because CPA's simply use service bureaus to process their client's writeup work.

To form a significant working relationship with a service bureau, a public accounting firm must carefully choose the type of service bureau with which it associates. If possible, a service bureau that provides computer services exclusively to public accountants should be used. This type of service bureau is preferable for several reasons:

1. They provide services exclusively to public accountants and not to the general public,
except indirectly through the CPA.

2. Since they serve only public accounting firms, they are willing to establish a close working relationship with public accounting firms.

3. They usually employ staff accountants who understand the CPA and his type of business.

4. They often provide training courses in EDP for the CPA and his staff.

Since many CPA's are still unfamiliar with the basics of EDP, the last advantage--providing training courses in EDP--is a very important one. The brochure of one service bureau that deals only with public accounting firms list the following training program:

1. Initial training course. A free four day training program for the CPA and his staff, during which all aspects of processing their clients' work is thoroughly discussed and practiced.. Subjects covered are: Systems, records, client set-ups, input equipment, costs, and special client applications. Participants obtain a good working knowledge of all these areas. A complete course manual is provided as a ready reference for use by the accountant.

2. Follow-up. Periodic bulletins are sent
out as needed to keep all accountants aware of changes in processing, new methods, improvements in forms, additional applications—everything that will serve to keep their processing up-to-date and flexible. A complete analysis of all work received from each accountant is made with periodic recommendations for improved speed and accuracy.

3. Special training. Even with the finest of systems, an occasional processing application develops which requires unusual handling. In these cases a representative of the service bureau will be sent on request to seek out a solution, working closely with the accountant.

Operate As A Service Bureau Without Owning Or Leasing Computer Equipment Or Without Employing A Full Staff Of Computer Specialists

The fourth and final way to meet any increasing competition from service bureaus is for the public accounting firm to operate as a service bureau, but without owning or leasing computer equipment or without employing a full staff of computer specialists. If the firm is to operate in this manner, it can rent computer time from a company which has excess computer time available; purchase or lease the
necessary input data equipment; convert clients source documents to computer understandable input, or contract this work to a company that specializes in input data preparation; and hire an EDP specialist or send a staff member of the firm to an EDP training school. The person hired or trained should have or acquire a knowledge of computer programming, computer and systems flowcharting, and computer systems.

If a public accounting firm hires an EDP specialist, this specialist most likely would be a non-accountant because few accountants currently have a good working knowledge of EDP. In the future, however, many public accounting firms should be able to hire accounting trained EDP specialists since many beginning accountants will receive university training in EDP. Most schools of business are following the recommendations made in *Horizons For A Profession* regarding the common body of knowledge required for beginning CPA's with respect to computers. These recommendations are:¹⁶

1. That beginning CPA's be required to have basic knowledge of at least one computer system.

2. That they have knowledge of at least one computer language.

3. That they possess the ability to chart or diagram an information system of modest complexity.

4. That they have the ability to design an information system, prepare a program for it, and carry their work through the stages of debugging and testing.

By operating as a service bureau without ownership of computers or without employing a full staff of computer specialists the accountants on the staff would provide expertise on accounting and systems and the computer specialist would design an automated system, prepare a flowchart and computer program for the system, test and debug the computer program, and process the program through the computer. In this way, a public accounting firm could offer its usual accounting services, along with EDP services.

V. THE PROBLEMS OF AUDITING CLIENTS WHO USE SERVICE BUREAUS\(^\text{17}\)

In addition to auditing clients that own or lease computers, many public accounting firms audit clients

\(^{17}\)A computer sub-committee formed by the American Institute of Certified Public Accountants and headed by Dr. Thomas Porter of the University of Washington is currently compiling a book on The Problems of Auditing Service Bureaus.
TABLE LXIII

PER CENT OF RESPONDING PUBLIC ACCOUNTING FIRMS
THAT AUDIT CLIENTS WHO USE SERVICE BUREAUS

<table>
<thead>
<tr>
<th>Region</th>
<th>Per Cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Central</td>
<td>67%</td>
</tr>
<tr>
<td>New England</td>
<td>87%</td>
</tr>
<tr>
<td>Average</td>
<td>76%</td>
</tr>
</tbody>
</table>

that use service bureaus (Table LXIII). Since a service bureau performs a data processing function that is essentially the same as the function of an in-house computer system, the basic auditing procedures and techniques used by independent auditors to audit any computer system are similar. Whether clients own or lease computers or use service bureau computers, the independent auditor must extend his audit programs to test the effectiveness of the computer system.\(^\text{18}\)

When a client uses a service bureau, the independent auditor must adjust his audit programs to cover that portion of the computer system unique to service bureaus.

\(^{18}\) This section will not examine audit procedures and techniques common to both in-house computer systems and service bureau systems. Only additional audit problems unique to service bureaus are examined. For an excellent discussion on the procedures to follow when auditing any type of computer system, see Gordon B. Davis, Auditing and EDP (New York: American Institute of Certified Public Accountants, 1968), 344 pages.
Audit programs must be adjusted because a company using a service bureau presents to the independent auditor the complicating factor of an outside organization which enters into the company's scheme of processing, internal control and record retention. The use of service bureaus, however, does not affect the auditor's objective in the ordinary examination of financial statements.

Objective of Auditing

The objective of the ordinary examination of financial statements is to express an opinion on the fairness with which they present financial position and results of operations.19 The auditor's examination is made in accordance with generally accepted auditing standards. Because auditing standards are designed to meet a variety of audit situations, they are unlikely to be affected when an independent auditor encounters an EDP system. The auditing procedures—the detailed acts comprising the independent auditor's investigation—to meet these standards are affected.20


Review of Internal Control

Before an independent auditor can determine the detailed audit procedures necessary to test the effectiveness of a computer system, he must review the internal control system as it relates to the computer system. Independent auditors have frequently concluded that when a company uses a service bureau, this review of internal control is not significantly affected by the presence of a service bureau.\textsuperscript{21} Accounting data must be processed somewhere, and the basic accounting functions—at least at this time—are not significantly affected by the location or mode of processing.\textsuperscript{22} Furthermore, all factors considered, the use of a service bureau (particularly for operations which can be subjected to overall controls and review—payroll preparation, accounts receivable processing, and so on) often leads to improved internal control and diminished audit problems.\textsuperscript{23}

Even though internal control may improve and

\textsuperscript{21}Letter from partner, one of the largest public accounting firms, July, 1969.

\textsuperscript{22}Ibid.

\textsuperscript{23}Davis, Auditing and EDP, \textit{op. cit.}, p. 219.
audit problems may diminish, the independent auditor must extend his review of a client's internal control system because the use of a service bureau creates control problems peculiar to service bureau processing. Thus, the independent auditor must determine if the service bureau's control system is adequate to assure that the client's accounting operation is not impaired. Accordingly, the independent auditor must extend his review of the service bureau's control system to seek answers to the following questions:

1. How reputable is the service bureau? How stable is its business? Is it likely to remain a going concern? Due to the high failure rate of service bureaus during their early years of operation, the independent auditor must work out a plan with his clients so that they can continue their accounting operation in case of service bureau failure. A disaster procedure should be established and the potential damage and cost which could result

---

24 Private interview with partner of one of the largest public accounting firms, June, 1969.

25 See pages 154, 155.

26 See pages 133, 134.
from service bureau failure should be assessed.  

2. Does the contract with the service bureau include a provision stating that any software developed and paid for by the client is his property?  

The audit program of a national public accounting firm states that, "the client should have the ability to pick up his system and leave, preferably at no additional cost."  

3. How adequately are client records and documents protected against fire, theft, water, and other disasters? Statistics compiled by the Safe Manufacturers National Association disclose that forty-three per cent of companies whose important documents and records were destroyed through some catastrophe never resumed business or were permanently closed down within six months and an additional thirteen per cent suffered severe economic impairment and were able to remain in business only under severe operating handicaps.  

---

27 Contained in the audit program of one of the largest public accounting firms.  

28 For other provisions which should be included in the contract, see pages 164-166.  


30 ADAPSO Eighth Management Symposium, "How to Operate A Service Bureau for Profits", 1963, p. 49.
For this reason, the independent auditor must determine whether the service bureau maintains protective devices, such as fireproof vaults or containers.

4. How does the service bureau maintain the security of client information? The auditor should determine how the bureau prevents disclosure of confidential information. This problem can be minimized if clients never send copies of source documents to service bureaus. Either punched cards or punched paper tape should be sent for processing and all items should be coded. Some security questions are not important since much information forwarded to service bureaus is either of no value to third parties or else is in a form (i.e., punched cards or tape) that makes it useless to an average onlooker. However, the majority of service bureau clients, at one time or another, submit source documents or copies thereof that could weaken the client's competitive position if it were to be mischanneled.

5. Does the service bureau maintain adequate insurance to cover loss of important client records and documents?

6. What type of system does the service bureau maintain to assure that all documents and records
are processed?

7. What type of system does the service bureau maintain to assure that all records and documents do not become commingled with other clients' records?

8. If client records and documents are destroyed, does the service bureau have a way to reconstruct these records?

9. Does the service bureau have adequate backup computer equipment in case its main computer breaks down? A significant delay in processing can be very costly to the client.

10. How does the service bureau protect against the loss of documents in transit to the client?

11. Do service bureau personnel have access to client assets?

The more favorable the answers to the above listed questions, the fewer extended audit procedures the auditor needs to test the process of data flow within the EDP system.

Audit Procedures

Audit Procedures designed to test data flow are practically the same, whether a company uses an in-house computer or a service bureau computer for processing.

\(^{31}\)See pages 149-150.
its data. Currently, most audit procedures are designed to test this data flow around rather than through the service bureau's computer system since most service bureau clients receive straight-forward routine applications. For this reason, auditors should place more emphasis on input/output controls rather than on processing controls. Comments on auditing procedures currently used by three of the big eight United States public accounting firms when they audit clients who use service bureaus follow:

Our own approach, generally speaking, has been to review very vigorously the client's own controls over input, output and error correction. Frequently, the programs being run by service bureaus are sufficiently simple that even without going to the service bureau we can satisfy ourselves over the accuracy of their computer processed data. In these situations, if we do go to the service bureau at all, it is to obtain additional comfort regarding the reliability of their procedures. Of course where we are unable to satisfy ourselves regarding the accuracy of the data purely from review of our client's own control procedures, we do visit the computer service bureau and ask whatever additional questions we feel may be necessary for us to properly fulfill our role as auditors.

Nearly all service bureau applications in existence today are audited by reviewing and testing transactions entering or produced by the system. This

---

32 A letter received from one of the largest public accounting firms implied that many authorities feel that this will also be true in the foreseeable future.

33 Letter from one of the largest public accounting firms, July 1969.

34 Letters, June and July, 1969.
is also true of the relatively few time-shared financial applications—whether operated internally or at a service bureau—the auditor will be able to rely on the controls over input information and output reports.

Our approach to audits of clients using service bureau systems is largely to use the around-the-computer approach. Almost universally, the systems are batch systems, lending themselves to this approach.

Possible Denial Of Access To The Service Bureau's System

The first of the above three comments indicated that the independent auditor in most instances does not find it necessary to visit the service bureau to test the accuracy of the computer processed data. In most cases, the auditor can review his clients' internal control systems as maintained at the service bureau by simply getting from his clients the answers to a few questions. However, there may be some cases in which the auditor cannot issue an opinion on financial statements unless he visits the service bureau.

In these cases, there is no assurance that the service bureau will grant the accountant access to its system because they are under no obligation to do so. As one partner of a large public accounting firm has stated, "service bureaus are generally very reluctant to meet with thirty or forty or maybe
even one hundred independent CPA's, all of whom are usually asking the same questions." If access to the service bureau's EDP system is denied, the independent auditor may have to disclaim an opinion on his client's financial statements.

Reliance on the Opinions of Other Independent Auditors

If an auditor cannot gain access to a service bureau, it is possible for him to rely on the opinion of another independent auditor who has reviewed the procedures and the internal control system of the service bureau. This of course would not relate to any programs which have been specifically tailored to any client, but would deal with the operating procedures, operating systems, documentation, and so on. An example of an opinion issued by a firm of independent auditors and which reviews various service bureau procedures and controls is shown in Figure 2. Although few of these opinions are now issued, the American Institute of Certified Public Accountants is studying the possibility of more widespread reliance on other auditors who will express

---

35 Letter from partner, one of the largest public accounting firms, July, 1969.
an opinion on internal control and other procedures at service bureaus. 36

VI. SUMMARY

The material in this chapter has been presented mainly for the benefit of public accounting firms. The discussion points out that service bureaus can have both a favorable and an unfavorable impact on public accounting firms and that additional audit problems are created when a client uses a service bureau.

The service bureau industry has a favorable impact on public accountants because it enables them to offer clients additional types of management advisory services and to process clients' bookkeeping work at service bureaus.

Service bureaus may have an unfavorable impact on public accounting firms because, in the future, the competition between the two industries for clients should increase. This study concludes that presently the competition between the two industries is not intense; however, in the future, unless public accounting firms offer clients many types of automated accounting

Mr. Charles W. Adams, President
Keydata Corporation
575 Technology Square
Cambridge, Massachusetts

Dear Mr. Adams:

At your request we have made a review of the KEYDATA organization and system, as defined in your document No. KD 3, dated December 29, 1964. This letter summarizes our findings; accompanying it is a report containing detailed comments.

Our review comprised a complete systems analysis and included an evaluation of the following requirements which are both unique and essential to an on-line real-time data processing system which is to be time-shared by multiple customers:

1. The equipment used must have the capability of handling transactions on-line and in real-time.

2. The programming must be done by personnel who are highly experienced and qualified in time-shared computing technology.

3. Maximum security must be provided for individual customer's programs and information.

4. Procedures must include protection of all information in the system in the event of equipment malfunction or human error.
FIGURE 2 (Continued)

In our opinion the KEYDATA organization and system, as defined, met all of these requirements and the system is an excellent example of controlled data processing. All aspects of the system have been well designed, reflecting the previous experience and capabilities of your personnel in the programming and operation of real-time systems as well as the soundness of the approach you have taken. When coupled with a customer's normal internal control procedures, the system provides an outstanding degree of control over both the accounting functions and the operating elements of a business. The KEYDATA system makes a practical and effective time-shared management information system now available to the general business community.

Very truly yours,

TOUCHE, ROSS, BAILEY & SMART

services, this competition will increase.

There are several ways that public accounting firms can offer clients automated accounting services and thereby meet any service bureau competition. First, they can purchase or lease computers, and form a combined CPA-service bureau operation. Many public accounting firms, however, cannot afford the expensive costs required to operate a computer.

A second way to meet service bureau competition is to form a cooperative service bureau. A cooperative is sponsored by a few firms who jointly own or lease a computer and share in its operating costs—at a fraction of the cost to individually own the computer.

Another way to meet increasing competition is for a public accounting firm to establish a significant working relationship with a service bureau. A public accounting firm and a service bureau who establish such a relationship pool their resources and provide a full range of services to clients. An accounting firm should establish a working relationship, if possible, with a service bureau that provides computer services exclusively to public accountants and not to the general public, except indirectly through the CPA.
A final way to meet increasing service bureau competition is for the public accounting firm to operate as a service bureau, but without owning or leasing any computer equipment or employing a full staff of computer specialists. A firm can operate in this manner by hiring a computer specialist and by renting some computer time.

Besides the favorable and unfavorable impact which service bureaus can have on public accounting firms, additional problems between the two industries are created when public accounting firms have clients that use service bureaus. When a service bureau is used by a client, the independent auditor must extend his audit programs to cover that portion of the computer system unique to service bureaus. The use of service bureaus, however, does not affect the auditor's objectives in the ordinary examination of financial statements. Before an independent auditor can express an opinion on the fairness of financial statements, he must review the client's system of internal control, including that portion maintained at a service bureau. Many auditors have concluded that when a company uses a service bureau, this review of internal control is not significantly affected by the presence of a service bureau.
However, the independent auditor must extend his review of a client's internal control system in order to determine if the service bureau's control system is adequate. This will assure that his client's accounting operation is not impaired.

The more adequate the portion of a client's internal control system maintained at a service bureau, the fewer auditing procedures the auditor needs to test the data flow within the EDP system. Because most service bureau clients receive straightforward routine applications, audit procedures are designed to audit around rather than through the computer system.

Since most auditors audit around the service bureau's computer system, they can review the internal control system without visiting the service bureau. In a few cases, the auditor may want to visit the service bureau, but he may be denied access to the system. The auditor may have to disclaim an opinion unless he can rely on the opinion of another auditor who has access to the service bureau system.
CHAPTER VII
SUMMARY AND CONCLUSIONS

This study describes the development of electronic data processing service bureaus, describes the types of services offered by service bureaus, evaluates the services received by service bureau clients, evaluates the satisfaction of clients with service bureaus, discusses the ways to improve client satisfaction, and describes and evaluates the impact of service bureaus on public accounting firms.

I. DEVELOPMENT OF ELECTRONIC DATA PROCESSING SERVICE BUREAUS

The service bureau industry is currently in its third stage of development. The most important developments that have occurred during this period include the formation of a trade association, called the Association of Data Processing Service Organizations (ADAPSO); the rapid increase in the number of service bureaus, particularly in the number of independent batch processing service bureaus; the formation of time-sharing service bureaus; and the rapid increase in the gross revenues of the service bureau industry.
II. SERVICES OFFERED BY RESPONDING SERVICE BUREAUS

Most third generation service bureaus offer both hardware and software services. Hardware services consist of computer time-sales and input data preparation. Software services consist of computer programming, systems analysis, computer consulting, facilities management, management consulting, real-time systems, and time-sharing services. The typical responding service bureau offers five of these nine services.

Hardware and software services can be further divided into specific routine and non-routine services. The typical responding service bureau offers seven routine services and three non-routine services. The services most often demanded by clients and provided by service bureaus are routine in nature and include: (1) payroll, (2) accounts receivable, and accounts payable, (3) billing and invoicing, (4) sales analysis, and (5) accounting--general ledger, financial statements.

Ninety-five per cent of all responding service bureaus plan to expand services in the future. The areas of expansion most often mentioned include: (1) accounting applications, (2) package applications,
(3) real-time systems, (4) time-sharing, and (5) simulations and model building.

III. SERVICES RECEIVED BY RESPONDING SERVICE BUREAU CLIENTS

Approximately eighty per cent of all responding service bureau clients receive only routine services from service bureaus. The most frequently received routine services include: (1) payroll, (2) accounts receivable and accounts payable, (3) billing and invoicing and (4) sales analysis. These services indicate that service bureaus are used strictly in routine administrative and financial areas. In fact, a very limited number of clients plan to expand into sophisticated high-payoff areas.

This automation of strictly routine applications by eighty per cent of responding clients does not usually result in the major direct benefit of cost savings. Only thirteen per cent of clients report direct cost savings from automating routine applications. For practically all responding clients, the other main advantage of automating routine applications--increase in accuracy and speed in processing data--in itself is not important enough to justify mechanizing routine applications. Since direct cost savings which result from automation of routine
jobs are easily quantifiable, many service bureau clients apparently failed to fully investigate the feasibility of using electronic data processing. Routine manual systems may provide adequate information at a much lower cost.

In addition to automating routine applications, about twenty percent of responding clients mechanize non-routine higher-payoff applications. Clients should receive many indirect benefits and savings from the automation of applications that either reduce cost of goods sold or provide managers with improved information for decision making. Applications that reduce cost of goods sold include automated inventory control systems, purchase systems, and transportation systems. These and similar applications should provide most companies with the most profitable use of a service bureau's computer. Although all companies included in this study could profitably automate applications that reduce cost of goods sold, only about one in seven responding clients automate any such applications. The cost of automating these applications is not prohibitive because responding clients who currently automate applications that reduce cost of goods sold do so at less than one-half the annual cost per application
to own or lease a computer.

Indirect benefits and savings should also result from automating applications designed to improve management information. The most profitable applications to automate in this group include budgeting systems, variance analysis systems, sales forecasting systems, and capital budgeting systems. Yet, only about one in fourteen responding clients automate any of these four or similar types of applications.

The fact that responding clients receive both automated routine and non-routine services does not indicate that these services are satisfactorily provided. An examination of the four major factors that affect satisfaction of clients leads to the conclusion that many clients in varying degrees are dissatisfied with service bureaus. These four factors are: (1) the number of different service bureaus used, (2) the per cent of service bureaus unable to provide clients with requested services, (3) the per cent of clients planning to expand services and (4) the per cent of clients planning to continue using service bureaus.
IV. HOW TO IMPROVE SATISFACTION OF SERVICE BUREAU CLIENTS

There may be three reasons why service bureau clients are dissatisfied with service bureaus:
(1) poor planning before selecting a service bureau,
(2) poor methods of selecting a service bureau and
(3) poor planning after selecting a service bureau.

Proper planning before selecting a service bureau involves three steps. First, a prospective client must appoint a feasibility committee composed of at least one member of management, preferably the controller.

Second, after the feasibility committee is appointed, it should discharge the following duties:
(1) analyze accounting sub-systems, (2) analyze non-accounting sub-systems, (3) suggest possible modifications of all systems analyzed, (4) measure the amount and type of savings or benefits resulting from the automated system, and (5) develop a five to ten year plan of applications to be mechanized at a service bureau.

Third, after the feasibility committee has discharged its duties, the company should appoint a committee to select a service bureau. This committee should be composed of at least two persons, including
a member of management and an accountant. The selection committee should select the best possible service bureau available.

The selection committee must carefully discharge its duty. If it does not, even the best planning before selecting a service bureau is wasted. A poorly selected service bureau often results in a client receiving marginal services and this can cause a disallusionment with the service bureau, followed by either a purchase or lease of an unneeded computer or a return to the manual system. In order to select the best possible service bureau available, the selection committee must consider the following factors: (1) consider several different service bureaus, (2) know the limitations of the major types of service bureaus, (3) consider the types of services offered, (4) consider the availability of backup computer equipment, (5) require service bureaus under consideration to submit cost bid proposals, (6) consider the reputation of the service bureau, (7) consider the financial and banking references of the service bureau, and (8) consider other miscellaneous items.

The first step in selecting a service bureau is to consider several service bureaus. However, forty
per cent of responding service bureau clients only considered one service bureau before final selection. The more service bureaus considered, the more opportunities the selection committee has for comparing each bureau's financial and banking references, past experience, types of services offered, and costs of services. Such comparisons increase the chances of finding a bureau that can provide satisfactory services. This study concludes that responding clients who considered three or more service bureaus are more likely to continue using service bureaus and to expand services in the future than those responding clients who considered only one or two.

A second factor to consider when selecting a service bureau is to know the limitations of the three major types of service bureaus— independent, bank, and manufacturer affiliate operated service bureaus. Although the three types of service bureaus have limitations, the limitations of independents usually can be overcome by careful selection techniques whereas the limitations of bank and manufacturer affiliate operated service bureaus usually cannot be overcome, even by careful selection techniques.
Another factor to consider is whether any service bureau contacted can offer the types of services desired by the prospective client. If a service bureau cannot offer desirable services, it should not be included on a list of service bureaus subject to further screening. The major factors which affect types of services offered by bureaus include the length of time in business, the size and composition of the professional staff, the extent to which application programming packages are used, and the type of computer(s) used.

Regarding the types of services offered, this study concludes that the selection committee should only consider for selection:

1. Independent service bureaus that have been in business for at least four years.
2. Large rather than small service bureaus.
3. Service bureaus that employ at least one full time professional manager.
4. Service bureaus that do not depend almost solely on the use of application programming packages.
5. Service bureaus that use computers designed mainly for processing business applications.

Fourth in the list of factors to consider in the selection process is the availability of backup
computer equipment by the service bureaus contacted. The most desirable form of backup equipment from the client's viewpoint is a parallel computer system.

Fifth, any independent service bureau that passes the preliminary screening tests— at least four years in business and the offering of desirable services— should be required to submit a cost bid proposal. The low bidding service bureau should not automatically be chosen because there are more important factors to consider than mere cost of services. Nevertheless, replies to this study disclose that cost of services is considered the single most important selection factor.

An equally important factor to consider when selecting a service bureau is the service bureau's reputation. A bureau's reputation can be determined by examining the recommendations and experiences of other users and the resumes of key personnel. Any service bureau under consideration should upon request submit to the selection committee the names and addresses of several clients. These clients should be asked questions that will indicate how well the service bureau provides services. An examination of resumes should indicate the qualifications of current employees.
A factor not to be overlooked in the selection process is to determine the quality of a service bureau's financial and banking references. These references, which indicate the financial stability of a service bureau, is one of the most important selection factors, and as questionnaire replies disclose, one frequently ignored. Yet, the higher the quality of these references, the less likely that the service bureau will go bankrupt.

Finally, several miscellaneous factors should be considered. The selection committee should view favorably affirmative answers to the following questions: (1) Does the service bureau have adequate insurance to cover the loss of important client documents? (2) Does the service bureau use fire-proof vaults to store important documents? (3) How conveniently located is the service bureau to the prospective client's place of business? and (4) Is the service bureau a member of ADAPSO?

To continue receiving optimum services after the selection of a service bureau, the following three steps must be taken. First, the client should sign a contract with the service bureau. A contract is needed to prevent misinterpretations of verbal contracts, to avoid many unnecessary frustrations.
at billing time, and to provide a convenient reference for settling disputes. Second, a liaison man should be appointed to work closely with the service bureau. Questionnaire results seem to support the conclusion that an accounting trained liaison man more effectively performs his duties than a non-accounting trained man. Evidence also seems to indicate that company personnel trained as computer programmers, systems engineers or analysts make the least effective liaison men. Third, the liaison man should periodically evaluate the services his company is receiving to assure that the company is making the most effective use of its service bureau.

V. SERVICE BUREAUS AND PUBLIC ACCOUNTING FIRMS

This study has pointed out that many internal accountants work for companies who are either users or potential users of service bureaus. Many of these internal accountants at one time or another are involved in selecting service bureaus, in determining which applications to automate at service bureaus, and so on. Consequently, the advice and recommendations presented in this study should be helpful to internal accountants. Furthermore, since service bureaus
can have both a favorable and an unfavorable impact on public accounting firms, these firms should understand the nature of the service bureau industry and how the industry can affect the practice of public accountancy.

Service bureaus have a favorable impact on public accountants because it enables them to offer clients additional types of management advisory services related to service bureaus. Also, clients' bookkeeping work may be avoided by processing this work at service bureaus.

Service bureaus may have an unfavorable impact because, in the future, the competition between the two industries for clients should increase. This study concludes that presently, the competition for clients between the two industries is not intense; however, in the future, unless public accounting firms offer clients many types of automated accounting services, the intensity of this competition will increase.

There are several ways that public accounting firms can offer clients automated accounting services and thereby meet the service bureau competition. First, they can purchase or lease computers and form a combined CPA-service bureau operation. Many public
accounting firms, however, cannot afford the expensive costs required to operate a computer.

Accounting firms who cannot afford the expensive computer costs can meet the increasing competition from service bureaus by forming cooperative service bureaus. Cooperatives are sponsored by a few firms who jointly own a computer and share in its operating costs—at a much lower cost than the cost of individually owning or leasing the computer.

Another way to meet increasing service bureau competition is for a CPA firm to establish a significant working relationship with a service bureau. A public accounting firm and a service bureau who establish such a relationship pool their combined resources and provide a full range of services to clients. A public accounting firm should establish a working relationship with a service bureau that provides computer services exclusively to public accountants and not to the general public, except indirectly through the CPA.

A final method to meet increasing competition is for the public accounting firm to operate as a service bureau, but without owning or leasing any computer equipment or employing a full staff of
computer specialists. A firm can operate in this manner by hiring a computer specialist and by renting some computer time.

Additional problems between service bureaus and public accounting firms are created when public accounting firms have clients that use service bureaus. Many public accounting firms audit clients who use service bureaus. The independent auditor must extend his audit programs to cover that portion of the computer system unique to service bureaus. The use of service bureaus, however, does not affect the auditor's objective in the ordinary examination of financial statements. Before an auditor can express an opinion on the fairness of financial statements, he must review the client's system of internal control, including that portion of it maintained at a service bureau. Many auditors have concluded that when a company uses a service bureau, this review of internal control is not significantly affected by the presence of a service bureau. However, the independent auditor must extend his review of a client's internal control system to determine if the service bureau's control system is adequate. This will insure that his client's accounting operation is not impaired.

The more adequate the portion of a client's
internal control system maintained at a service bureau, the fewer auditing procedures the auditor needs to test the data flow within the computer system. Since most service bureau clients receive routine applications, audit procedures are designed to audit around rather than through the computer.

By auditing around the service bureau's computer, CPA's can review the internal control system without visiting the service bureau. In a few cases, however, the auditor may want to visit the service bureau, but the service bureau may deny access to its system. The auditor may have to disclaim an opinion unless he can rely on the opinions of other auditors who have access to the service bureau's system.
SELECTED BIBLIOGRAPHY

Books


Periodicals


Bostwick, L. "Use of Information Theory in Accounting," Management Accounting, IXL (June, 1968), pp. 11-17.


"Canned Computer Programs will Save You Time, But," Administrative Management, XXIV (July, 1963), pp. 64-66.
Carmelnde, R. Lee. "We're Planning on Using a Service Bureau," Louisiana C.P.A., XXVI (October, 1966), pp. 60-61, 63-64.


Fertakis, J. P. "Toward A Systems-Oriented Concept of Controllership," Management Accounting, L (December, 1968), pp. 5-10, 23.


Garrity, John T. "The Management Information Dream; The End or a New Beginning?" The Financial Executive, XXXII (September, 1964), pp. 11, 12, 14, 16.


Miscellaneous Sources


How to Choose and Use an Outside EDP Center. N.Y.: Research Institute of America, September 4, 1963, 8 pp.


Letters and Private Interviews


Cranor, Mr. Administrative Manager, Louisiana Supply Co. Private interview, December 11, 1969, Baton Rouge, Louisiana.


Letter from an anonymous public accounting firm, June 27, 1969.


Letter from Fred L. Lilly, Jr., Manager, Ernst and Ernst, October 3, 1969.
Letter from Thomas M. Lynch, Partner, Ernst and Ernst, August 7, 1969.

Letter from Donald F. Markstein, Research Partner, Management Advisory Services, July 2, 1969.


Lipscomb, Mr. Secretary-Treasurer, Community Coffee Co. Private interview, December 2, 1969, Baton Rouge, Louisiana.


APPENDICES
APPENDIX A

METROPOLITAN AREAS SURVEYED
**South Central States**

**Alabama**
- Birmingham
- Mobile
- Montgomery

**Kentucky**
- Lexington
- Louisville

**Louisiana**
- Baton Rouge
- Lake Charles
- New Orleans
- Shreveport

**Mississippi**
- Jackson

**Tennessee**
- Chattanooga
- Knoxville
- Memphis
- Nashville
New England States

Connecticut
Bridgeport
Bristol
Hartford
New Britain
New Haven
Stamford
Waterbury

Maine
Auburn
Augusta
Bangor
Lewiston
Portland

Massachusetts
Boston and vicinity
Brocton
Brookline
Cambridge
Lowell
New Bedford
Newton
Quincy
Springfield
Watertown
Worcester

New Hampshire
Concord
Manchester
Nashua

Rhode Island
Providence
Pawtucket

Vermont
Entire state
APPENDIX B

QUESTIONNAIRE SENT TO PUBLIC

ACCOUNTING FIRMS
Dear Sir:

Your firm has been chosen to participate in a study valuable to all CPA's. The study will be an empirical investigation of service bureaus. The investigation will evaluate the services, satisfactions and systems of clients using service bureaus and the implications to the accounting profession. Strengths and weaknesses of the service bureau industry will be pointed out.

Relationships of CPA firms and service bureaus will be examined. The feasibility of forming a combined CPA-service bureau firm or a co-operative service bureau will be analyzed. The problems of auditing clients who use service bureaus will be discussed.

The study will be based upon the personal experience of CPA's. As a CPA, your participation is needed. A questionnaire which can be answered in about ten minutes is enclosed. Most of the questions can be answered by placing a check mark in the appropriate blank or blanks. Other questions call for short answers. Please feel free to make additional comments.

After a tally has been taken of all the returned questionnaires, the findings will be sent to your CPA firm. The results will also be included in my Ph.D. dissertation at Louisiana State University in Baton Rouge, Louisiana.

Your answers will not be identified. All information received will be held in strictest confidence. Please return the questionnaire to me by October 27 in the enclosed stamped addressed envelope.

Sincerely,

Michael J. Cerullo
SURVEY ON COMPUTERS AND DATA PROCESSING

SERVICE BUREAUS

PART A: BACKGROUND INFORMATION ON COMPUTERS AND SERVICE BUREAUS

DIRECTIONS: Part A is to be answered by all CPA firms

A-1. Please indicate (√) the size of your professional staff:

___ One ___ Sixteen to thirty-five
___ Two to five ___ Thirty-six to ninety-nine
___ Six to fifteen ___ One hundred or more

A-2. How many years have you personally practiced as a public accountant?

________________ years.

A-3. Does your firm currently own or lease its own electronic computer(s)?

___ Yes ___ No (If answered Yes, go to question A-5)

A-4. Does your firm plan to purchase or lease its own electronic computer(s) within the next five or ten years?

___ Yes ___ No ___ Undecided

A-5. Has your firm considered forming a co-operative service bureau (one owned and sponsored by several accounting firms) for processing clients' data?

___ Yes ___ No

Comments on the above question are welcome:

________________________________________________________________________

A-6. Does your firm write computer programs for clients?

___ Frequently ___ Occasionally ___ Never
A-7. Does your firm engage service bureaus to help provide more types of services for your clients?

   Regularly  Occasionally  Never (If answered Never, go to question A-9)

A-8. Please indicate the area(s) in which your firm engages service bureaus:

A-9. Do service bureaus engage your firm to help provide more types of services for their clients?

   Regularly  Occasionally  Never (If answered Never, go to question A-11)

A-10. Please indicate the area(s) in which service bureaus engage your firm:

A-11. Does your firm assist clients in selecting a service bureau?

   Frequently  Occasionally  Never

A-12. Does your firm help clients in evaluating the services they are getting from their service bureaus?

   Frequently  Occasionally  Never

PART B: PROBLEMS OF AUDITING CLIENTS USING SERVICE BUREAUS

DIRECTIONS: This part is to be answered only by CPA firms that have clients using service bureaus.

B-1. Has your firm experienced any problems of auditing clients who use service bureaus? Yes  No (If answered No, go to question B-2)

Please specify the area(s) in which your firm has encountered any such problems: ___________________
B-2. Do you feel that new audit procedures are needed for auditing clients who use service bureaus?  
___ Yes ___ No  
Comments on the above question are welcome:_____

B-3. Has your firm ever requested to check the adequacy of the internal computer control system maintained by a service bureau for your clients?  
___ Yes ___ No (If answered No, go to Section C)  

B-4. Do service bureaus grant your request to check the adequacy of the internal control system maintained for your clients?  
___ Always ___ Sometimes ___ Never  
Comments on the above question are welcome:_____

PART C: FUTURE IMPLICATIONS OF SERVICE BUREAUS TO THE ACCOUNTING PROFESSION  
DIRECTIONS: This part is to be answered by all CPA firms.  

C-1. Please check the area(s) in which your firm currently is experiencing competition from service bureaus:  
___ Writeup work  
___ Management advisory services  
___ Design and installation of accounting systems  
___ Design and installation of non-accounting systems  
___ None of the above  
___ Other (Please specify):_____________________

C-2. In the future, do you feel that CPA's will experience increased competition from service bureaus?  
___ Yes ___ No  
Please comment on the above question:__________
C-3. If question C-2 was answered Yes, how does your firm plan to meet the increased service bureau competition?

THANK YOU FOR COMPLETING THIS QUESTIONNAIRE. PLEASE RETURN IT TO:

Michael J. Cerullo
P.O. Box 20156
University Station
Baton Rouge, Louisiana 70803
APPENDIX C

QUESTIONNAIRE SENT TO SERVICE BUREAU CLIENTS
Dear Sir:

Your company has been chosen to participate in a study valuable to all service bureau clients. The study will present recommendations for improving client services and satisfaction. Your own service bureau will receive a copy of these findings.

The study will be based upon the opinions and personal experience of actual service bureau clients. As a service bureau client, your opinions are needed. A questionnaire which can be answered in about ten minutes is enclosed. Most of the questions can be answered by placing a check mark in the appropriate blank or blanks. Other questions call for short answers. Please feel free to make additional comments.

After the questionnaires have been returned, a tally will be taken. The findings will be sent to individual service bureaus. The results will also be included in my Ph.D. dissertation at Louisiana State University in Baton Rouge, Louisiana.

Your answers will not be identified. All information received will be held in strictest confidence. Please return the questionnaire to me by October 10 in the enclosed stamped addressed envelope.

Sincerely,

Michael J. Cerullo
SURVEY TO SERVICE BUREAU CLIENTS

PART A: GENERAL AND MISCELLANEOUS

A-1. Please state:

(1) Your title with the company_____________________

(2) Your area of training or specialization_____________________

A-2. Please indicate (✓) the size of your company:

- Less than 10 employees
- Ten-fifty employees
- Fifty-one to 150 employees
- 151-250 employees
- 251-500 employees
- More than 500 employees

A-3. Please indicate the company's main field or industry:

- Agriculture, forestry, fisheries
- Mining, oil, production
- Construction
- Manufacturing
- Transportation, communications, public utilities
- Wholesale and retail trade
- Service organization
- Non-profit organization
- Finance, insurance, real estate
- Other (Please specify): ______________________

A-4. Approximately how long has your company used a data processing service bureau? _________ years.

A-5. How many different service bureaus has the company used?

- One
- Two
- Three
- Four
- Five
- More than five

A-6. Has the company ever owned or leased its own electronic computers? Yes No (If answered No, go to question A-9.)
A-7. Does the company currently own or lease its own electronic computers? ___ Yes ___ No

A-8. Has the company ever discontinued using its own electronic computers in favor of using a service bureau? ___ Yes ___ No

A-9. Does the company anticipate purchasing or leasing its own electronic computers within the next five or ten years?
___ Yes ___ No ___ Don't know

A-10. Does your company employ its own electronic computer specialist? ___ Yes ___ No

A-11. Is your company periodically audited by a CPA firm?
___ Yes ___ No

PART B: SERVICES PROVIDED BY THE SERVICE BUREAU

B-1. Please indicate the category or categories of services received from your service bureau:

____ Computer programming
____ Computer time-sales only
____ Input data preparation
____ Management consulting services
____ Management of the company's computer installation (If applicable)
____ Systems analysis
____ Time-sharing
____ Other (Please specify)______________________________

B-2. Please indicate (/) the specific type(s) of services received from your service bureau:

____ Accounting-general ledgers, financial statements
____ Accounting-cash control, budget control
____ Accounts receivable, accounts payable, sales
____ Billing and invoicing
____ Capital budgeting
____ Cash management
____ Distribution-route optimization, carrier selection
____ Economic forecasts
Expenses-analysis and reports
Forecasting of money market conditions
Inventory level and control
Labor and cost distributions
Marketing-customer service system
Marketing-order entry
Payroll
Personnel-skills inventory, skills forecasting
Preparation of budgets
Production-cost control
Production-output reporting system
Production-scheduling
Purchase order writing
Purchasing-material selection
Purchasing-replenishment orders
Purchasing-vendor selection
Sales forecasting
Simulations
Transportation-routing
Other (Please specify):

B-3. Does your company expect to expand service bureau services or usage in the future? Yes No
(If answered no, go to question B-5)

B-4. Indicate below the area(s) the company expects to expand service bureau services or usage:

B-5. Has your company ever requested an expansion of services from the service bureau?

   Yes No (If answered No, go to question B-7.)

B-6. Was the service bureau able to provide the additional expanded services? Yes No

B-7. Please indicate (/) which of the following factors are used to justify or evaluate which jobs will be computerized:

   Accounting cost reductions
   Clerical worker cost reductions
   Improved cost control
   Improved customer relations
   Improved forecasting
B-8. Please indicate the approximate yearly direct dollar savings resulting from using the service bureau:

$_______ per year

None

Don't know

Comments on the above question are welcomed: __________________________

B-9. Does your company send original source documents to the service bureau?

Always

Frequently

Occasionally

Never

B-10. Does the contract or agreement with the service bureau specify that the software (i.e., computer programs, flowcharts, etc.) belongs to the company? Yes No

B-11. Does the service bureau have adequate backup equipment in case of a computer breakdown? Yes No Don't know

PART C: SELECTION OF A SERVICE BUREAU

C-1. What company or other outside personnel were responsible for selecting the service bureau? (More than one item may be checked.)

Top managers (Or owner or partner)

Other managers

Controller or financial officer

Accountant (Other than controller)
C-2. Who determines what jobs will be sent to the service bureau for processing? (More than one item may be checked.)

- Top managers (or owners or partner)
- Other managers
- Company controller or financial officer
- Company accountant (other than the controller)
- Company computer specialist or analyst
- Other company staff specialist
- Service bureau personnel
- Outside consultant
- Other (Please specify): _______________________

C-3. Approximately how many different service bureaus were considered by the company before selecting the current one?

________ others.

C-4. Before final selection of a service bureau, were service bureaus required to submit competitive cost bids to the company?

- Yes  - No (If answered no, go to question C-6.)

C-5. Was the service bureau submitting the lowest bid offered the contract?  

- Yes  - No

C-6. Does the company have a written contract or agreement with the service bureau?

- Yes  - No (If answered No, go to question C-8.)

C-7. For what length of time is the contract or agreement?

Please specify: _________________________________

C-8. Please indicate your average monthly billing charge from the service bureau: $_____________ per month
In your selection of a service bureau, indicate (/) the degree of importance given to each item below. Indicate whether the item was Not Considered, received Some Consideration, or received Very Important Consideration.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Advantages and limitations of service bureaus</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Costs of the services</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Financial and banking references</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Geographic location of the service bureau</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Literature and advertisements by the service bureau</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Past experience of the service bureau</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Recommendations and experience of other users</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Reputation of service bureau</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Technical knowledge of the service bureau personnel</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Types of services offered</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Other (Please specify): ________________________________________</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

C-10. Does the company plan to continue using a service bureau in the foreseeable future? ___ Yes ___ No ___ Undecided

C-11. Does one of the company's employees work closely with the service bureau?

___ Yes ___ No (If answered No, go to question C-14.)
C-12. Please indicate the title or position of the company man who works as a liaison between the service bureau and the company:

- Accountant
- Controller or financial officer
- Mathematician, economist, statistician, physical scientist, operations research expert
- Systems engineer or analyst
- Management (or owner or partner)
- Computer programmer
- Other (Please specify): __________________

C-13. Please indicate how the company liaison man gained his familiarity with the basics of electronic data processing and computers. (More than one item may be checked.)

- College or university courses
- Participation in professional seminars
- On-the-job training
- Self teaching
- Training received from the service bureau
- Liaison man not yet familiar with EDP
- Other (Please specify): __________________

C-14. Does the company employ an outside liaison man, such as a CPA or other consultant?  ____ Yes  ____ No

C-15. Has the service bureau ever promised services which it could not perform?  ____ Yes  ____ No

THANK YOU FOR COMPLETING THIS QUESTIONNAIRE. PLEASE RETURN IT TO:

Michael J. Cerullo
P. O. Box 20156
University Station
Baton Rouge, Louisiana  70803
APPENDIX D

QUESTIONNAIRE SENT TO SERVICE BUREAUS
Dear Sir:

Your service bureau has been chosen to participate in a study valuable to the service bureau industry. The study will present recommendations for improving client services and satisfaction. Current client system needs will be evaluated and future system needs analyzed. Present and future relationships of service bureaus with outside consultants will be discussed.

The study will be based upon personal experience of service bureaus. As a service bureau your participation is needed. A questionnaire which can be answered in about ten minutes is enclosed. Most of the questions can be answered by placing a check mark in the appropriate blank or blanks. Other questions call for short answers. Please feel free to make additional comments.

After a tally has been taken of all the returned questionnaires, the findings will be sent to your service bureau. The results will also be included in my Ph.D. dissertation at Louisiana State University in Baton Rouge, Louisiana.

Your answers will not be identified. All information received will be held in strictest confidence. Please return the questionnaire to me by October 10 in the enclosed stamped addressed envelope.

Sincerely,

Michael J. Cerullo
SURVEY OF SERVICE BUREAU PRACTICE
IN THE UNITED STATES

PART A: GENERAL AND MISCELLANEOUS

A-1. What is:
(1) Your title with the company: ______________________

(2) Your field of specialization: ______________________

A-2. Please indicate (✓) the size of your professional staff (excluding keypunch operators, clerical or secretarial personnel.)

   ___ Less than five  ______ Fifty-one to 75
   ___ Five to ten    ______ 76-100
   ___ Eleven to twenty-five ______ 101-200
   ___ Twenty-six to fifty ______ More than 200

A-3. Please indicate which of the following personnel are included on your staff:

   ___ Engineer(s)        ___ Financial analyst(s)
   ___ Mathematician(s)   ___ Physical scientist(s)
   ___ Economist(s)       ___ Computer programmer(s)
   ___ Statistician(s)    ___ Professional manager(s)
   ___ Operations research    ___ Other (Please specify)
   ___ Operations research expert(s) ______________________
   ___ Systems analyst(s) ______________________

A-4. How long has your service bureau been in operation?

   ________ years.

A-5. Please specify the make and model number of the electronic computer(s) owned or leased by your service bureau:

   ______________________

A-6. Does your firm conduct seminars for prospective clients, covering such topics as computers and their limitations or what to expect from the service bureau?

   ___ Regularly ___ Occasionally ___ Rarely ___ Never
PART B: TYPES OF COMPUTER SERVICES OFFERED TO CLIENTS

B-1. Please indicate (✓) the category or categories of services offered by your service bureau:

___ Computer consulting services
___ Computer programming
___ Computer time sales
___ Facilities management
___ Input data preparation
___ Management consulting
___ Real-time systems
___ Systems analysis
___ Time-sharing
___ Other (Please specify): ____________________

B-2. Please indicate the specific type(s) of services provided by your service bureau:

___ (1) Accounting—general ledger, financial statements
___ (2) Accounting—cash control, budget control
___ (3) Accounts receivable, accounts payable, sales
___ (4) Billing and invoicing
___ (5) Capital budgeting
___ (6) Cash management
___ (7) Distribution—carrier selection
___ (8) Distribution—route optimization
___ (9) Economic forecasts
___ (10) Expenses—analysis and reports
___ (11) Forecasting of money market conditions
___ (12) Inventory level and control
___ (13) Labor and cost distributions
___ (14) Marketing—customer service system
___ (15) Marketing—order entry, billing
___ (16) Payroll
___ (17) Personnel—skills inventory, skills forecasting
___ (18) Preparation of budgets
___ (19) Production—cost control
___ (20) Production—output reporting system
___ (21) Production—scheduling
___ (22) Purchase order writing
___ (23) Purchasing—replenishment orders
___ (24) Purchasing—material selection
___ (25) Purchasing—vendor selection
___ (26) Sales forecasting
___ (27) Transportation—routing
B-3. From the preceding list of services (Question B-2 above), please rank by frequency of occurrence the five services most often provided by your service bureau. For, example, if number 16, payroll, is the service most often provided, place a 16 in the column beside first.

<table>
<thead>
<tr>
<th>Frequency Rank of Service</th>
<th>Number of Service From B-2 Above</th>
</tr>
</thead>
<tbody>
<tr>
<td>First</td>
<td></td>
</tr>
<tr>
<td>Second</td>
<td></td>
</tr>
<tr>
<td>Third</td>
<td></td>
</tr>
<tr>
<td>Fourth</td>
<td></td>
</tr>
<tr>
<td>Fifth</td>
<td></td>
</tr>
</tbody>
</table>

B-4. Please indicate the type of industry or industries using your service bureau:

[ ] Agriculture, forestry, fisheries
[ ] Construction
[ ] Finance, insurance, real estate
[ ] Manufacturing
[ ] Mining, oil, production
[ ] Non-profit organization
[ ] Service organization
[ ] Transportation, communications, public utilities
[ ] Wholesale and retail trade
[ ] Other (Please specify): ______________________

B-5. Please indicate which of the following techniques are used by your service bureau:

[ ] Linear programming
[ ] Monte Carlo analysis
[ ] Probability theory
[ ] Program evaluation and review technique (PERT)
[ ] Queing theory
[ ] Simulations
[ ] Regression analysis
[ ] Statistical quality control
[ ] None of the above

B-6. In the future does your service bureau expect to expand services rendered to clients?

[ ] Yes [ ] No (If answered No, go to question B-8).
B-7. In what areas do you plan to expand client services?

B-8. Does your service bureau use generalized or packaged programs for some jobs?  Yes  No
(If answered No, go to question B-10.)

B-9. Are the generalized or packaged programs developed by the service bureau's own personnel?
  All  Most  Some  None

B-10. Does the service bureau help clients develop a plan for computer services to be implemented during the next five or ten years?
  Yes, for most clients
  Yes, for some clients
  No

B-11. Briefly indicate how your service bureau costs or prices its services:

PART C: SYSTEMS WORK

C-1. Please indicate (✓) which of the following benefits you feel your clients are receiving from their computerized systems:

- Accounting cost reductions
- Clerical worker cost reductions
- Improved cost control
- Improved customer relations
- Improved forecasting
- Improved inventory planning
- Improved negotiating position
- Improved shipping schedules
- Improved vendor performance
- Optimum (or near optimum) utilization of plant capacity
- Personnel stability
- Reduction in client's inventory level
- Reduction in client's cash balance
- Savings in other general and administrative expenses
C-2. Does your service bureau analyze a potential client's entire data processing system before deciding which jobs to computerize?

   ___ Yes
   ___ No, only those parts of the system which are currently causing trouble
   ___ Other (Please specify): ______________________

C-3. Please specify three important factors considered by your service bureau when designing a system for a client:

   1. ____________________________
   2. ____________________________
   3. ____________________________

PART D: INTERNAL ACCOUNTING AND REPORTING

D-1. Does the service bureau employ a staff accountant(s) to handle its own accounting operations? ___ Yes ___ No

D-2. Does the service bureau engage an independent public accountant or CPA to handle the service Bureau's accounting operation?

   ___ Yes, for all accounting work
   ___ Yes, for some accounting work
   ___ No

D-3. Does your service bureau prepare (or have prepared) budgets?

   ___ Yes ___ No (If answered No, go to question D-5.)

D-4. Please specify the type(s) of budgets prepared:

   ____________________________
   ____________________________

D-5. Does your service bureau prepare (or have prepared) standard costs for each job?
D-6. Are the standard costs periodically compared to actual costs?

___ Yes  ___ No

D-7. Are department heads held responsible for costs controlled by them? ___ Yes ___ No ___ Not applicable

D-8. Please indicate which of the following techniques are used by the service bureau's management (owner) for internal decision making:

___ Breakeven analysis
___ Capital budgeting
___ Cost of capital calculations
___ Direct or variable costing
___ Discounted cash flow techniques
___ Incremental cost analysis
___ Linear programming
___ Payback analysis
___ PERT, CPM
___ Regression analysis
___ Return on investment
___ Variance analysis
___ None of the above

PART E: RELATIONS WITH OUTSIDE CONSULTANTS AND CERTIFIED PUBLIC ACCOUNTANTS (CPA)

E-1. Does your service bureau engage outside consultants to help provide more types of services for clients?

___ Yes, regularly
___ Yes, occasionally
___ No (If answered No, go to question E-4.)

E-2. What type(s) of outside consultants are engaged by your service bureau?

___ CPA
___ Management consultants
___ Another service bureau
___ Other (Please specify): __________________________
E-3. Please indicate the area(s) in which outside consultants are used by the service bureau.

- Accounting systems analysis and design
- Computer programming assistance
- Linear programming, other operations research problems
- Market research and economic analysis
- Non-financial systems analysis and design
- Other (Please specify): ______________________

E-4. What impact do you feel that service bureaus will have on CPA firms?

Please comment: ________________________________

___________________________________________

E-5. Do CPA's ever request to check the adequacy of the control system maintained by your service bureau for their clients?

Regularly __ Occasionally ___ Never
(If answered NEVER, you are through with this questionnaire.)

E-6. Do you allow CPA's to check the adequacy of their client's control systems? ___ Yes ___ No
(If answered NO, please comment: ___________________________
VITA

Michael Joseph Cerullo, son of Mr. and Mrs. Michael F. Cerullo, was born in Patterson, New Jersey, on June 22, 1940.

He received his elementary and secondary education in the Needham, Massachusetts, public school system, graduating from Needham High School on June 10, 1958. In November of 1958, Mr. Cerullo entered Northeastern University, Boston, Massachusetts, where in June, 1963, he completed the requirements for the Bachelor of Science in Business Administration with a major in accounting.

In 1964, upon receiving a graduate assistantship in the Department of Accounting at Louisiana State University, he entered the graduate school and received the Master of Science in Accounting, in May, 1966.

In 1967, Mr. Cerullo received a graduate teaching assistantship in the Department of Accounting at Louisiana State University and is now a candidate for the Doctor of Philosophy in Accounting. He is currently an Assistant Professor of Accounting at Southern Illinois University, Carbondale, Illinois.
Candidate: Michael Joseph Cerullo

Major Field: Accounting

Title of Thesis: AN EVALUATION OF SERVICES AND SATISFACTION OF EDP SERVICE BUREAU CLIENTS AND THE IMPLICATIONS TO THE ACCOUNTING PROFESSION

Approved:

[Signatures]

Major Professor and Chairman

Dean of the Graduate School

EXAMINING COMMITTEE:

[Signatures]

Date of Examination:

May 23, 1971