

Systematic review methodology for development: An example from microfinance

ABSTRACT

Big international development donors such as the UK's Department for International Development and USAID have recently started using *systematic review* as a methodology to assess the effectiveness of various development interventions to help them decide what is the 'best' intervention to spend money on. Such an approach to evidence-based decision-making has long been practiced in the health sector in the US, UK, and elsewhere but it is relatively new in the development field. In this article we use the case of a systematic review of the impact of microfinance on the poor in sub-Saharan African to indicate *how* systematic review as a methodology can be used to assess the impact of specific development interventions.

Key words: systematic review, methodology, evidence-based, microfinance

Background

A systematic review is a methodology that generates an overview of the results of primary research on a specific research question. It is different from a traditional literature review, in that it identifies, selects, synthesises and evaluates only high quality evidence through an explicit, rigorous and particular process. The idea of a systematic review is to establish what is the 'best evidence' regarding a specific question, and to use that to inform policy and practice. It is thus in keeping with a shift towards an evidence-based approach to decision-making for policy. David Sackett, one of the pioneers of evidence-based medicine, describes it as '*the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients*' (Sackett et al 1996:71). Current 'best evidence' is collated and synthesised using systematic review methodology in which research evidence is weighed according to its relevance and the use of appropriate and rigorous methodology. The argument is that such reviews are time-saving and cost-saving exercises preventing unnecessary repetitive primary research, and providing a route for the findings of individual studies to influence policy and practice (Stewart & Oliver 2006). It employs explicit and transparent research methods in an attempt to reduce the scope for subjectivity and bias (Mulrow 1994).

Systematic review methodology was pioneered in health care in the 1980s (Stewart et al 2011), but has since been extended to fields of health promotion, social welfare, education, and crime and justice (Ashman & Duggan 2004; Cordingley 2004; Davies 2004; Wilson et al 2003), and most recently development (see articles in the new *Journal of Development Effectiveness*). Initiatives such as the Abdul Latif Jameel Poverty Action Lab at the Massachusetts Institute of Technology, the International Initiative for Impact Evaluations (3ie), the Evidence-based Policy in Development Network, and the International Development Coordinating Group set up in the Campbell Collaboration in 2011 reflect this growth in systematic reviews and impact studies.

However, the systematic review methodology does not necessarily translate smoothly to the field of development. It upholds comparative studies, specifically randomised controlled trials, as a gold standard for evaluating impact, a standpoint which is now

widely accepted in health care, but which is not so easily accepted in development where trials are often lacking and carry ethical concerns, solutions urgently required, and where regional and local variations raise serious concerns about the external validity of such trials (Barrett & Carter 2010; Bhargava 2008; Deaton 2009; Jones 2009). Two books released in early 2011 advocating the use of randomised control trials in/for development (Banerjee & Duflo 2011; Karlan & Apple 2011) thus raised much debate in the media and blogosphere (for example, see Algosio 2011; Bellemare 2011; Blattman 2011; Carr 2011; Kristof 2011; Ravallion 2011; Subramanian 2011; Week 2011). While in this article we do not directly engage with this debate on the relevance of systematic reviews for the development field (we do this elsewhere (Stewart et al forthcoming)), our illustration of how we applied a systematic review methodology in the field of development, signposts how to uncover ‘good evidence’, which includes randomised control trials but are not limited to them.

As with all research, transparency is advocated by systematic reviewers as an essential means to reduce potential for bias and is the reason for this paper. In 2010 the UK’s Department for International Development (DFID) undertook a pilot, commissioning academics to carry out systematic reviews on a number of key development topics. We undertook one such review on the topic of microfinance in order to assess the impact of micro-credit and micro-savings on the lives of the poor in sub-Saharan Africa. The aim of this paper is to illustrate *how* systematic review as a methodology can be used to assess the impact of specific development interventions, illustrated by using our systematic review of the impact of microfinance.

Why review the evidence on microfinance?

Microfinance is a term used to describe financial services for those without access to traditional formal banking. It incorporates the provision of loans, often at interest rates of 25% or more, to individuals, groups and small businesses – i.e. micro-credit. More recently it has also been extended to include the provision of savings accounts – micro-savings – as well as micro-insurance and money transfer services for the poor. Such interventions to increase access to financial services for the ‘unbankable’ are called by some the democratisation of financial services (APPGM 2011:12), and is part of the idea of ‘inclusive finance’.

These interventions have been hailed by many as a solution to poverty alleviation, which allows market forces to operate, enabling the poor to invest in their futures and bring themselves out of poverty. The advocacy movement behind these initiatives is powerful and many evaluations highlight the benefits of these services, from increasing income, improving health, education, nutrition and social cohesion, to empowering women (Afrane 2002; Barnes 1996; Barnes & Keogh 1999; Beck et al 2004; Hietalahti & Linden 2006; Hossain & Knight 2008; Schuler et al 1997; UNICEF 1997; Wright 2000). The expectations amongst donor agencies and the clients they serve are high – microfinance organisations bear names in local languages reflecting these expectations, meaning, for example, ‘hope’ and ‘seed’.

There is, however, growing concern amongst academics that these expectations are not being met (Adams & Von Pischke 1992; Bateman 2011; Bateman & Chang 2009; Copestake 2002; Copestake et al 2001; Hulme & Mosley 1996; Mayoux 1999; Morduch 1998; Mosley & Hulme 1998; Rahman 1998; Rogaly 1996). Rigorous

research approaches, employing randomised trial designs, have begun to suggest that microfinance may not be the golden bullet that many had hoped (Banerjee et al 2009; Dupas & Robinson 2008; Karlan & Zinman 2010). With a current expansion of microfinance services in sub-Saharan Africa, an increased focus on how best to extend these services to the poorest of the poor, and the crisis of microfinance in especially India, there is an imperative to establish whether micro-credit and micro-savings are helping or harming the poor people they purport to serve.

We set out to review empirical research on the impact of specifically micro-credit and micro-savings on poor people in sub-Saharan Africa to enable policy-makers, donors, and practitioners to understand the nature of the evidence available; our results are published elsewhere (Stewart et al 2010; Van Rooyen et al 2012). Here we report our methodology in detail in order to encourage discussion around the use of the systematic review approach in development.

Systematic review methodology

All systematic reviews include the same essential elements. The first aim is to identify all the relevant high quality research: that is research addressing the specific question which implements appropriate study designs to ensure bias is minimised giving us confidence in the validity, reliability and applicability of the findings. The process is therefore a little like a funnel. Initially, your intention is to capture in the funnel all potentially relevant research through thorough searching. You then apply a number of filters to exclude the irrelevant literature which you have picked up by mistake, and to assess the quality of the included studies. Once you have the relevant, good quality research which relates to your question, you then conduct a structured synthesis to combine the findings of these studies and answer your review question. In order to reduce bias, these elements, from the search strategy to the relevance criteria are all laid out in advance by the research team in a protocol which is peer reviewed, and made available online. Each of the elements of the systematic review methodology are outlined below in relation to our microfinance systematic review.

1. Engaging with potential users of this review

Underlying the whole review process is engagement with potential users of the review to increase its relevance and improve the likelihood of uptake of the findings. For our microfinance review we engaged with potential users of our review in a number of ways including circulating our protocol for feedback, requesting relevant literature for inclusion in the review, inviting feedback on our draft report and disseminating our final review.

In particular, we sought to incorporate the perspectives of four groups of potential users in this project:

- Those who make policy decisions related to microfinance services in sub-Saharan Africa whom we envisage to be our main audience for this review, specifically within DFID who have commissioned this review.
- Those who provide microfinance services in sub-Saharan Africa, in order that our review is relevant and our findings available to them.

- Those who research microfinance services in sub-Saharan Africa, in order to ensure that our review includes all of the relevant research literature, and that our findings form part of the accumulating evidence in the region.
- Those who use microfinance services in sub-Saharan Africa, in order to understand why they access microfinance services and how they use them.

Individuals were identified by liaising closely with our funder and asking for recommendations of other individuals who may have an interest in the review. Prior to the start of the project, one of the team members also attended the Africa & Middle East Microfinance Summit in April 2010 in Nairobi, Kenya and built a network of contacts amongst those who provide and research microfinance across the region. We also set out to identify individuals and organisations who provide and/or research microfinance services in sub-Saharan Africa from amongst the authors' networks. We emailed various national bodies of microfinance institutions in sub-Saharan Africa (see the list in Stewart et al 2010:79), and we also exploited new social media – drawing on Twitter and a Ning wiki on impact evaluation – to ensure this exercise was as broad as possible. We identified two individuals, one with topic expertise and another with methodological expertise, who formally peer reviewed our protocol. They were offered an honorarium for their time.

2. Criteria for inclusion and exclusion of studies in the review

Systematic reviews aim to identify all the relevant research to address the question of interest. In doing so, they search broadly and then apply strict inclusion/exclusion criteria. Before the process of searching, it is therefore important to specify the inclusion and exclusion criteria. For our review, we specified from the start that we would include studies based on the following criteria:

Region: We included research conducted in sub-Saharan African countries, defined as including Mauritania, Chad, Niger and Sudan and all African countries south of these, thus excluding the following north African countries: Tunisia, Libya, Morocco, Egypt, and Western Sahara. Research that included in one study countries from both sub-Saharan Africa AND non-sub-Saharan African countries were included in the review.

Study design: We included only impact evaluations, defined as comparative studies that set out to measure impact. Both quantitative and qualitative studies were included. Studies that did not measure impact of microfinance were excluded from the review. Studies that did not use comparative designs were listed in an appendix but not reviewed. Whilst we included randomised control trials, which Karlan and Golberg (in Copestake et al 2009) claim are the best way to measure the impact of microfinance, we also included other comparison studies.

Intervention: We included only microfinance interventions, defined as including micro-savings or micro-credit services. Whilst micro-insurance and money transfers are also considered part of microfinance, they were not considered 'core' activities of microfinance for the purposes of our review. We included microfinance services owned or managed by service-users or by others.

Population: We focused on impacts on poor people, i.e. those who were recipients of the services of microfinance institutions.

Outcomes: We included both financial and non-financial outcomes for the impact of microfinance on poor people in sub-Saharan Africa. Financial outcomes included income, savings, expenditure and accumulation of assets, as well as other broader measures of wealth considered in the literature. Non-financial outcomes included health, nutrition, food security, education, women's empowerment, housing, job creation, child labour, and social cohesion.

Language: We anticipated identifying literature in English. However, we had scope to also access papers in Dutch, German, Portuguese, French, Spanish, Afrikaans, Zulu and Sotho languages, and did not exclude any relevant papers in these languages. In fact, one of the included papers was a paper written in French.

3. Search protocol

By publishing the proposed search protocol in advance of the review, search specialists and topic experts can suggest additional sources of relevant literature. For our review reports were identified from online electronic databases including specialist databases for systematic reviews (Cochrane Library, Campbell Library and EPPI Centre Library) and the following bibliographic databases:

1. African Journals Online
2. Arts and Humanities Citation Index (via EBSCO)
3. British Library for Development Studies
4. Chemonics (<http://www.chemonics.com/projects/finalreports.aspx>)
5. Conference Proceedings Citation Index – Science (via EBSCO)
6. ECON LIT (Database of economic literature)
7. ELDIS (an online library of development literature provided by the Institute of Development Studies, Sussex, UK)
8. IDEAS Economics and Finance Research
9. International Bibliography of the Social Sciences (via CSA)
10. JOLIS (the database of fourteen World Bank and International Monetary Fund libraries)
11. Psycinfo (the Psychological Information Database)
12. Research4Development (DFID site)
13. Science Citation Index – Expanded (via EBSCO platform)
14. Social Assistance in Developing Countries Database (version 5)
15. Social Science Citation Index (via EBSCO)
16. Sociological Abstracts (via CSA)
17. WHO library database (WHOLIS)
18. Worldwide Political Science Abstracts

In addition, we searched key websites of organisations providing, co-ordinating and evaluating microfinance services across sub-Saharan Africa (e.g. the Africa Microfinance Network), as well as relevant worldwide bodies, such as the Consultative Group to Assist the Poor (see the list in Stewart et al 2010:62). We conducted citation searches of key papers evaluating the impact of microfinance using randomised controlled trials, such as the one by Dupas and Robinson (2008). Reference lists of included papers were scanned for relevant articles. We also tracked

the Poverty Action Lab's impact studies of microfinance, and attended and collected papers at the Africa & Middle East Micro-Credit 2010 Summit.

Searches of these sources were limited to studies conducted since 1990 based on the argument made by Brau and Woller (2004:4) that before the mid-1990s academic journals published very few articles on microfinance.

We combined search terms relating to microfinance, microcredit, microsavings, income, debt, wealth and poverty (see Stewart et al (2010:61-63) for the detailed list of keywords used), and used the Evidence for Policy and Practice Information and Co-ordinating Centre's (EPPI-Centre) specialist software, EPPI-Reviewer, to keep track of and code studies found during the review.

Our search results were then filtered using our inclusion and exclusion criteria. These were initially applied to titles and abstracts. Full reports were obtained for those studies that appeared to meet the criteria or where we had insufficient information to be sure. The inclusion and exclusion criteria were then re-applied to the full reports, to enable us to select the relevant literature for our review. The relevance of included studies to the review question was therefore judged again according to the following criteria:

- Whether they examined credit/loan services and savings (or only other financial services such as insurance and money transfers).
- Whether they measured impact on poverty levels of poor people (including their incomes and other wealth related outcomes – financial and non-financial).
- Whether they examined services to and impacts on poor people specifically (or only report outcomes in terms of the general population).

4. Characterising included studies

Having identified relevant literature, a process of characterising them then began using a coding tool (see Stewart et al 2010:64-78), facilitated by the specialist software, EPPI-Reviewer. This process allowed further assessment of relevance, as well as facilitated analysis later in the review.

Each microfinance intervention was characterised according to whether it included microcredit or micro-savings, and whether these were provided in partnership with micro-insurance, money transfers and/or other non-financial services such as education and training. The provider of the microfinance intervention and the recipients were also described, as well as the country or region in which the intervention was offered, and the setting (i.e. in an urban or rural environment).

The study itself was then typified according to its research design, including different comparative approaches. The outcomes assessed were described in relation to poverty and wealth, health, food security, empowerment and education, as well as other impacts on the service-users.

5. Assessing quality of studies

Once we have coded all the included studies, we checked whether the included studies described the microfinance intervention, the participants, the data collection and data analysis methods, and confounding factors. If two or more of these were not described, the study was judged as of poor quality and excluded. The studies that remained included were then assessed on their methodological quality using the following broad principles:

- The appropriateness of the methods used for addressing the question (for example, studies from non-comparative outcome evaluations were judged to be poor measurements of impact and their findings were not extracted for inclusion in the review. This is due to the inability of non-comparative outcome evaluations to assess whether the intervention (microfinance) has led to a change, or whether the change was occurring due to some other factor(s). By having a comparison group it is possible to assess the counterfactual, i.e. what would have happened anyway, and to understand what difference microfinance made.
- The extent to which the methods were applied appropriately (for example, a randomised control trial which used a comparison group which differed in age and gender from the intervention group would be considered low-quality).
- The extent to which the findings were in keeping with the methods employed (for example, we considered it inappropriate when a study made recommendations about how to increase the acceptability of microfinance without actually speaking to anyone about why they did or didn't use microfinance services).

We identified three broad categories for quality: high, medium and poor (see Stewart et al (2010:77) for detail criteria for each category). This weighting of what is good evidence, and what not, is one of the most crucial and difficult parts of the systematic review process. Being very clear in the protocol what will be considered as good evidence, and getting feedback on this, is therefore vital.

6. Quality assurance process

Systematic reviews set out to be transparent, replicable and free from bias. Specific approaches are therefore used to ensure the quality of the review. In our case, these included piloting our research tools, using more than one researcher to conduct key tasks, and peer review of our work.

Our review processes – including our electronic search string, inclusion and exclusion criteria, coding sheets and synthesis – were all piloted initially on a small sample of papers and discussed amongst the team before these tools were finalised. Any modifications were noted. We took steps to reduce researcher-bias and ensure we included all the relevant literature in our review. This involved one reviewer initially applying the inclusion and exclusion criteria to identified titles and abstracts and being 'over inclusive'. Full reports were then obtained. Two reviewers then independently screened all studies for potential inclusion. Any disagreements were resolved through discussion. The coding of included papers was also conducted by two members of the review group working initially independently and then comparing their decisions and coming to a consensus. Once inter-researcher coding was

consistent and definitions established, all remaining papers were coded by one of the two researchers working simultaneously in the same room to allow for queries to be raised and discussed as we went along. Lastly, both the protocol and the draft report were independently peer reviewed.

7. Methods for synthesis

Systematic reviews involve more than just describing the findings of reviewed studies. Instead, a specific process of synthesis occurs to combining the available evidence. These range from statistical meta-analysis (of quantitative data) to narrative and thematic synthesis, and meta-ethnography (of qualitative data), to realist synthesis (of mixed methods) (Dixon-Woods et al 2005; Pantoja 2011; Petticrew & Roberts 2006; Thomas & Harden 2008).

We intended that studies with comparative study designs would be included in statistical meta-analysis. Specifically we set out to combine, using statistical meta-analyses, the results of those interventions where all of the following statements were true:

- The intervention evaluated incorporates the same dimensions of microfinance (i.e. micro-credit or micro-savings or both).
- The study design for evaluating impact is the same.
- The quality of the study is rated as medium or high in our quality appraisal.

We intended to calculate effect sizes where possible. However, as these conditions were not met, we did not conduct any statistical meta-analyses. Instead we synthesised findings using framework analysis, which applies pre-determined categories to the data and enables structured comparison and synthesis through the use of structured qualitative matrices.

We synthesised the findings of comparative outcome evaluations which measured the impact of microfinance on the incomes, and on the material poverty/wealth of the poor more broadly. We also synthesised the findings of comparative outcome evaluations which measured the impact of microfinance on other non-financial outcomes for the poor.

8. Deriving conclusions and implications

Lastly, our review team met to derive our conclusion and to discuss the implications for policy, practice and research. Initial conclusions and implications were circulated to our network of review-users for their input. Amendments were then made in light of feedback. This allowed consideration of wider forms of policy and practice knowledge, and provided an opportunity for researchers to inform us of any new relevant research published since we conducted our searches. Our review was also sent for formal review to our funders and two peer reviewers. The review team then held further meetings following formal peer review to decide our final conclusions and implications, and write our final report.

Systematic review methodology for the development field

In this article we indicate *how* we used the systematic review methodology in gathering good quality evidence on the impact of microfinance on the poor in sub-Saharan Africa; elsewhere we discussed in detail the relevance of systematic review methodology for the development field (Stewart et al forthcoming). One of the key advantages of following a systematic review methodology is the rigour and transparency followed in summarising research evidence. Especially in a highly-charged political field as development, such thoroughness and openness makes engagement on what works, and what not, easier. A systematic review further highlights what is lacking in terms of rigorous impact studies. Our systematic review on microfinance, for example, revealed the lack of reporting on drop out rates, and on confounding factors.

A key concern for development is not only *what* works (or not), but also *why* it works (or don't work). The systematic reviews in health care were not *per se* concerned with this, but since systematic reviews had been applied in the field of social policy, this has become important. By considering a theory of change when developing the protocol of a systematic review, and then revisiting it once the evidence has been sourced, we can consider why some interventions work (or not). Developing such a causal pathway helps in considering context, which is crucial for development interventions, and enables policy makers and practitioners to better design interventions – see Weyrauch and Langou (2011) for the need to shift from impact evaluations to policy change. The causal pathway we developed based on the evidence from sub-Saharan Africa on the impact of microfinance on poor people are discussed in Stewart et al (2010; forthcoming).

Systematic reviews of evidence of effectiveness are not a silver bullet answer to questions of importance in development. A process of analysis is required to translate the synthesised findings into policy relevant recommendations. One approach to achieve this is the causal pathway analysis described above, whilst others are applying the same systematic review methodology to broader question addressing issues of appropriateness, feasibility and meaningfulness (Hemingway & Brereton 2009:1). Such developments however, enhance, rather than deter, from the value of systematically reviewed and synthesised evidence of impact. We have no doubts that systematic review methodology, as illustrated in this paper, will play an important role in the future of development research and development policy.

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