INFORMATION SYSTEM ISSUES FOR MICROENTERPRISE SUPPORT PROGRAMS IN ECUADOR:

CorpoMicro and Its Affiliates

FINAL REPORT

U.S. Agency for International Development

Prepared for: USAID/Ecuador

Prepared by: John H. Magill, DAI

Sponsored by: Private Enterprise Development
Support Project III
Contract No. PCE-0026-Q-00-3031-00
Delivery Order No. 28
Prime Contractor: Coopers & Lybrand, LLP

November 1995

TABLE OF CONTENTS

INTRODUCTION

In Swaziland, the programmer for a local microenterprise finance program is in prison for programming the system to deposit funds in his account. In El Salvador, a USAID-financed microenterprise program had a $1.5 million fraudulent or phantom portfolio. In Guatemala, three programmers for a microenterprise loan program were killed in a plane crash, taking all of the source code with them. In Bangladesh, the programmers of a portfolio management system for one microenterprise loan program resigned in mass, leaving the program with no support at all. In Bolivia, only one of five systems developed for Saving and Loan Associations (*mutualistas*) worked properly. And again in Bolivia, BancoSol, even though it inherited a self-written loan management program from its predecessor organization (PRODEM), is spending a reported $800,000 to purchase banking software developed commercially in Ecuador.

These various experiences highlight a number of points about self-generated banking software programs. Worldwide, more than 90 percent of self-developed systems fail. They almost never work properly, are very fragile, and are extremely vulnerable to error and fraud.

FINDINGS

The objective of this part of the assignment was to review the current plans and activities of CorpoMicro and its affiliates and offer suggestions to improve information system support. Two and a half days were spent with CorpoMicro and two of its affiliates located in Quito — INSOTEC and CORFEC — interviewing Rodrigo López (CorpoMicro), Alejandro Subía (a private consultant contracted through this contract by CorpoMicro), Solanda Grijalva (INSOTEC), and Kleber Frias (CORFEC). A preliminary report prepared by Alejandro Subía was reviewed, and reports and demonstrations of the two systems were worked through.

CorpoMicro

CorpoMicro's system is in an early planning stage. As pointed out by the consultant hired by CorpoMicro, the systems currently in place consist of spreadsheet and word-processing applications. No systems are in place to manage a complex financial institution. Although some of these systems have been identified, functional specifications and the overall architecture of the system are yet to be determined.

Before CorpoMicro can operate a sophisticated financial institution — such as the finance company it has just purchased — it needs to have a standard banking software package, with the exception of current accounts. This system must include fully integrated loans, savings, deposits and accounting modules, and a *tesorería* system for cash management. If it continues to provide loan guarantees, it will also need to have a guarantee program. The current accounting package is incomplete, and would need to be significantly upgraded to meet the needs of a *financiera*.

As a single financial institution, CorpoMicro does not need capability of communicating data. However, as an institution financing the portfolios of other NGOs, CorpoMicro does need to have methods and procedures for receiving information on a regular basis. This can be by modem or by diskette, although modem-to-modem transmission would be preferable.

NGOs

Time budgeted for this activity permitted visits to only two of CorpoMicro's affiliates — INSOTEC and CORFEC — both located in Quito. Generalizations to the other affiliates are subject to qualification, and are based primarily on the local consultant's report.

Although all of the NGOs have similar programs, each is developing its own system. The NGOs have a great deal of pride in these systems, which meet their needs to a varying degree and have been developed at relatively low cost.

Almost all of these systems are developed using a standard xBase program, usually FoxPro and Clipper. The major characteristic of xBase databases is that, even though access through the applications can be controlled by user codes and passwords, the databases themselves can be read (and modified) by any other xBase program — bypassing the application controls. Thus, these are inherently insecure systems.

The programmers who have developed these applications are all skilled programmers, but they have had little experience in programming financial systems. Because financial systems handle funds, and because the process of accounting for funds is important, financial systems are different from other database applications. Issues like security, back-up and recovery, error correction, and auditing are important aspects of a financial system. These requirements were not reflected in the systems visited.

All of these systems depend on user identification and passwords for security. None of the systems incorporate encryption or hashing to provide additional security.

Some of the routines do not handle calculations or reporting correctly. In particular, the programs visited do not follow accepted practices of crediting partial payments first to penalties and charges, next to accrued interest, and only last to capital. Delinquency tends to be reported on payments missed (*cuotas vencidas*) rather than on outstanding balances, which provide a more prudent measure of delinquency.

None of the loan systems are integrated into an accounting system, although INSOTEC is currently testing such a program. The problem with this lack of integration is that no daily trial balance and audit trail are available to safeguard the integrity and accuracy of the loan data. This deficiency should be remedied in all of the systems.

Back-up and recovery are limited to taking copies of the databases, and then recopying them onto the system if necessary. None of the systems have rigorous control over the opening and closing processes, and some even permit the system to close without taking a back-up. In financial systems, the back-up and recovery process needs to be dynamic, with reentrant programs used to control batch operations and recovery processes.

As the local consultant pointed out, management has had only limited involvement in the process of planning most of the systems. As a consequence, none of the systems have a well-defined system architecture that guides development. System and user documentation are lacking, and no provision has been made for change management in any of the systems.

CONCLUSIONS AND RECOMMENDATIONS

CorpoMicro

As the local consultant's report states, it is not necessary for all of CorpoMicro's affiliates to have the same financial information systems to meet CorpoMicro's reporting and information needs. These needs can be met adequately through reporting standards and formats that transmit selected information in a consistent fashion.

However, although a single system is not necessary to meet the needs of either CorpoMicro or the NGOs, there are strong reasons for arguing that the NGOs should develop a single system that is used by all of them. The current systems are incomplete and lack key integration and security provisions. In some cases, they are performing mathematical operations incorrectly. They are dependent on the skills and presence of a small cadre of programmers; if these programmers were to leave the institutions, the systems could be disrupted. The systems generally lack documentation and are therefore vulnerable. Ideally, the various institutions affiliated with CorpoMicro would share development costs and develop a single shared system that meets conventional financial management standards.

Barring that, each institution needs to incorporate a number of features to ensure the accuracy and security of its data. Annex A provides a description of one commercial product that provides most of the features required in a financial system. Although the NGOs may not require all of these features — particularly checking and savings accounts — the description of features and characteristics provided serves as a good indication of the features that the NGOs should duplicate in their existing programs.

In particular, the NGOs need to (1) integrate general ledger accounting into their loan portfolio programs, (2) incorporate improved security provisions, (3) develop dynamic back-up and recovery operations, and (4) develop adequate system documentation to ensure that the systems can be maintained if current programming staff changes.

USAID

USAID/Ecuador's role in information system development for institutions involved in microenterprise lending programs should be to encourage them to adopt systems that are accurate, reliable, and stable. At a minimum, this would entail providing the institutions with information on standards for data processing and microenterprise information systems, combined with seminars and training in the design and features of such systems. Financing a systems audit of the major financial programs by one of the major international accounting firms would also help ensure the integrity of these systems.

Beyond that, however, USAID/Ecuador should encourage CorpoMicro and its affiliates to adopt a single program to cover loans, accounting, and other core components of a microenterprise information system. The advantage to using a single system is that a tested, reliable product could be installed, and an inter-institutional support group could be formed that would ensure the viability and continuation of the system for all participants.

Because of the ingrained tendency to create in-house systems, convincing the institutions to adopt such a single system would require some incentives. A seminar to discuss needs and features, and to review and experiment with a single package would help introduce the concept. However, actual system

development and installation — even for a product like MicroBanker, which is installed in more than 600 sites worldwide — would require additional support from USAID/Ecuador. Specifically, it would require financing the purchase of a suitable package, customization of the package to meet the specific characteristics of Ecuadorean law and to produce local reports, assistance in converting data from existing systems to the common system, training in the use of the system, development of procedures, and development of a local capacity to maintain and service the software. Only if USAID/ Ecuador were willing to finance these costs would the institutions even consider such an alternative.

For Enlace Grupo Financiero, USAID/Ecuador should support continued development of the system, and should consider providing additional technical assistance to Grupo Enlace Financiero to make sure that the specifications for the loans, savings, accounting, and *tesorería* modules are consistent with the operations of financial institutions. Also, USAID/Ecuador should support a systems audit to ensure that the programs meet accepted standards once the system is complete.

ANNEX A

NEEDED FEATURES OF A FINANCIAL SYSTEM

The Microbanker Standard Runtime Edition

THE MICROBANKER STANDARD RUNTIME EDITION

I. Introduction

A. Overall Features

The MicroBanker Standard Runtime Edition (SRTE) is a unique banking software package that combines real-time transaction processing, general accounting and information retrieval functions with the low-cost of micro computer hardware. The system covers Loans, Savings Accounts, Time Deposits, Customer Information and General Ledger (GL) in one integrated package.

The MicroBanker SRTE is the latest edition of the FAO MicroBanking System that was first developed by the Food and Agriculture Organization of the United Nations in 1988. As of the end of 1994, the FAO MicroBanking system was being used in more than 460 offices in eight countries, in Asia, Africa and Latin America.

B. Single-Teller or Multi-Teller Options

MicroBanker SRTE offers a low cost approach towards automation for financial institutions that are able and willing to standardize their operations within the range of options provided by the SRTE (see III. Product Information below for details). The system is recommended for offices with 500 or more loan accounts or 1,000 or more savings and time deposit accounts and an average transaction volume in excess of 30 transactions per day. The MicroBanker SRTE can be run either on a stand-alone PC ("Single Teller") or on a network of PCs ("Multi Teller"). In general, the single teller system should be adequate for offices that have less than 100 transactions per day. Transaction volumes greater than that may soon require a multi-teller system. In many cases, banks that wish to install the SRTE as a multi-teller system would need external assistance with the setting up of their Local Area Network (LAN) software. The MicroBanker SRTE runs on Intel 80xxx based micro computers under the Microsoft MS DOS operating system and on the Novell and the Lantastic network operating systems.

The MicroBanker SRTE is customized by the users themselves within a range of options that covers most international standards. A menu-driven Configurator program enables the user to install the required adaptations to the SRTE. The SRTE may be installed by persons with minimal computer background. Proficiency with the financial institution's products, reporting requirements, customer and product classifications, operational and accounting procedures is required. The MicroBanker SRTE includes a 70 page Installation Manual and 250 page User Manual.

C. Distribution and Support

The MicroBanker SRTE is distributed through and supported by the following organizations:

MicroBNK Asia Ltd.
Phra Atit Road
Bangkok 10200, Thailand
Tel/Fax: 66-2-2819756

Rural Finance Group
AGSM/FAO
Via delle Terme di Caracalla
00100 Rome, Italy
Tel: 39-6-52253025
Fax:39-6-52256850

FAO MicroBanker Project
c/o RAPA, Maliwan Mansion
Phra Atit Road
Bangkok 10200, Thailand
Tel: 66-2-2819756
Fax: 66-2-2800445

Development Alternatives, Inc.
7250 Woodmont Ave.
Suite 200
Bethesda, Maryland 20814
U.S.A.
Tel: 301-718-8699
Fax: 301-718-7968

End-user support is, for the time being, available from MicroBNK Asia and the FAO MicroBanker project in Bangkok by mail, phone and fax. Additional distributors and support centers may be established in other parts of the world when demand requires. Further information regarding distribution can be obtained from all above-mentioned addresses.

II. Product Information

A. SRTE System Features

1. Security, Auditing and Backup Facilities

- Seven (7) levels of security access authority with three- digit teller code and four-digit teller password.
- Record encryption protects data against unauthorized modification from outside the MicroBanker system.
- Maintenance of up to seven generations of back-up data through enforced end-of-day and end-of-month backing-up routine.
- Automatic data recovery routines restore data integrity after system crash and informs operator if a transaction needs to be re-entered.
- Audit trail, supported by transaction vouchers and hard copy daily transaction and account listings and recording of number and date of previous transaction. Records teller code with each transaction.

- Daily hard copy account listings, designed for smooth switch from automated to manual operations in case of an emergency due to prolonged power interruptions or hardware breakdown.

2. Other Functions and Features

- Currently available in English, French and Spanish. Other language versions are under preparation and expected to be released in 1995.

- Supports the following formats for financial fields: (i) American (ii) European (iii) Indian "lakh format" (iv) Unformatted. Number of decimal places may be two or none. A total of 15 digits is supported for customer account balances and 17 digits for GL balances.

- Supports American, British or international date format, either with slash (/) or period (.) separators.

- Real time transaction processing, with end-of-day update of the respective general ledger accounts. Real time processing of user generated, general ledger journals.

- Transaction volumes in excess of 2,000 transactions per day have been achieved without speed degradation.

- Provides, in addition to real time transaction processing, back office batch processing facilities.

- "Mixed batches" allow posting of transactions across all applications, including GL, from one batch.

- Integrated customer, savings, loan, time deposit and general ledger modules with posting of general ledger transactions from within the MicroBanker system.

- Generation of automatic journals for transactions between customer accounts and between customer and GL accounts

- User-modifiable four-character transaction codes.

- Central customer file provides instant access to all accounts held by one customer.

- Customer records accessible through any of the customer's account numbers and, vice versa, account records accessible via the customer record.

- Access to specified sets of routines allowed by user-defined teller authority levels.

- Control of proper sequencing of beginning and end-of-period operations prevents operator errors.

- Enforced balancing of a teller's cash and checks on-hand with computer entries maintains full cash control. One GL Cash and one GL Cheque account for each authorized teller.

B. Customer Information

1. Functions and Features

- Central customer file with protection against the creation of duplicate customer records.

- Customer oriented with instant access to all the customer's accounts, on screen as well as in printed form.

- The system impose no limit on the number of savings, time deposit or loan accounts per customer.

- The number of clients and accounts per system is limited only by hard disk space.

- Facility to set relationship between customer records of spouses for instant access to the other spouse.

- Up to four user-defined customer classification codes. Each code is three characters with a break after the first character for purpose of sub-classification.

- Customer record accessible by (i) Customer number (ii) National ID number, (iii) Name or part of the customer's name (iv) Any of the customer's accounts (v) One customer classification code.

- Control of age-specific savings products through the customer's date of birth (see also III. Product Information for Savings Accounts).

- Maintains historic loan information for each client, which is retrieved when the client applies for another loan.

- The following customer information can be maintained: (i) first name (ii) surname (iii) initials (iv) user defined titles (v) national ID number (vi) date of birth (vii) gender (viii) 3 address lines (ix) postal code (x) phone number (xi) user defined civil status (xii) value of securities lodged (xiii) tax code (xiv) spouse's national ID number (xv) spouse's customer number (xvi) spouse's name (xvii) up to four user-defined customer codes.

C. Savings Accounts

1. Functions and Features

- Fully integrated with Loans, Time Deposit, Customer and General Ledger modules.
- Automatic generation of journals for (i) Monthly or Quarterly interest transfer from Time Deposit to Savings account (ii) Automatic recoveries from Savings Accounts to repay a loan
- System imposes no limit on the number of accounts per customer.
- No limit to the number of savings products per bank.
- Automatic update of General Ledger at end-of-day.
- Automatic update of General Ledger for interest accruals at the end-of-month.
- Controls for (i) Verification of available balance upon withdrawal (ii) Transactions on dormant account (iii) Maintenance of user defined minimum balance (iv) User defined minimum balance for purpose of interest earning.
- Products definable with/without passbook.
- User selectable options for no-book deposits and no-book withdrawals.
- Automatic update of "un-posted" transactions in customer's passbook such as debit/credit memos, no-book deposits and withdrawals, interest credits and withholding tax debits.
- Statement of Account printing upon customer request.
- User selectable automatic or manual clearing of checks.
- User defined period for dormancy with automatic transfer to dormant status and to dormant GL account.
- User defined charges for dormant accounts.
- Full support for passbookless operations.
- Full support for ledgerless operations.
- Facility to place a Hold on (part of) the balance of an account for a specified period of time.

- Facility to define and control opening of "senior citizen" or "junior" accounts as a function of the age of the client.

- Dual account ownership allows full customer information of both customers for one account.

2. Interest

- Choice of straight daily balance or graduated daily balance, selectable by product. The graduated rate depends on the balance of the account; for this purpose, a maximum of five balance brackets may be specified.

- User selectable monthly, quarterly, bi-annual or annual interest capitalization.

- Withholding tax option with up to nine tax tables as function of the category of client. If applicable, withholding tax is automatically debited at the time of capitalization. Products and/or customers may be tax exempt.

- Choice of treatment of uncleared checks as to whether interest is payable or not payable on such checks.

- Separate, user defined, (i) compulsory minimum balance, (ii) minimum balance for purpose of interest computation.

- Choice of treatment of dormant accounts as to whether interest is payable or not.

- Choice of current period interest payable/not payable upon account closure.

D. <u>Time deposits</u>

1. Functions and Features

- Fully integrated with Loans, Savings, Customer and General Ledger modules.

- Automatic generation of journals for monthly or quarterly interest transfer to savings, loan or GL payorder account.

- System places no limit on the number of accounts per customer

- No limit to the number of Time Deposit products per bank

- Automatic update of General Ledger accounts at end-of-day and for interest accruals at end-of-month.

- Control of (i) Pre-termination (ii) Dormancy after maturity (iii) Validation of interest rates, periods and minimum and maximum amounts per bracket during opening.

- Support for pre-numbered Certificates.

- User defined period of dormancy, defined as number of month after maturity without rollover.

- Full support for ledgerless operations.

- Facility to place a Hold on (part of) the balance of an account for a specified period of time.

- Single or dual ownership.

2. Interest

- Per product, interest rate may be a function of the term, the amount or a combination of both. Maximum of eight term brackets and five amount brackets.

- Interest payments may be specified monthly, quarterly, upon maturity or at any time. Monthly and quarterly interest payments may be specified to a loan or savings account or to a GL payorder account.

- Upon maturity, the time deposit may be renewed ("rolled- over") with or without interest.

- Interest after maturity (and when not renewed) payable at the savings rate or at any other, specified, rate.

- Interest in case of pre-termination may be specified at (i) savings rate (ii) special rate (iii) time-based rate, depending on the actual completed term.

- Withholding tax option with up to nine tax tables as function of the category of client. If applicable, withholding tax is automatically debited.

E. Loans

1. Functions and Features

- Fully integrated with Savings, Time Deposits, Customer and General Ledger modules.

- Automatic generation of journals for monthly or quarterly interest transfer from Time Deposit and for transfers from a savings account for the purpose of loan repayment.

- System imposes no limit on the number of accounts per customer

- No limit on the number of loan products per bank

- Automatic update of General Ledger at end-of-day.

- Control of (i) Product dependent loan limits (ii) Opening, approval and disbursement process with supervisor control over loan approval (iii) Disbursement schedule (date and amount) (iv) Product dependent maximum and minimum loan periods.

- Products definable as single repayment or choice of installment schemes with the following frequencies (i) weekly, (ii) semimonthly (iii) monthly (iv) bi-monthly (v) quarterly (vi) four-monthly (vii) six-monthly (viii) annually. In addition, a product may be defined to have an operator editable installment schedule which is flexible in terms of both installment dates and principal installment amounts.

- Rescheduling facility, with or without interest capitalization.

- Facility to debit miscellaneous charges as an accrual, maintained separately from the principal balance.

- Option to deduct charges from amount disbursed.

- Multiple disbursements from the same account allowed (no limit).

- Disbursements may be made in cash, by cheque, or in kind. Repayments in cash or by cheque.

- No periodic interest capitalization. Interest capitalization allowed only on an individual account basis for purpose of rescheduling.

- Repayments credited in order of priority: (i) Charges (ii) Penal interest (iii) Normal interest (iv) Principal. Option of "Specified Repayments" allows operator to override above priority.

- Up to three user-defined loan classification codes. Each code may be three characters with a break after the first character for purpose of sub-classification.

- Up to four user-defined disbursement allocation codes per account, reflecting the use of cash or in-kind disbursements.

- Up to five loan performance classifications, based on user defined age of the oldest overdue installment.

- Choice of 360 or 365 days per year as interest divisor.
- Daily report on installments falling due that day and listing of all overdue loans.
- Grace period at the beginning of the loan with interest during grace period payable with the first installment.
- Facility to generate a mail-merge file with account and customer information for the purpose of sending billings or reminder letters to borrowers.
- Maintains historic information on closed loans and reports by client.

2. Interest and penal interest

- Interest and penal rates definable by product.
- Per product, installments definable as (i) annuity installments whereby the sum of principal and interest is constant (ii) fixed principal installments with interest on declining daily balance (iii) fixed principal installments with flat interest on starting balance.
- Option for deduction of interest in advance for loans with single repayment, with or without rebate in case of early repayment.

F. General Ledger

1. Features

- User defined account format and header account format. GL accounts may have numeric or alpha-numeric account codes of maximum nine characters (or 13 characters if separators for numeric format are included).
- Easy account access through direct account code entry for experienced users or selection from pop-up menu for new users.
- Fully integrated and automated end-of-day update of GL accounts with customer account transactions from MicroBanker.
- Standard reports include daily trial balance, daily listing of GL transactions and daily listing of GL transactions by GL account.
- GL can be run as stand-alone program or, if for transaction purpose, from within MicroBanker.
- Access to specific routines controlled by user defined teller authority levels.

- User can specify GL contra accounts for transactions in MB that are not related to customer accounts.

II. Security and Control

A. Security Access, Data Security and Control Features

The MicroBanker SRTE has a number of built-in security and control features which make it highly suitable for use on stand-alone or networked MS DOS-based micro computers in remote rural areas and in small offices where supervisor control is minimal.

- System access operates exclusively through a pre-authorized teller number, and teller-selectable and changeable secret password consisting of four characters.

- Record-level data security through an encryption algorithm that protects sensitive system information against outside manipulation.

- Seven levels of access control to the various system functions.

- Automatic data-recovery restores data integrity after system crash and informs the operator when a transaction needs to be re-entered.

- Paper audit trail and hardcopy account listings allow for a smooth shift to manual operations in case of prolonged power failure or hardware breakdown.

- Built-in work flow control minimizes the possibility of operator errors and automates major daily, monthly, quarterly and annual maintenance operations.

- The system maintains up to seven generations of data back-up, one for each working day of the week. The end-of-day backup and end-of-month backup to diskette are enforced by the system.

ANNEX B

REPORTS

REPORTS

"Report" is the general term used for any output generated by the information system. Reports may be generated by on-line queries by an individual user, or as part of a regular, structured reporting cycle. A report may be "written" to screen, sent to a printer, or dumped to a file. In general, all "report programs" should give the user the option to select the screen, printer or a file as the destination of the report.

A. The Reporting Pyramid

Reports for a Microenterprise Support Institution should be based on a priority pyramid, which tailors reports to the decisions that managers need to make. The level of detail must be appropriate to, and focused on, the information needed to make those decisions. To understand this, it is necessary to understand that there are at least 3 levels of management responsibility in a typical MSE program:[1]

- **Top Management**, which is responsible for setting program priorities and targets, and for assuring that the program is meeting its objectives effectively and efficiently;
- **Program Management**, consisting of the intermediate-level office directors, who are responsible for managing specific aspects of the program — loans, collections, training and accounting; and
- **Operational Officers**, who are responsible for promoting new groups, making and collecting loans, and meeting established training targets.

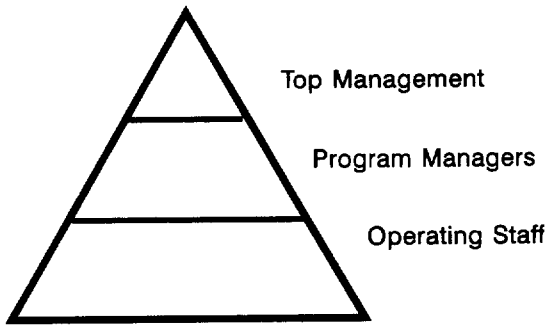

Figure 1. The Reporting Pyramid

Each of these has a different set of information needs and priorities. **Top Management** needs to make decisions regarding program priorities, direction and strategies. For this it needs to have a quick overview of program performance: it needs to know if targets are being met, if delinquency is being controlled effectively, and if the program is meeting its objectives. It does not need to, and should not, get involved in minute activity details. Accordingly, reports to top management need to be few in number, efficient, streamlined, and highly focused on potential problem areas. **Program Managers** need to have more detail about the specific activities they are responsible for, so that they can identify specific

[1]There may be additional levels for more complex operations that involve branch offices.

sources of problems and target corrective action. **Operational Officers** need information that helps them manage their portfolio of clients effectively and efficiently. This requires very specific information about individual clients, especially those who are in arrears on loan payments.

The level of detail required increases as the level of interaction with the client increases. This can be seen in Figure 1, which shows that top managers should receive, on a routine basis, concise reports containing very little detail that quickly convey the status of the overall program, while individual operational officers need a great deal of information about their specific client operations.

B. Reporting Concepts

1. Two Types of Reports

There are two fundamental types of reports — statistics and lists.

Statistics quickly convey summary information about a program, and focus on key problems and weaknesses — such as changes in delinquency ratios from period to period, growth (or contraction) in the portfolio. As such, these are suited for top management and donor reports.

Lists focus on the details. They provide detailed information on which accounts are delinquent, which loans are due to be collected in the coming week, etc. The detail contained in lists is needed by the operational officers, but are not helpful to top management, and only detract from top management's focus on critical institutional issues.

2. Periodicity

Reports have a time quality. Some reports (such as financial statements and statistical reports) are produced on a regular, fixed schedule, and are usually programmed to be produced automatically. Others (such as account queries) can be initiated at any time. These are generally programmed to be selected from a screen. Some reports may come out at regular intervals, but are also designed so that a manager may produce a special version of the report at any time. An example of this latter type of report would be a client's account statement that is normally produced each month, but may be produced at any time if the client comes in during the month and asks to see a copy.

3. Output

Reports may be displayed on a screen, output to paper, or copied to a file. While some reports may be designed to only be printed, reports that are displayed on screen should also have a facility for printing the displayed report.

4. Making Reports Useful

Reports are only useful if they focus attention on critical issues and provide the right amount of information necessary to understand the importance of the data. Too much, or too little detail, or poorly formatted reports hinder rather than enhance understanding.

Statistical reports are more useful if they show the statistics in a relevant context. The two major ways to do this are to show the statistics either as trends or as comparisons to planned or budgeted expectations. A statistic displayed as a trend might be as follows:

Month-to-Month			Indicator	Year-to-Date		
Last	This	Change		Last	This	Change
150.0	175.0	25.0	Loans Granted ($000)	2,500.0	2,000.0	-500.0

In this table it is very easy to see that, although loans granted this month exceeded those granted last month by $25,000, loans granted this year are significantly (20%) behind the rate of the previous year.

A statistic comparing planned performance to actual performance may appear as follows:

This Month			Indicator	Year-to-Date		
Planned	Actual	Variance		Planned	Actual	Variance
175.0	150.0	-25.0	Loans Granted ($000)	1,000.0	1,500.0	500.0

In this example it is very easy to see that, although loans granted for the month was behind projections, for the year to date the institution is ahead of its planned targets.

Lists are only useful if they are specifically formatted to serve the purpose for which they are intended. For example, a list of delinquencies (to be used by a loan officer to follow up on delinquencies) is not useful if it is a list of all loans with one field for the loan officer and another for whether or not the loan is delinquent. In this case, only delinquent loans should be included in the list, and a separate list should be generated for each loan officer. The report can be made even more useful if the list is grouped by location, or village, or other common unifying factor.

5. Families of Reports

Reports should be designed as a family of related reports. A "delinquency" report family would consist of:

- the summary statistics reported to top management;
- an expanded statistical summary for top management that shows which loan lines, branches, departments, or officers, are having the greatest delinquency problems;
- a report showing the delinquency status of loans managed by each operational officer under each program officer; and
- a listing of delinquent loans by operational officer, grouped by program officer, grouped by location or collection dates to aid in collections and follow-up.

This concept of a family of reports, progressing from general summaries to specific details provides a natural tool that allows management at all levels to function properly, and helps to keep top management focused on the overall health, growth and success of the organization.

C. List of Needed Reports

Reports required by the system include, but are not limited to, the following weekly, monthly, quarterly, and annual reports.

Weekly

Most of the weekly reports are working documents used to support field operations. They provide a rapid identification of delinquency problems so that actions can be taken quickly to resolve the problems. And, they generate forms used to manage collections and disbursements. The following listing assumes that an institution has branch offices, but it could be designed to report by department, manager or other grouping.

- Form containing a list of loan disbursements to be made, divided by branch, officer and group;
- Form containing a list of payments due, divided by branch, officer and group, to facilitate collections by the officers;
- List of delinquent loans, divided by branch, officer and group;
- Form summarizing expected payments during the week for each; branch — this form should be on one page, and show for each officer and the groups that officer is responsible for, the total payments expected, and the days those receipts are expected;
- Report to home office management detailing delinquencies, by branch; and
- Report to home office showing expected and actual receipts, by branch, for the week.

Monthly

Monthly reports are primarily statistical reports, designed not to show the status of individual loans or collections, but to provide concise performance summaries for the branches and for the program as a whole. Among the reports are:

- Portfolio status report showing, by branch, the number and amount of loans disbursed, amount of principal and interest (and fees) received, current number of outstanding loans, and amount of loans outstanding — both cumulative (year-to-date) and for the month;
- Delinquency report, showing an aged distribution of past due loans, by branch, and for the program as a whole;
- Detailed delinquency report, showing, for each overdue loan, the reason it is delinquent — by branch, officer and group; and
- Financial statements (balance sheet and income/expense) by branch and for the institution as a whole.

With the exception of the detailed delinquency report, all of these should be produced in both the local language and English (or other specified donor language).

Quarterly

- Loan statistical report, showing distribution of loans made (cumulative and for the month) by amounts, terms, type (working capital or investments), subsector, years in business, employees, sales;
- Loan statistical report on loans in excess of $300 showing distribution of these loans as per above criteria; and
- Analysis of costs, by field office and for the project as a whole, showing per-tache and per-borrower lending costs, and degree of self-sufficiency from self-generated fees and interest.

Annual

Annual reports will be the same as the monthly and quarterly reports, except that they will show annual totals.

Others

Detailed system design will identify a number of other reports that are needed to manage the system properly.

ANNEX C

DELINQUENCY CONTROL

DELINQUENCY CONTROL

The most important single process in the loans system is delinquency control. However, delinquency control is a managerial, not a publicity, function. Many institutions fool themselves when reporting delinquency. Instead of recognizing delinquency reporting as a managerial tool to help safeguard the value of the institution's assets, they view it as an embarrassment, and hence adopt ways of reporting delinquency that show the lowest possible ratios. This typically consists of reporting only overdue payments as delinquent, not counting loans as delinquent until they mature, calculating only the exposed portion of the loan as delinquent, or granting excessive grace periods before classifying a loan as delinquent. All of these avoidance techniques undermine the essential purpose of delinquency control, which is to protect the institution's assets.

There are two aspects to delinquency control: management and analysis. Management focuses on the prompt identification of problem loans and the processes involved in collecting delinquent loans. Analysis focuses on the effect of delinquency on the financial health and safety of the institution itself. The purpose of delinquency analysis is to identify problem areas so that management can take steps to correct problems that are leading to excessive delinquency.

1. Delinquency Management

Managing delinquency involves procedures designed to identify and pursue the collection of delinquent accounts.

A loan is theoretically delinquent the day after an installment is due but not paid. Most institutions allow a grace period before taking steps to collect a loan, but the fact that a payment has not been made on schedule should immediately trigger steps to assure its collection. The shorter the maturity date of a loan, the more important it is to take immediate action.

The loans processing system should regularly generate a set of reports to assist in the collection process:

- In advance of the scheduled payment date, a list of the loans with installments due.

- A daily statistical report for the manager showing the number of loans that had payments due on the previous working day, by loan officer, group or other appropriate categorization. This report should show the number of loans, the amounts of payment due, the number of loans with payments missed, and the amount of payments missed. It should not be a listing of the missed loans, but a statistical report.

- A listing, produced the evening or morning following the processing day, of all loans that had payments due, but which were not made.

- A listing, produced at the beginning of each week (or on another schedule if deemed appropriate) of all loans that have payments overdue. This listing would include the date of the last payment made, number of payments missed, the outstanding balance (including principle, interest and penalties, and the date of the next scheduled payment. Loans on the list should be grouped by the length of time they have been delinquent.

- A weekly statistical report for the manager showing the number of loans with overdue payments, by loan officer, group or other appropriate categorization. This report should show the number of loans, the amounts of payment due, the number of loans with payments missed, and the amount of payments missed. It should not be a listing of the missed loans, but a statistical report that the manager can use to review the performance of the loan officers.

Depending on the operating structure of the institution, the listings can be by loan officer, by group, or whatever breakdown is appropriate. The purpose is to place in the hands of the officer responsible, a list that can be used to follow up on the loans. Each officer should be required to note actions taken to secure the collections, and the results of those actions on these lists, and return them to management at least weekly. Management should follow up with loan officers to review problem loans on a regular basis.

2. Delinquency Analysis and Reporting

The purpose of delinquency reporting is to alert management to emerging problems in a portfolio — while there is still time to take corrective action. There are recognized standards for doing this.

A Simple Delinquency Ratio

The Delinquency Ratio is defined as the sum of all balances outstanding for all loans for which any payment is overdue, divided by the total outstanding portfolio. Note that this is the sum of *balances* due, not the sum of *payments* due.

The procedure for calculating this is very simple.

- Identify every loan that has one or more payments overdue — that is, that any installment has not been paid in the time period before the next installment is due.

- Sum the outstanding balances of all of those loans.

- Divide that sum by the total balance of all loans outstanding and express that result as a percentage (i.e., multiply it by 100).

An institution that wants to also report the amount of payments overdue may do so, but it should recognize that such a calculation has no useful purpose from the standpoint of portfolio management and prudent management.

An Aged Delinquency Report

In traditional banking systems calculating delinquency involves calculating the number of days the oldest overdue installment is overdue, and classifying the loan according to ranges of overdue dates. Typically, a loan that has not missed a payment is considered current, even though that payment may be late, and loans would be classified according to the number of days the oldest installment is overdue. A typical classification might be:

- 0 to 30 days
- 31 to 90 days
- 91 to 180 days
- 181 days to 365 days
- Over 1 year

This type of schedule works fine for loans that have a maturity of at least one year, and monthly installments.[1]

When an institution also has very short loans — such as 1-month loans with weekly payments — this schedule does not work. A 1-month loan that is 1 month overdue is significantly more at risk than a 3-year loan that is 1 month overdue . Similarly, a 3-month loan with four scheduled payments per month that is 3 weeks (payments) delinquent is significantly more at risk than a 3-month loan that has monthly payments that is three weeks overdue on one payment. Saying that a loan is 90 days overdue therefore, would have significantly different implications for a 1-month loan than for a 3-year loan. A 1-month loan with weekly installments that has an installment that is 180 days overdue is a lot more delinquent than a three-year loan with monthly installments that has an installment that is 180 days overdue, yet the two would show the same delinquency rate.

Since microenterprise programs frequently have both very short-term loans with frequent installments and longer term loans with monthly installments, the delinquency program should yield a similar placement of the different types of loans. This can be accomplished through standardizing loans on the basis of the number of days in the original loan maturity. In other words, the delinquency calculation is based on the number of days the oldest overdue amount is overdue compared to the total number of days of the original loan:

Step 1. Calculate the Number of Days the Oldest Overdue Installment is Overdue

$$\text{Delinquency Category} = \frac{\text{Number of Days The Oldest Overdue Installment is Overdue}}{\text{Lesser of 365 or the Total Number of Days of Original Loan}}$$

The next step in preparing an aged delinquency report is to establish delinquency categories. Establishing the proper categories is up to the institution itself, but should reflect some measure of risk. One such scheme might be:

[1]In fact, if an institution *only* has this type of loan it should use such a schedule rather than the one developed in the rest of this section.

```
From   0        to    .0830   =  Current
From   .08301   to    .2500   =  Overdue
From   .25001   to    .5000   =  Substandard
From   .50001   to   1.0000   =  Doubtful
Over 1.0                      =  Loss
```

The categories are somewhat arbitrary, and may be modified as necessary. The value of .0830 was chosen because it represents a the value that would be obtained when a 12-month loan with monthly installments is one period (30 days) overdue. A two-month loan with weekly payments would return a value of .125 when it is one payment (7 days) overdue.

This would mean that a 12-month loan with monthly payments that was up to 30 days late would be classified as current.[2]

Once you have determined the category the loans falls into, the next step is to sum the outstanding balances of the loans into the proper categories in column 2 in the table below. The example below uses sample numbers to illustrate this process.

Delinquency Category (1)	Sum of Outstanding Balances (2)	Percent (3)
Current: 0 to .1	1,000,000	70.2
Overdue: .1001 to .25	250,000	17.5
Substandard: .2501+ to .5	100,000	7.0
Doubtful: .5001 to 1.0	50,000	3.5
Loss: > 1.0	25,000	1.8
Totals	1,425,000	100.0

The procedures for programming a computer to produce this table, therefore, are as follows for each and every outstanding loan:

a. Calculate the number of days the oldest overdue payment has been overdue

b. Divide that number of days by the number of days per installment period to calculate the number of periods that the loan is delinquent.

[2]This method understates the delinquency situation of longer term loans. For example, a 3-year loan that had one installment that was 89 days overdue would also be classified as current under this scheme. The percentages used can be adjust somewhat, but the main purpose of this type of delinquency classification is to correctly classify very short-term loans.

c. Divide that number by the total number of installments in the original loan schedule, but no more than the number of installments falling within a one-year period for any loan that has an original maturity of more than one year. This will give a number that falls within one of the established delinquency categories

d. Add the outstanding balance of that loan to the appropriate cell in column 2 of the table.

Calculating a Portfolio Quality Index (PQI)

A Portfolio Quality Index (PQI) is an attempt to measure the true value of a loan portfolio, recognizing the fact that overdue and non-performing loans may not be recovered. The longer a loan is overdue, the less likely it is to be recovered. The PQI attempts to assess the amount of risk present in overdue loans by assigning a percentage estimate of the amount that is likely to be recovered on loans that have been delinquent for different periods of time.[3]

This can be accomplished by modifying the previous table slightly, adding two columns for calculations.[4] Once the classification of overdue balances is completed as before:

- Multiply the amounts in column 2 by the factors in column 3 to produce the amount in column 4.
- Sum columns 2 and 4 to produce the amounts in cells (2)A. and (4)B.
- Divide the amount in cell (4)B. by the amount in cell (2)A. to produce the PQI

(1) Delinquency Category	(2) Sum of Outstanding Balances	(3) Factor	(4) Value (2 x 3)
Current: 0 to .1	1,000,000	1.00	1,000,000
Overdue: .1 to .25	250,000	.90	225,000
Substandard: .25 to .5	100,000	.75	75,000
Doubtful: .5 to 1.0	50,000	.30	15,000
Loss: Greater than 1.0	25,000	0	0
Totals	A. 1,425,000		B. 1,315,000
Portfolio Quality Index (divide amount in (4)B. by amount in (2)A.)			92.3

[3]Ostensibly, the PQI should be calculated on the basis of "assets at risk" — that is, outstanding delinquent loans that are not covered by collateral.

[4]The column for percentages could be retained.

This will produce a single number that indicates the overall health of the portfolio. Interpretation of the significance of the PQI depends on historical trends and comparisons, and a series of monthly data points will be required to establish meaning in a given organization.

Practical Use of the PQI

This same analytical procedure can be used to compare the quality of different subsets of the portfolio — such as male versus female borrowers, large versus small loans, loans to different sectors, the portfolios of different branches, or the portfolios managed by different extension officers. Some of these are illustrated in the tables on the following pages. In all of these cases, which are using sample data, it is possible to quickly identify significant differences between male and female borrowers, and between small and large borrowers, and to assess the performance of branches and loan officers.

Portfolio Quality Index, Classified by Gender

Gender (1)	Sum of Loan Balances, By Category					Total Loans Outstanding (8)	PQI (9)
	Current (2)	Overdue (3)	Substandard (4)	Doubtful (5)	Loss (6)		
Male	100,000	25,000	25,000	50,000	25,000	225,000	69.4
Female	150,000	10,000	5,000	5,000	0	170,000	96.6
Total	250,000	35,000	30,000	55,000	25,000	395,000	81.1

Portfolio Quality Index, Classified by Branch

Branch (1)	Sum of Loan Balances, By Category					Total Loans Outstanding (8)	PQI (9)
	Current (2)	Overdue (3)	Substandard (4)	Doubtful (5)	Loss (6)		
Central Branch ·	1,000,000	425,000	10,000	5,000	5,000	1,445,000	96.3
Branch 1	250,000	125,000	35,000	25,000	10,000	445,000	89.0
Branch 2	100,000	2,000	0	0	0	102,000	99.8
Branch 3	150,000	20,000	25,000	35,000	40,000	270,000	73.1
Total	1,500,000	572,000	70,000	65,000	55,000	2,262,000	92.3

Portfolio Quality Index, Classified by Size of Loan

Gender (1)	Sum of Loan Balances, By Category					Total Loans Outstanding (8)	PQI (9)
	Current (2)	Overdue (3)	Substandard (4)	Doubtful (5)	Loss (6)		
Less than $300	150,000	10,000	5,000	5,000	0	170,000	96.6
More than $300	100,000	25,000	25,000	50,000	25,000	225,000	69.4
Total	250,000	35,000	30,000	55,000	25,000	395,000	81.1

Portfolio Quality Index, Classified by Loan Officer

Branch (1)	Sum of Loan Balances, By Category					Total Loans Outstanding (8)	PQI (9)
	Current (2)	Overdue (3)	Substandard (4)	Doubtful (5)	Loss (6)		
John Doe	1,000,000	425,000	10,000	5,000	5,000	1,445,000	96.3
Mary Smith	250,000	125,000	35,000	25,000	10,000	445,000	89.0
Jim Public	100,000	2,000	0	0	0	102,000	99.8
Judy Dogood	150,000	20,000	25,000	35,000	40,000	270,000	73.1
Total	1,500,000	572,000	70,000	65,000	55,000	2,262,000	92.3