A system study of the departmental charge system at the University of Montana

Gerald Leon Fogel
The University of Montana

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A SYSTEM STUDY OF THE DEPARTMENTAL CHARGE SYSTEM
AT THE UNIVERSITY OF MONTANA

by

Gerald L. Fogel

B.S. in Education, Northern Illinois University, 1958

Presented in partial fulfillment of the requirements for the degree of
Master of Science
UNIVERSITY OF MONTANA
1970

Approved by:

[Signature]
Chairman, Board of Examiners

[Signature]
Dean, Graduate School

AUG 6 1970
Date
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"The stresses on the resources for higher education require innovation in two major areas: the process of achieving educational objectives and the administration of the resources utilized to carry on the processes of education. These areas are interdependent. While it may be possible in the short run to maintain an adequate educational process with inadequate resource administration, in the long run it is neither probable nor possible."\(^1\)

While the primary objective of any education institution is education, the management of the resources that are necessary to carry on the educational process is extremely important. The management of these resources and the decisions concerning management are dependent upon information which is furnished through the process of systems. Orlicky states, "A company may be in the business of making widgets, but it is also in the business of keeping up its capability (and this includes a continuous effort to improve the system which supports and controls operations) to do so profitably."\(^2\)

In the "total systems" concept, the entire entity is recognized as a single system. All the smaller systems making up the whole are


recognized as subsystems, although they may be referred to as systems in themselves. It is these subsystems which provide the machinery for the administration of the resources necessary to carry on the objectives of the entity.

If an entity or "total system" is to manage its resources efficiently, the subsystems which provide the means of work flow must operate at maximum efficiency to produce the desired objective.

Continuous examination of these subsystems is necessary to determine if they are operating at peak efficiency. This may be difficult because of the manpower requirements needed to perform the examination and the simultaneous necessity to maintain the system.

In this age of automation, the computer is a convenient tool to aid in the operation of the system. Systems are made up of men, machines, and procedures. The basic component of the system is the human who uses the computer as a tool of the system. Procedures are the means, established by management, to accomplish the objectives of the system. The human element cannot be entirely replaced and procedures must be outlined in detail to accomplish the objective of the system in the most efficient manner possible.

"Automation suggests a self-contained system with inputs, outputs, and a mechanism of control. Yet the concept also recognized the need to consider the environment within which the automatic system must perform. Thus the automated system is recognized as a subpart of a larger system."^4

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^3 Ibid., p. 14.

Statement of the Problem

The reexamination and redesign of the subsystems of the University of Montana appear not to have kept pace with the growth of the student body and consequently with a greatly increased budget and other resources used to accomplish the objectives of the University. It is difficult to examine and redesign systems and at the same time keep the system operating in order to provide for current operations.

The University of Montana is made up of academic departments and ancillary or auxiliary enterprises. According to the American Council on Education, "An auxiliary enterprise is an entity that exists to furnish a service to students, faculty, or staff, and that charges at a rate directly related, but not necessarily equal, to the cost of the service."\(^5\)

In the course of the year, one academic department or ancillary service of the University might perform a service for or transfer goods to another department. In payment for this service or goods, funds must be transferred from the operating budget of one department to that of another. The system which accomplishes this transfer of funds is known as the departmental charge system.

During the winter quarter of the 1969-70 academic year, a study of the departmental charge system was conducted in partial fulfillment of the requirements for Business Administration 470, Analysis and Design of

Business Systems. This study concentrated on the system as it applied to Printing Services and was followed through the Business Office. It was felt by knowledgeable people in the field that the findings and recommendations of that study were valid.

The objectives of this study were four-fold. The first objective was to identify problems in the present system of departmental charges. All the segments of any system must work together in order to produce the desired objective efficiently. The second objective was to determine whether problems which were identified in the previous study by Bent and others are common to all departments. The third objective was to design a system which would eliminate any problems identified. The final objective was to design a standard form and related paper flow which could be used by all departments in reporting their departmental charges to the Business Office for processing the weekly departmental ledger.

Definition of Terms Used

The terms which are used throughout this paper are defined as follows:

System. An array of components designed to accomplish a particular objective according to plan.

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7 Ibid.
**Internal.** Refers to activity within the University Business Office accounting cycle.

**External.** Refers to activity outside the University Business Office accounting cycle.

**State.** Refers to accounts funded primarily from legislative appropriations and student fee and collections held by the state treasurer. This covers all areas where academic credit is generated.

**Local.** Refers to funds and funded accounts that are held in Missoula banks.

**Account.** Refers to the department designation. May be a three-digit (001-499) or a four-digit (500-1 through 999-9) number.

**Classification (class code).** Refers to the object or purpose of the activity. For example, the specific type of income or the specific category of expense.

**Significance and Purpose of the Study**

In the business world, the manager is charged with the responsibility of planning, organizing, controlling, and communication. The subsystems which comprise the system of the business furnish to the manager information which aids in the accomplishment of these duties.

At the University of Montana, department heads and directors of ancillary services are the counterparts of the manager in the business world. Subsystems of the University serve to furnish them with information relative to funds available. This information must be current if it is to have any value in the decision-making process.
It is the responsibility of the Business Office to furnish budget information to those who are responsible for the allocation of budget funds. As Gill states, "... The field of systems and procedures is an integral part of the job of every manager. By this is meant that every person who supervises, directs or administers the activities of subordinates has a responsibility inherent in his job for the systems and procedures that he and his subordinates employ."\(^8\)

This study was made with the knowledge and full cooperation of the Administrative Vice-President, the Business Manager, the Assistant Controller and others interested in improving the efficiency of the departmental charge system.

This study was made with the hope that the results might be used by the University and that the system arrived at would better serve those who must use the information which the system provides.

**Delimitations**

In order to limit the analysis to manageable proportions, it was decided to limit the study to those units of the University which make the heaviest use of the departmental charge system. It was assumed that any problems identified and any system designed which would apply to these units would also be relative to other units in the University.

The system study which was made through Printing Services will be referred to in order to determine whether any problems which are identified are common to those identified in that study.

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The study was relative only to the departmental charge system of the University of Montana. It should not be assumed that any findings or recommendations should apply to any other institution.

**Organization of the Study**

The investigator was a participant in the study made of the Printing Services described earlier. In that study, an initial interview was held with the Director of Printing Services. The purpose of this interview was to give the investigating team an insight into the purpose of Printing Services on the University campus; an overview of the organizational structure of Printing Services, the Business Office, and the University Administration; an overview of the present billing routines; and an appreciation of the need for more current information to assist the Director in making meaningful decisions. Each segment of the billing system was studied by a member of the investigating team. Information concerning the system of billing was obtained through interviews with the employees involved in the system.

The entire billing procedure, from the initiation of the order to the final reporting of the transfer of funds by the monthly departmental ledger, was documented by a flowchart using standard flowcharting symbols. After the completion of the flowcharting, the completed flowchart was checked with the person or persons from whom the information was taken to be certain that the procedure was correctly charted.

In expanding the study through the Physical Plant and Library Services, the investigator followed a similar procedure. Initial interviews were held with the Director of the Instructional Materials Services
and the Office Manager of the Physical Plant to gain a knowledge of the administrative problems of each organization. Organizational charts were obtained for each organization. Interviews were held with the office personnel who actually participate in the workflow of the system. From the information obtained in the interviews with the various office employees, flowcharts were prepared which represented, symbolically, the workflow of the system. These flowcharts were checked for accuracy with the personnel who originally furnished the information. The flowcharts served as an aid in analyzing the present system to determine if improvements could be made in the system.

After studying the flowchart of the present system and analyzing the notes taken in interviews with department and Business Office personnel, a system was designed which would eliminate any possible problems identified.

Two forms were designed to fit the needs of the departments studied. The first form was designed to fit the needs of those departments and ancillary services, which because of their specialized operation, have a need for a special form design. The second form was designed to fit the needs of all other departments and ancillary services studied. It is felt by the investigator that the needs of all departments and ancillary services on the University campus can be met with these two forms.
CHAPTER II

THE PRESENT SYSTEM

Introduction

In the analysis of the flowchart of the current departmental charge system presented in the appendix and in consideration of the information received in interviews, the following possible problems were found. Some of these problems are not of major significance, however, it is believed that all of them bear some significance to the improvement of the departmental charge system.

General Findings Concerning All Departments

It was found that there was a lack of communication between the various departments studied and the Business Office. This was reflected by the fact that, at least in one area, there was a lack of knowledge as to a deadline date for forwarding departmental charges to the Business Office. It was found in the Printing Services study that invoices were being sent to the Business Office on the fifteenth of every month, but no processing was being done until approximately the thirtieth of the month. Apparently the deadline date was not adjusted relative to the new procedure, when the operation was computerized. As a result, the invoices were delayed unnecessarily for almost two weeks.

It was also found that there was a lack of written job procedures in the various areas to describe job responsibilities and the procedures
for accomplishing those jobs. It is felt that the lack of communication and the lack of written procedures are related. If written job procedures were furnished, their use might make communication better between the departments and the Business Office. Written job procedures could also be valuable if it became necessary for temporary employees to replace permanent employees for a period of time. New employees on a job can perform better when there are written procedures which outline their duties and the procedures to follow.

All departmental charges are made on the basis of account number rather than department name. All originating forms have provision for the account number to be noted. In spite of this, not all requesting departments furnish this information when making a request for goods or services. This makes it necessary to determine the account number of the department or to contact the requesting department for this information at a later time.

Of the three organizations studied, it was found that all use a different form with which to report departmental charges to the Business Office. Printing Services had designed its own form to fit its needs in separating the charges into categories of Printing Services, Clerical Services, and Clerical Supplies. The Physical Plant Office uses a computer printout for reporting its charges. The University Vehicle Service, an ancillary service, sends one copy of the request form to the Business Office to report departmental charges. Gasoline Stores, a division of Physical Plant, does its reporting on a summary form which is derived from the store's requisition receipt. All Library
Services use an invoice form which evidently was originally established for the purpose of reporting departmental charges. The forms used are not uniform in design or in size.

**Business Office**

As indicated from the above finding, the Business Office exercises no control over the forms used by the various departments. Forms which are used exclusively within the department should be of concern to that department only, but forms which are used in the workflow of a system involving the Business Office should be controlled. The appropriate organization for exercising that control is the Business Office.

In the study of departmental charges through the Printing Services, it was found that the University was writing checks to itself in order to transfer funds from one internal local account to another internal local account. Recommendations were made in that study to eliminate the writing of checks and make the transfer of funds by journal entries. Each vendor to whom the University sends checks is assigned a vendor number by the Business Office. Internal local accounts are also assigned vendor numbers to facilitate the check-writing method of transferring funds. In examining the copies of claims for University of Montana vendors for the 1968-69 fiscal year, the extent of transferring funds by this procedure was determined both in transaction volume and in dollar volume. A table which summarizes this finding is presented below. The 498 checks written to University of Montana vendors represents only 1.9% of the 25,627 checks written during the 1968-69 fiscal year.
TABLE I

TRANSACTION AND DOLLAR VOLUME OF CHECKS WRITTEN TO UNIVERSITY OF MONTANA VENDORS DURING THE 1968-69 FISCAL YEAR

<table>
<thead>
<tr>
<th>Department</th>
<th>Number of Checks</th>
<th>Dollars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Plant--Gasoline Stores</td>
<td>12</td>
<td>$1,003.85</td>
</tr>
<tr>
<td>Accounts Receivable</td>
<td>6</td>
<td>2,159.31</td>
</tr>
<tr>
<td>Prescription Pharmacy</td>
<td>12</td>
<td>2,467.26</td>
</tr>
<tr>
<td>Instructional Materials Service</td>
<td>12</td>
<td>3,555.57</td>
</tr>
<tr>
<td>Chemical Stores</td>
<td>13</td>
<td>4,839.14</td>
</tr>
<tr>
<td>Computer Center</td>
<td>14</td>
<td>6,151.20</td>
</tr>
<tr>
<td>Clerical Supplies</td>
<td>11</td>
<td>7,327.83</td>
</tr>
<tr>
<td>Central Mail</td>
<td>13</td>
<td>8,207.00</td>
</tr>
<tr>
<td>Clerical Jobs</td>
<td>11</td>
<td>11,747.15</td>
</tr>
<tr>
<td>University Center</td>
<td>43</td>
<td>12,820.70</td>
</tr>
<tr>
<td>University Vehicle</td>
<td>17</td>
<td>26,786.39</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>43</td>
<td>29,198.26</td>
</tr>
<tr>
<td>Physical Plant--Utilities</td>
<td>7</td>
<td>52,659.88</td>
</tr>
<tr>
<td>Food Service</td>
<td>79</td>
<td>54,317.92</td>
</tr>
<tr>
<td>Printing Services</td>
<td>17</td>
<td>92,866.02</td>
</tr>
<tr>
<td>Physical Plant--Maintenance</td>
<td>78</td>
<td>98,482.97</td>
</tr>
<tr>
<td>Financial Aids Office</td>
<td>1</td>
<td>100,000.00</td>
</tr>
<tr>
<td>Cashier</td>
<td>109</td>
<td>758,234.13</td>
</tr>
</tbody>
</table>

**TOTALS** | 498 | $1,272,824.58
The dollar volume of $1,272,824.58 represent 6.07% of the total check volume of $20,968,955.15.

It would appear that the University is not capitalizing on the opportunity to earn interest by investing more of the funds rather than keeping the funds in demand deposits so that checks can be written to transfer funds. An interview with the Treasurer, however, indicated that it was not necessary to keep the funds in demand deposits. Checks are written and deposited on the same day. Providing that the funds are deposited in the same bank on which the check was drawn, there is no net change in the bank deposits.

When the Maintenance Division of Physical Plant charges an internal local account, the accounts receivable clerk in the Business Office routes the work order billing to an invoice clerk who attaches a coding apron to it. The work order billing is then sent to the department being charged for approval to transfer the funds. It is then sent back to the invoice clerk who routes it to the accountant who services the particular account involved. All transfers of funds are held up until such time as approval for the transfer is obtained and received again in the Business Office. This routing for approval requires, conservatively, seven days.

The monthly departmental ledger is actually created weekly for use of the accountants in the Business Office. In the last few months, copies have been sent weekly to a few selected departments who presumably have problems because of their need for more current financial information. With this exception, the departments are receiving the departmental
ledger monthly even though it is being created weekly by administrative
data processing and used in the Business Office by the accountants.

Central Mail

The present method of charging postage to the departments of the
University appears to be cumbersome. Considering the fact that the
account is small, an undue amount of time is spent by the accounts
receivable clerk in tabulating the charges to each department. Mail is
collected twice daily, weighed, and the proper amount of postage is
affixed. The amount of postage is entered on the daily charge sheet
under the heading of the proper department. At the end of each day,
the total of each department is entered on a summary sheet which
summarizes a 15-day period. On the sixteenth of each month the two
summary sheets for the preceding month are sent to the accounts receivable
clerk who prepares a summary of both sheets. A problem arises from the
duplication of accounts which are written in on each sheet; accounts are
not necessarily in the same order on the two sheets and their location
and matching is difficult.

Xerox

The daily Xerox report is prepared by one of the clerks in Instructional
Materials Service. This involves balancing the cash copies, the
recharge copies, and the internal copies with the number of copies run
according to the counter on the Xerox machine. The copy request and the
daily Xerox report is then sent to the office of the Dean of Library
Services along with the cash for the day. The secretary verifies the
the charges on each copy request and checks the figures on the daily Xerox report. It would appear that this is a duplication of effort on the part of these two employees.

For each copy request which is to be recharged, the secretary prepares a five-part invoice. Three parts are sent to the Business Office, one part is sent to the library acquisitions bookkeeper, and one part is filed. The copy which is sent to the library acquisitions bookkeeper is eventually filed in that office. Two copies of the same document are filed in the same building in two different offices which are in close proximity. It was also noted that reference was made to these documents only infrequently. This would appear to be an unnecessary duplication in the retention of records.

Inter-Library Loan

A similar circumstance was found in Inter-Library Loan. A five-part invoice is prepared for all rechargeable requests for materials. Four copies are sent to the library acquisitions bookkeeper and the fifth is retained in the files. The bookkeeper sends three copies of the invoice to the Business Office and retains one copy for her files.

Instructional Materials Services

Equipment requests, received in person or by telephone, are completed by a clerk in triplicate. Two copies of the request are used to log each piece of equipment in and out of the department and to aid in distributing and collecting the equipment. These two copies are destroyed after the equipment is collected and logged in. The third copy is used as the
basis for preparing a four-part invoice which is used in reporting to the Business Office. The invoice and the equipment request contain essentially the same information. Two copies of the equipment request are being destroyed at the same time four copies of the invoice are being created. One of the objectives of any system is to eliminate handling and copying of information. It would appear that this copying of information from the equipment request to the invoice form could be eliminated.

Summary

In the present departmental charge system, it was found that the problems of major significance were: (1) lack of communication between the Business Office and departments and ancillary services, (2) a lack of written job procedures and responsibilities, (3) each department or ancillary service studied used a different form on which to report its departmental charges to the Business Office, and (4) the transfer of funds between internal accounts was accomplished by the University writing checks payable to itself.
CHAPTER III

PROPOSED DEPARTMENTAL CHARGE SYSTEM

Introduction

Consistent with the objectives of the study and in consideration of the findings cited, the following recommendations are made. It is hoped that consideration will be given these recommendations in an attempt to secure a more efficient operation by the University.

Establishing and operating systems and procedures controls involves several kinds of controls. First, the centralized control of procedural directives and manuals; second, form design and control; third, records management; and fourth, reports control. It is through controls such as these that continuous improvements are being made in forms, reports, and records. At the same time, steps are regularly being taken to avoid the creation of inefficient forms, records, and reports that later might create procedural difficulties of serious proportions.\(^9\)

Communications

Written job procedures and responsibilities should be prepared for all jobs in the Business Office and all jobs in the departments which are directly involved in the workflow to the Business Office. Cooperation should be sought from the School of Business Administration. Upper level students in classes such as Personnel Management and Office

Management could furnish invaluable assistance in the writing of procedures and at the same time gain valuable educational experience.

In addition to the routine information contained in the written procedures, the dates for submission of departmental charges and other reports to the Business Office should be included. Insistence on the use of account numbers by requesting departments should be emphasized. Responsibility to obtain a missing account number should be fixed on the charging department before departmental charges are submitted to the Business Office.

Written job procedures remain valuable only if they are periodically updated. It is, therefore, recommended that written job procedures should be periodically reviewed; with special reviews to be made whenever significant changes are made in the system.

**Standard Forms**

Certain departments and ancillary services have need for a specialized form which is used in connection with the departmental charge system because of the nature of the service performed. Two examples are Instructional Materials Services and Printing Services. The equipment request form presently used in Instructional Materials Services is used only within the department, but with only minor changes could be used to report departmental charges to the Business Office. Printing Services uses a ledger card form on which their charges are categorized into printing services, clerical services, and clerical supplies before reporting their departmental charges to the Business Office. It is
recommended that two forms be used to report departmental charges to the Business Office.

For those departments requiring specialized forms, the upper portion of the form would be designed by each individual department. The lower portion of all forms would be of identical design with the exception of the pre-printed department name and account number. The sample shown on page 20 shows the specialized form for Printing Services.

For those departments not requiring a specialized form, a form similar to the standard invoice form now in use should be used. The bottom portion of this form would be identical to that on the specialized form except that the account number of the department would not be pre-printed. This would enable the form to be used by any department. A sample of the proposed form is shown on page 21. All forms, both specialized and general would be of standard size.

At the present time, the accounts receivable clerk in the Business Office summarizes internal local accounts on a multiple expenditure form and internal state accounts on either a University of Montana expenditure transfer or a University of Montana adjustment form. The difference between the two forms is that the former is designed to have the same department credited for a group of transactions and the latter is designed to vary the department credited. These forms are then used as a source document from which cards are punched to be used as input for computer personnel to transfer funds. The lower portion of the forms proposed would be similar in design. This would eliminate the necessity of having the accounts receivable clerk handle these forms. Departmental
<table>
<thead>
<tr>
<th>DATE</th>
<th>JOB NO.</th>
<th>COPIES</th>
<th>PAGES</th>
<th>DESCRIPTION</th>
<th>PRINTING DEPARTMENT</th>
<th>CLERICAL SERVICES</th>
<th>CLERICAL SUPPLIES</th>
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<td></td>
<td>Class—Dept=S Ref No.</td>
<td>Amt. Dr. Cr.</td>
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<td>207-430-0</td>
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<td>Amount</td>
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</table>
charges could be routed directly from the department to accountants for coding and then to data processing, thus circumventing the accounts receivable clerk.

All charges for jobs by the Maintenance Division of Physical Plant are tabulated and totaled on the computer. It is recommended that the program for this job be revised to produce a machine-readable output in addition to the regular printout. This machine-readable output could then be used to transfer the funds and eliminate the need for manual key punching.

Control of Forms

Forms that are used only within one department should remain controlled by that department; however, forms that are involved in the workflow of any system of the University should be controlled by the Business Office. The appropriate division of the Business Office to exercise this control would seem to be a Systems and Procedures Office. Cooperation of Printing Services should be sought so that all orders to print new forms must have the approval of a Systems and Procedures Office.

Direct Billing of Maintenance Charges

It is recommended that the transfer of internal local funds to the Maintenance Division of Physical Plant be done on a direct charge basis. As it was pointed out in Chapter II, obtaining approval for the transfer of internal local funds requires about seven days. The system of approval was probably instituted to insure satisfaction with
the work of the Maintenance Division and to give budget directors control over their funds. Any dissatisfaction regarding the amount of charges made could still be negotiated and charges reviewed. If it was found that the charged department had a legitimate claim, a satisfactory settlement could be obtained by reversing the transfer process.

**Transfer of Funds by Journal Entry**

It was determined in the Printing Services study that the practice of writing checks to the University in order to transfer funds from one internal local account to another was an inefficient practice. It was recommended in that study that all internal transfers of funds be made by journal entry. The receipt of cash from external accounts would be processed as it is presently. The transfer of funds between internal local accounts or between internal state and internal local accounts could be accomplished by this journal entry.

<table>
<thead>
<tr>
<th>D E B I T</th>
<th>C R E D I T</th>
</tr>
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<tbody>
<tr>
<td>Spending Department</td>
<td>Charge Department Expense</td>
</tr>
<tr>
<td>Charging Department</td>
<td>Increase Department Funds</td>
</tr>
</tbody>
</table>

The method of transferring departmental charges by journal entry rather than by writing checks has some definite advantages. The elimination of the checks, by their very absence, improves internal control of cash. The checks that are presently written never leave
the Business Office until they are taken to the bank for deposit. The very existence of the checks does constitute an element of danger to internal control.

The proposed method of transferring departmental charges by journal entry would eliminate the costs of processing both the checks and the claims.

The present system of writing checks requires both the invoice section to process the check and the cashier to process the check produced in the cash receipts operation. The proposed system would lighten the workload in both the invoice section and the cash receipts section; neither of them would be involved in the transfer procedure.

The proposed system, together with the proposed form design, would lighten the workload of the accounts receivable clerk. All internal transfers could be routed directly to the accountants for coding and then to data processing for keypunching and processing. External accounts would still be processed by the accounts receivable clerk. Freeing the accounts receivable clerk of processing internal accounts would make her available for other areas which may be in need of attention.

Distribute Departmental Ledger Weekly

It is recommended that departmental charges be processed weekly and that copies of the ledger be distributed to all departments. As was already noted, the ledger is already being created on a weekly basis. The only changes necessary to implement this recommendation would be to require all departments to submit departmental charge billings on a weekly basis, and to produce an extra copy of the computer printout for
distribution to department chairmen. Other advantages would accrue from the production of a weekly departmental ledger. More current information would be available to department chairmen. This is especially valuable during the closing weeks of the budget year, for any funds which were budgeted and not spent are lost to the department and are used by the University to cover expenditures of departments which are over budget.

The weekly reporting of departmental charges would also tend to level the peak loads of the work cycle.

Central Mail

It would appear that weekly reporting by all departments would solve most of the difficulty with Central Mail. Weekly reporting would eliminate the necessity of summarizing on two forms. This would solve the problem of matching the write-in accounts and simplify the problem of duplication.

Xerox and Inter-Library Loan

It is recommended that the complete job of preparing daily Xerox reports and rechecking Xerox request slips be delegated to the secretary of the Dean of Library Services. There appears to be no need to have the job done by a clerk in Instructional Materials Service and to have her work immediately checked by the secretary.

It is recommended that copies of invoices not be filed in the office of the Dean of Library Services or at the Inter-Library Loan desk. Copies of these documents are filed with the library acquisitions bookkeeper. There seems to be no need to have the same document filed twice
in the same building. On the infrequent occasions when reference must be made to these documents, a telephone call would get the information desired.

**Instructional Materials Services**

It is recommended, using the specialized form already proposed, that three copies of the equipment request be prepared. As is presently done, two copies would be used to distribute and collect equipment. When the equipment is collected, one copy would be routed to the Business Office. The second copy would be filed in the Instructional Materials Services office. The third copy would be sent to the charged department. This procedure would eliminate the necessity of recopying information from the equipment request form to the invoice form. The same form could be used for the entire procedure.

**Proposed Workflow**

The flowchart on the following pages represents the proposed workflow of the departmental charge system incorporating the changes described above.
CHART I

BASIC CHARTING SYMBOLS\textsuperscript{10}

1. Circle
   - Changes or adds to Work

2. Triangle
   - Permanent File
   - Temporary File

3. Square
   - Origin of Record
   - Inspection Step or copy

4. Cross
   - Addition to a Record
   - Copies

5. Checkmark
   - Check, Verify
   - Series of Steps Performed by One Worker at One Time

6. Diamond
   - Continues where the inserted letter next appears at the left


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CHART II

MAINTENANCE--PROPOSED

Create
Work
Order
Request

Written
or
Oral

To

Physical
Plant

To

Determine
Estimate
of
Cost

Customer
(Department)

To

Approval

To

Encumber
Funds
For
Work

A

(Routine Jobs)

(Extensive Jobs)
CHART III

MAINTENANCE—PROPOSED (Continued)

1. Assign Job Number
2. Create 4-Part Work Order
3. Work Order
4. Work Order

Physical Plant

1. Work Order
2. Work Order
3. Work Order
4. Work Order

Shops
One Copy
To Each Shop Involved (Xerox if Necessary)

File

Data Processing
Accumulate Charges Daily
Prepare 3-Part Work Order Billing

Work Order Billing

Work Order Billing

Work Order Billing

Business Office

Customer

File

To

To

To

To

To

To

To
CHART IV

CENTRAL MAIL—PROPOSED

Mail Collected Twice Daily

Central Mail Room
- Enter Postage Charged On Daily Charge Sheet by Department
- Post Daily to Weekly Sheet

Accounts Receivable Clerk
- Summarize by Department
- Prepare University of Montana Expenditure Transfers

Data Processing
CHART V

UNIVERSITY VEHICLE—PROPOSED

Physical Plant

Vehicle Request

Approve Request

Prepare Batch Control Total

Requesting Department

Prepares 3-Part Vehicle Request

Vehicle Request 1

To

Requesting Dept.

Vehicle Request 2

To

File

Vehicle Request 3

To

Business Office

Batch Control Total

B
CHART VI

GASOLINE STORES—PROPOSED

Physical Plant Clerk

Prepare Stores
Requisition
Receipt
at time of
Delivery

Sort
By Department

Prepare
3-Part
Invoice

Prepare Batch
Control Total

1
Invoice

To

Charged Department

2
Invoice

File

3
Invoice

To

Business Office

Batch Control Total

32
CHART VII

INSTRUCTIONAL MATERIALS SERVICES--PROPOSED

Create 3-Part Equipment Request

1. Equipment Request

2. Equipment Request

3. Equipment Request

Clerk

File

Log out Equipment

File

Match

Copies When Equipment is Returned

Log in Equipment

Record

Return on File Copy

Return on File Copy

A
CHART VIII

INSTRUCTIONAL MATERIALS SERVICES—PROPOSED (Continued)

Create Batch Control Total

1. Equipment Request → File

2. Equipment Request → Charged Department

3. Equipment Request → Business Office

Batch Control Total
CHART IX

INTER-LIBRARY LOAN

Prepare Request for Material  Prepare 3-Part Invoice

Invoice

To Manual Ledger

Invoice

Prepare Control Total

Invoice

Control Total

Library Acquisitions Bookkeeper

1

To

Charged Department

2

File

3

Business Office

Prepare 3-Part Invoice
CHART X

XEROX—PROPOSED

Dean of Library Services' Secretary

Separate

Xerox Request
1. Cash
2. Internal
3. Charge

Requests with Copy Count and Charges on Cash Requests

Cash Requests

File

(Destroy After 30 days)

Internal Requests

Prepare 3-Part Invoice

Prepare Control Total

Charge Requests

1 Invoice To Charged Department

2 Invoice To Library Bookkeeper

3 Invoice To Business Office

Invoice

Control Total

B
CHART XI

BUSINESS OFFICE--PROPOSED

1. Internal Invoice
   - Batch Control Total

2. Invoice
   - Batch Control Total
   - To Create 3-Part Billing Invoice
     - Post

3. Billing Invoice
   - File

To Accountant
   - Add Class and Sub-Department

To Data Processing

To Customer
DATA PROCESSING—PROPOSED

CHART XII

Data Processing

Prepare Punched Cards From Invoice

Balance
To Batch Control Total
Edit
For Valid Class and Department

Valid Detail Cards
Create 4-Part Departmental Ledger

Batch Control Total
File
By Batch By Week

Business Office

Separate
4-Part Ledger Form

1 Departmental Ledger
2 To Business Office
3

Departments

4 Departmental Ledger
To
CHAPTER IV

SUMMARY OF FINDINGS AND RECOMMENDATIONS

The four-fold objectives of the study were: (1) to identify problems in the present system of departmental charges, (2) to determine whether problems which were identified in the previous study of departmental charges through Printing Services are common to all departments, (3) to design a system which will eliminate any problem identified, and (4) to design a form and related workflow which could be used by all departments of the University in reporting departmental charges to the Business Office.

This study was made of the system as it pertained to Physical Plant and Library Services. These departments were selected because they were indicated by Business Office personnel of the University as high-volume users of the system. It was assumed that a system designed for the high-volume departments could also be used in other departments of the University.

Findings

The following are the findings of the investigator in the study of the departmental charge system as it pertains to Physical Plant and Library Services.

1. There appears to be a lack of communication between the Business Office and the departments. This is indicated by the lack of knowledge
of submission dates of departmental charges to the Business Office by clerks in the departments studied. A similar finding was made in the Printing Services study. A change was apparently made in the processing date when the system was automated, but no change in submission date was communicated to Printing Services.

2. There is a lack of written job procedures. It is felt that this finding is related to the lack of communication. Written job procedures should furnish a strong communication link between administration and personnel.

3. All departments are identified by account number and all originating forms contain provision for recording that number when requests are made. In spite of this, not all requesting departments use account numbers.

4. There is no standard form used on which to report departmental charges to the Business Office.

5. The Business Office exercises no control over the forms used by the various departments.

6. In the previous study of departmental charges through Printing Services, it was determined that the University was writing checks payable to itself to facilitate the transfer of funds between internal accounts. This investigator determined that during the 1968-69 fiscal year, the University wrote 498 checks totaling $1,272,824.58 which were payable to the University.

7. Maintenance Division charges to an internal local account are sent to the charged department for approval to transfer funds. This practice delays the transfer of funds for approximately one week.
8. Although the departmental ledger is sent to the department chairmen once a month, it is created weekly by administrative data processing for use by accountants in the Business Office.

9. Duplication of recording write-in accounts and the different order of those accounts on the two bimonthly report forms make the tabulating of departmental charges for Central Mail cumbersome. Although it represents a small account, a considerable amount of time is spent by the accounts receivable clerk in processing it.

10. It appears that unnecessary verification of the daily Xerox report is done to the degree that the job is being duplicated.

11. Copies of invoices are being retained in the files in the office of the Dean of Library Services and at the Inter-Library Loan desk which are also held in the files of the library acquisitions bookkeeper, located in the same building.

12. Invoices are being prepared in multiple copies by Instructional Materials Services staff at the same time their equipment request forms are being destroyed. Essentially the same information is contained on the two forms.

**Recommendations**

In view of the above findings, the following recommendations were made in an attempt to obtain a more efficient system for the reporting of departmental charges.

1. Cooperation of the School of Business Administration should be sought for help in preparing written job procedures for all jobs in the Business Office and jobs in departments which are involved in the work-
flow to the Business Office. Periodic review should be performed to keep the procedures current.

2. Two standard forms have been designed and are recommended for use in the departmental charge system. Illustrations of these forms are presented on pages 20 and 21 of Chapter III. One of the forms is designed to be used by the departments which require a specialized form for reporting to the Business Office. The second form is designed for use by those departments which have no special needs regarding form design. Both form designs have a section at the bottom from which information can be key punched.

3. Charges to internal local accounts by the Maintenance Division should be made directly, without the necessity of approval of the charged department.

4. It is recommended that a Systems and Procedures Division of the Business Office be charged with the responsibility of exercising control on forms used in the workflow of systems on the University campus.

5. It is recommended that funds be transferred between internal accounts by journal entry. This method has three advantages which are: (1) improved internal control of cash, (2) elimination of the cost of writing checks and claims, and (3) reduction of the workload in the invoice and cash receipts sections.

6. The reporting of departmental charges to the Business Office should be done weekly. The departmental ledger, which is presently being created weekly, should be distributed to departmental chairmen weekly.
7. It is recommended that the job of preparing the daily Xerox report be delegated to the secretary of the Dean of Library Services.

8. Copies of invoices should not be filed in the office of the Dean of Library Sciences or at the Inter-Library Loan desk.

9. Instructional Materials Services should report departmental charges on equipment request forms of the specialized design proposed on page 20. This would eliminate the need for recopying information to invoice forms.

10. It is recommended that the program for tabulating and totaling charges of the Maintenance Division be revised to produce a machine-readable output in addition to the regular printout. This would eliminate the need for manual key punching for transferring the funds.
Bibliography


This flowchart is an attempt to show the workflow as it applies to all departments and services on campus. Important exceptions to the general workflow are noted. Name of forms and number of copies vary. Three copies appear to be the most common number, but one copy is shown beyond this point for simplicity.
CHART XIV

BUSINESS OFFICE—PRESENT EXTERNAL CHARGE SALES PROCEDURE

1. Invoice
2. Report
3. Invoice

Create 3-Part Invoice

Verify With Control Total

Accounts Receivable Ledger

File

Total

Post

Customer

Business Office
Accounts Receivable Clerk

Create 3-Part Invoice
CHART XV

BUSINESS OFFICE—PRESENT INTERNAL STATE CHARGE SALES PROCEDURE

Business Office Accounts Receivable Clerk

Create Adjustment Form

Report

Record by Department and by Class

Adjustment Form

Business Office Accounts Receivable Clerk

Total Each Class and Prepare Journal Entry Transfer

Balances to Control Totals

Assistant Controller's Office

To

E

To

D

48
CHART XVI

BUSINESS OFFICE—PRESENT INTERNAL STATE CHARGE SALES PROCEDURE (Continued)
*This step is eliminated for Physical Plant—Maintenance charges.

**Physical Plant—Maintenance charges are sent to the charged departments for approval to transfer funds.
CHART XVIII

BUSINESS OFFICE—PRESENT INTERNAL LOCAL CHARGE SALES PROCEDURE (Continued)

1. Data Processing
   - Prepare 2-Part Claim Form
   - Prepare Checks
   - Prepare Journal Entry

2. Original Claim
   - File

3. Copy of Claim
   - To

4. Checks
   - To

5. Validate Claim and Endorse Checks
   - To

6. Journal Entry
   - File

7. Prepare Two Receipts
   - To

8. Business Office
   - Copy of Claim
   - File
   - Post
   - Receipt
   - Bank
   - Data Processing

9. Checks
   - Receipt
   - To