Fighting Malaria with Microfinance:
A Case Study on BISWA Microfinance Utilizing Microcredit Contracts to Increase the Use of Insecticide Treated Bednets

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October 15th, 2008

[1] The author would like to thank BISWA Chairman Khirod Chandra Malick, Dr. Dipti Patnaik, Ms. Sunita Padhi, Ashish Sahoo and everyone else at BISWA for their support and willingness to share their experiences. The author would also like to thank Lakshmi Krishnan, Benita Sara Mathew, Alessandro Tarozzi, Aprajit Mahajan, Brian Blackburn and Joanne Yoong for their insights and ability to see the big picture. The author would also like to express his gratititude to Sudhansu Behera, Deepak Nayak, Saumya Biswal, Rakesh Kumar, Chinmoy Roy, Santosh Sahoo, Pradeep Sahoo and Rajesh Kumar for their passionate and dedicated work on this project. Thanks also to Michael Chasnow, Theresa Chen, Emmerich Davies, Alexander Kobishyn and Minakshi Ramji for their thoughtful feedback.

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1. THE RATIONALE FOR FIGHTING MALARIA WITH MICROFINANCE

The logic is simple: the rural poor are generally those who suffer most from the devastating health and economic effects of contracting malaria. Microfinance Institutions (MFIs) serve the rural poor and have developed efficient distribution channels to deliver finance to their clients. MFIs may hence be able to use the same distribution channels to promote the use and sale of insecticide treated bednets (ITNs), a product which has proven to be a powerful defense against malaria and other vector-borne diseases.

The reality is quite complex: MFIs are organizations with limited resources specialized in the marketing and administration of financial products. The sale of ITNs is a bold venture into unfamiliar territory. Not only are ITNs a non-financial product, but ITNs are a product for which consumers may need to be educated to understand the benefits.

This case study will highlight BISWA's pilot project in which they offered self-help group (SHG) members across 50 villages the opportunity to purchase ITNs through cash or credit contracts. The paper will focus on the process of developing the product and the most important challenges faced during implementation.

In addition to the pilot project, BISWA agreed to participate in a rigorous impact evaluation. The Centre for Microfinance and researchers from Stanford University and Duke University are conducting the evaluation for which there will not be results until 2009. Therefore case study will *not* make assertions about the impact of the project, but rather discuss operational and logistical issues.

2. MALARIA AND INSECTICIDE-TREATED NETS (ITNS) BACKGROUND: ORISSA, INDIA AND WORLDWIDE

Malaria is one of the world's oldest and most persistent killers. Transmitted by *Anopheles* mosquitoes, human malaria is caused by protozoa of the genus *Plasmodium*. In 2002, one third of the human population was estimated to live in areas exposed to the most severe form of malaria, caused by *P. falciparum* or brain malaria, as it is locally known (Snow et al. 2005). Recent estimates of incidence range between 300 and 660 million existing cases, with 80 million cases in India alone (Snow et al. 2005, Korenromp 2005). The parasite causes more than one million deaths, most of them children, every year. Chronic effects can be particularly dire for young children, ranging from anemia to permanent neurological and developmental impairment.

The Human Development Report for Orissa cites malaria as the "number one public health problem" in the state (Government of Orissa 2004). The state Department of Health and Family Welfare reported 417,000 cases of malaria in 2003 (of which 83% were *P. falciparum*). In the early summer of 2007, Centre for Micro Finance researchers blood-tested 2,625 individuals for current parasitemia[2] using Rapid Diagnostic Tests in the five districts of Orissa where the pilot evaluation program would take place. Twelve percent of tests indicated current infection, with brain malaria accounting for more than 90% of the recorded cases.

Multiple studies have demonstrated that insecticide-treated nets (ITNs) are extremely effective in reducing malaria, particularly among women and children.[3] They are an essential component of public health interventions targeting malaria worldwide and their use is promoted by both the World Health Organization and the Center for Disease Control.[4] Yet ITN ownership remains very low in many malaria-prone areas. Estimates for all areas at risk in India indicate only 20% coverage (Korenromp 2005).

There are a variety of possible reasons for the lack of ITN ownership. One possibility is that poor households may simply not be willing to pay for ITNs or only be willing to pay well below market rates (Guyatt et al. 2002). Other possible contributors to low ownership and usage rates of ITNs include lack of knowledge about malaria transmission and of ITNs'

[2] Current parasitemia is defined by whether the antigens produced due to the presence of the malaria parasite are found present in the blood stream of an individual. Seemingly healthy individuals may be parasitemic, but even these seemingly healthy individuals are capable of transmitting the parasite into the blood stream of a mosquito, and from that mosquito to other individuals. Thus, the level of parasitemia is extremely important to understand when working on malaria control measures.

[3] In Kenya, Beach et al. (1993) found that village-wide use of ITNs led to a 40-50% reduction of *falciparum* malaria incidence in children under 6 and to a 63% reduction of malaria-associated fevers. In Malkangiri District (Orissa), an area similar to where the BISWA pilot program took place, ITNs reduced anopheline vectors up to 99% and caused a 57% decline in malaria prevalence among U15 (Sahu et al. 2003). In Sundargarh District a significant decrease in anopheline density and 59% decrease in malaria incidence was seen in persons sleeping in villages supplied with ITNs (Yadav et al. 2000).

[4] http://www.cdc.gov/malaria/control_prevention/vector_control.htm and http://www.who.int/malaria/docs/itn/ITNspospaperfinal.pdf

benefits, the belief that ITNs are uncomfortable, dangerous and/or an unworthy nuisance, and the inability of poor households to borrow to purchase nets

These issues, together with the documented efficacy of ITNs have led some scholars and policy makers to call for large-scale free provision of ITNs and net retreatment (see Curtis et al. 2003 and Sachs 2005, among others). However, the feasibility of such large-scale public interventions in poor countries is often financially and logistically constrained (Sachs and Malaney 2002, Narasimhan and Attaran 2003, Sachs 2005). In policy circles, there is an ongoing debate between those who believe that the most effective path to malaria reduction is through large-scale government programs which freely distribute bednets and those who believe that using market mechanisms and subsidizing nets will be the most effective way forward.

Government schemes dominate the ITN distribution programs currently being implemented in Orissa. India's National Vector Borne Diseases Control Programme (NVBDCP) receives World Bank assistance for fighting malaria through local government health workers. The targeted provision of free/highly subsidized ITNs to vulnerable households is an essential part of the NVBDCP's campaign.[5] In 2007, according to the Orissa Directorate of Health Services, approximately 878,000 nets were distributed in Orissa in 2008 either for free or at highly subsidized prices (at least 50% of the net cost is borne by the government).

Untreated nets are also available in local markets. These nets are not subsidized and accurate numbers on sales are not available.

3. BACKGROUND ON BISWA'S INTEREST IN MALARIA CONTROL

Established in 1994, BISWA (Bharat Integrated Social Welfare Agency) is a nongovernmental organization (NGO) based in Orissa focused on socio-economic development and livelihood creation. Through promoting and lending to Self Help Groups (SHGs)[6], BISWA uses microfinance as the central tool to achieve their mission. As of March 2008, BISWA had formed nearly 30,000 SHGs with over 450,000 members, primarily in the state of Orissa. It is also active in promoting small business entrepreneurship, encouraging market linkages and improving the environment.

As an Orissa-based group, the health and economic burden of malaria on BISWA members has long been clear to the organization's leadership. BISWA's chairman Khirod Chandra Malick has long felt that the debilitating consequences of malaria have been detrimental to the development of both BISWA's clients and the people of Western Orissa.

In late 2005, Mr. Malick was approached by a group of researchers from the Centre for Micro Finance, as well as Duke and Stanford Universities, with the idea of conducting

[5] See http://www.orissa.gov.in/health_portal/Programme/NVBDCP/main.html

[6] SHGs are generally made up of 10-20 women (and sometimes men) that have been organized by local NGOs or government agencies for mobilizing local resources. The Indian government has strongly promoted the formation of SHGs over the last several decades as powerful tool for social and economic empowerment. SHGs often function as credit and savings associations and are given small loans as working capital by state banks or MFIs. These loans are made to the SHG as an entity, and no individual is liable.

research on the use of BISWA's microfinance network to increase ITN coverage. The seed of the idea came from discussions between the researchers, BISWA management, and, Amulya Mohanty of BISWA's funding partner, CARE CASHE. For BISWA, the idea of increasing the use of ITNs and improving the health of their members was an appealing prospect. An added benefit was the potential increase in credit-absorption capacity and repayment ability of SHG members due to increased ITN ownership. These improvements would stem from reduced vulnerability to the debilitating economic effects of malaria, such as the need to spend money on treatment and the decrease in productivity from poor health.

The pilot program, which BISWA and the researchers quickly agreed to, would offer members the opportunity to purchase insecticide treated nets and would be implemented in 50 villages across 5 malaria-endemic districts of Western Orissa.

As a part of this pilot program, BISWA agreed to participate in an impact evaluation because of the understanding that it was important to judge not only the programs operational and financial viability, but also whether it was having a strong positive impact on clients.

Thus, all parties agreed to conduct a randomized evaluation comparing the benefits of the following three interventions:

1) Educating SHG members about the benefits of ITN usage.
2) Educating SHG members about the benefits of ITN usage and then giving these members enough free ITNs for everyone in their household to use.
3) Educating SHG members about the benefits of ITN usage and then offering these members the opportunity to purchase ITNs on micro-credit contracts.

As will be further discussed, the impact evaluation influenced the way the pilot program was rolled out. To conduct a rigorous impact evaluation with broad policy implications, BISWA allowed for the pilot program to be implemented across a large area in randomly chosen

villages. As mentioned earlier, the results from the impact evaluation will be available in 2009.

4. PRODUCT DESCRIPTION

BISWA's objective with its *Microcredit Contracts Program*, rolled out in September of 2007, was to offer BISWA SHG members the chance to purchase high quality, multifilament, polyester ITNs. In each village, a BISWA community organizer[7] along with at least one Centre for Micro Finance staff member conducted an information campaign on malaria and gave the SHG members details on the distinct purchasing contracts into which they could enter.[8]

Group members were limited in the number of nets they could purchase by the number of nets that the other members of that SHG thought that the individual was repaying. Because the SHG is the entity with liability for the loan, not individual members, each member of the group has to approve of every transaction with an MFI or bank.

The SHG members were given the following choices:

1) Members could purchase the nets on one-year credit contracts or in cash on the day of the offer. If nets were purchased on credit, then members were charged BISWA's customary 20% yearly interest (reducing balance).
2) Members could purchase single nets or double nets. Double nets have a 60% larger width but are 25 % more expensive.
3) Because the nets sold need to be retreated with insecticide every 6 months to maintain full efficacy, members could purchase the nets with an additional two future retreatments (to be completed 6 months and 12 months after the sale), or to only have the nets treated at the time of the sale.

ITN Contracts
SHG Member Options

Contract	Single (Rs.)	Double (Rs.)
Cash without retreatment	173	223
Cash with 2 Retreatments	203	249
Credit without retreatment[9]	192 (16 per month)	228 (19 per month)
Credit with 2 Retreatments	252 (21 per month)	276 (23 per month)

If members chose not to purchase the nets with retreatment, they would still be given the opportunity to purchase the retreatment with cash after 6 and 12 month. In this instance, they would have to pay 15 rupees for treatment of single nets and 18 rupees for double nets.

[7] BISWA chooses to call their field workers "community organizers" rather than loan officers, as most MFIs do, because their community organizers are expected to act as advocates for their members in ways that go beyond the simple disbursement and collection of loans.
[8] The script for this Information campaign is in Annex II
[9] Both prices on credit assume the member will pay in equal monthly installments. BISWA's interest rate is reducing, so if members choose to pay the loan amount off early, then the amount of interest paid will be reduced.

These choices were given to the members as a way to increase consumer choice, but also for research purposes, as a way to understand consumer preference in regards to ITNs purchase.

5. DESIGNING THE PRODUCT

In this section, we review the most crucial of the decisions BISWA and the researchers faced in designing the product.

5.1 Making Net Purchases Mandatory versus Voluntary

BISWA management felt that the program would be most successful if it was mandatory for members to purchase the nets. BISWA could have dictated that no SHG member could avail a loan without purchasing a certain number of nets. This would have been similar to the way that many MFIs, including BISWA, offer health insurance. In the case of health insurance, the product is made mandatory primarily in an effort to achieve scale and avoid adverse selection.[10] The argument for making bed net purchase mandatory is similar to that of health insurance, but there are also some differences.

First, making net purchase mandatory would have simplified program implementation and reduced BISWA's costs. Second, mandatory purchase would have almost certainly led to increased sales (assuming very few people would choose to end their membership in BISWA due to this purchase). Third, it would have also lessened the wasted expense of marketing nets to people who would eventually elect not to purchase the product. Finally, mandatory net purchase ensures that all those who benefit from a public good also pay for it. When one member of the community uses a net, it not only improves their health outcomes, but also those of their neighbors in the village. This is because the use of insecticide reduces the number of mosquitoes in the village. It could be argued then that by allowing certain community members to not purchase nets, they may be "unfairly" reaping the benefits.

The arguments against making purchase mandatory are quite simple. First, it would have eliminated individual choice. People who prefer to not use nets or already own enough nets would have been forced into spending money in a way that is not to their benefit. Second, it could have deterred existing clients and potential new clients for BISWA. SHGs members may have felt angry about being required to make this purchase and may not have wanted to continue as clients. Third, it would have eliminated the opportunity to study consumer preference. As the pilot program was also part of a larger research project, making purchase mandatory would have removed the opportunity to garner some interesting and conceivably useful data.

In the end, BISWA chose *not to make purchase mandatory* even though, in the short term, it was less economically beneficial for the organization. BISWA management believed that the combination of the benefits of consumer choice, not alienating clients with a forced purchased and the value of the research outweighed the benefits of the mandatory approach.

[10] If members were allowed to choose whether to purchase insurance, economic theory indicates this will result in a sicker population taking up the product because those who are sick will exhibit hire demand.

For all these same reasons, BISWA also did not make payment for the additional net retreatments after 6 and 12 months mandatory.

5.2 Source, Price and Kind of ITNs

BISWA and the researchers chose to purchase "untreated nets" rather than nets that had been "pretreated" by the manufacturer. Untreated nets need to be treated with insecticide every six months to retain their highest effectiveness. While pretreated, long-lasting insecticide treated nets (LLINs) are available in the international market, BISWA and the researchers chose not to use these nets because they were not available in the Indian market. Since the pilot program commenced however, a number of ITN retailers in India have begun to sell LLINs and market price has come down significantly. It is likely that any future sale of nets through micro-credit will involve LLINs.

BISWA purchased 2,500 nets from BIOTech International, a Delhi based distributor, who offered a competitive price on high quality nets. BIOTech also agreed to donate 7,500 free nets to the research project, which were distributed for free in the 50 villages serving as comparisons to the MF villages, as part of the impact evaluation.

Though a great deal more expensive than those available at local markets—sometimes as much a triple the price—the chosen nets had much higher quality. BISWA and the researchers believed that clients would be pleased by both air circulation inside the net and net durability, and that this would lead to higher customer satisfaction.

BISWA and the researchers chose to use Bayer CropScience's deltamethrin insecticide for treating the nets. Deltamethrin insecticide was chosen because of its high efficacy, low likelihood of causing of side effects, and its ability to maintain value after repeated washings (World Health Organization 2005).

5.3 Pricing: Subsidized or Full Sustainability

One of the more controversial aspects of the pilot program was that the pricing of the nets was set up to be fully sustainable. Many ITN programs advocate subsidizing the cost of the nets to increase uptake. The concern is that few customers will purchase ITNs without a subsidy - either because they do not consider nets to be worth their market value or they do not have enough income to purchase a net at full cost.

For this pilot project, BISWA and researchers were interested in testing whether, by using the innovative technique of credit contracts, the program could reach full sustainability. With full sustainability, there would be greater chance for scale-up of the program. BISWA and other MFIs in malaria-endemic regions would be eager to make a profit while simultaneously improving the health outcomes of their customers. To attain sustainability, the pricing of the ITN included not only the cost of the net and insecticide, but also staff labour and extra travel. In addition, if customers chose to purchase the net on credit, BISWA chose to use their customary 20% interest rate.[11] When nets were purchased with

[11] BISWA calculates the interest payment on the actual amount outstanding every month.

retreatments after 6 and 12 months, the travel, additional labour, and insecticide costs were added.

The following tables give the details on the component costs of the nets:

Nets Purchased without Retreatment

	Single nets	Double nets
Cost of net	148.00	196.00
Initial transport cost	10.00	10.00
Labour	5.00	5.00
Insecticide (1 treatment)	9.69	12.43
Total Cost	**173.00**	**223.00**
EMI (12 months)	**16.00**	**21.00**

Nets Purchased with Retreatment

	Single nets	Double nets
Cost	148.00	196.00
Transport	10.00	10.00
Travel (insecticide)	1.00	1.00
Labour	15.00	15.00
Insecticide (3 treatments)	29.07	37.29
Total Cost	**203**	**259**
EMI (12 months)	**19.00**	**24.00**

5.4 Area and Size of Pilot Program Population

The location of the pilot and the number of clients involved were greatly affected by the project being an impact evaluation. To rigorously statistically compare those that the pilot affected to the other two treatments (those who were only given an information campaign and those who were given free nets), certain parameters had be satisfied. First, the number of villages in which SHG members were offered nets had to be near 50 to ensure a sample large enough to provide statistically meaningful results.[12] Second, the villages which were offered the pilot program had to be randomly selected.[13] Thus, 150 villages across malaria-endemic Western Orissa were chosen to be part of the impact evaluation; with 50 villages randomly selected for selling nets, and 50 villages each for the other two treatments. Third, the area in which the pilot program was conducted was made as large and varied as possible, to engage the intervention in as many environments as possible. This way, any conclusions would be less likely to simply be a result of the uniqueness of a single setting.

While impact evaluation standards bring rigor and inferential leverage, hinging the pilot's location on the needs of an impact evaluation may have had some drawbacks. Without these

[12] The number of villages in which members were given free nets was also 50 as was the number of villages that were only given the information campaign.

[13] Randomly selecting the villages which were offered nets on microfinance means that the microfinance for nets villages should not be in any way systematically different from those in the other two treatments

considerations, BISWA could have chosen the area where the program would have been most likely to succeed. For example, they might have chosen to pilot somewhere where they had a health camp, more experienced managers and staff, or where members had expressed problems with malaria. Of course, any statistical conclusions would have been less meaningful, but the flexibility and ability of management to learn operational lessons could have been enhanced had the pilot been run in a smaller area.

5.5 Collecting Repayment

At the inception of the project, BISWA used community organizers (COs) to disburse and collect loans from the SHGs.[14] Although COs visit their SHGs on a monthly basis for collection of loans, they do not always end up collecting an installment. This is because BISWA includes a limited amount of flexibility in repayment of loans, which is fairly unique for the microfinance sector. Specifically, they allow SHGs to vary the size of repayments from one month to the next. For example, an SHG may choose not to make any payment in one month, and in the next month, repay three times its regular monthly installment. The BISWA management believes that their clients enjoy this flexibility and prefer paying in lump sums in times when they have their highest incomes, such as after the harvest.

For the ITN loan, BISWA initially decided to change their loan collection process. Rather than accepting lump sums, the researchers and management intended to collect the repayment for the net loan in small equal monthly installments. BISWA and the researchers believed that the amount was so small that it would be simple for clients to pay it every month and that there was no need to introduce flexibility.

5.6 Educating Prospective Customers

BISWA and the researchers recognized that one of the most difficult aspects of selling ITNs to SHG members would be a dearth of demand due to the lack of knowledge about malaria and the benefits of ITNs. Therefore along with selling the nets, there would need to be an intensive information campaign that attempted to educate the members on why they should want to buy a net and why they would want it to be treated with insecticide. Proper use of the net would also have to be demonstrated.

To develop this information campaign, the researchers worked with Dr. Dipti Patnaik of BISWA, a specialist in preventative medicine. The script for the information campaign developed can be found at the back of this booklet in Annex II. Along with this presentation, the SHG members were shown posters which visually clarified how to use the ITN. The members were also given example nets to observe their size and feel. When nets were purchased, the nets were dipped in insecticide in front of the members so that they could observe the process.

One member of CMF's research field team and a SHG CO presented the information campaign to SHG clients. A month prior to the rollout of the pilot, the COs were given a

[14] BISWA no longer uses community organizers to process loans. They now choose to have the community organizers act as advocates of the SHG. Community organizers communicate the needs of the SHG with "area coordinators" who conduct all financial transactions.

one-day training on malaria. BISWA and the researchers believed that it was possible that training the CO on the benefits of the net would make them better at promoting net purchase and use.

5.7 Length of Time Given for Purchasing Decision

BISWA and the researchers decided that because a net purchase might represent a substantial investment, members should have time to discuss the purchasing decision with their families. It was thought that this might increase take up because some members may have felt that it was not their place to make this decision without their husband or wife's approval.

BISWA and the researchers together decided that they would give the information campaign and explain the offer and return two days later to take orders as well as distribute and treat the nets.[15]

6. THE PILOT

In September 2007, BISWA launched the pilot program for selling ITNs through microcredit contracts. The offer was made to SHG members in 47 villages across 5 districts.[16] As planned, in each village at least one CMF field staff member and one BISWA community organizer conducted an information campaign to groups of SHG members (a maximum of 40 people could be in one group). Following the information campaign the offer was given to the members and orders were taken two days later. The program was completed in late October.

The implementation of the pilot did not encounter major logistical complications. In 85% of cases, either the targeted SHG member or another member of their household was present at the information campaign, [17] as well as an unknown number of people from households without a BISWA member. The simple observations of the research team indicate there were varying levels of attentiveness during the information campaign. In some SHGs, all of the members showed great interest and asked many questions, but in others the members seemed bored and confused.

The pilot led to the purchase of 891 nets. The table below demonstrates that the success of the program, in terms of selling nets, varied across the five districts.[18] This paper will not speculate on the possible causes of differences between the outcomes in each district. The intention is simply to reveal that it is not homogeneous.

[15] A surplus of nets were to be brought to the village in case of high demand.
[16] Three of the villages had to be left out of the pilot program because the self help groups in these villages were no longer operational.
[17] This number is calculated from data collected on a sample of the pilot population, made up of 10-15 households per village.
[18] The number of SHG members offered nets is not equal in each district as the number of villages chosen was proportional to the population size of the district.

Nets Sold

District Level Analysis

Districts	Nets Sold During September-October 2007	Number of Biswa Members in SHGs Offered Nets	Nets sold as a Percentage of Members Offered
All Districts	891	1919	46.4%
Sambalpur	153	203	75.4%
Phulbani	57	47	121.3%
Kendujhar	227	273	83.2%
Balangir	190	758	25.1%
Bargarh	264	638	41.4%

BISWA and the researchers found the take up to be lower than expected and BISWA had ordered over 1,000 more nets than they actually sold. Considering this net surplus, the researchers suggested to BISWA that they return to these same villages and offer the nets again. The logic behind this was that more people would buy nets after observing the effectiveness of other community members.

BISWA agreed to this return visit, and during November 2007, one BISWA community organizer and one BISWA staff member returned to each village to "re-offer" the nets. An abbreviated version of the information campaign was given along with a repeated explanation of the different products. One major difference of the "re-offer" from the original offer was that members were not given any time to think over their purchasing decision. They had to decide whether they wanted to purchase the nets during the meeting.

The following table shows how many nets were sold in the original offer, the "re-offer," the total number of nets sold and how many SHG members were targeted for sale.

Nets Sold

District Level Analysis

Districts	Nets Sold During Original Offer	Nets Sold During Re-Offer in November	Total Number of Nets Sold	# of Biswa Members in SHGs Offered Nets	Total Nets Sold as Percentage of Members Offered
All	891	237	1128	1919	58.8%
Sambalpur	153	69	222	203	109.4%
Phulbani	57	9	66	47	140.4%
Kendujhar	227	83	310	273	113.6%
Balangir	190	63	253	758	33.4%
Bargarh	264	13	277	638	43.4%

Take up increased by an additional 25%, but the increase was not as substantial as the researchers and BISWA had hoped. Considering the travel, labour and management time involved, it would be difficult to consider the "re-offer" an operational success.

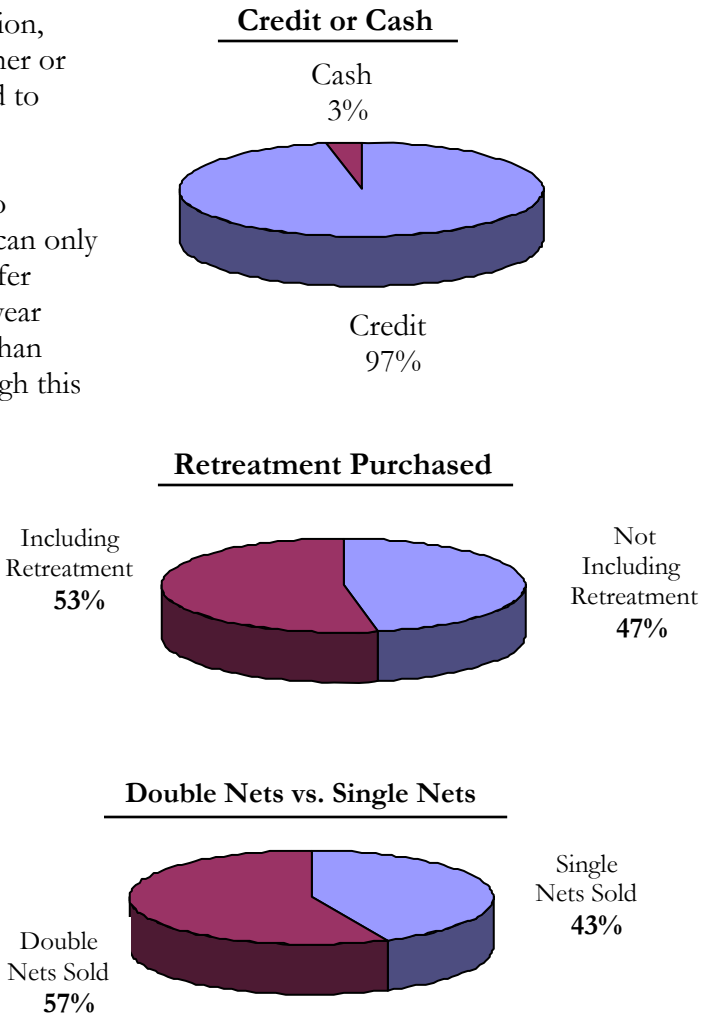
7. CONSUMER PREFERENCE

As explained in the product description section, beyond simply making the decision of whether or not to buy a net, SHG members were forced to make a variety of other choices:

At 97%, customers overwhelmingly chose to purchase the nets on credit contracts. One can only assume from this result that the ability to defer payment and/or pay for the net over a one year period was much more attractive to clients than paying in cash. We might also assume, though this is more speculation, that some of those who purchased on credit did not have enough liquid savings on hand to purchase the net(s), but believed they would have enough income over the year to pay.

A slim majority of the clients that purchased nets preferred to spend extra money at the time of the offer to buy the retreatment, instead of paying for retreatment in cash when the BISWA COs and CMF field staff returned after 6 and 12 months.

SHG members preferred double nets to single nets on a ratio of 4:3.



8. THE RETREATMENTS

In March-April 2008, six months after the original ITNs on microcredit offer, at least one BISWA CO and at least one CMF field worker returned to each village. They retreated the nets of those who had purchased it in advance, and offered the opportunity for retreatment to those who did not purchase the retreatment option (15 rupees for each single net and 18 rupees for each double net to be paid in cash).

During this period, BISWA was able to treat nearly 80% of those members who purchased nets with retreatment. The primary causes for the missing 20% were that some members were not at home when BISWA and CMF field staff visited the village and because some members had gifted the net to someone living outside the village. These members will be reimbursed for the money they spent on the retreatment.

Thirty percent of the members who did not choose to purchase treatment at the time of the original offer chose to purchase the retreatment with cash.

Percentage of Nets Purchased with Retreatment Retreated in March 2008	78%
Percentage of Nets Purchased without Retreatment Retreated in March 2008	30%

In September 2008, 12 months after the original offer, BISWA and CMF field staff returned to once again retreat the nets. Data is not yet available on how many of each kind of net was retreated.

9. KEY CHALLENGES GOING FORWARD AND LESSONS LEARNED

At the time of writing, it is unclear whether BISWA intends to scale up the program. As is generally true in the implementation of a pilot program, a number of unexpected challenges and difficulties arose. This section will describe a number of the difficulties going forward and how it might be possible to mitigate these challenges in the future. Perhaps the key lesson which runs throughout this section is the importance to researchers of understanding and working within the operational structure of the microfinance institution.

9.1 Staff Motivation and Incentives

BISWA trains community organizers to promote SHG formation and to manage the distribution and collection of cash loans. As such, the ITN loan represents a new responsibility with an added workload. While many COs were excited and eager to participate in the program, others felt that it was a burden on top of the large amount of responsibility they already had (both at work and at home). Additionally, the COs were given the added responsibility without any incentives, besides knowing the product would improve health outcomes for their client.

At the time of the loan offer, community organizers were paid based on the number of SHGs they were managing, and not based on the size or quality of their portfolio.[19] So in fact, CO may have felt a *disincentive* for pushing ITN purchase, as collecting the net loan would cause more work without any extra pay. During the loan offer, many of the COs were quite active in explaining and promoting the nets, but many others barely participated and left the Centre for Micro Finance field staff to shoulder the burden alone (even though the CMF field staff were not hired for this purpose).

[19] BISWA has changed their incentive structure, and now limits the number of SHGs that a CO can manage to increase the quality of service. The most important incentive offered is the opportunity for promotion.

9.1.1 Future Considerations and Lessons Learned

While the BISWA COs were given a one day training on ITNs and the BISWA nets offer, it is possible that increasing the length and quality of the training would have improved CO motivation and their ability to promote the product.

Additionally, if COs are to be heavily involved in promoting the product, there should be some incentive for their work. However, a monetary incentive based on number of sales might tempt BISWA COs to pressure or force members into buying nets. Perhaps a *monetary incentive based on knowledge or excellence in participation* could be given to participating COs.

On the opposite end, it may also be reasonable not to have COs involved in the net program beyond administration of the loan and instead let an outside agency, such as a health NGO, take up promotion. It is indeed presumptuous to expect COs to easily take on additional work when they already have a great deal of responsibility and work in maintaining their SHGs.

9.2 Collection of Repayment for the ITN Loan

One of the main issues of the pilot still left to be resolved is the repayment of the ITN loan. Collecting repayment presented a number of unforeseen challenges. As mentioned in the "Designing the Product" section, BISWA and the researchers decided to use an EMI system for collecting the repayment of the nets. It was intended that the COs for each SHG would collect small monthly installments for the net. Because of the small size of the loan, it was expected that these monthly installments would be simple to collect.

In reality, using an EMI system was confusing and awkward for the COs. Both the COs and the SHG members were unaccustomed to credit contracts that required monthly repayments with no flexibility. Several months into the one year period for repayment, it became clear the COs were not actually collecting the loan on a monthly basis. Sometimes members chose to repay the amount of the loan earlier than required and more common were SHGs skipping payment during one month. When non-EMI payments occurred, the COs were confused about how to calculate the remaining interest and how much to collect in the future. After considering the problem, BISWA and the researchers agreed that the simplest way to solve the problem was to give up on using the EMI system and inform COs that they could collect the ITN loan in the same manner that they would collect a regular BISWA cash loan.

9.2.1 Future Considerations and Lessons Learned

It seems clear in retrospect that introducing a new method of loan collection introduced unnecessary complexity to the pilot program. When using microfinance distribution channel for nets or to sell any other non-financial product it is important to maintain as much consistency as possible with processes already used by the MFI.

9.3 Reasonability of Independent, Small Loans

Throughout the implementation of the pilot program, many of the BISWA and CMF staff involved in the project suggested that the price for the net was too small for the operational effort of maintaining the loan. Loan maintenance includes filling out and registering the loan documents with the district office,[20] inputting the information on the loan application into BISWA's management information system (MIS), depositing every payment made by the SHG, and inputting these deposits into the MIS. Some of the SHGs included in the pilot do not have a cash loan and several COs stated that it is inefficient to visit these SHGs on a monthly basis to collect less than 100 rupees. Local BISWA management also has to spend valuable time monitoring these loans.

9.3.1 Future Considerations and Lesson Learned:

In the case study on the implementation of health insurance by SKS Microfinance also included in this packet, the authors describe how SKS came to the decision to *bundle their health insurance product along with a cash loan* and have the premium paid upfront. This decision stemmed from SKS's pilot, where they found that disseminating the health insurance product separately from the loan and having clients pay the premium in installments was inefficient. Although the SKS health insurance product was mandatory, the BISWA ITN loan faced some of the same problems.

Although this has not been tested, it seems worth testing whether selling ITNs at the same time that the cash loan is distributed might be more efficient. In this case, either the net would be paid for upfront out of the cash loan or the amount of the cash loan would be increased by the cost of the net. This is another example of where the program might benefit from being better integrated within BISWA's current framework.

[20] The important information on the loan document includes the names of all the members of the SHG, the date on which the loan was initiated, the amount of the loan and the term of the loan.

APPENDIX 1: TIMELINE OF EVENTS

September 2005	After discussions with a team of researchers, BISWA decides to research the viability and impact of using their microfinance network to sell insecticide treated bednets (ITNs) to improve malaria outcomes.
Aug 2007	BISWA community organizers (COs) are trained on malaria and the ITN product they are to promote and sell
Sep-Oct 2007	BISWA offers SHG members across 50 villages the opportunity to purchase ITNs for cash or on credit.
Nov 2007	BISWA offers another opportunity to the SHG members to purchase ITNs for cash or on credit after observing the nets purchased by their neighbors.
March 2008	Due to the reduced efficacy of insecticide after 6 months, BISWA staff and members of the research team return to the 50 villages to offer retreatment of nets to those BISWA members who had earlier purchased nets
Sept-Oct 2008	After another 6 months, BISWA staff and members of the research team return to the 50 villages to offer retreatment of nets to those BISWA members who had earlier purchased nets

APPENDIX 2: INFORMATION CAMPAIGN

Information campaign
(to be translated into Oriya or local dialects)

Namaste. We are part of a research team based in India and the US that with the permission of the Health Department of Orissa is working with BISWA to learn more about and improve the health situation in your village.

We would like to tell you today about how mosquitoes can make people sick, especially from malaria, and ways that you can stop this.

Malaria
Malaria is a very deadly disease. It can make a person very sick, and cause them to have fevers, body aches, and chills. Usually, malaria can be treated with medicines, but in some extreme cases, it can damage the brain ("brain malaria") or cause someone to die. Many people die from malaria every year in India, especially in Orissa.

Malaria can make everybody sick, and it is very important for everyone in the village to know about this disease. It is especially important for young children and pregnant women, because malaria is especially dangerous to them. These are the people most likely to get sick and die from malaria.

Malaria may precipitate miscarriage, abortion, or still birth and may complicate pregnancy by causing severe anemia and low-birth weight infants, and in severe cases, death of the baby or mother.

Mosquitoes
Mosquito bites give people malaria. Malaria is not spread by bad food, bad air, getting wet in the rain, or bad water. Even if someone in a house is sick with malaria, other people in the same house don't get it by touching, breathing, or sharing food or water with that sick person. What spreads malaria is a mosquito bite. If a person has malaria and is bitten by a mosquito, that mosquito can then be infected with malaria, and if this mosquito later bites someone else, it can give malaria to them. Other diseases, like filariasis [Batho], which can cause permanent swelling of the legs, are also spread by mosquitoes in the same way.

Because of this, it is very important to avoid mosquito bites. It is important to try to wear long sleeve-shirts, long pants, and to cover the skin as often as you can. You can also use mosquito repellants, or burn mosquito coils to keep mosquitoes away. All of these things help prevent mosquito bites, and thus help prevent malaria and other mosquito-borne diseases. Now we would like to tell you about another even more important way to avoid getting bitten by mosquitoes and prevent malaria.

Bednets and ITNs
One of the best ways to prevent malaria is by sleeping under a bednet/mosquito net. Most of the mosquitoes that give malaria bite during the evening or at night. Therefore, it is

important for everyone to sleep under a net every night. This way, mosquitoes can't reach you, and can't bite you. Sleeping under a net at all times means mosquitoes cannot give you malaria, and if you have malaria you will not give this to someone else.

Bednets work even better when they are treated with an insecticide (in Oriya the translation will literally be "medicine that kills/paralyzes mosquitoes"). This chemical not only keeps mosquitoes away, but also kills them or makes them sick if they touch the net. This kind of net is called an **insecticide-treated bednet (ITN).** Even though they kill mosquitoes, these insecticide-treated nets are very safe for people.

It is important to wash/dip the net in insecticide every 6 months, or there will not be enough chemicals to keep killing the mosquitoes. Using these kinds of nets means there will be less mosquitoes around, and therefore less malaria.

Benefits of ITNs

In many places, using ITNs has made a big improvement in the health of a village. This is felt by everybody, but especially by the children less than 5 years of age and pregnant women. Less people get sick, and less people die from malaria when ITNs are used in a village. It is most important for children under 5 years and pregnant women to sleep under an ITN every night, but we think it is very important for everyone in the village to sleep under an ITN every night, so that your women and children will lead healthier, longer lives. Of course, another benefit of sleeping under a net is that you will be able to sleep more peacefully, without worrying about mosquito bites and their annoying buzzing sound!!

Proper ITN use *(can be demonstrated)*

You should hang the ITNs so that they cover an entire bed or sleeping space. It is important not to leave uncovered the areas where people sleep. Once a person is in the bed or inside the mosquito net, it is also important to tuck the net under the mattress, bed, or mat so that mosquitoes can't get into the sleeping area.

During the day when the net is not in use, throw the net up over the bed or the sleeping area so it is out of the way and won't get damaged. If any holes form, it is important to sew them up so mosquitoes can't get though. Remember that mosquitoes want to bite you, and if you leave areas of your bed unprotected, or if your bednet has holes, the mosquito will find a way to enter and bite you!

Proper bednet treatment with insecticide *(can be demonstrated)*

We will dip the nets into the insecticide for you; we will be following instructions on the treatment package. The insecticide solution is mixed with a measured amount of water in a large pan or bowl. The net is dipped into the solution until it is all soaked up. The net is then dried **in the shade on the ground**. It is important not to allow ITNs to be left in the sun, because this stops the chemical from working and they should not be hanged on a rope for drying, because the chemicals will drip away.

Once the chemical is on the net and dry, it has almost no harmful effects, but it is important to be careful when mixing and treating the nets. The person mixing the solution and soaking the nets should wear gloves and also protect their eyes. Never drink or eat water or food

with this chemical on it. The chemical may also hurt fish and should not be poured in or used near any water supply, lake, river, ocean, or stream

ITN Offer

BISWA and the researchers have arranged for ITNs to be made available to all BISWA SHGs formed before December 01, 2006 in your village. You can buy these ITNs by taking a loan from BISWA or by paying cash. We strongly urge you to purchase enough ITNs to cover all sleeping spaces in your house and help lower the risk of malaria. It is particularly important for pregnant women and children under the age of 5 to sleep under ITNs. The nets need to be retreated every six months in order to remain effective against mosquitoes. Also, remember that it is not compulsory for you to purchase any nets from BISWA and if you do not wish to buy nets this will **not** affect your relationship with BISWA.

If you decide to purchase the nets for a loan from BISWA, we have two offers for you:

1) In the first offer, you can buy a single net from BISWA by taking a loan for Rs 173 and Rs 223 for a double net. The interest rate for this loan is 20% an annum and you can repay the loan in 12 small monthly installments of Rs 16 (for a single net) and Rs 21 (for a double net). The installments include both principal and interest. If you wish to opt for this offer, we will treat the nets before giving them to you. However, after 6 months and again in 12 months when we return to the village to retreat the nets, you will have to pay BISWA approximately Rs 15 for every single net and Rs 18 for every double net that you wish to have treated.
2) The second loan is a bit larger but will cover the cost of ITN plus two retreatments – one after 6 months and another after 12 months. You can buy a single net from BISWA by taking a loan for Rs 203 and Rs 249 for a double net. The interest rate for this loan is 20% an annum and you can repay the loan in 12 small monthly installments of Rs 19 (for a single net) and Rs 23 (for a double net). The installments include both principal and interest. Because this second type of loan covers both the price of the net and the price of the next two retreatments (one after 6 months and one after 12 months), if you opt for this, you will not have to pay any more money for the retreatments that will take place every six months for one year from now. After 6 months and again after 12 months, we will return to the village and retreat the nets for you.
3) Of course, if you wish, you can also purchase these nets for cash by paying Rs 173 for every single net and Rs 223 for every double net.

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