

Photo courtesy of Opportunity Bank Serbia:  
Client advisor Danka Mlinar meets with OBS client Tomislav Stankov in Kovilj, Serbia

ACCION

# Digital Field Applications: Opportunity Bank Serbia Case Study

Channels & Technology, Accion

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## Acknowledgments

We would like to thank the management of Opportunity Bank Serbia for partnering with us and contributing to this case study and business model.



### About Channels & Technology

Accion is a global nonprofit dedicated to building a financially inclusive world with economic opportunity for all, by giving people the financial tools they need to improve their lives. Accion's Channels & Technology team is an experienced group of professionals who have worked with a variety of financial institutions and FinTech companies to plan, test and implement innovative technologies and methods to reduce the bottlenecks for achieving financial inclusion growth and scale.

### About Software Group

Software Group is a technology company focused on providing products and services to the financial inclusion sector. With global operations, Software Group has a wealth of experience in deploying complex technology solutions for its clients. In addition to designing and deploying solutions, Software Group provides consulting services, with a particular focus on assignments that, as with this case study, help share lessons learned from the sector.

# 1

## Executive Summary

Around the globe, microfinance institutions have provided access to finance to many people who were previously excluded, offering a range of quality, affordable services marked by convenience, dignity and consumer protection. Historically, however, bringing these services in the field to the client has been a costly manual process, which has limited the ability for scaling up and created vulnerability to sub-optimal service, errors and fraud. In response to the challenge to balance outreach with costs when providing financial services to the underserved, we have seen a rise in recent years in the use of tablets, smartphones and other devices that digitize microfinance field operations for the sake of realizing much-needed efficiencies. For example, loan officers equipped with these devices can process loan applications and answer client inquiries in the field, eliminating paper forms, digitizing data and saving time and money for organizations and their clients.

The use of these tools in the microfinance sector, which we call Digital Field Applications (DFAs), is still at a relatively nascent stage, limited to early adopters or new market players, most of whom incorporate the technology into their initial process and market offering. The slow adoption of DFAs has in part been attributed to the providers' lack of understanding of the impact DFAs have on the business models of MFBs, for clients, and most importantly for the staff using DFAs in the field.

The objective of this study is to address these issues by providing clarity on the impact of DFAs by examining the business case, implementation process and effects for three MFBs around the world. The institutions we partnered with for the study were Ujjivan

Financial Services in Bangalore, India; Musoni Kenya in Nairobi, Kenya and Opportunity Bank Serbia (OBS) in Novi Sad, Serbia. This case presents the findings from OBS. The findings from Ujjivan and Musoni, as well as a consolidated review of the three cases, can be found on our [website](#),<sup>2</sup> with an accompanying Excel-based business case toolkit, which is available for MFBs to examine the prospects of DFAs for their specific business context.

### Findings

OBS's key objective in implementing a DFA was different from the other two institutions'. OBS sought to improve customer service and reduce costs through the use of automated credit decision-making. The bank targeted agricultural loans within predefined limits to develop a credit scorecard accessible to loan officers via the DFA, which delivered a credit decision in the field for 80 percent of agricultural loans disbursed in the pilot period.

Clients benefited from increased access to credit in a traditionally underserved, rural agricultural market. Clients also enjoyed improved customer service and convenience as a result of time savings and a faster loan-application response.

OBS benefited from the reduced costs and increased efficiency that accompanied the automation of credit decision-making, which eliminated data entry errors and improved compliance. Additionally, OBS established a reputation in the market as an innovator, and enhanced its ability to leverage Social Performance Measurement (SPM) data by digitizing client records.

<sup>1</sup> This paper discusses the use of DFAs that could be deployed by a host of different financial service providers, from microfinance institutions to commercial banks. While we use terminology associated with MFBs, this does not preclude other types of financial service providers who have some component of field operations that is suitable for digitization.

<sup>2</sup> <http://bit.ly/1UphWmp>

# 2

## Introduction

Opportunity Bank Serbia has a large rural portfolio, with a particular focus on providing loans to entrepreneurs and agricultural households, which presents unique opportunities and challenges to implement a DFA.

In 2007, after the Serbian revolution, OBS converted to a full commercial bank, subject to a strict regime of controls designed to rebuild confidence in the financial sector. Despite a lack of affordable funding and subsidies from its parent company, the bank was successful through 2008, when the financial crisis demanded a new strategy to ensure its future viability. By 2009, OBS was under new leadership and operating with an improved risk management program. As a result, the bank was one of the few players that were reporting positive growth in the market.

The majority of financial service institutions in Serbia focus on the Belgrade and Vojvodina provinces in the North. In contrast, approximately 60 percent of OBS clients live in Central and South Serbia. Eighty-four percent of OBS's credit portfolio consists of microloans to entrepreneurs, of which 40 percent are granted to agricultural households valued at up to €5,000 (U.S. \$5,500) each. Table 1 provides an overview of OBS's performance to date.

**TABLE 1**

**Opportunity Bank Serbia Overview**

Geographic region: Eastern Europe

Head office: Novi Sad, Serbia

Regulatory status: Bank

Year established: 2002

Total clients: 30,000

Loan portfolio: U.S. \$68 million

Total disbursements: U.S. \$296 million

Number of branches: 8, and 14 credit offices

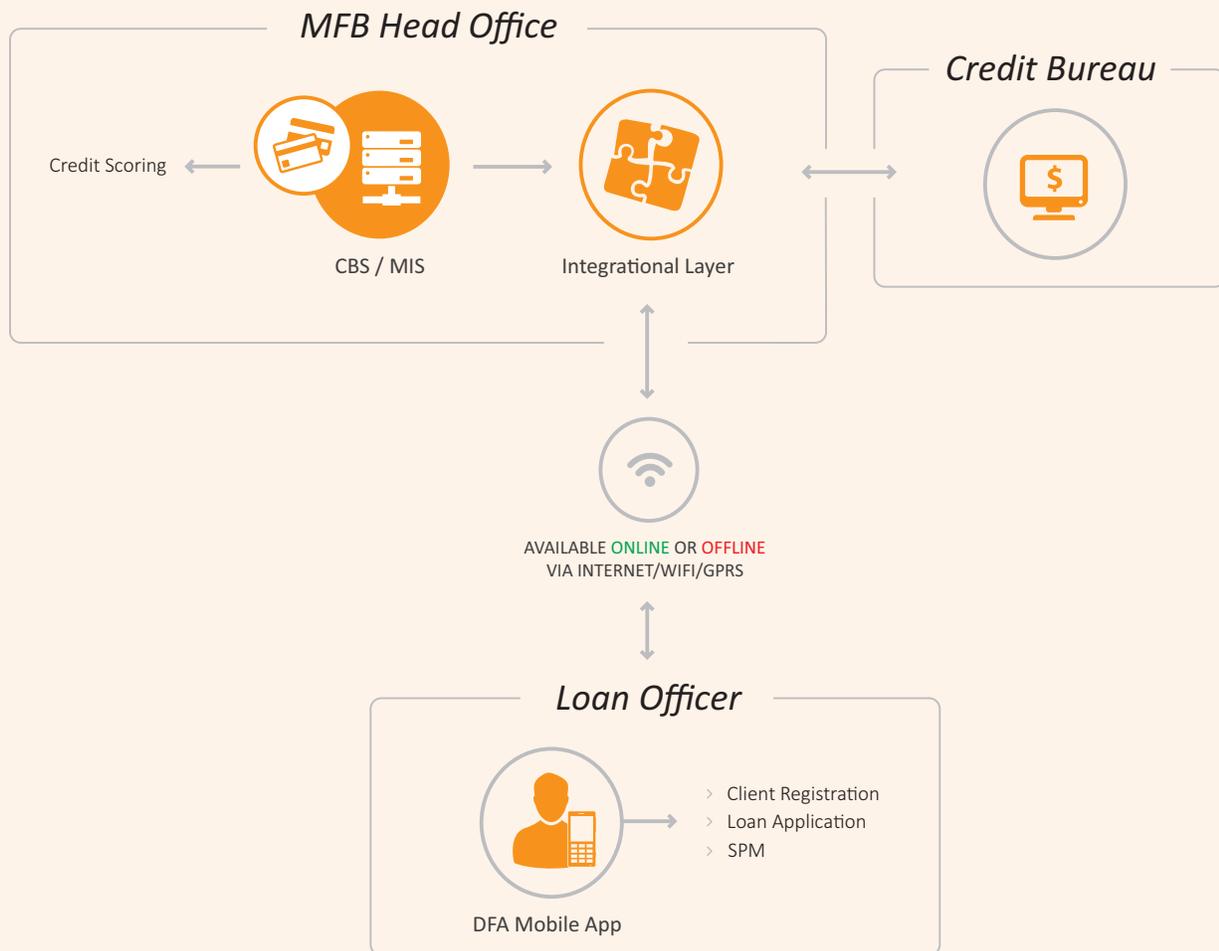
## Overview of the DFA at OBS

In 2013, OBS launched a DFA to expand access to financial services (particularly for clients in rural areas), increase customer satisfaction, and promote efficiency. One of the major goals for the DFA is to enable clients to apply for loans and, using automated credit scoring technology, receive a near-final credit decision while the loan officer is still conducting analysis in the field.

OBS's DFA is an Android application installed on a tablet that loan officers use to capture client and loan details. The application

operates in both offline and online modes, which allows it to connect directly to the credit bureau and to the credit scoring module of OBS's core banking system (CBS), from which it receives a credit score that informs staff and the client of the near-final credit decision. Approved clients then visit the branch to sign documents and receive loan funds. Most steps of loan processing occur in the field, but the final step takes place at the branch for regulatory and security reasons, because some documents must be signed prior to disbursement, and OBS field staff do not carry cash. Figure 1 provides an overview of the DFA technology solution at OBS.

**FIGURE 1**  
**DFA Overview at OBS**



# 3

## Implementation Process

OBS designed its DFA to advance an organization-wide push to further automate credit-scoring and decision-making in the field for low-risk loan applications.

### Planning & Analysis Phase

Traditionally, loan officers would visit a client in the field, capture data on paper forms, and return to the branches to input the data into an Excel spreadsheet to analyze and score the client, using a scorecard developed from agricultural pricing and market inputs. The output of this Excel analysis was a summary report that was printed and presented to the credit committee for a final credit decision.

The potential to improve the efficiency of this process and enhance customer service was clear to OBS. The old approach often required loan officers to make multiple client visits during the loan application, either to address glitches in nonstandard data collection processes or to correct errors that were made using the paper forms. These repeat visits were costly, inefficient for clients and OBS, and prevented OBS from adhering to the high levels of customer service it deemed important. Another inefficiency that OBS identified was the significant amount of time credit committee members and loan officers were spending to analyze relatively low-value loan applications, a process that could potentially be automated. Lastly, a large amount of data being input into the Excel system was not transferred to the CBS, making mining of this valuable data complicated for OBS. OBS therefore chose to increase its use of digital credit scoring, to

further automate decision-making for low-risk loan applications and enable loan officers to directly access the system when they met with clients in the field.

The first phase of the project was to define the business requirements, which involved a detailed review and rationalization of the data that the loan application form collected. This process took several months and required a dedicated team of agriculture specialists, risk managers, and IT staff. Each data field was justified to ensure that either it was directly relevant to the eventual credit decision or required for other mandatory reporting purposes. This led to the elimination of some unnecessary data. This process also helped staff determine the range of products and loan sizes that could comfortably be analyzed using the DFA. The result was a final list of approximately 200 data fields that needed to be included in the DFA and a management decision to use the application only for agricultural loans valued at up to €3,000.

The central role of the national credit bureau in the application process meant that the information it provided was a key input in determining the requirements for the DFA solution. For OBS to ensure that a near-final credit decision could be provided in the field, it needed to verify that the client's credit bureau report didn't adversely affect the application.

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Fortunately, the OBS DFA project coincided with the national credit bureau's release of an integration interface that allowed OBS to build an electronic look-up, retrieve a bureau report, directly load it into the OBS system, and include it in the scoring analysis. Because data connectivity was available in most areas of Serbia, OBS intentionally designed the DFA to operate in online mode at certain key points, such as when a look-up to the credit bureau was initiated as part of client registration.

### **Development & Implementation Phase**

Equipped with a comprehensive set of requirements, OBS could then apply these requirements across the different components of the full DFA solution. OBS determined that scoring could be handled by the existing system and that system integration could be performed in-house. This left development of the front-end mobile application to be sourced externally. Fortunately, Serbia has a vibrant IT sector with many suppliers interested in developing new applications. A due diligence process identified the best option from a short list of four companies. In early 2014, the selected supplier worked closely with the OBS IT department, using an agile development approach to rapidly prototype, test, and build the initial version in less than four months.

### **Pilot & Rollout Phase**

In May 2014, for the initial testing process a team of “super users” among the OBS staff, picked for their strong performance and positive attitude, were introduced to the mobile application and asked to give feedback on it. Testing successfully concluded in August and the application was deemed ready for piloting. During the first month of use the manual system and the DFA ran in parallel, but this was phased out by September when the system was considered fully live at all branches.

The biggest challenge throughout the rollout period was overcoming initial resistance from loan officers who feared that the DFA technology diminished their focus on clients. Fortunately, this issue was resolved after a few weeks of training and confidence-building to ensure loan officers could balance the task of data entry with their normal regimen of client observation and assessment.

**As part of the DFA design, each data field collected was justified to ensure that either it was directly relevant to the eventual credit decision or required for other mandatory reporting purposes. This led to the elimination of some unnecessary data.**

# 4

## Impact

Six months after launch, the project was heralded as a major success for OBS, improving customer service and increasing revenue for the bank.

Today, all loan officers working with agriculture portfolios have received training and migrated to the DFA, and the main objective of providing a near-final decision in the field has been achieved for more than 80 percent of qualifying agricultural loans. Also, a variety of client and institutional benefits have been realized (see Table 2 for an overview).

### Client Benefits

The introduction of the DFA has helped OBS achieve unprecedented levels of customer service for its target agricultural market. Previously, this market struggled for the attention of financial providers and often endured a long and complex process to access credit. With the DFA in place, now OBS clients receive a near-final credit decision during the first loan officer visit.

### Institutional Benefits

#### √ Cost Savings

While improving customer service was the primary motivation for introducing the DFA, OBS recognized the potential to achieve direct cost savings for the bank as well. This included a reduction in transportation costs resulting from fewer client visits to complete the loan analysis process. Previously, if a loan officer made an error while collecting customer details, he or she needed to make a second visit, which increased costs and processing time—both for clients and the bank. By building

strong data input controls into the app and formulating a tighter definition of what data was needed, OBS significantly minimized the chance of errors occurring and requiring additional client visits.

#### √ Efficiency Enhancements

In addition to providing client benefits and cost savings, the DFA has helped OBS become more efficient in several ways. Previously, a loan officer would typically spend a full day analyzing one new loan application with the paper- and Excel- based process, conducting a client visit during working hours and then inputting data later that same day or evening. With the DFA, the loan officer has drastically reduced the amount of time spent to gather information, complete documents, and receive a credit decision. Further enhancing organizational efficiency was the decision to remove the data fields that were not required to reach a credit decision (initiated as part of the business-process re-engineering to map out the DFA solution).

Likewise, in cases where the client's business and background information (including credit bureau report) did not meet OBS requirements, the loan officer reached a decision faster and saved time for both parties. With the DFA, all loans still pass through a credit committee review, but now the committee is able to spend less time analyzing applicants with positive credit scores. Once approved, the client need only be present in person to sign the final

**TABLE 2****DFA Impact at OBS**

Client Benefits	Institutional Benefits		
	Cost Savings	Efficiency Enhancement	Adjacent Benefits
Improved customer service due to time savings and faster application response (acceptance or rejection)	Reduced cost associated with multiple visits to client	Eliminated need to manually input loan application data into Excel spreadsheet at branch to obtain credit scores	Digital client data, including SPM, stored in the CBS
		More efficient identification of clients that don't meet OBS's credit criteria	Improved enforcement of controls and policy (reduced fraud, PAR)
		More efficient credit committee review with focus on exceptional cases	Excel-based credit scoring system eliminated
			Reputation established as an innovator among MFBs
			Availability of GPS data for both clients and staff to assist with field management

documents and receive the loan disbursement, which makes back-office loan processing much more efficient.

To assess the impact of these efficiency improvements on overall productivity, we compared the number of loans processed in the first four months of using the DFA and the number of loans processed in the same period the previous year, noting a 28 percent increase in loan volumes between the two periods. While participation in a subsidy program in some municipalities was acknowledged as an influencing factor, 35 percent of the increased loan volume was attributed to DFA use.

Whereas many organizations deploy a DFA in order to reduce their overall loan turnaround time (TAT), for OBS this wasn't a metric for project success, in part because its TAT was already quite low, with an average of three

days between application and disbursement. Additionally, given that clients still need to make the time to visit the branch even after the introduction of the DFA, the bank did not have full control over the total TAT. For these reasons, overall TAT was not the most relevant metric regarding the bank's efficiency in this process.

#### ✓ Adjacent Benefits

Additional benefits associated with the DFA project include the elimination of the Excel-based credit scoring system, with all client data now stored in the CBS, automatically updating a client's credit scorecard over time. Data collection was fully standardized and credit policies were supported through system-based controls as a means to help prevent fraud or errors. Lastly, OBS has established itself as a client-focused innovator and enhanced its reputation in the market.

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## Challenges & Lessons Learned

Looking back on its experience implementing a DFA, OBS identified several lessons, including the need to perform a detailed requirements analysis that challenges the status quo and pre-DFA processes. Additional insights include the importance of identifying and working with a team of super users for the initial testing, and of drawing on their enthusiasm for the project to navigate any initial hurdles. OBS did experience some challenges throughout the project, such as limited connectivity in some areas, which affected credit bureau look-up. Also, because OBS committed to becoming one of the first organizations to integrate the credit scoring module to its CBS, the endeavor required extra time, dedication of internal resources, and support of the CBS provider to successfully operate in online mode while checking the credit bureau.

**With the DFA, OBS loan officers have drastically reduced the amount of time spent to gather information, complete documents, and receive a credit decision. OBS has established itself as a client-focused innovator and enhanced its reputation in the market.**

# 5

## Business Case

Applying the business model at OBS provided a new framework to measure the DFA's financial benefits, such as caseload increase and improved customer service, in comparison to the costs.

While the Impact section outlines key observed benefits of implementing the DFA, this section examines how these benefits translate into a financial business case, using a business model template developed as a result of this study.

### DFA Costs

The first step of the business case is to examine the costs of implementing the solution at OBS. For the business case, we've split these costs into capital expenditures (CAPEX), which are incurred only once, and recurring operational expenditures (OPEX), which are incurred annually. Table 3 details the costs identified for OBS's DFA business case, which total U.S. \$54,933 in year one.

Now that we have outlined the total costs for adopting a DFA at OBS, we turn to revenues earned and cost savings.

### DFA Revenues & Cost Savings

One of the key benefits to emerge from the adoption of the DFA at OBS is the increased efficiency of the loan application process, which resulted in increased caseload per loan officer. We estimate that the DFA contributed U.S. \$24,000 in net income for OBS, as outlined in Table 4.

OBS also achieved modest cost savings by eliminating transportation expenses associated with multiple visits to clients, as seen in Table 5.

Adding this increased revenue and cost savings together results in a total year-one benefit of U.S. \$24,540, compared with a total expense of \$54,933. These values do not take into account amortization of CAPEX costs, which would typically cover a five-year period according to financial standards in Serbia.<sup>3</sup> Hence if amortization were included, OBS would see a positive return on investment in year one instead of year two when its DFA broke even.

**If amortization were included, OBS would see a positive return on investment in year one instead of year two when its DFA broke even.**

<sup>3</sup> Amortization has not been factored in to these case studies for the sake of comparison and to show total expenses incurred. It should be noted that most financial institutions have a minimum three-year amortization period for all technology investments, and in Serbia this period is five years.

**TABLE 3\*****DFA Costs**

Cost Type	Item	Description	Cost (U.S. \$)
CAPEX	Platform	Cost of developing the mobile application. Also includes cost associated with licensing the credit scoring module, instrumental to the DFA. (Note: the full module cost was not allocated to the DFA project since the system was also used for non-DFA purposes.)	20,000
	Implementation	Cost of implementing the platform, considering external and internal human resources. Includes organizational restructuring, process redesign, training, and system integration.	27,000
OPEX	DFA subscription	Annual support for the DFA platform.	3,000
	Data connectivity	A monthly \$20 subscription fee that includes devices free of charge, with bundles of data pre-loaded.	4,800
	Device support	Replacement batteries and ad-hoc maintenance required for devices. Includes an estimate of \$20 per user with replacement once every three years.	133
<b>Total Cost Year 1</b>			<b>54,933</b>

**TABLE 4\*****DFA Revenues**

	Pre-DFA	Post-DFA
<b>Number of loan officers</b>	20	20
<b>Caseload per loan officer (28% increase in total)</b>	200	256
<b>Additional loans/officer attributed to DFA (35% of increase)**</b>		20
<b>Average loan size</b>	U.S. \$1,500	U.S. \$1,500
<b>Net interest margin</b>	4%	4%
<b>Increase in net income as a result of the increased caseload</b>		<b>U.S.\$ 24,000</b>

\*\* Average productivity increase post-DFA was measured at 28 percent. OBS attributed this increase to multiple factors, estimating that the DFA accounted for 35 percent of the observed increase.

**TABLE 5\*****DFA Cost Savings**

Item	Description	Cost (U.S. \$)
<b>Transportation costs</b>	With improved data entry controls and a rationalized data set, the chance of errors during the loan application process is now reduced. This means less need for multiple visits to client sites, reducing transportation costs for OBS.	540
<b>Total cost savings</b>		<b>540</b>

\* Figures in tables 3, 4, and 5 provided by the MFB

# 6

## Next Steps for Opportunity Bank Serbia

**OBS acknowledges the success of its DFA to this point, and is in the early stages of identifying additional functionality, including GPS tracking and expansion to new products.**

Having met its immediate customer-service objectives, OBS is now interested in examining how the DFA can increase loan officer caseloads and enable the handling of more clients with greater efficiency, while retaining the bank's high-quality portfolio.

Additionally, OBS is exploring how new types of data, particularly GPS data, can help organize its field staff more efficiently and contribute to fraud detection. The ideas the bank is discussing involve mapping client and loan officer GPS data for planning and risk management purposes. Finally, OBS recognizes the need to continually revise the risk assessment methodology for its DFA to see if other loan types or larger loan sizes could be accommodated. This review will require the bank to begin measuring portfolio-quality statistics for all loans processed via the DFA, to determine if there is any correlation between performance and the automated decision-making function.

Slobodan Tešić, OBS's Managing Director, confidently stated, "We can't continue to scale as we have in the past without exploring the variety of ways in which technology can advance our operations. Our DFA tool enables us to operate more efficiently than we hoped – we have made customers very satisfied with such efficient field service, and our staff feel more productive having reduced many

manual steps in their daily activities. We plan to further develop our DFA solution and leverage as much as possible to digitize our processes and services in the coming year."

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## Project Team

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For thoughts and comments, please join the discussion on the Center for Financial Inclusion’s blog: <http://bit.ly/1hTHmqG>