MICROFINANCE CENTRE

DIGITAL FINANCE TECH HANDBOOK

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ABOUT THIS HANDBOOK

THIS DIGITAL FINANCE TECH HANDBOOK WAS PREPARED BY BUSINESS & FINANCE CONSULTING GMBH (BFC) FOR THE MICROFINANCE CENTER (MFC). THIS HANDBOOK IS MEANT TO BE A SHORT AND PRACTICAL HANDBOOK FOR MICROFINANCE MANAGERS IN EUROPE AND CENTRAL ASIA (ECA). THE MAIN OBJECTIVE OF THIS HANDBOOK IS TO BUILD AN UNDERSTANDING AMONG ECA MICROFINANCE MANAGERS OF THE MAIN TECHNOLOGICAL TRENDS AND SOLUTIONS THAT SUPPORT FUTURE GROWTH.

THIS HANDBOOK DOES NOT PRESENT AN EXHAUSTIVE LIST OF ALL AVAILABLE SOLUTIONS NOR DOES IT SERVE AS A GUIDE FOR IMPLEMENTING SUCH TECHNOLOGIES. RATHER, IT IDENTIFIES THREE KEY TRENDS (EXEMPLIFYING EACH WITH THREE SPECIFIC SOLUTIONS) AND GIVES PRACTICAL GUIDANCE ABOUT KEY ASPECTS THAT SHOULD BE TAKEN INTO ACCOUNT WHEN IMPLEMENTING TECHNOLOGIES.

CONTENTS

ABBREVIATIONS

ADC	ALTERNATIVE DELIVERY CHANNELS
AML	ANTI-MONEY LAUNDERING
ATM	AUTOMATIC TELLER MACHINE
API	APPLICATION PROGRAM INTERFACE
CBS	CORE BANKING SYSTEM
CRM	CUSTOMER RELATIONSHIP MANAGEMENT
IFC	INTERNATIONAL FINANCE CORPORATION
KYC	KNOW YOUR CUSTOMER
FI	FINANCIAL INSTITUTION
MFC	MICROFINANCE CENTER
SAS	STATISTICAL ANALYSIS SOFTWARE

EXECUTIVE SUMMARY

THIS TECHNOLOGY HANDBOOK IS A PRACTICAL TOOL TO SUPPORTS THE DIGITAL INITIA-TIVES OF FINANCIAL INSTITUTIONS IN EASTERN EUROPE AND THE COMMONWEALTH OF INDEPENDENT STATES (CIS). IT IS STRUCTURED IN THREE MAIN SECTIONS:

TRENDS AND SOLUTIONS

This section serves as an overview of the main ongoing technological trends in the market and includes analyses of the con-tent and relevancy of each of these trends (as based on financial institution size and maturity level). This section also outlines the selection of the following three main technological trends and corresponding focus solutions that are further developed in the Technological Case Studies section:

Technological Trends:
- Own Data Harvesting
- Loan Process Digitization
- Digital Sales and Marketing

Focus Solutions:
- Optimized Data Collection
- Workflow Automation
- Chatbot Solutions

CASE STUDIES

This section further develops the three main technological trends and corresponding focus solutions selected in the Technological Trends and Solutions section, including project specificities, key contextual factors and project results.

IMPLEMENTATION GUIDELINES

This section outlines the key steps for implementing technological solutions, highlighting key rules to follow and mistakes to avoid.

TRENDS AND SOLUTIONS

To strike a balance between brevity and depth, this Handbook focuses on three main technological trends and corresponding focus solutions. The identification of all trends and solutions considered was based on field experience with digital technology, a literature review (presented in Annex 3) and information provided by the MFC (based on in-house research conducted in 2017 and 2019).

The description and explanation of each technological trend and corresponding focus solution are tailored to a different size of MFI (small, medium and large). The rationale for which technological trend and focus solution is paired with which size of MFI is based on a high-level cost-benefit analysis.

The three main technological trends selected for inclusion in this Handbook are: (i) Own Data Harvesting, (ii) Loan Process Digitalization and (iii) Digital Sales and Marketing

DIGITAL TRANSFORMATION AS A PROCESS

Digital transformation is not like a switch that, once put in the "on" position, will transform a financial institution into a digital financial institution overnight. Rather, it is a process that teaches new ways of how to work and progressively evolves an institution's culture towards more agility and transparency as well as delivers concrete key performance indicator (KPI) benefits.

The path toward digital transformation is just as important as the end results. In fact, it important to remember that the specific end results may actually evolve throughout the implementation of a digital transformation project, with the final results being different from the ones originally anticipated.

DIGITAL TRANSFORMATION PATH DEFINITION

While all digital initiatives are welcome, it is important to prioritize digital developments and get a good understanding of the order in which these digital developments should be implemented in order to maximize the benefits of the effort. Some digital developments are quite fundamental for moving forward in digitization, while others can be performed only once the fundamentals have been established. This is best illustrated in the digital pyramid presented below.

DIGITAL PYRAMID

The digital pyramid below illustrates the hierarchy of the 21 digital solutions pre-shortlisted for this Handbook and how they relate to each other. The most fundamental solutions are placed at the bottom of the pyramid, while the more advanced are positioned higher in the pyramid. To appropriately implement a

THREE KEY TRENDS...

OWN DATA HARVESTING

Targets the continuous development of digital tools that collect and organize data in such a way as to deliver value insights in a simple and accurate manner. This trend is especially popular with MFIs aiming to grow quickly in competitive markets. The available solutions under this trend allow for live and insightful reporting. The implementation of this type of solution results in stronger controls, faster processes and, most importantly, agile and decisive decision-making.

LOAN PROCESS DIGITALIZATION

Aims at transitioning loan processing performed on paper and/or via email exchanges into a digitized and streamlined processing system. The loan process is digitized through workflow automation, document storage and field data collection. The implementation of this type of solution results in decreasing the amount of administrative work, increasing the speed of the loan process and increases controls as well as improving risk management.
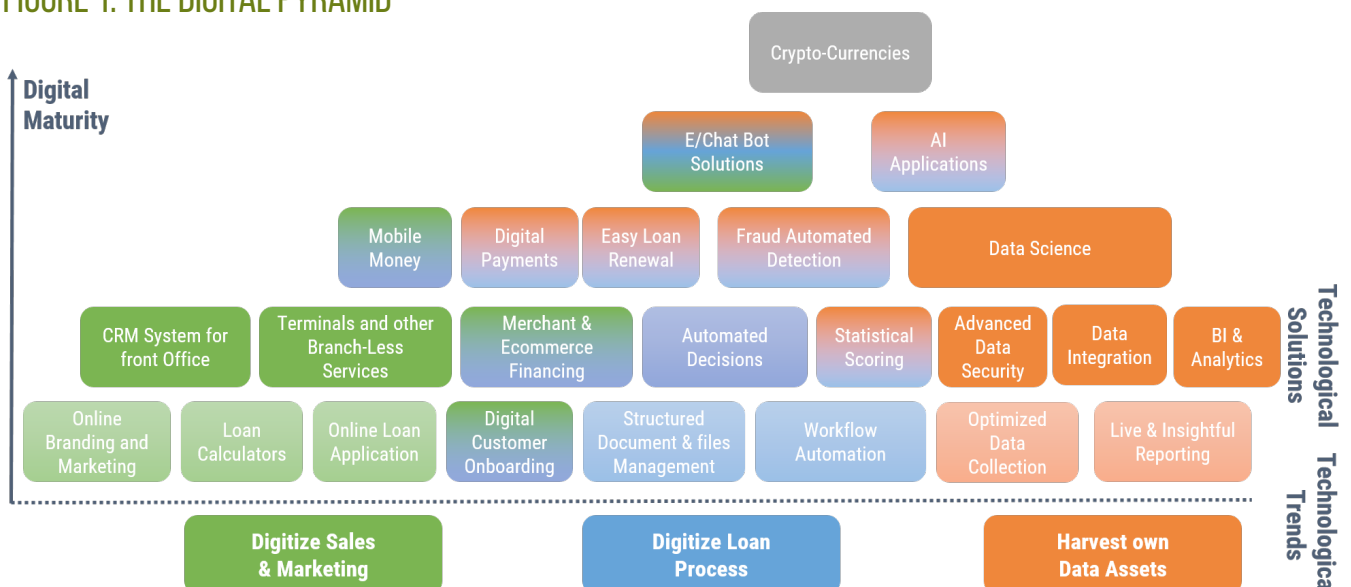
DIGITAL SALES AND MARKETING

Uses digital communications for marketing and sales by building on efficient and agile digital communications (via social media, email, online news, etc.). Communication of information to automatically selected customers using social media management tools increases the quality and speed of information lowers costs. The implementation of this type of solution results in the institution having a stronger brand and stronger relationships with customers.

solution, it is necessary to ensure that the solutions below it have already been implemented.

The solutions in the digital pyramid have been organized according to the three main technological trends (each represented by a different color) chosen for this Handbook. As can be seen, some solutions cross multiple trends.

FIGURE 1: THE DIGITAL PYRAMID[1]

A brief description of the top three solutions for each of the three main techno-logical trends is presented in Table 1. A more exhaustive list of solutions for each trend is presented in Annex 5.

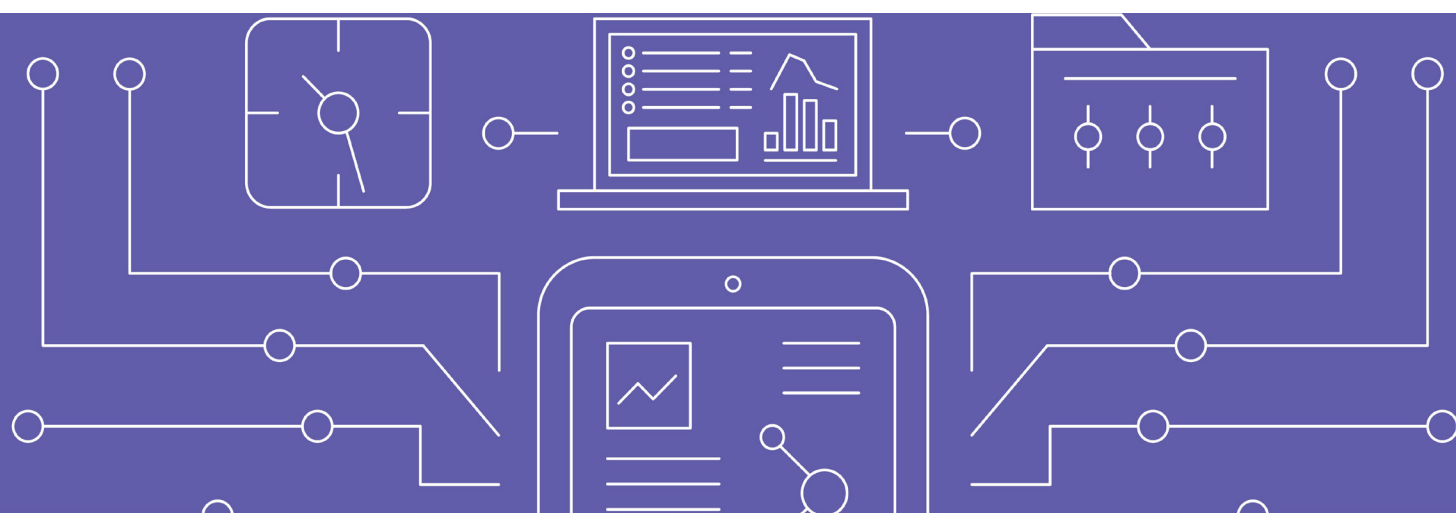## TABLE 1: TOP THREE SOLUTIONS PER TECHNOLOGICAL TREND

OWN DATA HARVESTING	
Optimized Data Collection	This solution streamlines information collection, ensuring data quality and consistency through appropriate usage and archiving.
Live and Insightful Reporting	This solution leverages digital tools to increase the access live infor-mation on activity and performance indicators, allowing for better, data-based strategic and operational decision-making (as opposed to opinion-based).
Data Integration	This solution integrates and uses data from an ecosystem of different platforms.
LOAN PROCESS DIGITALIZATION	
Workflow Automation	This solution digitizes the processing of loan applications through a system that automatically directs applications through pre-configured workflows. This is the first fundamental step in the process of loan process digitalization.
Digital Customer Onboarding	This solution immediately saves (in a digital format) loan application data gathered by loan officers working in the field. It is one of the key steps toward a fully-automated and streamlined loan process. It includes features to enhance know-your-customer (KYC) and anti-money laundering (AML) measures. It is important to note, how-ever, that bottlenecks can appear due to regulations related to e-signatures.
Payment Solutions	This solution leverages new technologies (terminal, mobile money, etc.) to facilitate payments from customers. This is a very trendy topic at the moment, but the implementation of such solutions is highly dependent on the local context and regulations.
DIGITAL SALES AND MARKETING	
Chatbot solutions	This solution automatically screens customer needs/demands, allowing for a higher level of customization for engaging with customers – all without the need of the direct involvement of a front office staff.
Online branding and marketing	This solution takes advantage of digital spaces (website, social media, etc.) to develop a strong brand image that emphasizes an institution's values and available services.
Terminals and other branchless services	This solution leverages existing technological networks (ATMs, terminals, etc.) and vendors (shops, kiosks, etc.) to increase the reach of services by decreasing a dependency on physical branches and reducing costs. The implementation of such solutions must be adapted to the local specificities of each country.

IDENTIFICATION OF TECHNOLOGICAL TRENDS PER MFI SIZE

In order to provide some depth into the analysis and description of the focus solutions, each technological trend has been paired with a different size of MFI (small, medium and large). Table 2 below presents a cost-benefit analysis to determine which pairing of technological trend and MFI size is most appropriate for the purposes of this Handbook. MFIs should use such cost-benefit analysis logic when prioritizing available solutions for their specific context.

TABLE 2: COST-BENEFIT ANALYSIS

TREND	MFI SIZE	COST	BENEFIT	RECOMMENDATION
OWN DATA HARVESTING	Small	Low	Medium	This trend is considered as the strongest for small-sized MFIs as it is especially useful for maintaining data quality as well as for the development of insightful reporting. This is also less costly and less complex to implement for small-sized MFIs.
	Medium	Medium	Medium	
	Large	Medium	High	
LOAN PROCESS DIGITALIZATION	Small	Medium	Medium	This trend is considered as the strongest for medium-size MFIs as they will see a strong benefit from digitizing loan processes and the implementation costs for such solutions are reasonable for medium-sized MFIs.
	Medium	Medium	Medium-High	
	Large	High	High	
DIGITAL SALES AND MARKETING	Small	Medium	Low-Medium	This trend is considered as the strongest for large MFIs as they will benefit significantly from digital marketing due to their ability to invest in its implementation. This trend is especially strong for large-sized retail MFIs operating in urban areas.
	Medium	Medium	Medium	
	Large	Medium	High	

SELECTION OF DIGITAL SOLUTIONS

In total, 21 different technological solutions were assessed for their potential for inclusion in this Handbook (more details are presented in Annex 4). Nine were shortlisted for further consideration based on five indicator criteria grouped into two main groups (benefits and requisites). Table 3 below outlines the five indicators used for the initial assessment.

Table 4 presents a further analysis of the nine shortlisted solutions. This analysis was used to select the three focus solutions that are further developed in the Technological Case Studies section of this Handbook.

The result of the analysis shown in Table 4 above was the selection of three focus solutions, one for each main technological trend:

- **Optimized Data Collection and Management:** selected under the trend of own data harvesting as the benefits are high and are expected to continue to grow. Furthermore, this solution fundamental, not complex to implement and not contingent on a supportive regulatory environment.
- **Workflow Automation:** selected under the trend of loan process digitalization as the benefits are high and are expected to continue to grow. Furthermore, this solution fundamental, not complex to implement and not contingent on a supportive regulatory environment.
- **Chatbot Solutions:** selected under the trend of digital sales and marketing as its benefits are high and are expected to continue to grow. Although not considered to be fundamental, it is not complex nor is it contingent on a supportive regulatory environment.

TABLE 3: TECHNOLOGICAL SOLUTION SELECTION CRITERIA

CRITERIA	INDICATOR	SCALE
BENEFITS	Current	Low/Medium/High
	Expected (future)	+/=/-
REQUISITES	Fundamental Technology	Yes/No
	Complexity	Okay/High
	Dependence on regulations	

TABLE 4: ANALYSIS OF THE NINE SHORTLISTED SOLUTIONS

TRENDS	SOLUTIONS	BENEFITS		REQUISITES		
		CURRENT	EXPECTED	FUNDAMENTAL TECHNOLOGY[2]	COMPLEXITY	DEPENDENCE ON REGULATION
OWN DATA HARVESTING	Optimized Data Collection and Management	Medium	+	Yes	Ok	Ok
	Live and Insightful reporting	Medium	+	Yes	Ok	Ok
	Data Integration	High	+	No	High	Ok
LOAN PROCESS DIGITALIZATION	Workflow Automation	High	+	Yes	Ok	Ok
	Digital Customer Onboarding	Medium	=	Yes	Ok	High (e-sign)
	Digital Payments	High	=	No	Ok	High
DIGITAL SALES AND MARKETING	Chatbot Solutions	High	=	No	Ok	Ok
	Online Branding and Marketing	Medium	+	Yes	Ok	Ok
	Terminals and Other Branchless Services	High	+	No	Ok	High

SUMMARY OF THE ANALYSIS AND SELECTION OF FOCUS SOLUTIONS

Three main technological trends were identified for inclusion in this Handbook as the result of a literature review (see Annex 3), expert experience of best industry practices and MFC research.

These main technological trends were then paired with different sized MFIs in order to allow for focus solutions to be detailed in greater depth. Finally, three focus solutions (one for each main technological trend) were selected based on an analysis of which ones are the most likely to be of the most impact to a greater number MFC network organizations.

It should be noted that each MFI should conduct its own cost-benefit analysis of which solu-tions are most appropriate for it (and in which order they should be implemented).

2. PART OF THE KEY TECHNOLOGIES TO PUT IN PLACE AT EARLY STAGE OF DIGITAL TRANSFORMATION.

KEY TAKEAWAYS

- There are a great number of trends and solutions in the market. This Handbook (and other references available in the Annexes section) serve as a guide to MFIs in better understanding what options are available to them and how applicable each is to their institution.
- Many solutions require that other solutions be already established for effective implementation (see the Digital Pyramid).
- The selection of a solution must take into consideration various costs and benefits and should also be tailored to the context of each specific MFI. It is important that an MFI clearly understand what benefits are expected from each solution as well as the requisites to implement each solution in order to choose the most appropriate one.
- Digital opportunities should never be analyzed statically as digital contexts evolve very quickly. Specific solutions should only be undertaken once it is clear that the end results will be relevant over a significant period of time.

CASE STUDIES

This section presents three case studies, one for each main technological trend and focus solution identified in the Technological Trends and Solution Selection section:

- Own Data Harvesting: Optimized Data Collection and Management
- Loan Process Digitalization: Workflow Automation
- Digital Sales and Marketing: Chatbot Solutions

Each case study presents a description of the technology, the case itself and three example providers.[3] The description of the technology includes the benefits expected from its implementation and where it belongs in the transformation process. Each case described includes a description of the context, a description of the implementation steps involved, key figures, the impact of implementation and success factors. Each list of three example providers presents two providers of tailored solutions as well as one provider of a universal solution (for cases when a solution needs to be scalable and/or modular). Special attention in this section has been dedicated to the key strategic considerations for implementing new technologies,[4] especially business objectives, the environment and the business case definition.

CASE 1: OPTIMIZED DATA COLLECTION AND MANAGEMENT

TECHNOLOGY DESCRIPTION

The main bottlenecks preventing financial institutions from effectively harvesting their data are usually problems related to organization and data quality. It is a common issue to see financial institutions of even the smallest size gather a significant amount of data that serves no purpose in the loan process or in the analysis of performance.

There are two fundamental steps in terms of data harvesting for financial institutions to keep in mind:

1. Organize data in a single data silo so it can be easily used
2. Roll out ways of transforming this data into insights that create value for the institution

This will enable financial institutions to initiate a continuous improvement process on its data management that simultaneously removes data from the process that does not create any value and adds new data that provide additional actionable insight.

There are currently several solutions and service providers that streamline information collection as well as data quality and consistency. These solutions are usually a combination of pure technology and advisory services that aim at achieving the two key steps listed above.

This trend is considered especially relevant for small-sized MFIs as the sooner sound data management practices are set, the less effort will have to be put into gathering insight from data. On the other hand, big institutions who have been working for many years with many different data silos and a lack of culture of transparency in terms of access to information would also benefit from such solutions, although they will need to invest a lot more money, time and effort into optimizing data collection and management.

CASE STUDY 1: OPTIMIZED DATA COLLECTION AND MANAGEMENT FOR SMALL MFIS THAT ARE PART OF A NETWORK

CONTEXT

This case is based on a small MFI that is part of an international network and is looking for ways to improve its competitive position on the market, better retain its current customers and attract new customers. It has a centralized core banking system (CBS) but also uses other, annex systems and channels, all with their own databases. The management of several system and several databases in parallel has become a bottleneck for the implementation of new innovations.

Among other plans, the MFI wanted a solution that would automatically propose the early renewal of loan products to its best customers as a way to maximize income, reduce effort and limit risks.

PROJECT IMPLEMENTATION

The implementation of this project ended up being a major leap forward for the network in terms of leveraging data to create immediate business value. The following key actions were taken:

- Rolling out of an automated daily extraction and consolidation process for data from the CBS and other annex systems into one single database
- Hosting of this database on a cloud-based platform, making it easily accessible and usable
- Plugging in of the institution's scoring system into the data, allowing every customer to be scored every day
- Defining, on a daily basis, whether each customer would be eligible for a new loan if they were to ask for one that day
- Sharing of this information with loan officers and the marketing department as well as systematically proposing loan renewals to customers defined eligible by the system.

These automatic loan renewal business rules significantly improved the customer service of the institutions and also increased staff efficiency. Following this successful initiative, several other affiliates of this network rolled out similar systems. The implementation of this system also allowed the institution to develop

other value generating practices such as the automated proposal of nano loans to good customers, automated alerts identifying customers with a greater potential for delinquency and automated alerts on loan applications with a higher potential for fraud.

Various MFIs and networks have implemented similar processes within the last five years, taking advantage of the opportunity created by cloud-based data warehouses, which considerably decrease the costs and complexity of such projects.

KEY FIGURES

PROJECT LENGTH	3 months	**IMPLEMENTATION COSTS (EURO)**	~30,000
		OPERATIONAL COSTS (EURO)	2,000 per month
BENEFICIARY	300 loan officers and 20,000 customers	**STAFF INVOLVED**	300+ loan officers 40 supervisors 10 branch managers

IMPACT

FINANCIAL INSTITUTION	CUSTOMERS
• PAR30 <1.5% • 38% increase in customer retention • Up to 25% Efficiency Increase or Loan Officers saving up to 5 days of work per month	• 30% of repeat customers do not need to wait to process a new loan application

SUCCESS FACTORS

ENVIRONMENT	BUSINESS OBJECTIVES	IDENTIFIED PAIN POINTS
• Centralized, stable and modular CBS • Ability to extract CBS data on a daily basis and upload it to the cloud-based platform • Reliable and strong internet connection • Partners available to train on the implementation and updating of automatic loan appraisal criteria (simple scoring system)	• Commitment to customer protection principles and the SMART Campaign • Sustainable and profit-able growth in the urban and digitally literate market segment	• Some inefficiencies identified in the loan renewal process • Many customers renewing loans each month, among them an estimated 50% eligible for automatic loan renewal

EXAMPLE SOLUTION PROVIDERS

The example solution providers listed here all provide cloud-based data solutions with some analytics and reporting facilities. Some of them also provide solutions that can incorporate (via an API) a financial institution's business rules.

TABLE 5: EXAMPLE SOLUTION PROVIDERS

TYPE	EXAMPLE	SPECIFICITIES	WEBSITE
SPECIALIZED	Rubyx	A cloud data science platform service, Rubyx assists financial institutions in the consolidation and cleaning of their data, providing them with actionable insights that enable solutions such as fast loan renewal and automated nano loan approval.	www.rubyx.io
	FACS	FACS has experience across different regions in implementing technical solutions that automate a part of the lending process by leveraging data analysis. Their core experience is in agricultural lending.	www.facsglobal.com
UNIVERSAL	Google Analytics	Google Analytics enables financial institutions to efficiently capture, process and analyze data with their cloud-based product.	www.cloud.google.com/products/big-data

CASE 2: WORKFLOW AUTOMATION

TECHNOLOGY DESCRIPTION

Most financial institutions still use a large number of paper forms to gather and process customer data. In most cases, this information is digitized in some way, usually by transferring it to a spreadsheet, for further analysis. In many institutions, this spreadsheet transits from one staff member to another via emails or unstructured chat tools. This causes important delays in processing due to these back and forth communications. Furthermore, a lack of centralized tracking makes identifying main process bottlenecks difficult or impossible.

Workflow automation technology aims at addressing these issues by introducing one centralized platform in which loan applications transit through during the entire decision-making process.

Such systems usually have the following specificities:

- Secured sign-in account for all staff members involved in the appraisal process, with limited accesses and authorizations based on responsibility and scope of work
- Workflow designer, allowing the financial institution to create and update on their own workflows based on product, amount, branch and other parameters
- Reporting system that tracks performance, including the time each application spends at each stage of the process, and gives clear indications for where improvements can (and should) be made in the process
- Capacity to integrate a scoring module that automatically rates applications and directs them to-ward a specific workflow.

The implementation of such a solution is one of the first fundamental steps toward digitizing the loan process. This trend is considered as the strongest for medium-sized MFIs aiming at boosting their efficiency to gain in market share. Such a system usually requires an important initial investment, sometimes making a bit hard to afford for very small institutions. Big institutions usually already have such systems in place (if they do not, implementing such a system would be highly recommended but may be difficult to do for the whole institution at once). Implementing specific systems for specific departments could be an option, as highlighted here.

CASE STUDY 2: WORKFLOW AUTOMATION FOR THE AGRICULTURAL DEPARTMENT OF A MEDIUM-SIZED FINANCIAL INSTITUTION

CONTEXT

The herein presented case is based on the implementation of a workflow automation solution for an agricultural lending department at a leading bank. At the time of the project, this department was the last in the bank to be properly equipped in terms of loan origination, resulting in the efficiency of the bank's agricultural loan process being average despite the bank being one of the more active in agricultural lending in its country. The original project focus was limited to upgrading the agricultural scoring sheet used by the bank only; however, bank management decided to move forward with the implementation of a workflow automation solution once the implementing consultant discussed with bank management how such a solution could impact the efficiency of the bank's agricultural loan process.

PROJECT IMPLEMENTATION

The implementation of this project involved a combination of bank management (especially those in charge of the agricultural lending department), an agricultural lending consultant and IT developers. The following key actions were taken:

- Develop of agricultural scoring (in an Excel format)
- Configure the bank's systems to incorporate agricultural lending workflows
- Configure a data warehouse that, on daily basis, gathers data from the bank's CBS and merges it with data from the loan origination system and the Excel-based scoring sheet, thereby creating a single updated database that includes all relevant data
- Develop a reporting engine that gives a complete overview of the agricultural loan origination process and highlights main bottlenecks in terms of processes and staff members.

KEY FIGURES

PROJECT LENGTH	6 months	IMPLEMENTATION COSTS (EURO)	50,000
		OPERATIONAL COSTS (EURO)	2,000 per month
BENEFICIARY	200 agricultural lending loan officers and 8,000+ farmers	STAFF INVOLVED	2 IT staff 2 senior analysts 1 head of agricultural lending

IMPACT

FINANCIAL INSTITUTION	CUSTOMERS
• 63% increase in agricultural lending volume • 27% increase in number of agricultural loans disbursed • 31% increase in the outstanding agricultural port-folio amount • 6% increase in customer retention	• 64% reduction in time-to-yes • 54% reduction in processing time (time-to-cash) • Opening of dedicated farmer service centers (as front office staff had more time to dedicate to customer-centric activities)

SUCCESS FACTORS

ENVIRONMENT	BUSINESS OBJECTIVES	IDENTIFIED PAIN POINTS
• Competitive in the local agri-cultural lending environment • Knowledge of both technical and agricultural lending • Willingness to not only monitor the process but also change/improve it	• Development of a key market (agricultural lending) • Planned to fully outsource an IT project	• Inefficiencies identified in the agricultural lending process, especially at the credit committee level and at the disbursement level • Lower efficiency standard in the agricultural lending department

EXAMPLE SOLUTION PROVIDERS

The example solution providers listed here all provide cloud-based data solutions with some analytics and reporting facilities. Some of them also provide solutions that can incorporate (via an API) a financial institution's business rules.

TABLE 6: EXAMPLE SOLUTION PROVIDERS

TYPE	EXAMPLE	SPECIFICITIES	WEBSITE
SPECIALIZED	Softgenic	Softgenic's Loan Workbench solution covers the entire loan process — from data acquisition to contract termination. It has been implemented in several financial institutions in Eastern Europe and Central Asia.	www.softgenic.com/
	Finbits	The Finbits solution was developed in collaboration with the IT consulting company PCES. The main specificities of the system rely on the following four characteristics: process focus, cloud-based, modular and native system integration. The Finbits team has significant experience in Africa and the Balkans.	www.fin-bits.com
UNIVERSAL	ProcessMaker	ProcessMaker has implemented workflow management systems in several sectors and regions.	www.processmaker.com

CASE 3: CHATBOT SOLUTIONS

TECHNOLOGY DESCRIPTION

The ever-increasing level of digitalization of customers is pushing financial institutions to continuously review their sales and marketing efforts. From websites and social media to providing services via apps, the implementation of a modern customer relationship management (CRM) system provided numerous opportunities.

Leveraging the continuous breakthrough in terms of data science and artificial intelligence, chatbots are one of the most cutting-edge tools that can upgrade digital sales and marketing efforts.

When done physically by front office staff, the screening and understanding of the needs and demand of customers takes valuable time resources with no guarantee of return on effort. The analysis of website data, online forms and social network behaviors provides valuable insights on customers' needs and demands that can be gathered and utilized by intelligent chatbots to more accurately and efficiently communicated with customers.

In general, such systems work as a chat to manage communications between (potential) customers and a background database (which includes bank-specific information). The system communicates with the customer, with the aim of understanding his/her need or demand and sharing useful and relevant information with him/her. The system also gathers and stores information on specific customer needs and demands for later use in terms of customized (and automated) marketing.

Customer profiles are communicated to a physical front office staff member only when the chatbot cannot understand the customer's need or demand, allowing a human staff member to intervene and directly pro-mote the most appropriate service(s) to the customer.

This trend is considered as the strongest for large-sized MFIs as they will benefit significantly from digital marketing due to their ability to invest in its implementation and the expected impact being higher given the higher number of customers they come into contact with.

CASE STUDY 3: CHATBOT SOLUTION FOR COMMUNICATIONS WITH CUSTOMERS OF A LARGE MFI

CONTEXT

The herein presented case is based on an MFI that was focused on improving customer experience by implementing various digital channels. Prior to this, the MFI had implemented a new IT system that allowed for loan applications to be collected directly from the field and streamlined internal processes to minimize double data entry make the approval process more efficient. One of the most important impediment preventing the MFI from going further in these efforts, however, was that the regulator did not allow loans to be approved without a physical signature on loan documents.

As the loan processing could hardly be more optimized given this regulator constraint, the MFI decided to focus on digitizing what happens prior to loan processing, i.e. early communication efforts with customers. This resulted in the

MFI leveraging the increasing usage trend of chat applications like Viber, WhatsApp and Facebook Messenger by developing a chatbot solution.

PROJECT IMPLEMENTATION

The project was undertaken by an internal team of seven IT staff members. The following key actions were taken:

- Define the purpose of the chatbot solution
- Contact chat system providers to understand the capabilities of their systems in terms of chatbot development[5]
- Identify what the chatbot would do based on MFI data available and system capabilities
- Structure and integrate the MFI's database with the chatbot system
- Map and develop chatbot logic in terms of customer interactions
- Conduct beta testing on a small group of customers
- Expand the project

5. THE CONNECTION WITH THE VIBER COMPANY ALLOWED FOR THE IDENTIFICATION OF ADDITIONAL OPPORTUNITIES THE COMPANY COULD TAKE ADVANTAGE OF FOR INTERNAL EXCHANGES.

The chatbot solution developed allows customers to easily access information about product offerings, outstanding loan balances, penalties, loan they are prequalified for, etc. In terms of digital marketing, the system has allowed the MFI to pull more customers into the customer pipeline and strengthen the perception of the MFI as an advanced, tech-savvy institution. Strengthening customer service allows for improved customer retention, increased word of mouth references and better responsive to customer feedback.

KEY FIGURES

PROJECT LENGTH	12 months	IMPLEMENTATION COSTS (EURO)	50,000–100,000
		OPERATIONAL COSTS (EURO)	2,000–5,000 per month
BENEFICIARY	100 loan officers and 1,000 customers	STAFF INVOLVED	10+ back office staff

IMPACT

FINANCIAL INSTITUTION	CUSTOMERS
• 25% reduction in the number of complaints processed by front office and lending staff • 10% increase in the number of new customers recruited via social media	• Average delay to get an answer reduced from two hours to two minutes • Quality of the answers and follow-up on complaints improved significantly

SUCCESS FACTORS

ENVIRONMENT	BUSINESS OBJECTIVES	IDENTIFIED PAIN POINTS
• API to integrate with other applications • SAS development and configuration (in some cases) • Social media applications integrated with the CRM system • Accepting legal environment for communicating with customers in such a way • Customers not being saturated with similar messaging	• Expansion of a digitally-literate customer base	• Resources and adequate processes needed to filter and prioritize demands generated online • Sizeable back office team (marketing and customer service/callcenter) necessary to manage the communications with customers

EXAMPLE SOLUTION PROVIDERS

The example solution providers listed all provide solutions to automate answers communications with customers via a technological platform, with the main differences being that some provide more depth in the type of data analysis and complexity of answers and also allow for integration with a CRM system.
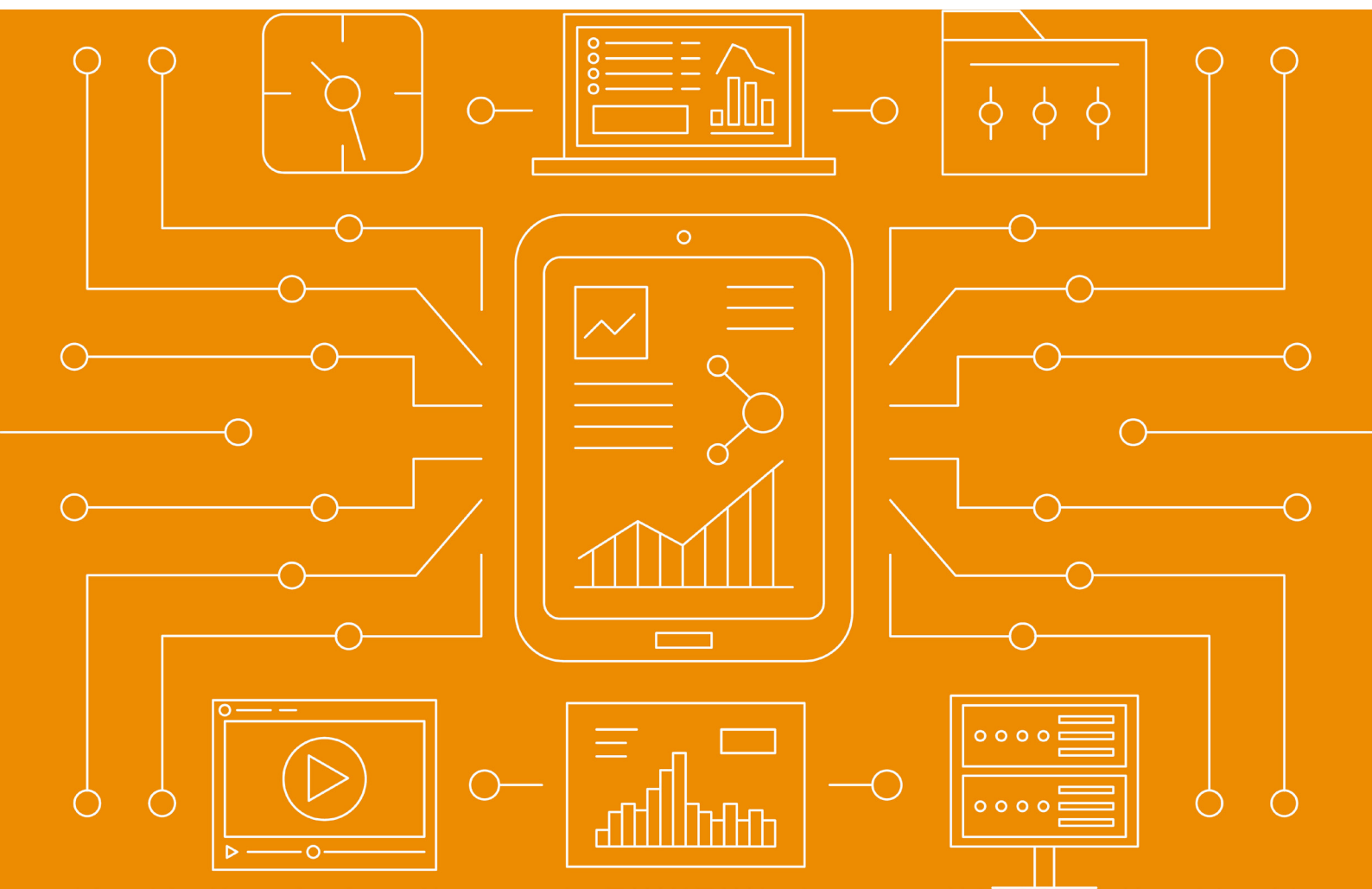
TABLE 7: EXAMPLE SOLUTION PROVIDERS

TYPE	EXAMPLE	SPECIFICITIES		WEBSITE
SPECIALIZED	Botmother	A technology to implement simply an information bot that allows to automatize online responses to customers regarding ATM and office locator, offers, contacts, or other information.	Technology: can integrate with various platforms including WhatsApp, Viber, and Facebook	www.botmother.com
	Chatbank		Technology: a simple integration is possible and it doesn't require any IT specialist.	www.chatbank.net
UNIVERSAL	Azure bot service	A universal and global solution to connect bot such as Q&A or virtual assistant across channels and devices. Technology: Open-source and SDK.		www.azure.microsoft.com/en-us/services/bot-service

SUMMARY OF THE CASE STUDIES

Before selecting a technological solution for implementation, it is first important to understand which solution(s) will bring the greatest benefit in terms of both (1) value for customers and (2) increased efficiency and/or revenue for the institution. While this section has outline three specific trends (one for each size of MFI), MFI-specific assessments should be tailored to their specific contexts.

KEY TAKEAWAYS

- Optimizing data collection and management has proven especially useful for small-sized MFIs that are willing to use data to automate the pre-qualification of specific loan amounts. This trend is especially useful for MFIs that have a stable and modular CBS that can be somewhat easily extracted on a daily basis.
- Workflow automation is particularly useful for medium-sized MFIs operating in competitive markets where marginal differences in delivery time significantly increase or decrease customer satisfaction. It is especially useful to implement workflow automation in MFIs that are interested in improving their lending processes to make them more efficient.
- Automatized chatbot solutions are most useful for large MFIs operating where customers are more comfortable with technologies. This is most typically the case for customer segments that are mostly financially literate and located in urban areas. Furthermore, financial institutions implementing such solutions are typically relatively advanced in their digitization process and have already implemented some other solutions.
- The use of the case studies presented in this section are examples and should only be considered as such. Any institution considering implementing a technological solutions should assess the benefits and costs of such solutions relative to the unique context in which it operates.

IMPLEMENTATION GUIDELINES

INTRODUCTION

Rather than outlining a step-by-step list of "what to do" (which has already been done by other organizations (including, for example, the IFC handbook in Annex 3), this Handbook lists common challenges encountered by financial institutions when implementing technological solutions. The list specifically focuses on: (1) challenges that are relevant in the EAC region and (2) challenges that are most relevant for the three technological solutions detailed in the Case Studies section. The region's maturity regarding technological innovation is fairly low, and, for that reason, the most common and important challenges concern the beginning of the step-by-step process (which consists primarily of strategic design and initial project organization). The challenges are organized chronologically, by step in implementation process.

STRATEGY DEFINITION

OBJECTIVE

FOCUS AND ALIGNMENT WITH BUSINESS OBJECTIVES
A common challenge encountered by financial institutions when implementing technologies appears when the design process of the technological solution is isolated from the rest of the business. This leads to the design of a solution that is not aligned with the objectives of the business. This most often occurs when the problem that the solution is expected to solve is not specific enough or when the sub-objectives/key deliverables of the project are too numerous (i.e. more than three) or not narrow enough. The end result is a solution that does not clearly and positively impact the value offer to the customer.

RELIABLE INFORMATION AND A CLEAR DEFINITION OF RESPONSIBILITIES
A sound project conception starts with a comprehensive review of the pain points and potential solutions to overcome them. It is important that the collection of this information be completed by someone/group with a sufficient level of knowledge, responsibility and accountability in order to ensure that recommendations are

INNOVATION PROJECT MANAGER:
"You need to have strategy that is set by management and the board."

sharp and project design decisions are appropriate. The following are important sources of information for making these decisions:

- Core business and/or operations department
- Information from customers and field staff
- Other departments, especially including ones in charge of human resources, administration and auditing/internal control
- Other relevant sources[6] (see Annex 3)

MANAGEMENT SPONSORSHIP

It makes no sense to invest resources and time in a digital project if it is not supported by key stakeholders or if the project management team does not have the capacity to implement it. If not properly supported, such initiatives are destined to produce friction with the institution and, potentially, fail.

ENVIRONMENT

LOCAL CAPACITY

It is important that an institution has an appropriate plan to implement and maintain such initiatives. This includes understanding the complexity of such a project and knowing whether or not the institution has internal abilities to complete it or if support from suitable external parties needs to be arranged.

REGULATION

It is important to clearly identify the limits allowed by the regulatory environment as they can have a major impact on digital projects, e.g. those regarding digital signatures or cloud-based data solutions.

GATHER BUSINESS CASES

Thinking that implementing the technology alone will be a business case in itself is a mistake. Only a narrowed-down business case with clear objectives is realistic. It is advised to have well-defined pain points that are expected to be addressed through technology projects. In that sense, the minimum impact expected should be quantified, and the maximum budget should be defined as early as possible in the process. A practical way to make sure that the most conservative projections are considered is to discuss those with business stakeholders that are perceived internally as fairly risk averse. A expected overall impact that is too low and/or does not justify a sufficient budget is not a strong enough basis for project design.

6. TECHNOLOGICAL NEWS SOURCES, INCLUDING BULLETINS PLATFORMS AND EVENTS SUCH AS HACKATHONS, STUDY TOURS, CONFERENCES, ETC.

LARGE MFI CEO:
"You can't have _just one_ department in charge of innovation."

LARGE MFI COO:
"In my country, digital signatures are not allowed, so we decided to postpone our in-the-field account opening solution."

INNOVATION PROJECT MANAGER:
"You need to make a strong case to senior management: costs are significant, but benefits will be even more significant in the future."

VENDOR SELECTION

BUSINESS ANALYSIS

One of the most recurrent challenges in technology projects is to transform business objectives and requirements into practical selection criteria that allow for prospective solution providers to be differentiated and ranked. Too often, selection criteria are overly-focused on aesthetic features such as infrastructure or reporting rather than features that will actually impact the end results. This often happens naturally due to limited internal practical knowledge.

UNDERSTAND THE RANGE OF AVAILABLE SOLUTIONS

In order to succeed in defining practical selection criteria, it is important to first know the range of technological solutions available, including their key individual advantages and disadvantages. It is useful in this instance to discuss with other managers and experts that have gone through the same process. An information technology and innovations consultant can also provide strategic advice that will help initial strategic design flaws that would lead to wasted resources be avoided. This consultant should be knowledgeable, experienced and fair (without a conflict of interest).

USUAL SELECTION CRITERIA

A well-informed business analysis leads to practical selection criteria being listed that make from the perspective of what is needed as well as the perspective of what is available. Typically, this list covers, at least, the criteria areas listed below:

- **Types, range and flexibility in using hardware with the solution**
- **Types, range and flexibility of partners to operate the solution**
- **Accessibility and ease to locally customize and configure:** ideally, customization, configuration and updating of the solution should require little to no additional code.
- **Scalability of the solution:** ideally, the solution should be accessible with cloud and SaaS facilities, and the platform performance (storage, computing) should increase with the increased activity.
- **Security:** the platform should be designed and developed in line with industry best practices (for example in accordance with PCI-DSS).

MEDIUM MFI COO:
"There is a lot of stuff out there. Before you go to market, write down exactly what you need. Don't get taken in by a good salesperson."

LEADING MFI CEO:
"There is no ready-made solution, ever."

- **Integration:** the architecture of the solution should be designed to integrate with the best functional components in the market and should be based on standard and mature products developed by market leaders. The architecture should be able to integrate new functional bricks that allow for the development new business models as well as integration with third-party systems.
- **Modular:** each module of the solution should, as much as possible, work independently from others and be able to be easily replaced.
- **Level of service:** agreed-upon and documented service agreements from the provider, including priority level/relationship strength between the financial institution and the provider, are important.
- **Cost for the implementation:** this includes all hardware, software, customization and configuration costs.
- **Cost for operating the solution:** this should be calculated on a per user (customer, staff member) or a periodic (annually, monthly, weekly) basis. Costs associated with performing additional configurations– ideally, without having to involve the provider – should also be included in this.

REQUEST FOR PROPOSALS AND TENDERING

Too often, the person in charge of an innovation project will shortlist providers before clarifying its tendering process and needs (i.e. its request for proposals, or RFP). Doing so naturally leads consultants into designing an RFP that corresponds to the offers discussed with those specific providers. It is especially useful to follow tendering best practices while working on a technological innovation project as they force solution providers to structure their language, workplan, deliverables and presentations in a systematic manner that facilitates the financial institution into better understanding different alternatives. Some key elements that should be included in the innovation RFP are:

ELEMENTS	
Main problems to be addressed	Technological and human capabilities in the institution
Expected timeframe	Language requirements
Big lines from the available budget (plan more in the internal budget)	Envisioned maintenance requirements

The tendering process should also be in line with international best practices and involve the following aspects:

ELEMENTS	
Customer references (generally 3–4 per provider)	Prototype testing or demonstration solution (before choosing)
Additional questions to the provider	Clarifications on the functional scope of the offer, the implementation plan and updated financial estimates (as necessary)

IMPLEMENTATION

INCEPTION PHASE AND WORKPLAN DRAFTING

The project should start with an inception phase, during which the initial project plan and concept is re-examined and updated. This should be concluded with an approval from the stakeholders. As possible, it is useful to give a sense of urgency to the project while developing the timeline. The project should not be rushed, but allowing too much could keep the project form moving along. The project team must feel the urgency for making the change happen; it is a must that the transformational project be properly completed. A progressive project, with incrementing pilots and small-scale testing can be utilized, especially if it is difficult to get buy-in for a full-scale change. This will also help to limit risk, limit discussion time and foster an atmosphere of learning through the process. It will also help cultivate a more innovative culture that is open to testing and sometimes (fruitful) failing in the future.

Lastly, it is useful to identify risks and a mitigation strategy from the beginning of the project. An example of this is provided in Table 8 below.

TABLE 8: EXAMPLE OF A RISK MITIGATION STRATEGY

RISK	PROBABILITY	IMPACT	MITIGATION STRATEGY
Lack of clarity in the business analysis and the technical requirements	Medium	Medium	Spend sufficient time on the initial needs assessment and on identifying prospective solutions
Misunderstanding of final users	Medium	High	Involve final users in the design of the solution
Changing regulatory context or insufficient internet connectivity	Low	High	Design a solution that will not depend heavily on contextual aspects such as regulatory or internet connectivity

GOVERNANCE AND PROJECT MANAGEMENT

Good governance and project management starts with well-defined project responsibilities, especially the project owner (who should be one specific person). Sharing the top responsibility of a project makes project development slower as there are always other priorities. The project should be the first priority of the project owner. Project managers need both IT and business knowledge. They should ensure that all future stakeholders are informed and available to provide their required input when necessary. Keep top management sponsorship close by ensuring that they are convinced of the benefits of the project as their support will most likely be needed at some point during project implementation (most likely when the most transformational aspect of it will come into play and the way people work starts to change). The agile project management techniques "scrum" is useful in this regard. Key elements of the methodology include:

• Iterative approach to development
• Continuous communication with end users
• Continuous testing of the system in real business conditions with end-users
• Understanding that nothing is ever perfect

It is important to keep an eye on problems as nothing stays still, i.e. problems tend to evolve as the project moves forward. If problems are changing, adapt solution development plans accordingly. It may happen that the product that eventually is developed addresses a problem that did not exist at the project's outset. This is alright; just make sure that the product at the end does not address only problems which lost their importance over the course of the project.

USER ACCEPTANCE TEST

User acceptance test scenarios should be drafted by a technical experts with the inputs from business experts. On the other hand, the tests should be done in real-world conditions with future end users. It is important to involve a representative sample of real end users in the testing of released versions of the system and not only their managers.

Testing the system with motivated but averagely tech-savvy staff members allows for surprises to be avoided when rolling out the system on a full scale. Once this is done, it is also important to test the capacity of the system at a full load.

GO LIVE

Very responsive support is crucial in the first hours and days the system is being used as it builds the trust of the system's end users. This support includes having developers available to fix bugs as they are most likely to happen within the first hours and days.

MONITORING AND EVALUATION

It can sometime be more affordable to outsource the monitoring and evaluation of the system than training a team internally. Monitoring and evaluation efforts should take place against a backdrop of the indicators that were targeted as they key benefits for the implementation of the project.

KEY TAKEAWAYS

- Clarifying the objectives for implementing the solution and aligning them with the other business objectives reduce the risk of investing time and resources into an inappropriate technological solution.
- The environment either allows or does not allow some specific technical solutions. It is important to know staff, partner and regulatory limits.
- Expected benefits should be weighed against expected costs (i.e. the business case should be researched, clarified, presented and discussed).
- Technical requirements should be prioritized based on clearly-quantified expected benefits and detailed business needs.
- Best practices for requesting a proposal and tendering should always be followed...always.
- The implementation plan should be organized and map our any potential risks, including mitigation measures to overcome those risks.
- The responsibilities of all key parties involved in the implementation of a solution should be formalize and communicated to all key parties.
- The project owner should have the time to dedicate to the project as well as the necessary power support to keep the project moving forward.
- All solutions should be thoroughly tested.
- Very responsive support should be provided when the solutions goes live, especially during the first few hours and days.
- The solution should be monitored over time against the benefits identified at the outset of the project.

ANNEXES

ANNEX 1: TECHNOLOGY SELECTION TABLE WITH CRITERIA ANALYSIS

TRENDS	SOLUTIONS	BENEFITS		REQUISITES		
		CURRENT	EXPECTED	FUNDAMENTAL TECHNOLOGY	COMPLEXITY	DEPENDENCE ON REGULATION
OWN DATA HARVESTING	Optimized Data Collection/Mmgt	Medium	+	Yes	Ok	Ok
	Live and Insightful reporting	Medium	+	Yes	Ok	Ok
	Data Integration	High	+	No	High	Ok
	Data science Solutions	Medium	+	No	Ok	Ok
	Data Quality Maintenance	Low	+	Yes	Ok	Ok
	Business Intelligence & Analytics	Medium	=	No	Ok	Ok
	Advanced Data Security	Medium	+	No	High	High
	AI applications	Low	+	No	High	Ok
LOAN PROCESS DIGITALIZATION	Workflow Automation	High	+	Yes	Ok	Ok
	Digital Customer Onboarding	Medium	=	Yes	Ok	High (e-sign)
	Digital Payments	High	=	No	Ok	High
	Automated decision	Medium	+	No	Ok	Ok
	Structured Document/File Mgmt	Low	+	Yes	Ok	Ok
	Statistical Scoring	Medium	—	No	Ok	Ok
	Fraud Automated Detection	Medium	+	No	Ok	Ok
	Easy Loan Renewal	Medium	=	No	Ok	Ok
	Ecommerce Financing	Medium	+	No	Ok	High
DIGITAL SALES AND MARKETING	Chatbot Solutions	High	=	No	Ok	Ok
	Online Branding and Marketing	Medium	+	Yes	Ok	Ok
	Terminals /Branchless Services	High	+	No	Ok	High
	Online Loan Application	Medium	=	Yes	Ok	High
	Loan Calculators	Low	=	Yes	Ok	Ok
	CRM System for front office	Medium	+	No	High	Ok
	Mobile Money	Low	+	No	Ok	High

ANNEX 2: USEFUL LINKS TO EXPLORE FURTHER

TITLE	LINK	TYPE	DESCRIPTION
THE DIGITAL TRANSFORMATION PLAYBOOK	http://bit.ly/2OZr3ep	Book	Build platforms not just products, Turn Data into Assets, Harness your customer network, Innovate by rapid experimentation, Adapt your Value proposition, these are the 5 new paradigm of digital transformation presented by David L Rogers in this book. A bible for your digital transformation.
THEFINANSER.COM	https://thefinanser.com	Blog	Blog of Chris Skinner, a thought-leader in the fintech industry and strong advocate of the need for banks to better digitize.
BFC FINTECH BULLETIN	http://bulletins.bfconsulting.com/en	Resource	Weekly publication on digital topic helping managers of financial institutions of CIS region to know more about main digital trends and how they can be leveraged to help their organizations.
BAIN DIGITAL TRANSFORMATION ROADMAP	www.youtube.com/watch?v=Dr0MX-wdPs8E	Video	A quick intro from a leading consulting firm on how to approach digital transformation as a whole.

ANNEX 3: LITERATURE REVIEW

SOURCE	LINK
Fintech Oxford	https://cdn.crowdfundinsider.com/wp-content/uploads/2017/09/Oxford-Fintech-Program.pdf
Digital Innovations and Analytics (IFC)	www.ifc.org/wps/wcm/connect/369c10de-1703-4497-876f-9cdf0367a4d4/IFC+Data+Analytics+and+Digital+Financial+Services+Handbook.pdf?MOD=AJPERES&CVID=lRrkzEd
Digital Financial Services and Risk Management (IFC)	www.ifc.org/wps/wcm/connect/92ac1a71-6bd5-43db-84ff-1b6794f82653/Digital+Financial+Services+and+Risk+Management+Handbook.pdf?MOD=AJPERES&CVID=mxxEJFZ
Digital Financial Services for Agriculture (IFC)	www.ifc.org/wps/wcm/connect/3d053636-c589-47ac-865d-731068f0736e/Digital+Financial+Services+for+Agriculture_IFC%2BMCF_2018.pdf?MOD=AJPERES&CVID=moq-VoG
Alternative Delivery Channels (IFC)	www.ifc.org/wps/wcm/connect/c5489855-7da5-4cdf-b662-afdbc60e5e1f/ADC+Handbook_ISBN.pdf?MOD=AJPERES&CVID=lg4vX-I
Gartner's Technology Hype report	www.gartner.com/smarterwithgartner/5-trends-appear-on-the-gartner-hype-cycle-for-emerging-technologies-2019/
David L Rogers, Digital Transformation Playbook	https://issuu.com/columbiaup/docs/rogers

ANNEX 4: DESCRIPTION OF THE SOLUTIONS PRESENTED IN THE PYRAMID

OWN DATA HARVESTING

DIGITAL SOLUTIONS/PROJECTS	DESCRIPTION
Optimized Data Collection	Solution to streamline information collection, with quality & consistency. This solution will ensure appropriate usage and archiving.
Live & Insightful reporting	Leverage digital tools to increase the capacity of the PFI's management and teams to access live information on company's activity and performance indicator allowing to take better data-based decisions instead of opinion-based strategic and operational decisions
Data Integration	Solution to integrate and use data from an ecosystem including different platforms
Data Science Solutions	For companies with important quantity of exploitable data, data science tools and capacity allows to dig into the available data to gather key insight on which to base service development and further strategic orientations.
Data Quality Maintenance	Collect, Clean and Organize Data allowing this valuable asset to be used by teams and partners to create value for the organization while mitigating the effort to generate and make exploitable this asset.
Business Intelligence & Analytics	Business intelligence tools allow managers of small structure with exploitable data to access and perform simple analysis of information on their own, creating significant business value for limited investment.
Advanced Data Security	Your data is a valuable asset which must be protected. Between the threats of cyberattacks and the increasing requirements in terms of data protection, a rigorous data security approach is a key part of digital transformation. This effort can be complex technical and very bound to legal context.
Artificial Intelligence (AI) Applications	This is the stage following data science solutions, the implementation of automated algorithm allowing smart automation and self-learning of your systems. Good to be explored for companies advanced on the data science thematic.

LOAN PROCESS DIGITALIZATION

DIGITAL SOLUTIONS/PROJECTS	DESCRIPTION
Workflow automation	Digitize the processing of your loan applications through a system automatically directing these applications through pre-configured workflow. The first fundamental step in the process of digitizing loan process.
Digital Customer Onboarding	This solution immediately saves (in a digital format) loan application data gathered by loan officers working in the field. It is one of the key steps toward a fully-automated and streamlined loan process. It includes problematics related to Know-your-customer (KYC) and Anti-money laundering (AML). Bottlenecks can appear, however, due to regulations related to e-signatures.
Payments	Solution to leverage new technologies in terms of terminal, mobile money and other tools to facilitate payments from customers. A highly trendy topic, but highly dependent from the local context and regulation.
Field Loan Application	Loan application data is immediately saved in a digital format by loan officers collecting information on the field. This is the necessary first step for a fully streamlined loan process. Bottlenecks exist due to different regulations related to e-signature.
Automated Decision	Combine scoring logic with the benefits of a workflow automation tool by automatically validating or refusing applications based on pre-defined criteria. Highly impactful in terms of efficiency.
Structured Document and File Management	All official documents and files are digitized and ordered in a database allowing security and easy access for team members needing the information. A fundamental step for digitizing processes
Statistical Scoring	Development of the optimal scorecards based on the statistical analysis of legacy late loans data. Requires a data base of significant size and regular updates. Currently challenged by data science and AI tools performing this in a more automated way.
Fraud Automated Detection	Advanced application of data science and loan process digization. Based on data criteria, the system automatically highlights applications presenting a high risk of fraud.
Easy Loan Renewal	The good clients or potential clients can get their loan renewed earlier or benefit from an approval fast track.
Ecommerce Financing	A platform to buy goods on credit. Is to be built in partnership between banks and retail vendors. Not always in the key mission of microfinance and may face regulation constrains depending of countries.

DIGITAL SALES AND MARKETING

DIGITAL SOLUTIONS/PROJECTS	DESCRIPTION
Chatbot solutions	A tool to screen automatically the demand of the client allowing a higher customization of the engagement with the client without the direct involvement of a front office team member
Online Marketing and Branding	Give the best image of your brand, your services and your value on the digital space through website, social network activity and other online instruments.
Terminals and Other Branchless Services	Leverage existing networks of technologies (ATMs, Terminals, etc.) and vendors (Shops, Kiosk, etc.) to decrease your dependence to physical branches, decrease your cost and increase the spread of your service. Will need to be adapted to the local specificities of each country.
Online Loan Applications	Clients can request a loan online and sometime receive an answer online. Good for quality of service and capacity to attract customers. Regulations set some limits to such practices in some countries of the region.
Loan Calculators	Clients can simulate loans online to immediately know what service he could receive. Saves time especially if combined with online loan application.
CRM System for Front Office	A Customer relationship System Increases significantly the efficiency of your front office by giving them a tool to better track and improve their promotion activity and giving a tool for management to better control and evaluate the front office team actions.
Mobile Money	Decrease the dependency on cash (and the costs related to it) by serving your clients through mobile money. Highly potential improvement but dependent of the availability of well spread reliable mobile money in the country.

ANNEX 5: EXPANDED LIST WITH EXAMPLE OF SOLUTION PROVIDERS

SOLUTION	KEY REGIONS/REFERENCES	SPECIFICITIES	WEBSITE
DATA			
PrognozPlatform	IMF, Russian Central Bank, Sberbank	Prognoz cooperates with the largest banks and financial institutions in Russia and around the world. To manage the activity of financial organizations, we offer cutting-edge BI systems that comply with international GRC standards (Governance, Risk management, Compliance). Our products provide comprehensive automation of banking activities related to credit portfolio and risk management, financial planning, investment activity, and stress testing. Our solutions easily integrate with your bank's existing information environment to facilitate sound decision making.	www.prognoz.ru/products/finance/commerce
Altkraft	CIS (Russia)	Omni-channel platform ALTKRAFT Russian software for the automation of communications and marketing. Increases sales, optimizing business operations taking into account the activity and interests of your customers. Ensures the security of personal data.	www.altkraft.com
WORKFLOW AUTOMATION			
OpenCBS	Central Asia, Southeast Asia, Africa (mainly small-middle size MFIs).	OpenCBS is an innovative platform offering an Open Source Core Banking System as well as other value-added solutions for the microfinance and financial services industry including a Tablet application for KYC, Appraisal and collection of Social Performance Indicators, a Loan Origination Solution and a Customer Relationship Management System.	opencbs.com/

Terrasoft	Kazahstan (Halyk Bank Kazahstan, Alfa Bank), Azerbaijan (Nikoil Bank, AG Bank, Bank Respublika), Armenia (Ameria Bank), Uzbekistan (Hamkor Bank), Kyrgyzstan (Rosin), Tajikistam (Eskhata)	Terrasoft is a leader in the Russian market of corporate software for business process management and CRM. The company is one of the key players in the global BPM and CRM market, with offices in seven countries and more than 500 partners in Russia and around the world.	www.terrasoft.ru
RSBank	OJSC "Optima Bank", OJSC "RSK Bank", JSCB "Hamkorbank", MDO Imon International, Tengri Bank JSC	R-Style Softlab is a leading Russian developer and integrator of banking software, part of the international holding Asseco Group. The company's solutions cover the automation of almost all the main areas of banking, including settlement transactions, lending and deposits, working on the securities market, servicing private and corporate clients through various channels, strategic business management, interaction with regulators, on-farm operations, etc.	www.softlab.ru
CFT Bank	Kazakhstan (KaspiBank, VTB Kazakhstan, AsiaCredit Bank, Asia Life Capital Bank, Tsesnabank, Tengri Bank, Bank RBK), Kyrgyzstan (BTA Bank, JSCB "Kyrgyzstan", Kompanion Bank, Rosinbank),Tajikistan (National Bank of Tajikistan, Development Bank of Tajikistan, Agroinvestbank, Fononbank, Eskhata Bank, MDO Humo, AmonatBank, International Bank of Tajikistan, Bank of Asia),	Center of Financial Technologies (CFT) is a group of innovative companies that develop high-technology solutions for the finance sector and other industries in Russia and the CIS countries. CFT's core activity involves design, development and replication of high-tech solutions for the credit and financial organizations, including a wide range of processing services and trainings for bank employees.	www.cft.ru
CHATBOT			
Nanosemantica	CIS (Russia, Uzbekistan, Belarus, Georgia)	Chatbots for Business Our chatbots can imitate human speech, maintain a conversation with people and act as an interactive interface with their informational systems delivered through text or voice channels.	nanosemantics.ai/proekty/

ANNEX 6: ADDRESSING CULTURAL BOTTLENECKS FOR DIGITAL INNOVATION

INSTITUTIONAL RISK AVERSION VERSUS TRY AND LEARN CULTURE

The fundamental mission of financial institutions is to manage financial risks. This leads many of them to be naturally risk averse and reluctant to launch digital innovation projects as there is a high level of unknown at the start of such projects as well as a higher chance of failure than with more traditional initiatives. Being an innovative company consists mainly of trusting your capacity to manage the unknown when it arises. The general objective of a digital innovation project should make sense for your company. If it really makes sense and you manage it in a proper and agile way, it will become successful or, at the very least, bring some level of positive benefits to your company.

PRACTICAL TIPS:
- Create a space and culture in your company where trying new things is encouraged and failing not seen as a bad thing if it brings with a valuable learning moment.
- Launch small-scale pilot projects and proof-of-concept initiatives, putting value-oriented people to coordinate these initiatives.
- Start with less sensitive or risky topics as it will be simpler to get the buy-in of the most conservative team members. Move later to more sensitive topics.

WATERFALL VERSUS AGILE PROJECT APPROACH

Many big complex projects are being managed by a waterfall approach. This approach consists of spending significant time on planning all the initiative's tasks and expecting that all steps will go smoothly, even after several months. This approach most often fails as seldom do things happen as per plans and project objectives tend to become irrelevant by the time of project completion. The plan and objectives of the project must evolve continuously through the development process, alongside the evolving objectives of the organization.

PRACTICAL TIPS:
- Make a clear plan for the coming few weeks or months and make plan higher level for what is coming after. Smooth communication is more important than accurate planning.
- Schedule regular project reviews to stay up-to-date on where a project stands and address any issues accordingly.
- If possible, continuously test what is being developed with future end-users.

IT AS BLACK MAGIC VERSUS NOTHING IS COMPLICATED MENTALITY

In many companies, the IT team is seen as a group of strange people having their office in the basement and dealing with things only they are able to understand. The things they do are very complex, meaning that it is important that they feel at peace and be afforded as much distance as possible. Anyway, they are not the most sociable people. This way of looking at IT is irrelevant and will be a burden for your organization. A good IT manager (or chief technology officer) in today's world is somebody who has constructive exchanges with operational managers on regular basis. He/she is able to clearly explain existing constraints as well as the opportunities in development.

PRACTICAL TIPS:
- In IT, do not take "we cannot do it" as an answer. Everything is possible; it is just a question of resources (i.e. time, money and personnel).
- You must feel comfortable with the person leading your technology effort. If this is not the case, your head of IT may be too technical.
- You may need someone with a more operational understanding who can act as technology translator between the IT and operational capacities of the organization. Companies able to do that well usually thrive in terms of digital transformation.

CONTROL AND SUSPICION VERSUS TRUST AND EMPOWERMENT

In many financial institutions (especially those in the CIS region), a culture of control and suspicion still prevails. In these companies, we tend to think that information is better hidden from others who may do wrong things with it. It is preferable to be suspicious of potential partners as they probably have an interest in our failure, and we should always make sure to keep team members under close control and restrictions to ensure they do not pose any real risk to the organization. This way of looking at things is destructive for business development overall, but even more especially for digital innovation. A fertile company culture for digital innovation trusts by default that team members and potential partners have an interest in the success of the company and will use whatever power and capabilities they have for the benefit of the organization. To achieve this state, first keep people motivated with a strong and inspiring business vision, a motivating incentive system and a good level of HR awareness. Then, empower your people by giving them the space to try new things while also sharing the information and tools that allow them to be successful with their initiatives. Do not limit this approach to the management level, most of the best innovations are inspired from the field.

PRACTICAL TIPS:
- Celebrate your best-performing and innovative team members.
- Idea boxes and internal competitions are good initiatives to push innovations at all stages of the organization as well as show that management is listening to the team. However, these must not be seen as gadgets but rather as consistent with the general empowerment and listening approach of the company.

MY NOTES

MICROFINANCE CENTRE

MetLife Foundation

THE MICROFINANCE CENTRE IS A SOCIAL FINANCE NETWORK THAT PROMOTES FAIRNESS, INCLUSION, EQUALITY AND RESPONSIBLE SERVICE.

We unite 113 organisations (including 77 microfinance institutions) across 36 countries of Europe, Central Asia and beyond, who together deliver responsible microfinance services to almost 2,000,000 low-income clients. Our mission is to empower individuals and sustain communities through innovative social finance and microfinance.

Web: www.mfc.org.pl
Email: microfinance@mfc.org.pl
Twitter: @MFC_Network
Facebook: @MFCNetwork
LinkedIn: @mfcnetwork