

THE PIVOTAL ROLE OF TECHNOLOGY IN SCALING

GRAMEEN AMERICA

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Funding Gap for Small Business Women Entrepreneurs

In the United States, the door is often closed to essential resources, such as financial capital, for women entrepreneurs who live below the poverty line. This phenomenon is exacerbated by the fact that these women often live outside of the formal banking system, without a banking relationship in the form of a savings or checking account and little-to-no credit history. If these women small-business owners do have a banking relationship, prior research has shown a "high level of dissatisfaction" with them.[1] Published research identifies several reasons why this might be so. First, women small business owners are less likely to have a business education, making the submission process for a bank loan more arduous. They might not know how to submit forecasts for their expenses and revenues in a standardized accounting format, nor how to write a business plan. Second, historically these women entrepreneurs have tended to run companies in industries (i.e. consumer retail or service businesses) that were less attractive to commercial banks for lending purposes. Third, given the disproportionate number of male loan officers to female loan officers, some women entrepreneurs fear an implicit bias against them. Furthermore, there is often a negative bias to lending to "lifestyle" businesses that allow women to balance work and family life[2], reinforcing the perception of a negative bias by loan officers. In fact, in 2013, less than 4 percent of all commercial loans went to women entrepreneurs.[3] As a consequence, women entrepreneurs are more likely to use informal or personal financing options (i.e., borrowing money from family or friends) instead of going through the commercial banking system for a business loan.

Yet, small businesses comprise thirty-nine percent of the United States' gross national product and two out of every three jobs in the United States (U.S.) economy come from small businesses.[4] Besides their contribution to the GDP, small businesses tend to employ more diverse individuals, including those less educated as well as older populations.[5] However, in 2012, only 36 percent of all small businesses were women-owned.[6] On a global scale, according to the UN Secretary-General's High-Level Panel on Women's Economic Empowerment, an underrepresentation of women owned businesses is amplified on a worldwide basis, with only 20 percent of firms located in the poorest countries having female business owners.[7] Yet, women having more parity economically is considered a "cornerstone" towards achieving the U.N.'s Sustainable Development Goals:

> "Over the past two decades, there has been progress in closing gender inequalities, especially in education and health. Yet there is still much to do to achieve the full and equal participation of women in society and the economy."[8]
>
> **U.N. Secretary-General's High-Level Panel on Women's Economic Empowerment**

A key issue identified by the UN's research on women's economic empowerment is that there are cultural barriers that curtail gender pay parity. This includes the level of "informal" and "unpaid" work expected of women to support their families in comparison to men, as well as the overall perception that women's work is of lesser value. Other issues identified by the U.N. are women's lack of mobility in some regions and inability to own property. Yet again, nations with greater gender economic equality and pay parity tend to have higher income levels per capita, faster overall economic growth, and are more economically competitive with other nations.[9]

[1]Coleman, Susan (2002), "Constraints faced by women small business owners: Evidence from the data," Journal of Development Entrepreneurship, 7:2.
[2]Ibid.
[3]http://c.ymcdn.com/sites/www.wipp.org/resource/resmgr/Access_to_Capital/WIPP_Access_to_Capital_Platf.pdf
[4]Yallapragada, R., and Bhuiyan, M., (2011) Small Business Entrepreneurships in the United States.
[5]Ibid.
[6]https://www.sba.gov/advocacy/media/Women_Owned_Business_Spotlight/
[7]www.WomensEconomicEmpowerment.org, UN Secretary-General's High-Level Panel on Women's Economic Empowerment 2016.
[8]The UN Secretary-General's High-Level Panel on Women's Economic Empowerment 2016
[9]Ibid.

History of Grameen America

Grameen America (GA) was founded in 2008 with a mission to fight poverty in the United States through the empowerment of low-income, female small business entrepreneurs. The organization focuses on reaching women who may be prevented from accessing the mainstream financial system and who have few options for getting the capital needed to build small businesses within their communities. To fulfill its mission, GA offers microloans averaging $2,300 per person, training, and a supportive peer network, as well as asset and credit-building opportunities.[10] Also unique to GA is the fact that most loan officers, known as Center Managers (CMs), are women. Given that GA's members are also women, GA's outreach is markedly different than that of a more traditional commercial bank. Also curious, and affirming to GA's approach, is the fact that research has shown that women loan officers are both "more likely to take part in loans requested by riskier members" and "have better information processing skills with respect to unobservable, soft-information factors pertaining to the character and nature of the loan applicant." Also, "loans screened and monitored by female loan lenders tend to perform better, being 4.5 percent less likely to be problematic."[11]

Grameen America is dedicated to helping women who live in poverty build small businesses. We offer microloans, training and support to empower women entrepreneurs across the country.

Grameen America

GA is a nonprofit organization that is affiliated with, but separate from, Grameen Bank (GB), the latter of which is headquartered in Bangladesh. GB was founded in 1976 by Professor and Noble Peace Prize recipient, Muhammad Yunus.[12] Importantly, and unlike most commercial banking institutions, GA utilizes the same group-lending model made famous by GB. Women first organize themselves into groups of five and then join a multi-group network in their community of at least 20 women who commit to participate in weekly center meetings, led by a CM. In return, each member, can receive a loan of up to $1,500 initially. Larger loans are available after each six-month loan cycle, depending on the member's attendance record and the approval of her lending group (see Appendix A for more on the group lending model). To qualify, each member must have an annual income below the poverty line[13] but does not need to have a bank account, collateral, or a credit score. The strength of GA's model is its focus on community lending. While the group members are not financially responsible if another member defaults on her loan, the peer support system serves as a strong motivator to repay each loan. Unlike a more traditional commercial bank, loans are not collateralized. Still, GA has consistently achieved an organization-wide repayment rate of its microloans of 99 percent.[14]

GA has now been operating for 10 years and has expanded nationwide to California, Texas, Nebraska, Indiana, New York, Massachusetts, New Jersey, North Carolina, Florida, and Puerto Rico (See Appendix B for branch locations). By the end of 2017, GA had served over 97,000 women and invested more than $820 million in their small businesses.[15] GA's members typically begin without a previous credit history and achieve an average credit score of 640 by the time they complete their first six-month loan.[16] The savings balance of GA members across the network has also grown to over $6.9 million as of 2017.[17] According to GA's Senior Director of Operations and Strategy, Alethia Mendez, a core part of GA's strategy is to provide capital to marginalized populations as a way to build their assets and credit worthiness. In addition to helping grow their businesses, the model aims to help them achieve enough income and savings to begin moving above the poverty line.[18]

Going Paperless and Cashless

With a loan repayment rate of over 99 percent and a desire to expand its reach, GA saw an opportunity to improve transaction efficiency, data integrity, auditing capability,

[10] www.grameenamerica.org/model
[11] Bellucci, A., Borisov, A., and Zazzaro, A., "Do Male and Femal Loan Officers Differ in Small Business Lending? A Review of the Literature." MOFIR working paper 47.
[12] Professor Yunus also chairs the Board of Directors for GA as noted in http://www.grameenamerica.org/model
[13] Since GA does not require tax filings to prove income, the community vouches for the member, that she is in need of funds and fits GA's profile.
[14] Grameen America 2015 and 2016 Annual Report. Number audited by PWC.
[15] Grameen America 2017 Annual Report.
[16] http://www.grameenamerica.org/blog/building-credit-grameen-america
[17] Grameen America 2017 Annual Report
[18] Based on an interview with Alethia Mendez on 1/16/18.

and the member experience by infusing mobile loan technology into its field operations (See Appendix C for core components of its field operations). Prior to this technology conversion, a typical GA community meeting could have as many as 30 members squeezing into a group member's living room or business, each carrying cash for that week's repayment. Each woman would also have in hand a much dog-eared "passbook" in which her loan repayment was recorded by the CM. The CM would have to collect, count, and document these payments, while tracking attendance and considering group proposals of additional loans—all on separate sheets of paper. Just collecting and recording loan payments could take up to 45 minutes of an hour-long meeting, with receipts scattered across a table or couch.

Furthermore, the loan repayment data ultimately had to be entered three times: in the member's passbook, on the CM's collection sheet, and then later at the branch office on GA computers. Mistakes and delays were not uncommon (See Appendix D for process summary), with often a 1 percent irreconcilable margin of error.[19] Even if the data was recorded correctly, it still had to be exported into Salesforce, a customer relationship management software,[20] for internal GA data analysis and for reporting members' credit scores to various credit agencies (this is important in establishing the credit worthiness of GA's members). The manual entering process, exacerbated by time constraints and the many distractions of a packed room, often led to lost paper or inaccurately recorded loan repayments. If there was an error, it could take hours or days to correct the mistake, if the mistake was caught at all.

Historically, GA had relied on software custom-built[21] for GB in Bangladesh. Although this legacy software supported Grameen's unique lending model, it was better suited for the Bangladeshi context than that of the U.S. In Bangladesh, good technology is expensive and labor is abundant, but in the U.S., the opposite is true: "I can get Internet even in a basement in Brooklyn, whereas I don't even have reliable Internet in the regional office of Bangladesh," said Marcus Berkowitz, Senior Director, Technology and Innovation at GA.[22]

Within the first 30 days of joining GA, CEO Andrea Jung (who had previously led Avon) knew that GA could not continue to grow as a cash- and paper-based business. She felt that the current system was setting the organization behind, given how the world was moving to cashless transactions (i.e., M-Pesa, Apple Pay, etc.). Therefore, she halted GA from opening any new branches until the organization made a concrete effort to move its loan operations into the digital age.

Pilot

The first pilot of GA's new, "off-the-shelf" software loan repayment system, known as Mambu, took place in GA's Puerto Rico offices in 2013. Referred to as a "stealth" pilot, the goal of the Puerto Rico deployment was to create a test case for how an off-the-shelf solution could perform on par with, and in many ways better than, the internally developed software solution. The Puerto Rico branch was chosen because it did not have a history with GA's legacy software system and therefore loan officers lacked a "set way" of entering and managing loan data. However, noted Marcus Berkowitz, Senior Director of Technology and Innovation: "because the staff in Puerto Rico didn't have the background of the prior technology, they couldn't tell me what was missing or how to improve it." Nevertheless, during this two-year pilot period in Puerto Rico, GA was able to customize the off-the-shelf system and prove that Mambu could replace GA's legacy software system.

> "It's hard to go from a custom-based software to an out of the box software...because people say 'Wait a minute. Why would you give up on something that was customized?'"
>
> **Marcus Berkowitz, Senior Director of Technology and Innovation, Grameen America**

While the pilot in Puerto Rico demonstrated that Mambu had the potential to radically improve key organizational functions, the technology team knew that they needed to get the backing of GA's senior leadership and the field offices in order to make a new software deployment a success. Through $1 million in combined grants secured by early 2016 from Citi, Mastercard, Apple, Capital One, and the Robin Hood Foundation, GA had the opportunity

[19] Based on an interview with David Gough on 1/30/18.
[20] https://www.salesforce.com/products/what-is-salesforce/
[21] http://grameencommunications.org/products/gbanker.html
[22] Interview with Marcus Berkowitz 10 /18/17.

to more rigorously test a second pilot with its now customized Mambu platform at a New York location. So, in April 2016, the second Mambu pilot took place in Sunset Park, Brooklyn, in New York City, not far from GA's headquarters in Manhattan. Unlike in the first pilot, the staff in Brooklyn was able to tell the technology team what features were missing in Mambu as compared to the legacy software system. According to Jung, it was critical for GA to pick a location that was not too large, to avoid taking on too much risk, but also not too small, so that the pilot had credibility with other branch managers. GA's technology team also needed to build buy-in and tighten communication within its senior leadership team, even before embarking on its second pilot, given its strategic significance.

Task Force

In order to establish open dialogue and buy-in across the organization, GA created a task force to effectively support the localized pilot in Brooklyn, New York. As David Gough, CFO for GA, emphasized: "Marcus [Berkowitz] was out on his own, and needed a way to engage with different stakeholders in this process. There was a Eureka moment when Andrea [Jung] recommended the task force. We decided who was going to be on it, the head of the different functions needed to be involved." The task force, made up of representatives from across the organization (see Appendix E), included the organization's President and CEO, Andrea Jung, Senior Vice President and CFO, David Gough, as well as other key individuals, such as: the General Counsel (Mary Majewski), Vice President of Development (Mindee Barham), Senior Director of Operations and Strategy (Alethia Mendez), Chief Program and Strategy Officer (Daniel Delehanty) and Senior Director of Technology and Innovation (Marcus Berkowitz). Unique to this kind of project was having a development officer on the task force. Jung believed that the development leader being on the task force, fully participating in the local pilot and national roll out, was key to building a compelling fundraising strategy.

This tiger team met every two weeks initially, to discuss the pilot, its progress, and ways to overcome roadblocks—ensuring proper documentation and feedback throughout. According to Mendez, the fact that such careful records were created, and issues were so well documented, made it easy for the team to address issues in a holistic way; this was not the case with the Puerto Rico pilot. Jung further emphasized that running the meetings the way they did created a greater discipline throughout the entire organization. Meeting minutes were taken, agendas were pre-published, and there was follow-up on delegated items.

The task force believed that even with major improvements in the new banking platform, staff would resist the technology migration if they could not see the features they had become accustomed to in the legacy system. "We didn't want them to feel like they had 'lost' anything. So even if the new process in Mambu didn't require a feature or reporting functionality, sometimes we would build it in anyway. Some of these "features" we phased out as users realized they were superfluous, but it was worth the effort," Berkowitz explained. The close proximity of the Sunset Park branch to GA's headquarters also allowed the technology staff to drop in frequently, test the progress of the pilot, and quickly make adjustments to the software as needed. The branch staff took full advantage of sharing their thoughts on Mambu, typically writing up a list of suggestions that the technology team would then try to add and the task force would discuss at their bi-monthly, and later weekly, meetings.

As frontline staff, the CMs could quickly see where the new system might create issues down the road. For example, on the tablet version of the attendance form, there were originally only two options in the dropdown menu: "present" and "absent." For the CMs, this did not fully capture the information they needed about their members. They asked the technology team to add to the dropdown menu "absent excused," "absent unexcused," and "emergency." Later on, they asked for a comment section to be added so that they could make notes by members' names in order to communicate to management specific situations about the member or just to remember relevant details about the member from center meetings. Through the local pilot, GA then refined the product until it was ready for the national rollout.

National Rollout

Another key decision made by the task force was that if the branch operations staff did not find the Mambu system valuable, then the organization would not proceed with a nationwide rollout. The two pilots played an important role in ensuring that the new software would be accepted by the frontline CMs and members, while also providing a testimonial for how it would improve both the efficiency and accuracy of field operations. Therefore, the task force made a concerted effort to continue gathering the candid feedback and logistical input from its regional branches at every step of the rollout. According to Mendez, critical for the successful implementation of the technology by the frontline employees was "building Mambu in a way that was open to feedback and where you could see concrete efforts made in the application of that feedback when you gave it." This gave the CMs, whose day-to-day job would be most affected by the new software deployment, the confidence to make the switch. According to Gough, "They [Center Managers] were reluctant to embrace a more advanced technological system due to the fear of the unknown, so there was a persuasion that needed to happen from the operations side."

The official national rollout took place over the course of nine months, beginning in the third quarter of 2016 and wrapping up in the first quarter of 2017. The rollout occurred region by region, beginning with the four branches in California, then moving to a number of cities in the Midwest, then the Northeast, finishing with the four largest branches, one of which is in Charlotte, North Carolina, and three in the New York region. To support the branches in quickly adopting the new system, each Branch Manager identified a "Mambu Champion," who received training at headquarters prior to Mambu's launch at each local branch. Bringing the champions to Brooklyn to learn the system marked the beginning of the six-to- seven week pre-migration training process for all staff. The champions initially advocated for the benefits of Mambu during the challenging weeks of adjustment, and subsequently provided ongoing support to their colleagues as they familiarized themselves with the new system. The goal was not necessarily to pick the most tech-savvy person as a champion, but rather someone who could help troubleshoot locally for branch colleagues, and this meant picking someone who was well respected in the branch, but also capable of training others. As such, a champion's role was twofold: (1) spend a week in the Sunset Park branch (which by then was using Mambu) to be schooled in the day-to-day practicalities of the new system; (2) to be a local point of contact for updates and ongoing communication between the local branch and the technology team. It would have been too much for a small headquarters staff to take calls from all of the CMs during the migration process. In this way the headquarters staff was able to limit the number of times they had to respond to the same questions and focus on more pressing issues in the field related to the system rollout.

Through each stage of the rollout, the entire staff had access to a mirror image of Mambu, dubbed the "sandbox." For the technology team, it was a tool they could use to test new applications, software, and reporting functionalities. For the finance department, it served as a vital check that all loan data from the legacy system was migrated properly to the new system. The field operations team used the sandbox as a training tool to understand how the system worked and to practice inputting data and navigating various applications without actually affecting the real system in real time.

Transitioning to the new system at first extended the time needed to complete all transactions and take attendance during center meetings. However, within one month, the time required to handle these action items was cut down by an average of 50 percent. In the past, each branch also had slightly different methods for capturing data, small differences that created challenges for the accounting and data analytics team when it tried to reconcile loan data later on. When customizing Mambu, the technology team looked for ways to standardize how information was reported, like increasing the use of dropdown menus (as previously mentioned). At Sunset Park, Branch Manager Maritza Valencia explained that moving over to Mambu was not easy, and her team of eight was at times frustrated by not being able to input information in the way they had been used to. "But now they love it," she said. "If you'd ask them 'Do you want to go back to the old system?' they'd say 'never!'"

New System Benefits

The benefits of the migration to Mambu surpassed just gaining a cloud-based software system.[23] Benefits also included: a foundation for the organization to improve its loan processing, enhanced internal and external auditing capabilities, and an improved overall member experience that also provided the groundwork for transitioning them to fully digital financial transactions. Appendix F provides a comparison of the features offered by the legacy system and Mambu. This snapshot alone demonstrates the range of the new functionalities. GA's headquarters now has more accurate data—leading to better data analytics and the ability to conduct surprise audits and more easily detect fraud based on data irregularities. Most importantly though, Mambu expanded the information that the field operations staff has at its fingertips, empowering the CMs responsible for verifying loan payments, running the weekly member meetings, and approving new loans within their communities.

Improved Field Operations

✓ Decrease in Theft and Security Risks

In the past, members made their weekly loan payments either in cash or as a money order and the CM was responsible for depositing the payments on his/her way back to the branch office. Both the members and local CM were therefore sometimes targeted for theft, a risk that was exacerbated by the regularity of the meetings and the consistency of routes taken to and from the meeting locations. Mambu worked seamlessly with another program called PayNearMe, which allowed each member to repay the weekly portion of the loan at a nearby CVS or 7-11 store prior to each week's center meeting. With the ease and improved safety that Mambu and PayNearMe provided, members now rarely choose to pay back loans in cash.[24] By moving to a predominantly cashless system in both the payment and recording of loan payments, theft and safety issues around the community meetings have been largely mitigated, as have any concerns around internal theft of funds or fraud.

✓ Empowered Field Operations

Now when a member takes out a new loan, she receives a text message on her phone with key information, such as her weekly repayment amount, the interest rate, and the date and time of her weekly meeting. When making payments through PayNearMe, in addition to the paper receipt she presents to the CM, each member receives a text confirming the payment has gone through. Finally, the member also receives a weekly text with the remaining principal amount on her loan as well as the interest due. Beyond these helpful SMS updates, in the future memberss will be able to log in and access their loan information on Mambu at any time, a feature that the legacy system could not provide. Likewise, CMs are now empowered to review loan and member information on the fly. For example, CMs can quickly detect patterns in absences or late payments, allowing them to flag a problem at weekly center meetings. If a new loan is being considered for a member, this can also be reviewed with center meeting leaders in and around the weekly meeting.

> "We wanted to take away administration and unleash our members' time, to focus on content."
>
> **Andrea Jung, CEO, Grameen America**

✓ Content Rich Meetings

The increased efficiency of the transaction process greatly reduced the time needed during meetings to collect, input, and reconcile loan payments. Not only has this set a more professional tone to the meetings, but the CMs can now use this saved time to build community and go deeper into topics useful to each woman's business. According to one member, the weekly center meetings are a chance for her to exchange ideas, and everyone is full of creative advice and suggestions.[25] GA is in the midst of assessing how to make the most of this saved time, to keep members engaged and support the growth of their businesses.

[23] In the past, the company was spending most of its It budget on maintaining servers. Now, since the SAS software was cloud based, GA was no longer maintain servers, and instead, investing its time on the interface between its internal personnel and its software vendor, Mambu.
[24] In the interest of inclusion, GA will always provide a way for members to pay in cash, in this case via PayNearMe's cash payment acceptance netowrk, but it is critical that the GA employee not have to touch cash herself. Our payment channel strategy is oriented toward these two important goals.
[25] Q2 2017 Report

✓ Faster Notification of Potential Delinquencies

The migration to Mambu has also had a major impact on the quality of the organization's portfolio and its ability to support members. At GA's headquarters, the management team can now see which loans are becoming delinquent in real time and where those loans are located. This granularity allows them to understand where the risks exist and then follow up with CMs as needed. With the legacy system, loan data was uploaded into Salesforce monthly and it required around two weeks to clean and reformat; this meant that members who were late on their loan payments were already a month delinquent ("in the red") before receiving a notice, at which point GA would typically view the loans as unrecoverable. In contrast, with the new system, if a member is over a week but less than a month late ("in the yellow"), GA can now follow up with the member and provide her and the local Branch Manager the guidance needed to make sure that the loan moves back "in the green," so she is back in good standing with GA. With the former system, the yellow zone barely existed, and members were quickly flipped from being coded green (in good standing) to red; the organization simply did not have the information it needed to service its members in critical moments of need.

Institutional Benefits

✓ Improved Efficiency and Work Quality

In recent years, as GA scaled its impact and community groups grew larger in size, handling all of the transactions and managing members' paperwork became a real burden to the CMs. Additionally, the more members in the meetings, the more likely the CM was to make mistakes that then took hours to later rectify. Now, with less time devoted to processing cash payments by hand, GA staff can lend to a greater number of female entrepreneurs. Since the technology rollout began, the case load benchmark (the point of maximum efficiency) has increased from 400 to 500 members per CM. Moreover, each branch can now support all of its members with one fewer CM on its staff. Even with the smaller staff and a 25 percent increase in the case load, CMs state that they now have more time to support each of their members.[26]

✓ Improved Data Integrity

Before Mambu, the data entry process was prone to errors and important paperwork was easily misplaced. The three-step process of inputting loan information has now been simplified to just one step. The decrease in the number of manual entries has greatly improved the integrity of the data entered into the system, as has the standardization of the response data. Furthermore, with the prior system, if a staff member wrote down the incorrect information in his/ her collection sheet, it could take hours, if not days, to identify and resolve the mistake with the member. With the SMS capabilities of the new system, a member receives information directly on her phone within moments of completing a transaction and any inconsistencies can be addressed before the staff and members leave the weekly meeting (See Appendix G for more details on the process).

✓ Improved Data Analytics

Not only has the new software improved the integrity of data, it has also allowed GA to better analyze the performance of branches, the success of its members in both repayment and retention, and a myriad of other important performance-related data. Stronger data mining capabilities now aids GA in seeing irregular patterns and determining potential areas of fraud. Matthew O'Neill, Senior Manager of Finance and Impact Evaluation, explained, "We can use analytics at the branch level to see if they're functioning properly. If loans in one loan officer's portfolio are going delinquent, we can now quickly follow up to see why and how we might support that employee." The staff can address pitfalls immediately as Mambu allows them to review the data in real time. In addition to analyzing data as an important management tool, it has also allowed GA to be more responsive during crisis situations, such as in Puerto Rico when Hurricane Maria made landfall in September 2017.[27] In the aftermath of the incredible devastation that occurred throughout Puerto Rico, GA was able to process emergency loans more quickly and pause repayments so that members did not become delinquent.[28]

[26] Interview with Alethia Mendez 1/16/18
[27] https://www.theatlantic.com/science/archive/2017/10/what-happened-in-puerto-rico-a-timeline-of-hurricane-maria/541956/
[28] Interview with Marcus Berkowitz 10/20/17

✓ Improved Internal Auditing Capability

With improved data collection and integrity, GA also has improved its management of field operations. The GA leadership team now has the ability to better monitor each of its branches, including the ability to conduct "surprise" audits. Previously, surprise audits were difficult to administer, as calling the branch to find out community meeting times automatically alerted the region to pending audits. Now, GA team members can easily conduct audits with no advance warning to either the Branch or Center Managers. The technology migration also created stronger controls around how information in the system can be manipulated or accidentally impaired. Now, if a CM wants to update member information or loan data, she must go through the Branch Manager. Lastly, Mambu has made it simpler to flag atypical numbers and trends in the data collected at the center, branch, and system level.

✓ Improved Accounting System

The legacy system was focused on branch operations, and as a consequence, did not meet the very practical needs of the headquarters' accounting team. Previously at GA, loan data had to first be uploaded into Salesforce and then go through a "scrub process" to get portfolio data each month cleaned up and presentable. This process, which took 10 to 12 days of someone's time, was a critical step to ensuring the data was correct, complete, and properly formatted. Mambu has made this scrub process practically unnecessary and it can be completed in a day. GA's Director of Accounting, Andrew Horrow, said: "When we're being audited, we can literally just give the auditors the login information if we wanted. Mambu makes it so much easier!"

✓ Better Impact Evaluation and Grant Reporting

The first step in obtaining a GA loan is to fill out a survey that captures information about the member and her business so that GA can measure and understand its impact on both the member and her community. In the past, the survey was paper-based and not absolutely mandatory. Just like with the loan information, the survey data collected manually and re-entered into the computer was prone to errors, in which case whole surveys had to be dismissed. With Mambu, surveys are now required with each loan and thus track progress at roughly six-month intervals. By being online and organized with dropdown menus, there is minimal room for error. As such, the new system has dramatically improved the quantity and quality of information that the Impact Evaluation team can use. Further, the Impact Evaluation team—which used to rely on data that, by the time it could be exported and cleaned up, would be one to two months out of date—can now run reports and have workable data in minutes. When reporting to current and potential funders, the team now has more confidence that what they present externally is accurate and timely. "In looking for partnership or grant opportunities, we analyze what our portfolio looks like at each level (i.e., branch, region, national) and where the growth is going. This serves as the basis for what we present donors. Now we feel much stronger about the quality of what we're presenting," Matthew O'Neill, Senior Manager, Financial Analysis and Impact Evaluation, explained.

✓ Decrease in Time to Operational Self-Sufficiency

GA's Jackson Heights branch became the first-ever domestic microfinance organization to achieve 100 percent branch financial sustainability (i.e., the cost of processing loans is off-set by revenue generated from the interest on those loans). Today, additional branches have become financially self-sustaining and the organization overall is more than 60 percent financially sustainable. By both decreasing the needed branch staff from ten to nine persons, and improving the caseload per CM, GA expects the number of self-sustaining branches to grow at an even faster rate, with the organization soon becoming 100 percent financially self-sustaining based on its operations. While GA will continue to seek donations, in the future the capital it receives can be freed up to fund more innovative, new initiatives.

✓ Ongoing Integration Capabilities

Through open Application Programming Interfaces (APIs), Mambu can seamlessly integrate with other off-the-shelf software applications. For example, since Mambu's core software rollout, GA has been able to rapidly implement other technological improvements such as compliance-related software and disbursement cards with an ease that was impossible before. The organization can now adapt to new requirements and quickly respond to suggestions from its frontline staff. The organization already has plans to continue enhancing the technology experience for its members and employees and is actively pursuing strategic partnerships with other organizations to further advance its mission.

Table 1: MIS Technology Impact

Member Benefits	Institutional Benefits		
	Efficiency Enhancement	Cost Savings	Performance Improvements
Flexibility to make all loan payments before each meeting at a local 7-11 or CVS.	Faster processing of member repayments by GA staff.	Decrease in staff time spent per transaction, due to sunsetting of passbooks; decrease in paper used per member.	Decrease in data input errors (as information is already in the system).
Improved safety and reduced theft by eliminating cash payments.	Reduction in time and resources spent to handle security incidences.	Decrease in lost payments due to theft or human error.	Decrease in lost morale and revenue due to theft.
Access to loan information via SMS.	Errors noted and resolved immediately rather than hours later in the branch office.	Staff time saved from addressing mistakes; more accurate payment amounts.	Ability to grant a higher volume of loans due to more efficient loan processing (i.e., a single-entry process).
Support during times when struggling to make payments.	Timely information so CMs can follow up with members before problems grow.	Delinquent loans recovered before they become “lost.”	
Improved member experience due to professionalism of the meetings and loan process.	Reduction in “lost” time to paperwork and disorganization, and more focus on building a member community.	Improved retention of members.	Ability to have more members in each center meeting if desired.
Opportunity to take part in more training or spend more time on their businesses.	Higher CM satisfaction as they can now focus on relationship building with members.	Improved staff retention.	Higher likelihood of repayment if businesses are more successful.
Important member documents are secure and organized in the cloud.	Finance team takes 80 percent+ less time to prepare audited materials.	Auditing process requires <2 days of staff time, down from 10-12 days; storage space needed at branch greatly reduced and no more “digging” for receipts during audits.	

Best Practices and Lessons Learned

Today, support for Mambu has been garnered across all of GA's branches. However, looking back, it was not always obvious that deploying Mambu would be such a success. It is worth noting that the greatest reason cited for the rollout's success was the technology team's focus on actively seeking input from all stakeholders, from the CEO to frontline CMs. The organization formalized the feedback process by creating the Mambu task force and by spending time at the branches incorporating both major changes and smaller modifications to make the platform more user-friendly. In fact, the task force served as such a powerful construct for cross-departmental dialogue, that it has now become a standard part of any significant GA initiative.

GA's experience migrating its core technology to a new banking platform offers numerous lessons for the field in how to use technology to effectively scale an organization's mission. The following lessons are aimed at providing guidance to any institution seeking to implement a significant technological change.

Planning and Implementation

✓ Expect Some Pushback

One key take away is to expect some resistance when implementing an organization-wide technological change. GA had to overcome objections to replacing a custom-built, in-house software banking system, that was the standard for all loan operations. The team driving the technology change put together strong arguments for moving away from the legacy system before ultimately gaining the buy-in necessary to even conduct its second pilot. Berkowitz recalls presenting his case for the technology change to GA's board of directors by showing them the mountain of paperwork required to serve just one member for one year. Multiplying that stack by the thousands of members the organization serves, let alone the thousands more it hopes to reach, was a powerful statement about the benefits of going paperless. For the field staff for whom changing their practiced routines seemed daunting and superfluous, the ability to simplify the three-step transaction process to just one was a significant benefit. But, moving to a cashless system also improved each CM's personal safety, which served as a huge catalyst for making the change (especially after a CM from one of GA's New York branches was forcefully robbed after a center meeting). Finally, shifting the focus of meetings to quality check-ins broke down much of the field operation's resistance to a platform change.

✓ Develop a Task Force

Open communication amongst key stakeholders regarding a large-scale deployment is vital for any initiative's success. At GA, the task force included the organization's senior leadership, as well as representatives from all affected departments. The task force determined what each stage of the migration should look like, and what the metrics for success would be. They met every one to two weeks and required full attendance. Establishing a cross-organizational internal tiger team facilitated a more strategic rollout and created buy-in from all employees. It's also worth noting that this change was supported at the highest level of the organization; the organization's CEO, Andrea Jung, both conceived the task force and then in turn empowered it.

✓ Carefully Choose Pilot Location to Maximize Its Benefits

GA ran two different pilots, one to first test that Mambu was the right solution in a site where the pilot would be less disruptive, and then a second pilot that would allow the technology team to fully customize the product to one that the staff wanted to use. The technology team chose the Puerto Rico branch for its "stealth" pilot because of the staff's openness to the new system and because, being a new branch, Mambu could be introduced without needing a complicated migration protocol from the legacy system. Before the national rollout, however, the technology team chose to run a second pilot in a nearby and established branch in order to refine Mambu further. As a result of the second pilot, GA's technology team had a better sense of the features and functionality they had to transition from the old system to the new one. While both pilots were time consuming[29], this two-step process was critical to ensuring GA had the right technology and organizational buy-in, and that the national rollout was a success.

[29] Both pilots combined were conducted over two years period of elapsed time.

✓ Plan for Initial Slowdowns

GA assessed which aspects of the organization's operations would likely see decreased performance while conducting a new platform migration. For example, when Mambu was implemented at a branch, it typically saw two weeks to one month of slower service as branch staff and members familiarized themselves with the system's new processes. Migrating all of the loan data from the branches at each stage of the rollout required a great deal of time and care on the finance side as well. The data had to be checked, cleaned, migrated to the sandbox, approved by the Director of Accounting, moved into Mambu, and approved again until it could go "live." The process took several days per branch and the staff accountants visited each regional office to train the field operations team. Planning for each step of the new platform's deployment was important so that any slowdowns were anticipated and made as painless as possible for the organization and its members. As noted, additional staff from headquarters were allocated to each branch while it went through the migration process.

✓ Document Approval at Each Step

With any major technological deployment that involves the transfer of financial data and member information, it is absolutely necessary to have documented approval for every change. At GA, even when the task force had explicitly discussed next steps in one of its regular meetings, the staff implementing changes had to nevertheless request approval via email from the proper authority who would then respond to confirm that the approved change could be made. This more formal approval process is an expectation of external auditors and even one missing sign-off could be a red flag for auditors.

Technology Migration Tips

✓ Find Your Champions

Identifying "champions" to support training and adoption efforts at each office was core to Mambu's success. The Mambu champions served critical roles both as trainers of and as advocates for the new technology. Especially in the first few days and weeks of the migration, Mambu seemed more cumbersome and less intuitive to use, which created friction within the local branches. GA learned that having strong champions to support and motivate the other staff eased tensions around the major transition.

✓ Keep Old Features along with the New

GA avoided taking old features away entirely, no matter how many improvements the new system offered. While the technology team eventually removed some of the older, redundant features when the staff no longer found them necessary, in the beginning Mambu offered almost everything that the legacy system had, and certainly everything that users requested. This allowed the CMs to become comfortable with Mambu, given that the software mirrored some of the previous platform's functionality. Including the old with the new features smoothed out the transition period and reduced internal pushback, which improved adoption rates.

Business Case

The migration to a new banking platform came with significant costs to GA, approaching close to $1 million dollars. The cost of this technology transformation was covered by a number of generous donors including Mastercard, Citi, Apple, Capital One and the Robin Hood Foundation. Apple also agreed to provide new iPads and to upgrade them every few years. The ongoing cost to support the Mambu system was budgeted to be 50 percent higher than that of the legacy system and without the support of Apple, staying up to date with well-functioning tablets could become more costly in the future. Nevertheless, the increased efficiency and safety of the staff that resulted from the migration, as well as the improved member experience, more than made up for the costs. The organization fully expects to see both a decrease in its annual expenses as well as improved revenue once the benefits of the Mambu migration are fully realized. The data integrity has also increased as well as the organizational muscle to perform data analytics and audits throughout its member network.

✓ Ongoing Operational Cost

The most significant cost of implementing the new software system was the cost of the actual software and internal staff time needed to complete the migration in all of GA's branches. The ongoing cost to support Mambu's technology is estimated to be just over $180,000 per year, roughly 50 percent more than the cost of maintaining the legacy system. However, the technology team is no longer managing server farms, the 1 percent error in loan data

has been eliminated, theft and fraud have been greatly reduced, and both accounting and auditing functions are now highly operational.

✓ Benefits

GA saw two significant financial benefits as an organization. First, the switch from having a capital intensive technology system requiring frequent and expensive server maintenance to a cloud-based technology system has meant far less internal responsibility for hardware maintenance. Second, the efficiency of the staff and the improved quality of their work that Mambu has made possible has produced gains for the organization that alone made the platform migration a clear success. Additionally, what could not be captured in a business case analysis but was just as important to GA was the ability of staff members to double down on the institution's mission. The improved professionalism of the meetings, the safer conditions for repayment, the speed at which renewing loans could be considered, and the improved ease of making regular loan payments are just a few examples of how the members' experience improved with the introduction of Mambu. Mambu also laid the groundwork to help transition GA members to a paperless and digital financial system in the future.

Table 2: Mambu Migration Cost Components

Category	Type	Components
Cost: CAPEX	Mambu platform	Cost associated with development, purchase or leasing of Mambu platform.
	Integrations with other applications	Several software integrations come with an additional fee, either in the form of a license or one-time fee.
	Infrastructure	Cost of tablets
Cost: OPEX	Recurring platform maintenance/ usage charge	50 percent increase in maintenance over previous system, budgeted at $180,000 per year.
	Recurring charges for application integrations	Subscription and/or usage costs associated with ongoing use of third-party APIs.
Cost: Staff Time	Training and Implementation	Internal staff time to design and oversee implementation, take part in training, and initially be less efficient during the transition stage.
Benefit: Cost Savings	Infrastructure	No longer rely on servers, which were expensive to purchase and to maintain.
	Accounting Errors	Fewer errors associated with member accounts that required staff time and resources to resolve.
	Staff	The increase in CM efficiency has meant that the branches no longer require 10 full-time CMs. Branches decreased CM staff to 9 from 10, leading to substantial cost savings.
	Fewer Delinquencies	With loan data updated and checked daily, GA staff can better manage late loans by checking in with members during the critical window before the loan is more than a month late, and in default.
	External Audit	The amount of time needed by a full-time staff member to prepare documents for audits went from two weeks to two days and is expected to decrease further.
Benefit: Increased Revenue	CM increase in caseload	The benchmark caseload per CM (i.e. the maximum efficiency) increased from 400 to 500 members per CM due to the efficiencies enabled by Mambu. All else being equal, the increased case load should increase revenue per case manager by 25 percent.
	More competitive grant proposals	The improved amount, timeliness, and integrity of data allows the GA staff to create more competitive grant proposals.

Current Challenges and Future Opportunities

Because employee feedback has remained core to GA's migration to Mambu, the system continues to be updated and adjusted based on user feedback. In addition to providing ongoing improvements to Mambu, GA faces the larger challenge of how to better use center meeting time. These group meetings are core to GA's lending model and the financial stability of GA rests on its 99 percent repayment rate. The introduction of PayNearMe and Mambu has meant that CMs can now view all loan payments before the center meetings even begin, compromising a key motivator for a member to come to a meeting. This could become a big cultural issue for GA, as its group-lending approach relies on community support and endorsement for loans, in a form of network governance.[30]

The organization has thus far been able to mitigate this risk by emphasizing that attendance, not repayment, is the main factor considered by GA in approving future loans. Furthermore, members still present their payment receipt to the CM in front of the group, thus maintaining the role of network monitoring. Going forward, GA may need to adapt further to encourage members to still attend center meetings for other reasons than making a loan payment. With some centers seeing the duration of meetings decrease by more than 50 percent, this also creates an opportunity for GA to use this time to help women with their businesses, which raises additional questions. How "content rich" should these meetings be going forward to ensure that their members are motivated (not just required) to attend them? And what types of content should GA prioritize?

Conclusion

The success of the transition to a new banking platform was made poignantly clear by GA's senior leadership team, CMs, and members. GA's shift to Mambu and the possibility of future enhancements being available by integrating other technologies into the new platform illustrate the power technology can have on increasing the accuracy, efficiency, and satisfaction of a nonprofit's many stakeholders.

This study also demonstrates the importance of creating a task force and carefully planning each stage of a new system rollout, with time and budget built in for meaningful iterations and improvements. GA began customizing the new system early, piloted it in two very different branches, and placed utmost importance on receiving feedback from its staff to ensure the new platform's acceptance and usefulness. When it came time to deploy Mambu across all of its branches, GA was able to complete the process within nine months, but nevertheless took a step-by-step approach that enabled the organization to provide the branches with the support necessary to add meaningful system updates one region at a time.

Now that the new software is in place, GA has begun to introduce other new technological capabilities, moving more quickly into having a rich digital banking portfolio, including piloting a way to make loan payments online so that members no longer need to locate a 7-11 or CVS prior to their weekly center meetings. GA is also exploring partnerships with other organizations, such as traditional brick and mortar banks, to increase its members' ability to grow assets and have greater access to a myriad of loans. In closing, GA continues to build on the strong foundation set by its successful technological transformation and exciting, new opportunities lie ahead. But at the end of the day, what will remain core to the organization is its mission to economically empower low-income women in the U.S. As Andrea Jung reminds us, "What our CMs are really there for is to change our members' lives."

[30] Network governance "…has advantage over both hierarchy and market solutions in simultaneously adapting, coordinating and safeguarding exchange" Jones, C., Hesterly, W., Borgatti, S. (1997) A General Theory of Network Governance: Exchange Conditions and Social Mechanisms, Academy of Management Review, 22 (4); 911-945.

Appendix A: Group Lending Model

Our unique **model**

Grameen America is distinct from other institutions in our approach: in place of collateral and credit history, we use a group lending model. Our members form small groups, which encourage them to repay their loans and provide them with support, motivation, and inspiration to grow their small businesses.



Group

A woman with a dream finds four people she trusts to form a group.



Training

Groups learn about loans, savings and credit building.



Microloan

Member receives microloan to start or build a small business, allowing her to increase her income.



Weekly Meetings

Groups meet weekly to make repayments, continue their education and build peer support networks.



Successful Women

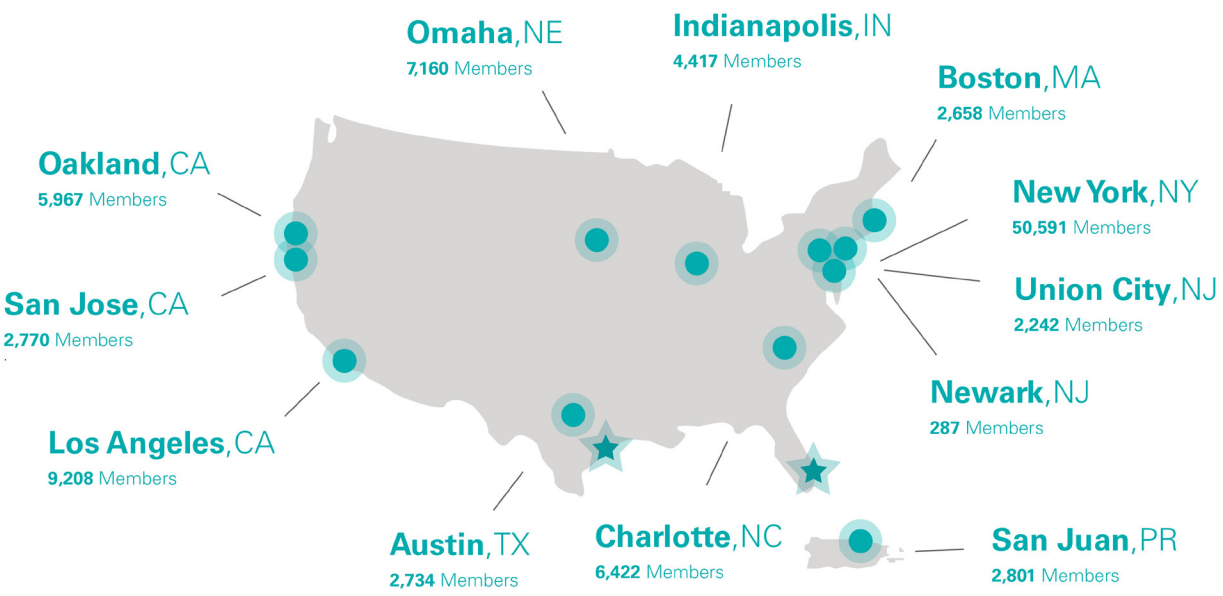
With tools in hand, women increase their income, build their credit score and create jobs in their communities.



Continued Support

Women continue in the program and receive larger loans to invest in their businesses.

Appendix B: Grameen America Branch Locations



Appendix C: Core Components of Technology Conversion

The 2016-17 conversion to cloud based system supports seamless digital integration and mobile banking for members. It is part of Grameen America's vision to promote access to latest digital financial technology for our members.

Paperless Technology

Replace paper intake and repayment systems with mobile devices linked to MIS to allow real-time and remote data entry

Cashless Technology

Introduce next generation of cashless repayments

Mobile Money

Help borrowers shift their businesses from cash operations to mobile money systems

Appendix D: 3-Step Loan Data Entry Process

In GA's legacy system, the CM was required to enter repayment data three times, for each member



Member Passbook

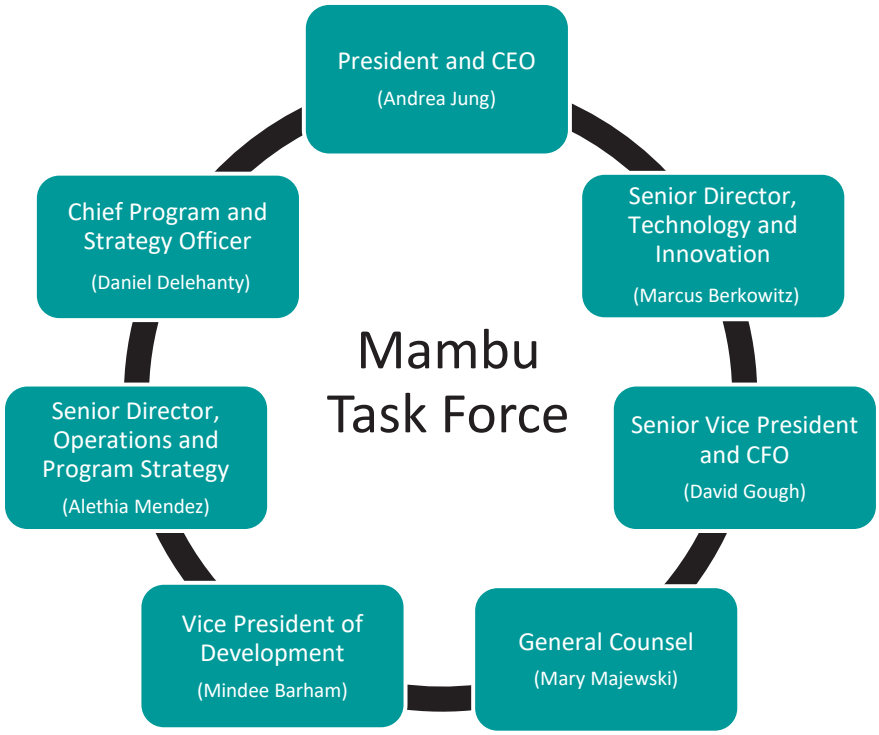


CM Collection Sheet



Legacy System in Branch Computer

Appendix E: Mambu Task Force



Appendix F: Feature Comparison

	Legacy system	*Mambu*
Member Accounts and Consumer Protection		
Automatic application of all payments directly to member's account	N	Y
Members can log into their own accounts independently	N	Y
Automatic text receipts for certain transactions	N	Y
Account "flagging" of info regarding problematic members across system	N	Y
Ability to store photos and documents	N	Y
Integration, Administrative, and Technical		
Open APIs for new software integration	N	Y
Sandbox for training/testing	N	Y
80+% of changes can be made on-site without asking vendor	Y	Y
Web/cloud based storage and backup of data	N	Y
User Interface and Reporting		
Third-party mobile app capability for simple collection processing/consistent data	N	Y
Feature to track performance granularly; multiple metrics at the CM level	N	Y
Feature to allow for remote approvals to speed up the acquisition process	N	Y
Accounting		
Transaction-level drill down capability from the General Ledger and Trial Balance	P	Y
Ability to reprint daily reconciliation/closure reports	N	Y
Elimination of the need to manually enter items into the accounting module	N	Y
More granular views of the following reporting functions;		
a. Member accounting report	P	Y
b. Delinquency reporting by age, CM, branch, region, etc.	N	Y
d. Portfolio development by CM/branch/region, etc.	N	Y

Note: "N" means that this was not previously available, "P" means that it was partially available, and "Y" means that it was (is) available.

Appendix G: CM's Daily Steps

Before Mambu Deployment

At Center Meeting

- ✓ CM and member arrive
- ✓ Member gives weekly payment to CM in front of group
- ✓ CM counts payment
- ✓ CM writes payment amount in member's passbook
- ✓ CM writes payment amount on collection sheet
- ✓ CM repeats process for each member
- ✓ CM takes attendance
- ✓ Group considers new loan proposals
- ✓ CM collects signatures for loan form from group members
- ✓ CM collects members' paper work
- ✓ Meeting concludes

At Branch Office

- ✓ CM deposits cash and money orders at bank
- ✓ CM returns to branch office
- ✓ CM inputs attendance data into branch computer
- ✓ CM organizes paperwork in filing cabinet
- ✓ CM inputs loan data into branch computer
- ✓ CM notices error
- ✓ CM pulls history of all bank deposits from the day
- ✓ CM compares numbers to branch computer, collection sheet and member's passbook
- ✓ CM corrects numbers in branch computer, collection sheet, and member's passbook

After Mambu Deployment

Before Center Meeting

- ✓ Member makes payment at nearby 7-11 or CVS
- ✓ Member receives paper receipt and text confirmation with payment amount

At Center Meeting

- ✓ CM and member arrive
- ✓ Member gives payment receipt to CM in front of group
- ✓ CM verifies loan amount in Mambu is correct
- ✓ CM marks member as present
- ✓ CM repeats process for each member
- ✓ Group considers new loan proposals
- ✓ CM collects e-signatures for loan form from group members
- ✓ CM takes photo and uploads member documents to Mambu
- ✓ Meeting concludes

At Branch Office

- ✓ CM returns to branch office