Selecting and installing a portfolio management system

CHARLES WATERFIELD

As microfinance institutions scale up their operations the needs for timely and accurate information on the state of their portfolios increases – indeed the reliability of their management information systems (MIS) is often the difference between the success and failure of the institution. This article outlines the process that is involved in selecting the right MIS for the organization. The information needs of the institution must be determined, along with the institutional resources that will be needed to match an MIS. Then the process of selecting an MIS is described, including what costs will be involved. The whole process is often more time consuming and costly than is anticipated because it involves a complete examination of core issues: what the institution wants to accomplish, how it goes about its tasks and how it measures success.

ALL ORGANIZATIONS have management information systems (MIS) of some sort. Without them, there would be insufficient information about employees, clients, donors, and investors to continue operations. Having minimal systems in place (such as a manual record-keeping system that produces financial and portfolio reports one month late) might be seen as sufficient, particularly since improving information systems involves massive effort and cost. Good information is essential for an institution to perform in an efficient and effective manner, however, and more accurate, timely, and comprehensive information on operations, especially on the loan portfolio, will strengthen management's capacity to enhance financial performance and expand client reach. In a competitive environment, it is argued, the institution with better information is at a distinct advantage.

Although MIS has been an unmet need among microfinance institutions (MFIs) for many years, the urgency of finding a solution has been increasing as many MFIs focus on scaling up their operations. In doing so, methodological issues, staff development, and even financing are frequently not proving to be the critical constraints. Rather the institution's ability to track the status of its portfolio in a timely and accurate manner has emerged as the most pressing need. The reliability of the systems tracking this information is in many cases the difference between the success and failure of the lending operations, and therefore of the institution.

Thus, the development of rigorous management information systems is one of the most important tasks facing the microfinance field. To endeavour to scale-up without an adequate information system is an invitation to disaster. The aim of this article is to suggest what needs to be considered by MFI managers as they look for solutions to their MIS needs. The process of choosing an MIS can be divided into three phases: assessing institutional needs; evaluating and selecting an MIS; and the process and cost of installing an MIS.

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Charles Waterfield is an independent microfinance consultant.

Different institutions have different needs

The task of selecting a loan-tracking package is challenging, not only because it is difficult to choose from the hundreds of packages currently in use, but even more so because the likelihood is small that any of those packages will in fact meet an institution's current and future needs.

There are a large number of packages which work satisfactorily for the institutions in which they are installed. However, selecting among these packages does not necessarily lead to a suitable choice for another institution. No two institutions have the same information needs – in fact, a single institution will find its information needs evolving over time – and no single software program can anticipate and accommodate all these varying needs. Just as MIS systems differ not only in philosophy and approach, they differ widely in capabilities. Thus, any selection or development process needs to begin with absolute clarity about the expected functionality of the MIS.

Some of the most important issues related to the inability to transfer software systems from one institution to another are:

○ divergent definitions in the calculation of financial ratios;

○ complexities introduced by variations in methodologies (e.g., individual vs. group lending);

○ various ways of treating portfolio issues (e.g., calculation of interest rates and penalties, linkage of savings to loans, determination of delinquency, etc.);

○ local language issues (e.g. English, French, Spanish, etc.);

○ issues related to the scale and degree of centralization of the MFI;

○ information flows within the MFI related to its policies and procedures;

○ national banking or accounting regulations;

○ the individual preferences of management or MIS staff; and

○ the availability of local, reliable technical support.

As well as whether a software product supports the policies and procedures used by the institution, there is a second issue of the sophistication of the institution. There are essentially three levels into which most MFIs can be placed. These categories are related to the MFI's stage of development: small-scale programmes with fewer than 2000 clients; institutions undergoing transition into larger institutions, serving between 2000 and 10 000 clients; and large-scale microfinance institutions, with more than 10 000 clients. (The number of clients is just one of a number of indicators influencing the volume of data to be processed: the actual volume also depends on factors such as the type of methodology (individual versus group) and the frequency of payment instalments (weekly, monthly, etc.) It must be stressed that the numerical ranges presented here are intended as approximations only.)

In the first category are small-scale, young programmes which have fewer than about 2000 clients, have no short-term plans for significant expansion, do not expect to transform into formal financial institutions, and have no plans to offer a broader range of financial products. These are frequently multi-service NGOs which offer financial services as one of several components. As such, their needs for loan-tracking systems are fairly basic and there is less need for a rigorous and versatile package.

Security features can be more lax, and there may not be a need for networking computers. Although some of these small MFIs might like to have a full-featured package, the complexity of installing and maintaining such a program frequently exceeds their institutional capacity, either in terms of computer sophistication, staff skills, or budget. Instead, these institutions can get by with a simple system that keeps track of the quality of the portfolio.

Expanding 'transitional' institutions often need a complex MIS but do not have the resources to develop and maintain one
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The second category are those transitional institutions that have from 2000 to 10 000 clients, are expanding, and probably have plans for much more significant growth. They are institutions which are commonly going through 'growth pains', planning to restructure their organizations to deal with their increased size, needing to bring in new senior staff capable of managing the substantial increase in activity and resources, and aiming to become more systematic in their operating procedures in order to handle a much larger volume of transactions. These institutions therefore require a much more rigorous MIS, which will stand up to the scrutiny of auditors, has solid security features and a thorough audit trail, handles savings accounts and can deal with a large volume of transactions. However, these MFIs frequently lack the skilled staff necessary to operate and maintain a complex and rigorous MIS. It may also be difficult for them to find the financial resources required either to purchase a commercial system or to finance the in-house development of a complete, customized MIS. In effect, they need many of the features of a rigorous 'high-end' system, but are often not yet ready to develop and maintain one. Their success will depend upon a carefully developed strategy that considers their complex operating constraints and dedicates sufficient time and resources to overcome these constraints.

Modifying an MIS for a large-scale institution can cost over $100 000
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The final category is comprised of the large-scale MFIs, which exceed 10 000 clients and intend to continue to grow. These are mature institutions, that generally have established operating procedures and capable staff, including in the accounting and information systems departments. These institutions are large enough that they can generally justify the cost of substantial modification of an existing MIS – or even the development of a new system – to meet their information needs more specifically. Costs of such MIS development can easily exceed $100 000, but such a rigorous MIS can lead to significant efficiencies with an institution of this size and thus justify the high level of investment.

Determining information needs

Before researching different MIS options, management should begin with a careful determination of the MFI's information needs. If this step is overlooked or not handled properly, months of frustration can result and the entire process can end in failure. It is important to begin by assembling all documentation on the existing policies and procedures of the institution. In many cases, documentation in certain of the following areas may be either non-existent, outdated, limited in its coverage, or contradictory to other documents within the institution. In cases of institutions with weak documentation, the information necessary to continue with the process exists only in the heads of the staff. In such a case, key staff should be available to participate actively in the following steps in the process. There are four main areas requiring documentation:

○ *Accounting policies and procedures.* These include charts of accounts; copies of vouchers, receipts, passbooks, etc; accounting procedures manuals; most recent financial statements; latest audited financial statements; and so on.

○ *Basic operating policies and procedures.* These include an organizational organogram; information and process flowcharts; copies of all data collection forms; operational procedures manual; client numbering procedures; and so on.

○ *Internal control procedures.* These include job descriptions; loan and check authorization procedures; payment and receipt document handling; system access procedures; and daily clearing of suspense and exception items.

○ *System parameter values.* This includes descriptions of all types of loan and savings accounts; coding lists for items such as loan purpose and geographic location; detailed information on calculation of interest, penalties, and fees; sample registers from all loan products in order to calculate repayment scheduling and interest calculations; and product account numbering procedures.

After documenting policies and procedures, this information can be used to determine the flow of information throughout the institution. The goal of documenting and diagramming information flows is to discover answers to the following questions:

○ Where are data collected?

○ Where are data transformed into information?

○ Who needs what information?

○ What decisions need to be made?

○ What information is required to make those decisions?

○ When is the information required, and by whom?

○ Where is information stored?

○ Where do areas exist that can be redesigned to make processes more efficient?

○ Where are the leverage points and the critical processing points in the system?

Information flows are necessary for the systems designer to understand how a process such as loan disbursement and repayment works. The systems designer must create a system that facilitates the process, and to do that, the designer requires an understanding of where data are collected, where they are transformed, where they are used for decision making, and where they are stored.

An MIS should be expected to have a minimum life of five years and will therefore need to grow and adapt with the institution. The optimal time for an institution to install a new MIS is not when it is in the midst of massive expansion, when such a change can be extremely disruptive. To plan for the future and 'invest' more than the bare minimum now may avoid serious problems later on. The following questions need to be considered.

○ What rate of growth is anticipated?

○ What changes in existing financial products are planned?

○ What new financial products are being designed?

○ What degree of centralization and decentralization is going to occur?

○ What reorganizations are anticipated?

○ What changes in work flows will occur?

Determining feasibility

In order not to omit important opinions, a task force of key personnel should be formed consisting of one knowledgeable person from each department, including representation from each level in the organization, from senior management to field staff. It should also include several staff from the information systems department – selected for their listening skills – to document the input from the task force and co-ordinate the technical work.

The task force should be involved in assessing what kind of MIS is feasible for the institution: to match needs with capabilities. The task force should assess three areas: staff capabilities, technology issues, and cost considerations. The level of sophistication of the MIS that management decides to install will need to be carefully matched to the institutional capacity in each of these three areas. If institutional capacity is weak in any of these three areas relative to the MIS, steps will need to be taken to improve the deficient areas before the MIS installation is undertaken: technical solutions simply cannot substitute for deficiencies in institutional capacity.

Staff capabilities. The capability of staff to manage computers is a critical ingredient of the successful incorporation of new computer technologies and is often overlooked. The task force needs to examine the following issues:

○ Who will be managing (installing, maintaining, updating, etc.) the new system? Is there currently an adequate information systems department, or will the department need to be created or strengthened?

○ Are there local consultants available who can provide ongoing support? Are they competent, reliable, and affordable?

○ Do appropriate skills exist among current staff or will new staff need to be hired?

○ How much training of users will be required? Will this training be provided in-house or by an external source?

○ Does the institution have systems programmers on staff? Does it intend to hire programmers? How capable are programmers in the local market? What are salary levels for programmers?

○ How strong is the accounting department staff? Will they be able to handle the rigours of a sophisticated system? Are they able to keep information up-to-date?

○ What complexity of computer systems can be supported at the head office? At branch offices?

Technology issues. A number of technical issues need to be assessed when determining the feasibility of using computer technology in the information system.

○ Is the electrical system adequate to install computers in the head office? In branch offices?

○ Are phone communications adequate to support any branch communications envisioned? Is e-mail access adequate for any international technical support envisioned?

○ What level of computerization should the institution strive for? Should the headquarters be fully computerized? Should the branch offices be computerized?

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The capability of staff
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- Should a network be installed? If so, what type?

- Should the system support 'front office' activities, where staff use computers in their direct interactions with clients, or should the system only support 'back office' activities, where information is entered from paper-based records?

- How much existing hardware can be utilized and how much will need to be replaced? What level of hardware purchases can the institution afford (see next section)?

Cost issues. Many managers do not fully comprehend the magnitude of the task of developing (or selecting) and installing an MIS. This is not necessarily due to inappropriate approaches or inefficient techniques: it is more due to the nature of the task. An information system is a complex undertaking that forces an institution to assess and articulate issues that reach to the very core of the institution: what does it want to accomplish, how does it go about its tasks, how does it measure its success?

> Many managers do not fully comprehend the task of developing and installing an MIS

It is difficult to give specific prices, and in some cases even price *ranges* for commercially developed systems. There is no single 'price list', because these are not software packages that one simply takes out of the box and installs. In virtually every case for large microfinance institutions, the institution is required to seek customization of the source code, assistance in configuration of the system, training of staff, and ongoing maintenance. Each of these services will have a cost which is dependent upon the complexity of the task and the resources the software firm has available locally.

Thus, when purchasing software, once a package meeting the essential requirements of the institution has been identified, the comprehensive cost of the software and services needs to be carefully negotiated. Pricing schemes will typically be divided into a substantial up-front cost and a regular annual fee for maintenance and support. Purchases of system upgrades or periodic customizations can also result in large outlays every few years.

> The technical assistance needed to install the system often costs more than the software itself

While it is difficult to give any precise guidelines on the amount to budget (situations, needs, and available resources vary too widely), the following categories must be considered. First there are the costs associated with software.

- Software licensing (sometimes charged per user or per installation, sometimes a one-time fee, sometimes an annual fee).

- Software customization fees (modifications of source codes can be extremely expensive).

- Installation technical assistance (support during configuration, installation, and data transfer is normally required for high-end systems because of their sophistication and complexity).

- Extra staffing during installation (temporary help, overtime pay, and bonuses are often required because of the major effort required in installing a new system and inputting initial data).

- Staff training costs (materials and instructors, overtime pay, temporary help).

- Technical support (can be a monthly or annual fee, can sometimes exceed the cost of the software itself).

- Cost of future software upgrades, improvements, and modifications.

○ Higher staffing costs owing to any new staff hired to maintain the system or due to raises required to reflect enhanced responsibilities.

The costs associated with hardware include the following.

○ Hardware purchases (servers, computers, printers, network cards, modems, back-up power supplies, generators, tape back-up units, cables).

○ Infrastructure improvements (wiring, new phone lines, improved security, new work spaces, temperature and humidity control).

○ Cost of future hardware upgrades.

○ Higher utility bills and insurance premiums.

○ Costs of periodic technical support for the repair or upgrading of computers.

These costs will vary widely, depending upon decisions made relating to head office and branch office computerization, front office or back office operations, accounting system or portfolio system computerization, custom or off-the-shelf software, a local software company or an international firm.

Selecting an MIS

After working through the steps in the previous section on needs definition and the feasibility study, the task force has to assess the available alternatives. In most cases, some degree of computerization will be sought. The computerization alternatives can be clustered into three broad categories:

○ Option 1: Purchase a standard 'off-the-shelf' system;

○ Option 2: Modify an existing system used elsewhere; and

○ Option 3: Develop a custom system 'in-house'.

There are three principal questions that influence the choice of alternatives: How much money is the institution willing to invest? How willing is the institution to be flexible in adapting policies and procedures to the idiosyncrasies of the system under consideration? How reliable is technical support for the system under consideration?

As explained previously, there is no dominant off-the-shelf MIS – that is, a program that an MFI can order and install that will successfully meet 80–90 per cent of its information needs. Indeed, given the divergent information needs among microfinance institutions, this is unlikely ever to happen. An institution with significant financial constraints may choose Option 1, but it will have to be flexible in adapting its policies and procedures to be compatible with those of the MIS package.

Option 2, modifying an existing system, is attractive in a large number of instances. The MFI can benefit from the previous work and testing put into the system, and then tailor it further to meet its own needs by spending the additional money necessary to make the modifications. If carefully designed, the modifications can transform an unacceptable system into a solid system that meets most of the institution's needs. There are, however, potentially significant limitations to this approach, as will be explained in the following section.

Frequently, institutions have chosen Option 3, contracting to have custom software developed around their specific needs. When done properly, this can result in a very effective system and can overcome most of the limitations inherent in Option 2. However, customized software has often

An institution will have to adapt its policies and procedures to an 'off-the-shelf' system

Customized software may take at least a year to develop and sometimes fails to work

failed to live up to expectations, and sometimes has failed to work at all. In addition, even in the best of circumstances, there is a lengthy development time frame to this approach, generally a full year or more.

Initial evaluation framework

Before deciding to commit to an MIS package, both the MFI and the software firm supporting the package have to assess carefully the 'fit' between the MFI's practices – both present and projected – and the software's capabilities. Any selection process needs to begin with absolute clarity about the expected functionality of the MIS and the degree to which the institution is willing to adjust its procedures to match those of the MIS.

The *initial* assessment should include a careful review of all existing documentation the software firm is willing to provide and, ideally, a review of any demos or trial versions of the software that are available. This initial assessment should focus on major issues of compatibility – rather than the more technical details – such as procedures for calculating penalties, since these are sometimes difficult to determine from basic documentation.

When areas of potential incompatibility are identified, they should be carefully noted for later discussion with the firm. Often, incompatibilities can be addressed through undocumented features of the software. Sometimes the incompatibilities can be solved through relatively minor software changes.

If assessing a software package that is in use at another institution within a reasonable travelling distance, it is highly advisable to visit that installation for several days, observe the system in operation, and interview the users on their level of satisfaction with both the system and the support provided by the firm. If a visit is not possible, every effort should be made to contact other users, either by phone or in writing, to solicit their opinions.

> It is advisable to observe the system in operation elsewhere

Detailed software assessment

If the task force has identified one or more promising software systems in the initial assessment, these systems will now need to undergo a detailed assessment. If the MFI's operations are very sophisticated – with a broad range of financial products – this institutional assessment is best done in a face-to-face meeting of 3–5 days between 1–2 skilled staff from the software firm and the MIS task force of the institution. If, on the other hand, the institution has a small number of clients and only one or two products, the final assessment stage may possibly be handled in as little as one day with one representative from the software firm. If the package under review is supported from outside the country, this assessment in itself may be quite costly.

Prior to this assessment, all of the documentation on the institution's policies and procedures assembled previously should be provided to the software firm for their review and preparation. During the time together, the firm's representative will probably have a standardized procedure to follow, but the MIS project team should ensure that they carefully address all concerns raised during their initial assessment, as well as carefully review the program in detail.

When assessing existing software for possible incorporation into an MIS, careful consideration needs to be given to the following main areas:

○ product and account numbering systems;

○ disbursement policies;

- repayment scheduling;
- interest rate calculations;
- fee calculations;
- indexing issues;
- penalty calculations;
- linkages to savings; and
- rescheduling and write-off procedures.

A portfolio system should be designed to work with all major types of financial products offered to clients. Within each major type of financial product (loans, savings, etc.), the system should be designed to establish distinct sets of rules for different kinds of sub-products (e.g. capital loans, housing loans, solidarity group loans, etc.) Interest rates, interest calculation methods, maximum allowable amounts and terms, definition of overdue payments, eligible collateral, and many other factors will probably vary between different sub-products.

A large number of the parameters that define a loan product interact primarily to determine two key issues: (1) the generation of the repayment schedule, and (2) what to do when the client does not precisely follow that repayment schedule. There is a surprising amount of variation in the way different institutions treat this seemingly straightforward topic, and this issue is at the root of many incompatibilities between computerized portfolio systems and institutions wishing to adopt them.

<div style="text-align: right; font-style: italic;">There is much variation between institutions on loan repayment schedules, and what to do when clients do not follow the schedule</div>

The only effective means of determining incompatibilities between current operating procedures and the system under consideration is to run a small sample set of actual clients through a fully operating version of the software. A random sampling of accounts – a minimum of 50 from each financial product offered by the institution – should be selected. The data should then be entered into the system and calculations and balances carefully compared with the institution's current records.

By carefully following the process described above, management should have a very clear understanding of the system and what its strengths and shortcomings are. Management then needs to determine how to handle any shortcomings: will they pay for modifications to the software or will they adapt the institution's procedures to match those of the software? Negotiations with the software provider will disclose the complexity and cost of any desired changes. After reaching a final decision about what changes, if any, are to be requested, final negotiations regarding pricing can take place.

Developing a customized system

Developing a new, custom MIS is a massive effort. Designing and developing the core, or most essential, routines of a moderate system can take a minimum of six months of programmer time. Debugging the system, and completing all the non-core features (a wide variety of reports, error correction routines, user-friendly features) usually take at least another six months of programmer time.

<div style="text-align: right; font-style: italic;">A systematic needs assessment prior to development is essential</div>

The system should be thoroughly outlined prior to beginning actual development and programming. The importance of following a systematic needs assessment prior to development cannot be overemphasized.

A custom system can be developed in-house, by staff of the institution, which ensures access to the source code and provision of technical support. Or development can be contracted out to an independent firm, in

Table 1. Different approaches to choosing an MIS

Option	Advantages	Disadvantages
Purchasing an off-the-shelf system	Low to medium cost. Likely to operate relatively error-free. Short time-frame for implementation.	Dependent on outside technical support. Unlikely to fully match institution's policies and procedures. Cannot be modified as institution changes.
Modifying an existing system	Likely to operate relatively error-free. Medium time-frame for implementation. Can be closely adapted to institution's policies and procedures.	Medium to high cost. Dependent on outside technical support. Future modifications costly.
Developing an in-house system	Technical support is in-house. Can be fully adapted to institution's policies and procedures. Can be modified to match institution's changes.	High cost. Will require debugging. Long development time-frame.

which case ownership of the source code and the cost and reliability of technical support need to be carefully negotiated.

Conclusion

Without an MIS that produces accurate and timely information, management has little on which to base its decision making. Given the advances in computer technology, the increasing scale of microfinance institutions, and the importance of developing efficient, low-cost product delivery, most institutions will find that a computer database application is the best alternative to provide for their information needs. To install a computerized MIS, an institution can choose either to purchase a standard 'off-the-shelf' system; modify an existing system used elsewhere; or develop a custom 'in-house' system.

The best option for any institution depends upon its needs, capabilities, resources, and the environment in which it is operating. Table 1 highlights the advantages and disadvantages of each approach.

Regardless of the option chosen, the process will take the time and energy of a number of the institution's staff. If the institution treats the process with the importance it deserves, there is every chance that the end result will be a successful MIS that meets the institution's needs.