Data Standards for Connecting to Commercial Sources of Capital

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Abstract: The importance of data interchange between commercial sources of capital and the microfinance sector is generally acknowledged, if not well detailed. But microfinance institutions (MFIs) and commercial sources of capital often need a different depth and breadth of information. As the industry grows and accesses more commercial capital, there is a need to enable standardized reporting from multiple MFIs to multiple sources of capital, rather than a proliferation of one-to-one reporting relationships. IT professionals and managers of microfinance institutions need to recognize this need and push vendors and industry associations to agree on specific standards of data elements, quality, and transmission protocols. This paper aims to provide the reader with a grasp of the issues involved and to recommend a sample set of data standards for MFIs to use in communicating with commercial sources of capital.

Ongoing financial innovations in the microfinance market—equity investments, portfolio securitization, and credit facilities—demand comprehensive scrutiny of microfinance institutions (MFIs) to ensure that their operational systems meet the requirements of such financial instruments. In addition, careful attention must be paid to the value and the quality of the data MFIs produce.

According to an article about financial transparency published online by the World Bank's Consultant Group to Assist the Poor (CGAP, n.d.),

> Only a handful of microfinance providers currently include enough information to comply with International Financial Reporting Standards (IFRS) and industry-specific disclosure guidelines. Industry-specific disclosure requires certain information in addition to that required by IFRS to permit a fair assessment of the profitability and asset quality of microfinance operations.

The importance of enabling data interchange between commercial sources of capital and the microfinance sector has been underscored in multiple forums. The microfinance industry needs an estimated US$300 billion to grow to scale. However, this figure may be too conservative, given that approximately three billion people globally do not have regular access to financial services. That number continues to grow.

An analysis of the industry's needs by a group of funders and microfinance practitioners shows three related obstacles (personal communication, July 28, 2004):

1. Lack of diversified sources of capital for microfinance investing.
2. Lack of sufficient market infrastructure to facilitate efficient information and resource flow.
3. Lack of business expertise and capacity among leading MFIs required to reach scale.

From these concepts, we can derive broad requirements:

- Diversification of portfolio financing by MFIs requires more sophisticated segmentation of the loan portfolio and loan servicing concepts, better data for regulatory agencies to allow

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registered deposit taking, and more customer data to enable the modeling of the risk profile of any derivative securities.

- The market infrastructure factors that will enable resources and information to flow are the ability to send information, the need for data to be understood, and the need to create norms, audit standards, and mechanisms to comply with the requiremens of rating agencies.
- Organization-wide norms, expressed through systems, are a key part of operational capacity. These systems must also have the flexibility to adapt to changing conditions.

This paper proposes an overall strategy to meet the emerging need for data standards in the microfinance industry. These standards should, nominally, leverage large parts of the existing financial services standards with some important caveats. However, the microfinance industry, precisely because it deals with the non-banked, does not always have the same level of information that is found in the formal sector.

Data standards should cover the following areas:

- Financial reporting, such as those embodied in the Mix Market platform.
- Connections to commercial capital markets (e.g., the securitization of portfolio).
- The information needs of credit bureaus and regulatory players.
- Remittances and external payment systems.
- Remote transactions and third-party transactions.

The remittance market, which is currently estimated at US$150 billion annually, is particularly interesting to note as a potential source of capital.

Third-party transactions include connections to global transactional systems such as point of sale (POS), automated teller machine (ATM), credit card, or ACH transactions (an inter-bank automated clearinghouse system). Such transactional networks typically operate through agreements with regulated banking entities in each country, a fast growing market globally. Currently, these

networks are absent in microfinance operations in rural environments, but this seems to be mostly a function of connectivity.

Other reporting standards not covered in this document include those used by credit bureaus and other regulatory or standard financial documents used to evaluate an organization's strength.

Microfinance Open Source and Establishing Standards

The microfinance open source project (Mifos) developed by Grameen Foundation USA focuses on integrating data standards and protocols for financial transactions into an operational system. To maximize the effectiveness of the system and to move towards common standards, input from others in the industry is critical, particulary because one effective strategy for pioneering new standards is to encourage partner institutions to adopt them.

Intended Audience

The audience for this paper is composed of those concerned with the technical interface between the back-office systems used by microfinance institutions and those used by banking entities. Vendors of back-office systems for MFIs and the Mifos software itself will benefit from having specifications from these important data flows.

General Approach

In the context of promoting financial instruments and the information requirements to enable the aforementioned financial mechanisms, the intent of this report is to look as broadly as possible. Requirements for data standards should reflect current trends away from legacy systems in the commercial sector, with their strong systems-in-isolation approaches, and toward "marketplace" approaches, where interoperability and data exchange are key drivers. There is probably little need in the microfinance sector to be backwards compatible with legacy systems in the commercial sector.

There are numerous sources which can be used to determine the information requirements for back-office systems of microfinance institutions. These include work on portfolio management systems and financial accountability funded by the World Bank. As noted by Dailey and Parekh (2003),

> One of the most important kinds of information exchange conducted at microfinance institutions is basic financial reporting. Many different kinds of financial reports are needed for the effective functioning of an institution. . . . These reports can be intended for a variety of audiences, and encapsulate different subsets of data for institutional performance and operations.

The financial reports typically used by MFIs include the following:

- **Teller/operational reports** guide the teller or loan officer in transactions.
- **Portfolio reports** provide qualitative analysis of the payment performance of a loan portfolio, including such indicator calculations as loan aging, portfolio-at-risk, and credit scoring.
- **Financial statements** are the most common documents, including balance sheets and income statements.
- **Cash flow reports** provide monitoring data for actual and predicted cash flows; they are used in evaluating performance and forecasting problems.
- **Summary reports** provide aggregate reports for upper management to guide institutional strategy and planning.

While useful to specific audiences, these reports focus only on a high-level data summary. The financial instruments being considered by GFUSA and the MFIs, however, focus more on detailed portfolio transactional data.

For the commercial banking sector and other sources of capital, the format and type of data needed is dictated by its use. Whereas in equity investments, only summary data validating the

strength of the organization and transparency about weaknesses is necessary, for portfolio securitizations, more complex data is required. To date, financial deals with microfinance organizations have not demanded changes to the MFI-customer relationship. Therefore, while the financial paper corresponding to that segment of the portfolio may be traded (as in the case of ICICI Bank of India's purchase and subsequent sale of a segment of the portfolio of a leading MFI to another Indian bank), the actual "loan servicer" does not change. The requirements for the bank in these types of deals, according to interviews conducted in August 2003 with ICICI, will involve the following components:

- Elements of risk within the portfolio by segment (indentifying diverse sources of risk, such as geographic focus, industry-specific or MFI-management–specific issues, etc.).
- Determinants of that risk, including loan size, terms, and loan purpose.
- Current loan terms and loan repayment history.

These elements determine how the funding bank would ideally stratify the portfolio into risk-based segments and are thus the basics for determining the appropriate pricing for the overall loan portfolio. Until such pricing becomes outsourced to credit rating agencies and similar entities, or there is sufficient industry history, individual deals will require a willing bank to look at the risk factors and determine their pricing. Grameen Foundation USA and Grameen Capital India could have a key role to play in determining how these types of data formats are generated and evaluated.

An article in the *Deloitte and Touche Journal* (Caplan, 2001) points to three areas of data for the commercially traded loan:

1. Pedigree information—who issued the loan originally, under what facility, etc.
2. Pricing information—how one should value the loan (largely automated through algorithms in developed markets).
3. Back-office information—how a third party can service the loan and what information is transferred to enable that.

For microfinance, the third area of loan servicing is now underway in limited areas. In contrast, the second area is still unclear to the markets, and the first is relatively easy, since few deals have happened. The second area deserves the most attention because this is where the microfinance industry is the least standardized, and the availability of such transactional data sets is also unclear, at best.

With regard to loan servicing, it is generally held that only the original institution has the relationship and the operational reach to service the customer. Actual field conditions are proving otherwise. Currently it appears true that only institutions with relatively similar methodologies, rotating staffs, and similar geographic outreach can actually do loan servicing for another MFI or, through acquisition, easily absorb the other MFI's customer portfolio. Although the industry is a long way away from offering investors clear options for loan servicing, it is interesting to note that this misconception is already giving way to the real needs of the industry.

Reporting versus Transactions

As noted previously, banks with a typical lender relationship with a microfinance institution are interested in standard financial statements, such as balance sheets, profit and loss statements, cash flow reports, and portfolio-at-risk ratios. They may have no interest in the transactional data that underpins the portfolio-at-risk calculations but will be interested largely in the debt-to-equity ratios and solid cash flows from external sources. These relationships do not explicitly recognize the asset valuation of the portfolio. Commercial sources of capital seeking to work with MFIs in the same manner as a typical bank should structure the deal so that either the asset of the loan portfolio is used as collateral or the asset is effectively purchased, as happens in a securitization deal.

According to Jennifer Meehan (2004), director of GFUSA's Capital Markets Group, "In the largest individual microfinance securitization to date, ICICI paid US$4.3 million for 25% of SHARE's loan portfolio. SHARE's cost of funds was approximately

8.75%, below the 12 to 13% it has traditionally paid borrowing from commercial banks, including ICICI."

It is clear that the ability to use the MFI portfolio as a readily priced asset class requires a greater degree of reliability and accuracy for the portfolio data, frequent or on-demand reporting on portfolio quality, and better transparency with regard to debt servicing by the customer. Those standard financial practices do not necessarily have to be specific to the microfinance industry, but they must exist within it. They must also be enforced via commonly accepted mechanisms, such as true ratings agencies. The rating agencies must be bonded and must be able to accurately assess the microfinance portfolio through meaningful audits and analysis.

An important step toward data standardization in the microfinance industry is the creation of a set of data standards that are universally accepted and understood by all MFIs.

Developing a Data Standard

The next section sets out a high level data standard. The first part is concerned with the data elements that one would expect to find, and the second part covers data protocol issues. The data standard is given from the perspective of a flat file transmission.

The rationale for this is that in most electronic data interchanges, the database is flattened out to provide a simple hierarchy of the multidimensional data, rather than sending a multitable database.

The data elements should include annotations, which are meant to magnify a particular grouping of data elements. For example, the data element "extend" is a common annotation for XML-based standards and indicates those places in the file format where additional data elements can be added. Determining optional or required elements and specifying data types are both part of the standards settings and part of the implementation.

The process imagined for setting this data standard in the microfinance industry is, briefly:

1. Determine minimum requirements of a specific bank.
2. Sketch out overall sector requirements (this document).

3. Review the document (performed by the range of institutions that may be involved).

4. Develop a prototype solution between two entities.

Borrowing from Fannie Mae's approach to data standards, the Mifos project envisions a data dictionary, a conceptual data model, and a conceptual XML shema.

Data Dictionary

The data dictionary will present the portfolio data standards in a list form and will build on the data list below. It will include information for each data attribute, including standard business names, screen names, definitions, data types and lengths, allowable values, and XML names.

Conceptual Data Model

The conceptual data model will show the relationships between groups of data, such as the recursive loan details and the client information to which those loan details relate.

Conceptual XML Schema

The Mifos XML schema for this data set type will consist of references to the specialized microfinance schema (groups, methodologies) and standard financial data. It will essentially capture the data dictionary in XML with attribute and element names, enumeration values, and definitions.

Data Elements

Data elements can be described as having four segments:

1. *Metadata*—annotations and fields describing the data set, its origins, and general information about the institution.

2. *Customer data*—basic determinants of risk with regard to the profile of the customer.

3. *Account data*—information about the product (e.g., loan) provided to the client.

4. *Account transactions*—the core of the data set, which describes the payments and relationship to arbitration values for being "on time."

Protocols for Data

Beyond the basic data format, there are many questions about how data will be generated within the system. In the formal financial sector, the relationship between transactional data and actual accounting events is generally understood; knowledge of the microfinance sector, however, is limited. Data quality includes the concepts of reliability according to a set of financial operational standards.

Table 1. Data Elements

Metadata	Customer data	Account data	Account transactions
Data set informa-tion:	**Customer (recursive):**	**Loan (recursive)**	**History of loans**
Number of records	Identifying	Loan Purpose	Percentage of
Date or report	information—may	Loan amount	payments
Annotations	be stripped out	Extend	previously on time
Extend	(Name, Address,	Terms of loan	Extend
Facility informa-tion (Tanche ID):	ID)	Length	**Payments on this**
	Age	Interest	**current loan**
Bank deal identifier	Gender	Collateral (opt)	**(recursive)**
Bank deal type	Household income:	-Type	Date of payment
facility amount	-Household income	-Value	Payment amount
Facility start date	component one	-Date of value	On time? (flag)
Extend	(opt)	-Depreciation	Extend
Institution	-Household income	method	
information:	component two	-Verification	
Name	(opt)	method	
Primary Location	Extend	Co-guarantors (opt)	
National ID	Determinants of	Revolving loan	
Banking sys ID	risk	type?	
Admin Contact	-Length of	Restrctured loan	
Technical Contact	relationship with	type?	
Institutional rating	institution (e.g.,	Extend	
Rating by	group membership		
Annotation	term)		
Extend	-Type of work		
Portfolio	-Type of industrial		
information:	sector (e.g.,		
Size of portfolio	farming)		
overall	-Extend		
Size of portfolio			
data in data set			
Extend			

One of the successes of microfinance is the relatively high repayment rates. This has been achieved through a combination of personal touch (the officer goes to the customer), expectations management (repayment schedules are structured with minor grace periods that are not shared with the client), and group-based risk management. The group-based risk management is the most important factor and has several components, all of which are well documented in microfinance literature. The first is loan issuance, where the group operates as a kind of business plan review committee, ensuring that only the most productive business ideas are advanced for funding. Secondly, it implies, depending on the situation, that the group entity is either the loan guarantor or the loan recipient. Since these group entities are not legal entities, the individual is usually the stated borrower on the loan. Because the group may, in some institutions, be required to make up any payment shortfalls, 97% to 100% repayment rates are not uncommon. This creates a fundamental question for the data protocol: how much intra-group payment dynamics are required to accurately account for risk management?

It is at this level that the Mifos project hopes to have the greatest impact by allowing for metadata that explains the techniques utilized by the MFI to manage such risk components. The protocol for communicating such risk components will need to be further developed through surveys of existing MFIs and better understanding of the intra-group dynamics that are captured in internal back-office systems. One suggestion is to flag when individual payments are made in part or in full by the group, rather than the debtor.

Metadata

Capturing the unique characteristics of microfinance requires a type of metadata for the portfolio data. By structuring how those intra-group risk mitigation dynamics are described, the information system can manage the complex data and use it for risk analysis.

As detailed in the data elements section, metadata about the transaction record set allows for the data quality and integrity to be

described. Building on this, the metadata should allow for full transparency to the appropriate parties of:

- Coverage, periodicity, timeliness.
- Data access and privileged rights.
- Data integrity.
- Data quality.

Coverage refers to the data set within context. Providing the total portfolio of the organization and then the relative size of the portfolio covered by the data set provides one type of context. Periodicity of providing data can be regular or irregular, and if regular, the period should be noted in the metadata. Timeliness is a judgment as to how well the data has been provided according to the reference of the periodicity. Data integrity refers to the ability to trace the data back to data generated at the source institution, data quality refers to how well that data reflects actual occurrences. Data access and privilege rights are self-explanatory.

Conclusions

The global financial services industry is a very large consumer of data about customers and financial products. Microfinance, as a part of that industry with a social mission, should also be able to promote and use a set of standards for data about asset quality and profitability. This data should be both meaningful to the commercial sector and in keeping with the long-term mission to have customers of microfinance become full economic participants in society.

Secondly, data that is sorted in different ways can reveal patterns and information beyond the initial intent. At a minimum, microfinance institutions should be aware of the value of their customer database to the commercial bank, which may or may not be thinking about these microfinance customers as their next market.

Lastly, Grameen Foundation USA and others are promoting innovations in the financing of microfinance institutions to achieve greater effectiveness in serving the poorest with access to credit. Commercial data interface standards have an important role to play in terms of leveraging the exiting portfolio quality for funding.

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Fannie Mae. (n.d.) *Multifamily data standards.* Retrieved December 12, 2005, from http://www.efanniemae.com/mf/applications/techresources/datastandards.jsp

Meehan, J. (2004). *Tapping the financial markets for microfinance: Grameen Foundation USA's promotion of this emerging trend.* Washington DC: Grameen Foundation USA.

Other Resources

Asia Pacific Loan Market Association, http://www.aplma.com/

Credit risk assessment services, http://www.xbrl.org/BankingLoans/

Loan Market Association, http://www.loan-market-assoc.com

Securitization Journal, http://www.bondmarket.com/Research/ESFDataRprtWinter04.pdf

Transactional systems, http://www.goldengate.com/products/industry_bankingRetail.html