Auditor's Guide to Duplicate Payments

Using the EZ-R Stats Windows and SQLite database system to identify and recover duplicate payments

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Audit Procedure - duplicate payments

Steps for Identifying Duplicate Payments

Testing for duplicate payments always has the potential for high payback and its benefits can be clearly demonstrated. Such a review can identify cash savings for their organizations. Duplicate-payment audits provide a superb opportunity to meet this success metric and, if you do it right, pay for your department for the next few years.

The International Accounts Payable Professionals and The Institute of Management & Administration estimate that the average company's duplicate payments reach one-tenth of one percent of its spending. While this may sound negligible at first, a company that spends $10 million annually is paying out $10,000 annually in duplicate payments.

In order to identify duplicate payments, you should follow these steps:
- Identify all the payment systems and data files relevant to performing the analysis
- Determine the data elements available for testing, and what they should   contain, along with their meaning
- Perform an initial analysis to identify the key attributes of the population   to be tested, e.g. how many transactions, histogram of distributions, major   vendors, etc.
- Identify the tests to be performed
- Perform the detailed analysis

Any definition of a duplicate transaction will always fall under the category of "Same, Same, Same", e.g. same vendor, same invoice number, same payment date. There are numerous variations and combinations on this theme and the number of variables can range from as few as two to as many as five or more. All of this needs to be carefully considered upfront. Just a few examples include:

- Same invoice number, amount, invoice date, and vendor.
- Same invoice number, amount, and vendor.
- Same invoice number and vendor.
- Same amount and vendor.
- Same purchase order, vendor, and amount.
- Same numbers in the invoice number, amount, invoice date, and vendor fields   (removes many unneeded characters in invoice number such as punctuation).   First four digits of invoice number, amount, invoice date, and vendor (e.g.,   identifies duplicates where a user enters the invoice number and then a duplicate payment with an invoice number with an "A" at the end).
- Same invoice number, amount, invoice date, and different vendor   (identifies same invoice payments to vendors with a different

name in the accounts payable system such as "IBM" and "IBM Corp").

- Same invoice number, amount, vendor, and different check (identifies same invoice payments made on different days to vendors that may normally go undetected).
- Report of all vendors that are comprised solely of duplicate payments.
- Report of all vendors where only two similar payments were made (e.g., only two $395 payments in the period reviewed).

The same, same, same procedure is flexible in how the processing is done. First, the analyst must determine which variables will be involved in the identification process (for example, in the instances cited above the variables would be invoice number, vendor, amount). There can be up to five variables involved, or as few as a single variable. In each instance, all but the last variables are SAME, and the final variable may be either SAME or DIFFERENT. For example, in a review or payroll data, you might want to identify the same employee last name, same street address and same city, but DIFFERENT employee number. In this instance the selection type would be coded as "SSSD".

A much different (and possibly simpler) instance would be where you wanted to identify any duplicate items in a single column. In this instance the selection type would be "S".

There are a number of examples of the "same, same same" processing included in the test files provided.

There are two solutions for the identification of duplicate payments to facilitate cash recovery. The **Duplicate Payment Detector** - SQLite Database, uses a database solution and is available at no charge. A test dataset of invoice payments, along with example SQL scripts and example data base is provided. The database is open source, public domain. To identify and recover duplicate payments, requires that the auditor modify and run the supplied SQL scripts after they are tailored for a specific system. This same system may also be used to identify duplicate employee expense reports, duplicate fixed assets or other types of duplicate records.

The second solution is a scripting based system. In order to use this system, the data is first converted into the industry tab separated value format (TSV). There are instructions and examples of how to do such a conversion. After the data has been converted, then scripting procedural steps can be run to identify duplicate payments or other duplicate transactions or records.

What the data tells us The same, same, same procedure has identified three sets of questionable invoices, all of which have the same invoice number, invoice date and amount. The first is invoice number 1630, of which there are three such invoices (the first pair and one of the second pair. Similarly, there are three invoices numbered 2331. However, as to invoice number 3387, there are a total of four apparently duplicate invoices, besides the original. To determine this, look at the data as pairs (this record / last record.

Audit Procedure - Relative Value

Cash recovery from supplier overpayments is often possible regardless of how well the internal controls have been designed. Best practices and stringent controls can reduce duplicate invoice payments to less than half a percent. However, this error rate seems largely unaffected by automation. There are a variety of reasons why this is the case – multiple (non-integrated or non-communicating) systems, human error, intentional override, system failures, etc. But even a rate of .5% can amount to significant unnecessary expenditures, especially if transaction volume is significant. Cash recovery can result from analyzing a population of payment transactions and then identifying those considered the most likely to be overpayments. Cash recovery analysis can be performed in any area where there are electronic records of significant amounts of disbursements, and especially where the volume of transactions is high. The persons involved in a cash recovery effort will often involve staff from various areas such as Accounts Payable, Procurement, Cash Management, Internal Audit, etc.

Objectives

Cash Recovery – The objectives of a cash recovery effort should include the following:

- Near term recovery of cash in excess of the effort involved to recover it
- Identification of control weaknesses, in order that corrective actions may be implemented
- Longer term solutions designed to reduce the probability of overpayments recurring in the future

Data Integrity

Duplicate items in a database or other repository of information can reduce the efficiency and effectiveness of the system. For example, a vendor with multiple assigned vendor numbers, if done unintentionally, significantly increases the risk of payment processing errors

Assessing Effectiveness of Controls

A thorough test for duplicate payments or duplicate accounts, if properly conducted, can either identify opportunities for cash recovery or else confirm that the existing system of internal controls is functioning effectively.

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Duplicate Payments

How to Specify/Identify

A duplicate payment may arise under a variety of criteria, such as:
- Same supplier number, same invoice number, same payment amount
- Same supplier number, same payment date, same payment amount
- Same supplier number, same payment date, same payment amount, different
- invoice number
- Same supplier number, same purchase order number, same amount
- Etc., etc.

Because duplicate payments may arise under a variety of circumstances, when planning a cash recovery analysis, one of the first steps will be determining what criteria should be used in order to identify an overpayment candidate. Circumstances which may lead to making duplicate payments may include:
- Duplicate supplier established on the supplier master file/database
- Payments from other than "original" invoices. For example, payments made based upon fax copies, copies of. invoices or statements will not be accepted and invoices marked. "Duplicate original".

Approaches which can be used

There are a variety of approaches which can be adopted for a cash recovery analysis. The technique used will depend, to some extent, on the number of transactions to be analyzed and the specific skill sets of the analysts performing the investigation. Below are the primary advantages/disadvantages of each, along with a brief explanation of the approach and when it might be used to advantage.

Spreadsheet approach –

Import the data into a spreadsheet, with a view to sort the data in a variety of ways and either review it visually or else use macros/formula to identify errors

Advantages

- relatively easy to implement
- can be effective for small volumes
- the most common types of errors can be identified
-

Disadvantages

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Has row limitations (approximately 65,000 rows max)
- Can be cumbersome to use
- Difficult to identify all types of errors

Script Approach – Use a "script" to programmatically review the entire dataset of transactions, in order to identify errors

Advantages

- Enables a fairly thorough analysis of the transactions
- Provides flexibility as to the type of analysis which can be performed

Disadvantages

- Requires a certain level of expertise / experience
- Can require a significant amount of computer time (but not necessarily analyst   time)
- Requires that data exist be preloaded into a database before it may be   analyzed

Database Approach – Load the transaction data into a database and then analyze that data using database scripts – structured query language (SQL)

Advantages

- Enables a fairly thorough and rapid analysis of the transactions   Provides flexibility as to the type of analysis which can be performed
- Facilitates "drill-down" techniques

Disadvantages

- Requires a certain level of expertise / experience in using database systems
- Can require a significant amount of computer time (but not necessarily analyst   time)
- Requires that data exist in a particular format (or be converted to that   format)

Other Analytical Considerations

A variety of other considerations can enter into a cash recovery effort, such as:
Transpositions – The invoice numbers may have been transposed when entered, preventing the system from identifying a potential duplicate payment.
Split Payments – In some instances, there may have been an intentional

"override" of the system controls, and the invoice was "split up" in order to allow processing a duplicate, even though system controls have been put into place. Also, many systems allow for a duplicate payment "override" which will explicitly allow a payment considered a duplicate by the system.

Near Dates – In some instances, a due date or invoice date may not be an exact duplicate, but fairly near that of the duplicate payment. Relative Value Analysis – Key punch errors may result in the invoice amount being entered in error by an order of magnitude, e.g. an invoice for $23.94 entered as $2,394. A relative value analysis can identify this type of potential error.

Invoice Number Suffix – The same invoice has been entered, the second time using a suffix. For example invoice number 12345 and 12345A. Assigned Invoice Number – The invoice submitted has no invoice number, so a method must be used to assign one (or leave it blank). Population Stratification – Perhaps not all of the population should be reviewed at once. May want to concentrate using the "Pareto" principle – 20% of the suppliers account for 80% of the volume, etc.

Processing Approaches

Analysis for duplicate payments is most effective if performed before the payment is made, in order that any potential duplicate payment is flagged and stopped before it is processed. However, this is not always possible or feasible for all invoice payments. In this instance, an "after the fact" review can be performed. There are also different approaches depending upon the volume of transactions. In instances where there are relatively few transactions, then it may be possible to analyze for duplicate payments "on the spot". However, in instances of significant volume or activity, in order for a thorough and effective analysis to be performed, a fair amount of computer analysis time may be required. This processing can often be done in an "unattended" mode.

Other Areas of Application

Employee Expense Reports – Although not invoices, similar types of considerations applicable to supplier invoices can also be applied to employee expense reports for travel, meals and lodging. Employee Ids – Ancillary to many cash recovery studies is the search for employees who are also suppliers (albeit not necessarily disclosed). This can be detected by matching supplier information (address, tax id, etc) to key elements of the payroll master file. Also, employees may have multiple identifiers (possibly by accident or unintentionally).

Fixed Asset Records – Any collection of accounting records may contain duplicate entries. One example is fixed asset records. Any duplicates can result in overstatement of assets (and possibly depreciation).

Identifying transactions of unusual amount

Computes the ratio of the highest dollar transaction with the amount the next to the highest dollar transaction. High ratios indicate the potential for miskeying or overstatement. For example, invoices from one particular vendor may tend to be bunched around a central figure, but one invoice was miskeyed, for example
$1,995 instead of $19.95.

Syntax

```
proc rv data=DATAFILE factor=FACTOR;
var VARIABLENAME;
out = OUTPUTRESULT;
by BYVAR;
```

Parameters Used

There are five parameters for the RV procedure:

DATAFILE - the datafile to be analyzed
FACTOR - the cutoff amount to select records (must be 1.0 or larger)
VARIABLENAME - the numeric variable to be analyzed
OUTPUTRESULT - name of the file to store the results of the analysis
BYVAR - the field used to identify a control break, e.g. supplier number,   employee number etc.

Example Script

```
*;
* RV.ezs;
* determine if any area in the census table had a significant;
* difference between the highest and next highest;
* number of rental households (v0031990) in the 1990 census;
* cutoff point is 200%;
libname test '{%libout}';
libname rv '{%libin}';
proc RV data=rv.censuspart1 factor=2;
out = test.rv1;
var v0031990;
by areaname;
run;
```

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Example Output – Relative Value Script

GROUP	RVVALUE	HIGH	NEXT	COUNT
Adams	3.4817	262311	75340	13
Addison	27.40215	30526	1114	3
Albany	2.33458	278399	119250	4
Alexander	2.26845	61804	27245	3
Allegany	12.51436	71895	5745	2
Allen	4.39988	1303090	296165	5
Alton	3.26765	10646	3258	2
Anchorage	16.62639	221264	13308	2
Anderson	2.1238	143558	67595	5
Andover	11.46299	29116	2540	5
Anson	6.02015	14340	2382	2
Antrim	7.88813	18403	2333	2
Arkansas	37.75102	2292393	60724	2
Armstrong	36.88403	72514	1966	2
Athens	57.84432	50903	880	3
Auburn	5.77307	23583	4085	3
Augusta	2.30649	53070	23009	2
Aurora	2.24938	219814	97722	4

Other factors when looking for duplicate payments.

When reviewing invoice payments to vendors, the auditor may notice any of the following four conditions:

- Two payments have been made to a vendor, in the same amount, but on dates that are near each other.

- Two payments have been made to a vendor, the payment amount is the same, but there is one invoice is a single transposition different from the other.

- Two invoices have been paid to a vendor, in the same amount, and one invoice number can be derived by adding a suffix, or group of characters to the other.

- Finally, the auditor may notice that a group of payments have been made to a vendor, which in total or some other combination add to the amount of the other.

All of these types of situations may be analyzed using the scripting system CR (Cash Recovery). In order to do so, the file of invoice payments must be converted to a tab separated value format, and the first row must contain the column names. The auditor then specifies all the processing criteria, which are as follows:

Description	Example

Input file	C;?ezs/libin/invtest.tab
Name of report file to store results	C:/ezs/libout/results.tab
Name of Vendor field	Vendor
Name of Invoice number field	Invoiceno
Name of date Field to be tested	InvDate
Name of amount field to be tested	AmtPaid
The format for the date field , e.g. month day year	mdy

All of this information is placed into a "parameter" file for processing. The parameter file must have a suffix of ".ezs".

Example Script

```
*;
*    cr0.ezs;
*    cash recovery procedure;
*    run analysis on vendor payment data;
libname test '{%libout}';
libname in '{%libin}';
proc cr data=in.invdata fmt=mdy;
    by vendor;
    var InvoiceNo Amount DatePaid;
    out = test.invtest;
run;
```

In this example the symbolic parameters "%libin" and "%libout" have already been defined in the system registry. This simplifies, and standardizes the process to store and handle file names.

When the script is processed using the input file, the following report file is obtained:

Example Output – Cash Recovery Script

Vendor	Invoice	Date	Amt	Reason
V120	3733	6/9/2006	74.92	near dates
V120	8733	6/1/2006	74.92	near dates
V173	2450	7/30/2006	89.73	transposed
V173	2540	5/13/2006	89.73	transposed
V173	2540	5/13/2006	89.73	suffix
V173	2540A	5/13/2006	89.73	suffix
V173	8252	5/14/2006	116.5	split4
V173	5268	6/16/2006	276.17	split4
V173	6354	6/16/2006	200	split4
V173	6271	6/16/2006	76.17	split4

V41	8650	7/31/2006	79.05	near dates
V41	3650	8/5/2006	79.05	near dates

The report above identifies an example of each of the conditions mentioned before. Note that only exceptions are reported.