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KOMIDA: Making microfinance digital in Indonesia

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Teaching Case

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Abstract

This case chronicles specific background, challenges, and actions taken by an Indonesian microfinancing institution (MFI) as it was implementing a digital mobile system to replace its current manual processes used in its field office operations. From a high level perspective, it describes the challenges faced by an organization that was attempting to implement a new digital initiative but constrained by its resource-scarce, institutionally, and culturally bound environment. At the same time, it highlights that this digital initiative was a critical part of its overall plan for addressing industry demands, increasing competitive pressures, and internal process issues. The case study thus provides in-depth information of motivations behind such a project and the challenges facing the organization as it manages the project with an external IT vendor.

Keywords: microfinance institutions, IT implementation, case study

Introduction

As the second largest microfinancing institutions (MFIs) in Indonesia, Koperasi Mitra Dhuafa (KOMIDA) had been preparing to go mobile and digital in the past year. In February 2018, the project team faced its most crucial tests, which was to trial its new system in selected field offices over the next few months. There was still much left to be done for a mobile digital system that was due to launch as soon as the end of 2018. The Operational Director was mindful of what his CEO and founder of the cooperative had told him about the new platform. Among the many objectives, it must improve efficiency and reliability of KOMIDA's field operations across the country. The Operational Director had to make sure that the operations department back in its Jakarta headquarters, as well as the management information systems (MIS) and the social performance reporting teams under his charge, work well with more than 200 field offices to ensure that the rollout would be a success.

In an effort to be closer to its member base, many KOMIDA's field offices were located deep in the rural areas, often without reliable access to electricity and telecommunication networks. As a result, field operations remained largely manual, relying on paper forms and laborious data entry into the MIS terminals that connected back to Jakarta. In fact, the Operational Director keenly remembered that a recent pilot to improve field operations with a smart card system was subsequently scrapped due to cost concerns and lack of acceptance from the villagers it served.

[1] The authors prepared this case based on interviews with KOMIDA and TBOP.

The project rollout had been challenging for several reasons, of which many emerged during field trials. In addition to data errors and differences between stipulated and actual practices by field officers, there were also issues with respect to how KOMIDA and their IT vendor, TBOP, understood as what constituted the root causes of project delays. In fact, both teams had worked hard to put in more resources to ensure trials could return on track as soon as possible. What should the Operational Director do to make sure at least the trials would lead to an eventual successful rollout of the entire digital mobile platform? What should he watch out for to keep things moving well and quick?

The Rise of Microfinancing in Indonesia

Microfinance refers to financial services offered to the unbanked. The unbanked as a segment typically refers to small businesses and households who do not have collateral to be eligible for traditional bank loans. (See **Appendix 1** on microfinance.) In recent years, the microfinancing landscape in Indonesia had been heating up, with more than 250,000 MFIs taking root across the country.

Both funding agencies (e.g., Opportunities Inc., International Financial Corp (IFC) under World Bank) and the Indonesian government had stepped up their scrutiny on MFIs. Funding agencies cared about the social impacts of their investments in MFIs while the Indonesian government wanted to improve the accountability of MFIs like KOMIDA. In the midst of all these developments, mid-sized banks such as *Bank Tabungan Pensiunan Nasional* (BTPN) realized the potential of the unbanked and had also begun to expand and deepen their services to rural areas through branchless services enabled by mobile technology.

KOMIDA's mobile digital initiative also takes place against the backdrop of Indonesia's unbanked population, which stands as one of the biggest in the world. In 2016, more than 60 percent of the Indonesian adult population did not enjoy access to financial services, such as those provided by a bank (Baziad 2016). Furthermore, close to 80 percent of micro, small, and medium enterprises (MSMEs)—which comprised 90 percent of businesses powering the economy—also did not have access to formal financial services (KPMG 2015). This is despite the fact that microfinance in its various iterations had existed in the archipelago for more than a century (Rachmawati 2015; Steinwand 2010).[2]

KOMIDA: Caring for the Poorest Women

KOMIDA began as a foundation, Yayasan Mitra Dhuafa (YAMIDA), on June 28, 2004. It built its first field office in Banda Aceh and was one of the first MFIs that assisted survivors from the 2005 Indian Ocean Earthquake/Tsunami disaster. KOMIDA as the microfinance institution was carved out from YAMIDA and registered in 2009.

Adopting the popular Grameen microloan model, KOMIDA strove to serve low-income women in Indonesia, specifically to help them gain financial independence and augment their family's income. (See **Appendix 1** for more information on the Grameen model.) The cooperative planned to achieve this by providing its members with financial assistance (savings and loans) and non-financial assistance (health training, financial management).

In recent years, KOMIDA had expanded to provide more non-financial services, such as funding of education, water and sanitation, household appliances, and *mikrobisnis* (micro-business). The social enterprise had more than 200 field offices nationwide situated mainly in Java, and serving close to 470,000 members. It had close to US$3.5 million in savings and administered US$35 million of loans (Annadanam and Greenberg 2017).

KOMIDA's governance structure comprises of three boards. The Management Board includes the Chairman, CEO, Treasurer, and Secretary. The other two boards are the Supervisory and Advisory Boards. Notably, the Supervisory Board is responsible for the internal and staff audit, as well as providing oversight of the audit and financial committees.

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[2] The Indonesian People's Credit Banks (*Bank Perkreditan Rakyat*, BPR) offered microfinance services to businesses from the late 19th century. Also known as rural banks, they were established by the Dutch colonial government.

Day-to-day functions are handled by two major departments: the Human Resource (HR) and Finance department and Operations department. The first department is led by the HR and Financial Director who manages the General Manager, Finance Manager, and HR Manager. The Operational Director leads the second department. He has three direct reports: the Operational Manager, SPM and Reporting Manager, and the MIS Manager. The regional and branch offices nationwide came under Operations.

KOMIDA's IT Journey

KOMIDA first foray into using technology to improve efficiency was about a decade ago. In 2008, the cooperative went beyond the typical Microsoft Excel spreadsheets and started developing an in-house offline MIS. However, the head and branch offices were not connected. By 2011, computer terminals at branch offices were connected to the central MIS in Jakarta. By then, KOMIDA had expanded to cover all the offices across the country. An offline system simply could not serve their needs. It had to be able to consolidate its daily transactions more effectively. (See **Exhibit 1** for KOMIDA MIS development history.)

Meanwhile, KOMIDA initiated a smart card pilot project in 2010. It involved a generic smart card that could be read by a mobile smart card reader (see **Exhibit 2**). The system captured all the transactions and customer information in a smart card that was issued to the client. The aim was to replace the manual forms and physical pass books so as to increase field officers' efficiency. The Operational Director recalled being pleased with how using smart cards not only improved the speed of transactions at the branches it was tested, it also reduced data entry errors on the ground. Unfortunately, cost became the issue. KOMIDA forked out about 22,000 rupiah (US$1.60) per card, and another 1,000 (US$0.07) rupiah each for monthly maintenance. In two years, the project had also amassed 50,000 cards, a byproduct of members who left the cooperative. The cards could not be reused and there was cost incurred (approximately US$80,000). Furthermore, many members reflected being were uncomfortable with receiving paper receipts issued for smart card transactions. They were more used to transactions and balances being penned into their physical pass books. The pilot was terminated in 2012.

Despite this episode, KOMIDA remained keen to give technology another chance. The cooperative had several reasons to do so.

First, it hoped this time they could realize the efficiency and effectiveness through using advanced technology. Doing away with paper forms and manual processes for all field offices nationwide and, in the process, converting all data into digital form would result in significant time saving. To illustrate, prevailing processes required new members complete more than 50 paper forms during their registration with KOMIDA. In turn, information captured on the forms needed to be entered into the MIS. This could be done only when field officers returned to their branch offices at the end of the day, and handed the forms over to the branch MIS team to do so.

Second, KOMIDA hoped that the new system would improve controls and reduce fraudulent transactions. Even though low in numbers, fraud remained a perennial issue in the field. Annually, three to four individuals were caught committing fraud involving a sum of 10 million rupiah (about US$722). The figure may seem low in the absolute terms, but relative to the value of each individual loan, it was significant.

Current procedures dictated that audit staff from Jakarta had to visit branch offices every year. They would sample the village centers under those branch offices selected for closer audit. This included checking member pass books against accounts at the branches. When fraud was detected, the branch office had to inform the main office. The defrauded amount would be first covered by KOMIDA but in due time to be repaid by the culprits.

The issue of fraud detection was a tricky issue for KOMIDA. The balance of sticking to rules and procedures as a matter of control and accountability and maintaining trust and showing flexibility on the ground was challenging to manage. Close ties counted especially in the rural areas (Canales 2014). Field officers relied upon keeping up with good relationships with members and their social networks to reduce defaults and increase loans. Furthermore, given the load many field officers had to manage during the course of a day's work, some processes were either performed incompletely, belatedly, and on some occasions, not at all (See View from the Ground for specific details).

A View from the Ground at the Branch Offices

- Each field officer was expected to conduct sometimes as many as eight meetings at the village centers by noon each day. The meetings were where the transactions (e.g., deposits, loan repayments) are conducted
- At the meeting, the field officer had to perform rituals (such as Islamic prayers) to start and end the sessions, manage relationships with various groups and clients.
- Branch managers were expected to conduct surprise visits to the meetings; in the afternoon, they conducted training for newly-registered members
- They also had to visit and negotiate with the village heads from whom KOMIDA had sought permission to conduct business on their grounds. It was not uncommon that meetings were conducted at the homes of village heads or at a member's premises
- Approved transactions needed final signoff from the field officer, the cashier at the branch office, and, finally, the branch manager. All these were performed after all field officers returned to branch offices, typically before branch managers had to leave for afternoon training
- Members were mobile. Some skipped repayment after migrating to other areas. Field officers had to track them down and persuade them to resume.
- Seeing repayment default was possible, some members in the same group might delay or even default repayment
- For recalcitrant members, field officers might had to resort to cover repayments with said member savings in KOMIDA. It might lead to a situation when savings were emptied, which would result in length negotiations with affected members
- The regional coordinator had to be activated to address the issues. If the situation continued to escalate, Operations staff from Jakarta had to visit the affected branches

Third, KOMIDA was keenly aware that competition was heating up considerably with new MFIs and even mid-tier banks entering the fray. Some used higher loan amounts as bait to attract KOMIDA members to switch, resulting in some members making loans from multiple providers. There might be as many as 12 microfinancing providers vying for the same client base in one region and typically scheduling the same meeting times to meet clients. The banks often brought with them more advanced wireless and mobile systems, simplifying registration and quickening transactions. KOMIDA simply could not afford to stand still and stick to current ways of doing things. It also could not risk damaging the relationships built between branches on the ground and their rural members, which might lead to the latter switching to other microfinancing providers.

The competition for members also translated into competition for field office staff. It took KOMIDA considerable effort to train new field officers. They had to be first trained at YAMIDA for several weeks before going for on-the-job training at branch offices for at least three months. It took even longer for them to be familiar and build rapport with members and villagers. When they became competent, other providers would come to poach them, promising them higher pay and faster promotion.

Fourth, KOMIDA also hope the new system at some point could help assess social performance of their initiatives, in order to address external investors and funders' request for more visibility on that domain. In 2010, KOMIDA adopted Grameen Foundation's Progress out of Poverty Index (PPI) to keep track of the social impacts of their initiatives in addition to their financial benefits. In 2011, KOMIDA also began to keep track of other social impacts, such as improvement in sanitation and water supply. More recently in 2013, another funder, Opportunity Inc. from Australia, introduced the framework social performance management (SPM) (SMART campaign) to KOMIDA. Through the campaign, KOMIDA was given technical assistance to implement the SPM using the SPI4 index. A new SPM department was formed in the same year. After working with the technical consultant, the cooperative was not only able to successfully conduct the SPM audit, it was also certified for their financial and HR functions four years later. Although the SPM department was not directly involved in launching the new digital mobile system, it actually had a stake in how the project would turn out. This is because the work that it did require extensive data from the MIS.

Finally, being the head of the national microfinancing association (*Perkumpulan Akses Keuangan Indonesia*, PAKINDO, or Indonesian Access to Finance Association), CEO had been a strong advocate for

Indonesian MFIs to improve their accountability. Furthermore, with efficient data collection across its field offices, especially going beyond financial aspects to even analyze social performance, KOMIDA could become Indonesia's forerunner in digital transformation and smart data analytics.

Enter TBOP: Implementing Prodigy in KOMIDA

Technologies for Business Operations & Payments Pte Ltd ("TBOP") was founded in 2012 by two veterans in the Singapore telecommunications industry. The firm focused on developing mobile technology platforms for social enterprises working in rural areas, covering services in finance, healthcare, and education. TBOP's mobile solutions aim to help clients improve their performance and reduce their operational costs, while at the same time, institute clearer audit trails to control fraud.

TBOP entered the Indonesian MFI landscape in 2015. The company was contacted by a Singapore-based consultant to assess the IT needs of a large Indonesian MFI. Its first IT assessment project led the firm to working with IFC and other Indonesian MFIs, who were stakeholders, on gathering operational improvements and requirements for a mobile MFI system. At the same time, TBOP was making presentations of its system architecture to other Indonesian MFIs. It was at one such chance presentation that KOMIDA's CEO encountered TBOP. Impressed with TBOP's presentation, KOMIDA's CEO invited TBOP's CEO and his team to make a separate presentation of its proprietary mobile banking system, Prodigy, at KOMIDA.

By then, it was understood that the new mobile IT platform replacing existing manual processes would be the de facto heir to the failed smart card pilot project in KOMIDA's quest for higher efficiency. The Operational Director and his MIS manager started sounding out their external vendor who had built their core banking system years ago. KOMIDA was keenly aware that their core MIS database was built by the external vendor. While the MIS Manager could amend and customize some reports generated from the system, the database architecture was known only to their external vendor.

Ultimately, KOMIDA chose TBOP in mid-2015. According to TBOP, KOMIDA's CEO and his team was impressed with the functionalities and features of Prodigy mobile system. Furthermore, TBOP was willing to adapt its system according to their requirements. At the same time the pricing of system was also competitive. Another reason why KOMIDA did not go with their core banking system vendor was that it could not deliver the requisite wireless access for its branch offices.

Project scope and timeline

The branch at Bogor was chosen to be the pilot site because it was physically closer to KOMIDA's MIS headquarters. This meant the MIS Manager and his team would find it more convenient to train users and troubleshoot the system during trial and rollout. With close to 4,700 members, Bogor officer also had a sizable client base for testing. KOMIDA also reasoned that the rural conditions at Bogor also resembled other major field offices in the country. Test findings and lessons learned could be applied elsewhere.

The KOMIDA team would be led by the Operational Director and largely managed by the MIS Manager. The Operational Director would be the decision maker for the project implementation. He would also be responsible for informing the team concerning any change in regulations. The MIS Manager was the project manager. According to the Operational Director, the latter handled "80 percent of the project matter" especially programming-related issues. These project responsibilities were in addition to his day-to-day duties as MIS Manager. Initially, he had one MIS staff helping him with the project. This staff worked as a tester and translator. As the project unfolded, he roped in two more MIS staff for user acceptance tests.

From TBOP, its CEO was the overall project director while his Chief Product Designer was the project and systems manager. At various points, there was one to two full-time programmer working on the project. The company expected to commit about 1,500 man-days to the project.

Details of the project plan were mainly at the gross level. As seen in **Exhibit 5** project event timeline, the original project plan was focused on the user requirement analysis and development of Prodigy's Field Officer Mobile module and Field Manager module. The next phase was mainly focused on the testing of the entire Prodigy system and its integration with KOMIDA's MIS. By early 2017, the consensus between KOMIDA and TBOP was to conduct a complete system rollout at Bogor by end of August 2017, with

subsequent implementations in KOMIDA's branches across the country in the following months. (See **Exhibit 3** for the layout and modules under the new Prodigy-based system.)

Project Implementation: Challenges and Delays

The progress of the project seemed smooth at the beginning. The entire year—2015—was spent on understanding KOMIDA's requirements, with TBOP team making multiple trips to Jakarta to study KOMIDA's process flows, procedures, and business policies. Development work on the Field Officer modules, including its user interface and functionalities began by middle of 2015, with multiple iterations of improvement being made along the way. In early 2017, the team had progressed to working on the development of the Manager module. By May 2017, development work for the Prodigy system had completed and field testing in Bogor began in earnest. (See **Exhibit 4** for scenes of testing at Bogor village center.) However, it was at this juncture when the project seemed to start falling apart.

It started in July 2017 when KOMIDA's MIS team began putting up new requirements for additional application forms and system interfaces during field testing. As a result, the field trial was extended to September 2017. While the application forms were quickly completed, the development of the interfaces between Prodigy and KOMIDA's core banking database began to hit some roadblocks in that several errors occurred when data was transferred between the systems. The MIS core banking system was more complicated than expected. As The MIS Manager was the only one familiar with the MIS database, more time was needed to resolve the issues. At the same time, testing of the forms was also delayed till October 2017. (See **Exhibit 5** for project event timeline.)

These issues led the field trial to be postponed several times, first from September to end of November, and then till early December 2017. Unfortunately, both KOMIDA and TBOP teams continued to encounter issues with data synchronization when December arrived. Meanwhile, KOMIDA requested again for new application forms to be built in. This was in anticipation of the changes to existing client data collection forms in 2018. After the third postponement of field testing, KOMIDA and TBOP finally set the tentative date in March 2018, an overall delay of seven months.

Many issues encountered during testing were due to the actual practices field officers followed, either they were not articulated in formal processes and standard operating procedures (SOPs) and thus left to their discretion, or that they deviated from formal processes. A digital mobile system was not able to tolerate the degrees of flexibility that would be acceptable in a manual, paper-based system. For example, field officers in their current mode could simply modify the dates on paper when members missed payments. When members moved to another village and hence another group, the change in membership and meeting days (e.g., from Tuesday to Wednesday) could conveniently be reconciled by scratching off dates or other information on the forms. This also took time to be entered into the MIS, and typically might not be on the same day the change was effected. The current MIS did not require real time updates.

However, in the new digital mobile system, such changes in repayment and schedules presented grave issues. This is because the repayment schedule in the Field Officer module on a field officer's tablet would not be synchronized with the MIS database. The discrepancy would be reflected as a "missed" payment on the tablet, but not in the MIS. Thus in the digital mobile system, field officer deviations from formal processes had significant implications for the reliability of data captured in the databases. One solution would be to perform a one-time data cleansing between field office and main MIS databases, provided that discrepancies and misalignments could be exhaustively identified.

Differing Perspectives from KOMIDA and TBOP

Not surprising, KOMIDA and TBOP teams interpreted the broad causes of the delays and detours taken during the testing phase differently.

From KOMIDA's point of view, TBOP did not perform sufficient testing, especially for the menus and functionalities of the various modules. According to KOMIDA, the visits to Bogor village center and the extent of observation that the TBOP team made were not sufficient. In addition, the latter did not had the opportunity to observe the processes for registration and applying new loans during the visit.

On the other hand, the TBOP team felt that the KOMIDA needed better proficiency of their internal MIS database system. Often the MIS team became the "bottleneck" because it was the only party that knew how to access and manage the database. From TBOP team's perspective, the situation was further complicated by the fact that the core banking vendor may not have provided the MIS team with the entire database dictionary (i.e., tables and their inter-relationships). However, the TBOP team acknowledged that they could have planned for and allocated more development time for the system. They acknowledged that KOMIDA's business policies and rules were more complex when compared to other smaller Indonesian MFIs. As a result, the project implementation was more challenging than what they had expected.

The TBOP team reflected that the last-minute, surprise requests could also been anticipated with better communication within KOMIDA, particularly between the project/MIS team and other stakeholders. For example, new requirements from operations (such as new forms) were not promptly updated, which resulted in last-minute changes. The change might have arisen from shifts in operational requirements.

Another example was the MIS team allowing field officers to amend certain fields in the Prodigy modules after entering the data into the system. This feature was initially not enabled as the Internal Audit team (under the supervisory board) had discussed this during one of the early project meetings and raised concerns about how the feature might compromise audit controls. However the MIS team decided to change this requirement after much discussion with the field office staff during the field tests. The feedback was that this would prevent field officers from easily correcting mistakes in data entry in the field.

The last example was the issue of the review questionnaire. Field officers had to conduct reviews at the beginning, in the middle of, and at the end of the loan period. Instead of doing one in the middle of the loan period as required, field officers often conducted it only when the current loan period was about to finish and members needed to initiate a new loan. In other words, they performed both the mid-cycle and end cycle reviews at the same time. Furthermore, the MIS team planned to reduce the number of PPI questions from 10 to three questions. This decision seemed to be taken independent of the SPM team. In fact, the SPM manager only attended one project meeting at the beginning of the project.

Of course, not every change could be anticipated. Some were born out of actual field and data testing that took place as the project unfolded. One prominent example was the need to make fundamental change in data architecture of the mobile digital system. In the original design for the Prodigy system, the data collected by the field officer tablets would be first synchronized and stored in the branch MIS office manager module and then directly uploaded to KOMIDA's MIS and accounting databases. With the discrepancies and errors emerging from the field testing, KOMIDA MIS and TBOP realized that they could not directly upload the field data to the MIS and accounting databases. As such, TBOP had to provide a separate database to store all the uploaded field data, which would be then "cleaned" and reconciled before sending them to the MIS and accounting databases. (See **Exhibit 3**.)

The TBOP team also observed that there were no fully dedicated staff to the project until much later in the implementation. There was no change management team put in place at KOMIDA, let alone an individual who would monitor and prepare for helping both branch offices and members accept and switch to the new system. TBOP understood that without more financial support from funders and donors, KOMIDA could not raise new resources to do so. This was in addition to delays in tests and feedback from KOMIDA for TBOP to rectify the issues, further triggering a downward spiral in terms of timely delivery of the system.

The Road Ahead: Securing Quick Wins

> "One of the most crucial obstacles standing between low-income Indonesians and financial inclusion is the technical capability of most MFIs. Many still rely on paper-based solutions or Microsoft Excel spreadsheets."
>
> Steven Hodgson, co-founder of Kanopi, a technology startup that built information systems for MFIs in Indonesia (Baziad 2016)

One hurdle that MFIs in Indonesia encountered was weak technological support to meet the requirements stipulated in the new microfinancing law. Even KOMIDA, one of the most established MFIs in the country, struggled with joining the digital mobile age.

Reflecting on their journey, some in the KOMIDA team wondered whether they should have gone with a vendor who was already clued into MFIs, especially in Indonesia. An organization that already knew the processes and related products. The sentiment was most keenly felt when in spite of so much time and effort spent, there were still processes and forms that were not properly captured in the new system. In addition, issues concerning database integration and data synchronization continued to haunt the project. The thinking goes, "if the vendor fully understood the processes end-to-end, then they would have built applications that meet our needs."

That being said, the project was moving forward. Both KOMIDA and TBOP teams committed more resources and interacted more with each other. TBOP observed that the KOMIDA team had been taking stronger ownership of the project, such as assuming a more active role in resolving the database issues.

The Operational Director had laid out what he hoped the project could achieve in the coming months. He preferred taking a phased approach, securing quick wins where selected functions of the new system were gradually rolled out at the Bogor pilot site. Once that was achieved, there would be a go-live at Bogor, followed by full implementation at other selected pilot sites.

The Operational Director had thought through how to select these new pilot sites: they should be a handful of branches which catered to different membership size (e.g., some fewer than 1,500 members while others have more than 5,000 members) and covered varied field conditions. Field conditions included competitor dynamics, loyalty, connectivity, and stability of electricity. The tests should also collect data on direct and indirect cost and expenses, as well as the impact on the efficiency of field offices (e.g., less time required to conduct transactions) and on the quality financial data reporting. He would be satisfied if these sites could reduce direct cost by at least 30 percent. Any other improvements and benefits on the ground would be a bonus.

The Operational Director planned to meet field managers and officers from those pilot sites, as well as the MIS and operational staff for feedback on the new system. If the pilot sites worked well, the next step would be to roll out the system to the 80 branches in West Java and then the remaining 200 branches in the rest of the country, including Sumatra and Kalimantan.

Exhibit 1: KOMIDA MIS Development History

Year	Description
2005-2009	Paper-based system with some excel spreadsheets for data analysis
2008	Began developing a MIS
2009-2012	Implemented an offline MIS (head office and field offices are not connected)
2011-2013	Implemented an online MIS (field offices have MIS terminals linked to the central MIS)
2010-2012	Deployed smart card reader system for field office (trial/system cancelled)
2015	Began project to look at field office and field officer system

Exhibit 2: Generic Smart Card and Mobile Smart Card Reader

Figure 1. Example of A Generic Smart Card and Smart Card Reader

Exhibit 3: New KOMIDA Digital Mobile System

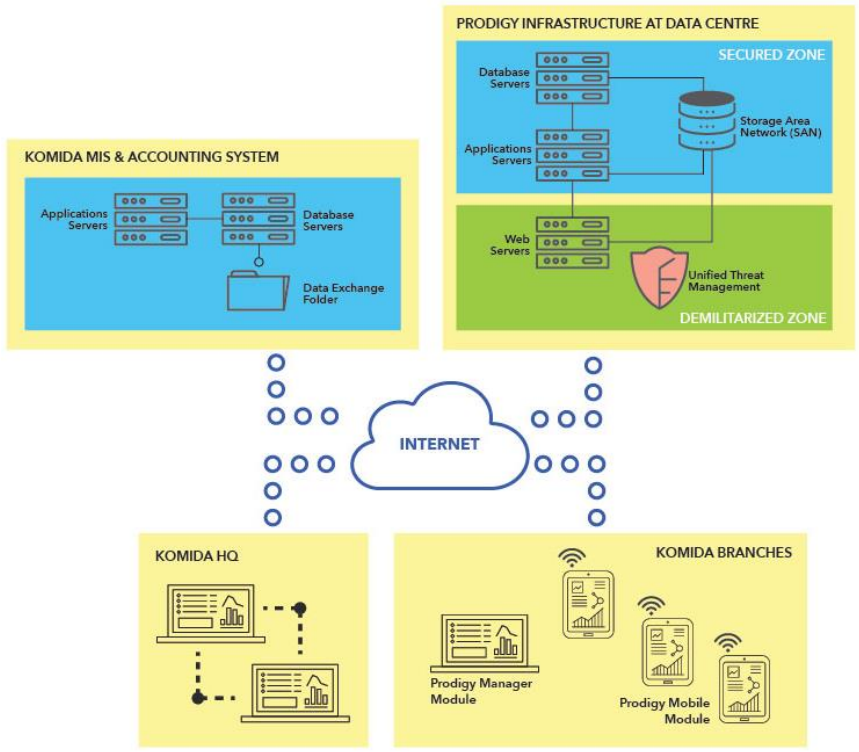

Figure 1. Layout of New Digital Mobile System

Source: Courtesy of TBOP

Modules in New KOMIDA System

1. Field Officer Mobile Module
   The module replicates all MFI existing paper-based forms as features in a mobile device. These features include:
   - an operational dashboard with the tasks-for-the-day summary, total repayment collection total, total savings, total savings withdrawal, and total disbursement as well as the cash on hand;
   - manual updates of the repayment amounts or savings or whether the repayment was assisted or missing;
   - audit trail that captures any of these variations that are applied to the clients;
   - option to either to send a SMS to the client's hand phone or print a receipt for the client (via low-cost portable Bluetooth printers)
   - Housing Index scoring feature where field officers enter in criteria for the housing index e.g., housing type, housing size etc.
   - access all the past records and transactions of a client by using the search function and client profile
   - capture the critical personal information of a potential client like photos of client

- "online" or "offline" modes depending on the availability of Internet and/or mobile connectivity
- data synchronization with Field Office Manager Module

2. Field Office Manager Module
   The management and Back office module provides integrated management for field office data.
   - Fully integrated with the Field Officer Mobile Module for data synchronization
   - Integrated database linked to MFI's MIS data: daily scheduled data extraction and transfer between the MFI central MIS and field office module.
   - Field officer user management: manage field officers' assignments, centralized provisioning and configuration of mobile devices, and remote revocation of user access to missing/stolen device
   - Field officer reporting feature to track the performance history of the clients assigned to each field officer as well as the trend data for new client enrollment or new loans and savings take up rates
   - Client management information to review client performance, approve any changes to their loans and savings
   - Daily onsite backups function

Source: Courtesy of TBOP

Exhibit 4: Bogor Branch Office Pilot Site

Figure 2. Field Officer Recording Transactions on a Pass Book at a Village Center Meeting

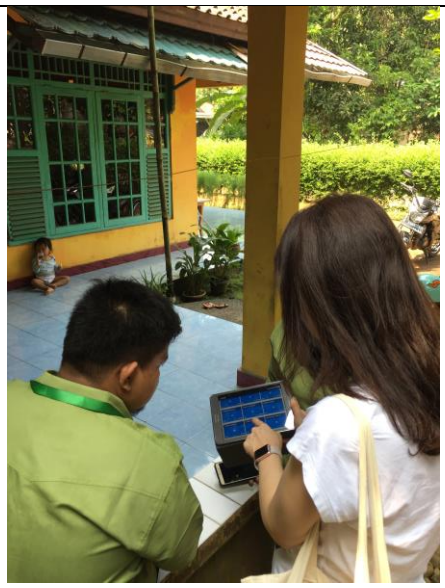

Figure 3. Field Officer Testing the Prodigy System at the Same Meeting

Source: Case authors

Exhibit 5: Prodigy Project Milestones and Events (2015-2018)

Year	Description
2015	KOMIDA's Annual meeting to discuss MIS planning Operations and MIS team proposal to Management approved Began discussion with partners and investors to select vendors TBOP presentation at MFI association caught interest and was invited to present to KOMIDA's team TBOP and KOMIDA begin Prodigy development TBOP's development team at KOMIDA's site to understand process flows, procedures and business policies
Mid 2015 to end 2016	Development of Prodigy's Field Officer Mobile module (User-interface design and functionalities) Development of Prodigy's Field Manager module Ongoing iteration of system and customer engagement
Early 2017	Ongoing development of Prodigy's Field Manager module (interfaces) Testing of Prodigy system Prodigy development beta completed
2017 May 2017 Jun	Field test of Prodigy system and demo at Bogor Branch Office (Pilot site) Explored request for changes Proposed trial implementation of Prodigy System at Bogor field office at end August (with a goal to start full implementation planning in September)
2017 Jul	New requirements from KOMIDA for new forms and interfaces Data interface with KOMIDA's database test to be scheduled Proposed trial at Bogor field office postponed to Sept. 2017 *(1st postponement from August 2017)*
2017 Sep	Change management problem mooted by an external funder
2017 Oct	KOMIDA MIS began full testing of forms and interfaces
2017 Nov	New requirements for forms and interfaces completed KOMIDA database servers not able to synchronize due to errors Proposed trial at Bogor field office postponed to end Nov or early Dec. 2017 *(2nd)*
2018 Jan	Ongoing data synchronization problems as KOMIDA MIS attempted to rectifying issues KOMIDA requested for new interfaces for client data collection based on new forms Proposed trial at Bogor field office postponed to March 2018 *(3rd)* TBOP wanted to discuss about full deployment at Bogor
2018 Feb	Due to ongoing issues with database KOMIDA proposed alternative implementation plan: to roll out Prodigy only for registration of new members. All other functions would continue manual paper process. This will be rolled out in Bogor field office (proposed first week of March).

Appendix 1: Microfinance—Small Loans with Big Impact

Microfinance services include savings and loans, as well as insurance and money transfers. They also cover microcredit, which is credit services usually of small loans. While microfinance should not be treated as a panacea for closing the global poverty gap, it can be a sustainable means to help small businesses and the low-income "build assets, increase incomes, and reduce their vulnerability to economic stress." (International Finance Corporation undated). It is also regarded as an effective means to empower women (International Labour Organization 2008).

Microfinance are typically provided through formal, semi-formal, and informal channels.[3] Formal channels include organizations such as banks, financial companies, credit unions, and even insurance companies. Semi-formal channels cover cooperatives, village banks, and non-government organizations (NGOs). Non-registered self-help groups, commercial money-lenders, and even small to medium business owners (e.g., shopkeepers) constitute informal microfinance providers. Among the three channels, the formal channel is the most regulated and supervised by government; the informal may not even be regulated at all.

One of the established models of microfinance services is the Grameen (Bangladeshi for "Village" or "Rural") model pioneered by Muhammad Yunus, a Bangladeshi economics professor. Run as a community development bank, the Grameen model offered microcredit primarily to women, recognizing that the access to credit and income for this demographic was particularly limited (and more so than men), even among the underserved. Another feature of the Grameen model is the practice of solidarity lending. It requires a group of borrowers to supervise one another, making sure everyone repays her loan on time. No guarantee is required from any member; neither is there expectation of joint liability by the group. The model relies upon the trust and collective responsibility shared within the five-member groups.

The value of the global microfinance sector in 2015 was estimated to be as high as US$100 billion (The World Bank 2015)—which was close to the size of Croatia's economy in the same year—and serving about 200 million individuals, which would be about the entire population of Brazil.

According to KPMG (2015), there continued to be potential for growth for lending to MSMEs in Indonesia, particularly in Sumatra and Kalimantan compared to Java and Bali where they seemed to be saturated. Crowd funding and peer-to-peer (P2P) lending among other alternative lending initiatives are at their nascent stage and yet to reach critical mass (KPMG 2015).

The regulatory landscape in Indonesia changed in 2015 when the new microfinancing law came into effect. Drafted with the intent to improve financial inclusion and integration of rural banks and other MFIs into the national financial system, the new microfinance and branchless banking law required these organizations to meet capitalization and licensing criteria. Their activities would be supervised by *Otoritas Jasa Keuangan* (OJK), Indonesia Financial Services Authority. In addition to mandatory registration, MFIs were required to maintain records according to accepted financial accounting standards, and submit financial reports periodically to OJK. MFIs also needed to meet provisions on consumer protection, confidentiality, and information sharing with other institutions. Banks were also allowed to provide branchless banking, hence easing their burden on documentation and labor.

Such requirements presented significant challenges to many MFIs. As a result, the pace of registration had been slow. According to OJK (2017), close to two years after the law came into force, only 167 MFIs had registered with the regulator.

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[3] There are other ways to categorize the range of organizations that perform microfinance. For example, specific to Indonesia, another way would be to classify according to banking (e.g., BNI) and non-banking finance organizations (e.g., Farmers' Cooperatives [*Koperasi Petani, Koptani*]). A se, as well as government agencies (e.g., Office of the Cooperatives and SME Service) that offer such services in line with their developmental mission.

See The Asia Foundation. (2003). *Microfinance Services in Indonesia: A Survey of Institutions in 6 Provinces*. Retrieved from https://asiafoundation.org/resources/pdfs/Indomicrofinancesurvey.pdf

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KOMIDA:
Making Microfinance Digital in Indonesia

Teaching Case (Teaching Note)

Synopsis

This case chronicles specific background, challenges, and actions taken by an Indonesian microfinancing institution (MFI) as it was implementing a digital mobile system to replace its current manual processes used in its field office operations.

From a high level perspective, it describes the challenges faced by an organization that was attempting to implement a new digital initiative but constrained by its resource-scarce, institutionally and culturally bound environment. At the same time, it highlights that this digital initiative was a critical part of its overall plan for addressing industry demands, increasing competitive pressures, and internal process issues. The case study thus provides in-depth information of motivation behind such a project and the challenges facing the organization as it manages the project with an external IT vendor. While most standard IT project management principles may be useful in managing these challenges, it is imperative that they are applied in a way that is mindful of the cultural and industry norms in which the implementation occurs. As of August 2018, the project had restarted trial in Bogor for the first set of functionality (onboarding or new client processing). This function has been extensively tested and found to be stable for the pilot rollout. The next few months in 2018 would see the rest of the functionalities being rolled out and tested in Bogor and with the HQ in Jakarta. Once that is completed, the project will be rolled out to the rest of the other local offices, region by region.

Target Audience

The case study may be suitable for courses or modules related to:

- Project management of information systems implementation in developing countries and/or industries with complex institutional and cultural norms
- Fintech innovation implementations
- MFI case study on business process innovation and systems improvements

The case can be used for MBA and other Masters level students, executives and advanced undergraduates.

Learning Objectives

- To understand the operational, business, and technological challenges faced by a MFI in developing countries
- To identify the project management actions required to successfully design and implement a digital mobile system for a MFI
- To appreciate the impact of cultural norms and industry context on project management principles and system designs

Assignment Questions

1. What are the main motivations behind KOMDIA's push to implement the digital mobile systems? Evaluate how each motivation shaped the digital mobile project.
2. Based on the case study data, examine the digital mobile system implementation process and identify the following:
    a. Vendor selection issues: What would be some best practices? Why would they be applicable in this case?
    b. Project management and organizing issues: What are some best practices and why would they be applicable in this case?

   c. Business and organizational issues: What are some issues that may have constrained or affected the above two issues discussed? How should you address them if you were (a) CEO, (b) Operational Director, or (c) project manager?
3. What are some of the project risks that The Operational Director encounter given the current situation?
   a. What should The Operational Director do to mitigate those project risks?
   b. What other emerging issues do you foresee that may affect the next phase of the project?
   c. What would you do to ensure that both KOMIDA and TBOP effectively deliver the new system?

Suggested Teaching Plan for IT Project Risk Class

Here we illustrate and run through an instance where the KOMIDA case could be used in a project management class, specifically on project risk control and another instance that uses it to study business process innovation in the MFI domain.

I. IT Project Class

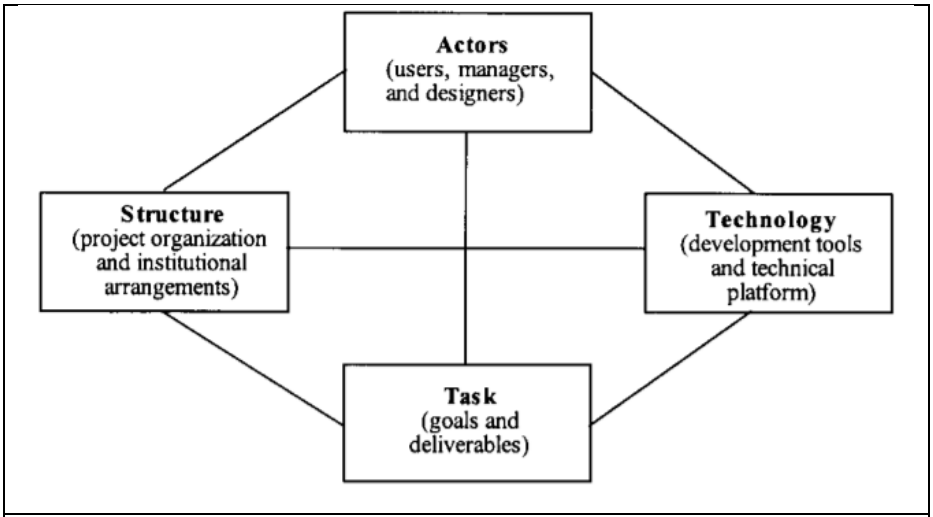

Figure 1. Socio-technical model of system development (Lyytinen et al. 1998)

Drawing on a seminal framework on systems development project (see Figure 1), we note that any IT project will involve four major organizational components:

1. Structure: Project team (and governance), other organizational and institutional arrangements
2. Actors: Users, managers, designers, and other stakeholders (vendors)
3. Technology: systems, development tools, platforms, and legacy systems
4. Tasks: goals and deliverables of project, project scope

The class can be organized into three discussion segments, also known as "pastures". Depending on the time available and the intent of the instructor, the discussion segments can be delivered in one class setting or spread over several settings. The instructor may also choose to spend more or less time on specific issues or even eliminate particular pasture(s).

Pasture 1: Case walkthrough

Instructors could use the framework and walk students through the case to understand what issues KOMIDA and TBOP faced for each component of the framework.

The discussion can be organized according to each component:

1. Structure
   1.1. The size of the project team in KOMIDA
   1.2. Presence/absence of change management
   1.3. Working relationship between KOMIDA and TBOP
2. Actors
   2.1. Clients
      2.1.1. How will members react to new process of new client signup (vs. old way of talking face to face and later filling up the paper form)
      2.1.2. How will members react to new process of collecting monies when field officers will have to do all the work
      2.1.3. How will members react to the switch from passbook to receipt transactions — need education
   2.2. Field officers and MIS Team
      2.2.1. Issue of KOMIDA project team and field officers: E.g., resistance, communication
      2.2.2. Need for ongoing training for new field officers
      2.2.3. Competition for talent
3. Technology (mobile digital system for field office)
   3.1. Functional processes - run tests and to identify issues and to implement solutions.
   3.2. Device issues e.g., battery life, wet weather
   3.3. Connectivity issues
   3.4. Cost of system issue (TBOP licensing and system)
4. Task (field or branch office)
   4.1. Time to train the field officer to digitized version of current tasks
   4.2. Vendor for user training (in-house with YAMIDA or outsourced)
   4.3. Privacy of data may be another issue

Pasture 2: Interdependencies among components

The important problems facing the project however, are not within each of the component but in the alignment between the components i.e., the interdependencies between the four components. Instructors break students out into groups to discuss what some of the key misalignments were in the case and explore how that led to the initial project issues. We discuss three of the six interdependencies below.

1. Actor-Structure: issues related to project resourcing (and sponsorship)
   1.1. To consider alignment of incentives, goals, knowledge transfer among project team, vendors, and users
2. Task-Structure: Internal project organizing and synchronization of work/project information flow
   2.1. To consider alignment between project controls and strategy
3. Task-Technology: Technical and process misalignment issues not resolved
   3.1. To consider alignment of work and new technology especially given the industry and cultural norms of the field office

Pasture 3: Project risks

In this final pasture, instructor should lead the class to identify and review the project risks in this case study, and subsequently discuss practical approaches to the implementation. Discussion could involve the implementation approach (big-bang approach, phased approach, or hybrid approach) (Brown and Vessey 2001).

Instructor could explore with class the advantages of the Operational Director's phased approach.

Review the Operational Director's phased approach plan:

1. Use a (staggered) phase approach: phased functional roll-out in pilot site, followed by complete system implementation at the pilot site; followed by complete system implementation in different site conditions; finally, full deployment across field offices according to geographical areas (phases)

2. He envisioned that the project team would deploy one function/process (new client), do tests, collect data, make changes then move on to the disbursement process and do the same and finally collecting/transactions.
3. Once the pilot site with all three functions are completed, they will move to several branches of different **sizes** (small <1,500 members, 2,500 to 3,500 members, >3,500 to 5,000 members) and with different **field conditions** (e.g., competitor dynamics, loyalty)
4. He wanted to collect data on a) direct expenses/costs, b) indirect expenses, and c) impact on activities of the field officers (more efficient - less time required to conduct transactions, more effective - to do more monitoring, visit more members), d) impact of financial data reporting (improve quality of data). He would be pleased if the project could reduce direct cost by 30 percent (target was 50 percent) if he could point to the other improvements and benefits on the ground.
5. **Next 3 months** - to finish testing the new client process using mobile application
6. He expected to meet up with branch team of field manager and field officers and MIS and Account staff to get feedback; to conduct focus group with branch members to get feedback
7. If works well, to move from the pilot branches to rest of branches

Potential downside to the plan:

1. Speed of implementation and how that may impact the strategic objectives of the project
2. Cost of project implementation (ongoing support)
3. Ability for vendor to support continued roll out
4. Lack of knowledge transfer between MIS and vendor

II. Business Process Innovation and Systems Improvements for MFIs

Another perspective to use the case study is through the business process innovation lens. The uniqueness of this case study is its industry—FinTech—specifically, the MFI domain. While there have been various case studies of MFIs (Annadanam and Greenberg 2017; Canales 2014; Mersland and Strøm 2009; Thrikawala et al. 2013), their focus has typically been on the performance of MFIs in terms of its social impact. With the exception of Canales (2014), few have tried to provide in depth analysis on the operational issues that MFIs face and how those issues in turn impact on its ability to perform and achieve the social goals that its sponsors expect.

Pasture 1: Case walkthrough

Instructors should focus on the sections "The Rise of Microfinancing in Indonesia" and the Appendix 1 "Microfinance: Small loans with big impact". The learning focus is to help students understand the Indonesian MFI industry and the key pressures small MFIs face in this current environment.

Specifically, instructors could help students understand:

1. Regulatory concerns: New regulations impose new requirement on MFIs for accountability
2. Sponsors concerns: IFC's increasing scrutiny on social impacts of investments in MFIs
3. Competitive pressures: With the new microfinance and branchless banking law, existing mid-sized banks are moving into the same markets as the MFIs
4. Internal operational pressures: Most MFIs continue to lack technological infrastructure and are slow to meet the new banking laws' requirements

Pasture 2: Analysis of tensions for field operations standardization through IT

While many sponsors and pundits have argued for increased use of technology in the MFI domain (e.g., proposed adoption of blockchain technology for MFIs) (Yeow et al. 2017), few have understood how the operating conditions of MFIs would constrain the actual implementation of technologies.

Instructors could adopt the following insights from Canales (2014) and adapted here for our case analysis. Specifically, the model in Figure 2 shows us the tensions between flexible routines used by MFIs and the strict-computerized practices that are introduced by new technology like mobile tablet systems.

Based on Canales (2014) study, we understand that flexible routines help MFI better manage clients' needs through better knowledge of client and more interaction and trust while strict routines help MFI enforce polices and reduce credit risk. Whereas most MFI work is based on relationship and trust, his empirical study reveals that the presence of both flexible routines that emphasize relational management and the use of strict-computerized routines that emphasize on stringent rule-based controls will enable MFIs to perform better than other situation where either one dominates.

Instructors can discuss what are some of the disparities between the field office practices (see "A view from the ground at the branch offices") and the new rules that would be implemented (see project implementation challenges). This could be used as a basis to consider the challenges on capturing, standardizing MFI processes typically expected in a digitalization project. Students would consider the extent to which KOMIDA's new digital mobile system should be used to enforce strict-computerized routines while enabling the relational and flexible work done by MFI field officers.

The final part would be to consider how best to balance the tension between flexibility and exhaustiveness and standardization and how business process innovation designs for MFIs should be mindful of these issues. The instructors could break the students up into groups to discuss on such designs.

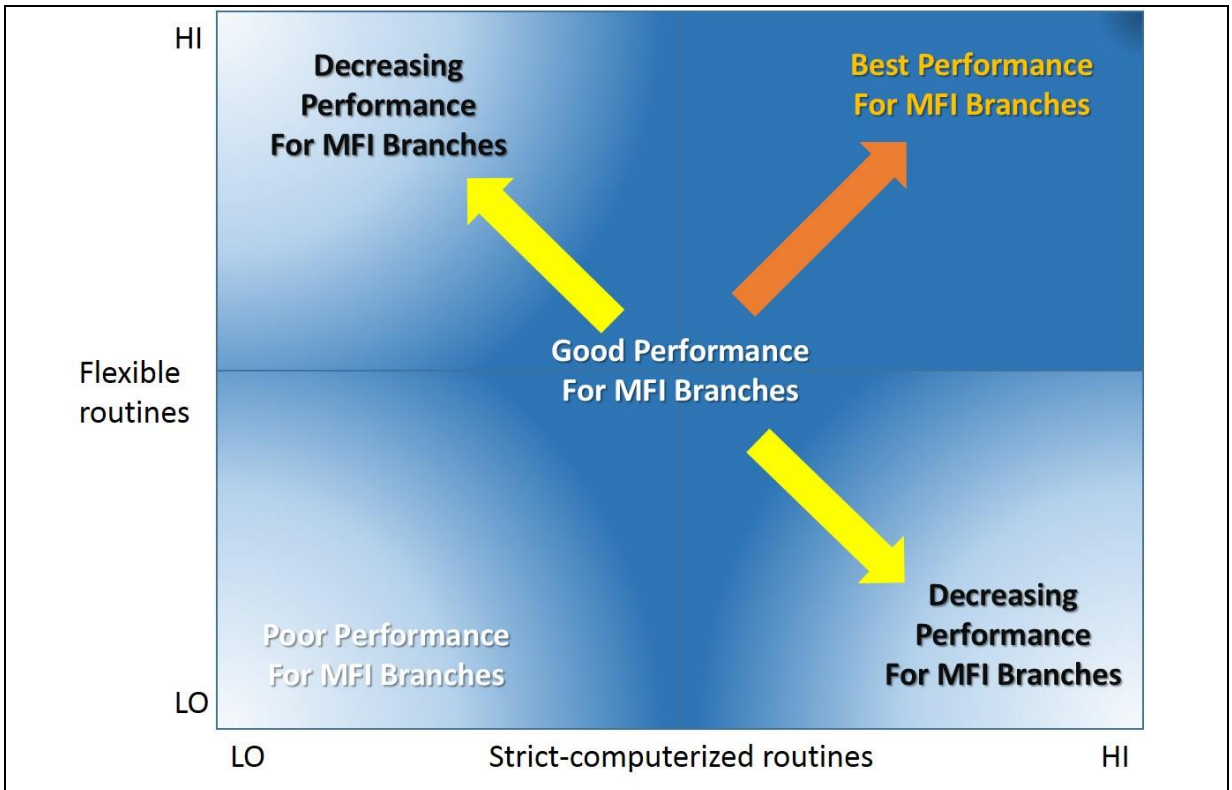

Figure 2. MFI Performance with flexible routines and strict-computerized routines (adapted from Canales 2014)

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