Data and Metadata. 2025; 4:833
doi: 10.56294/dm2025833

CASE REPORT

Implantation of Information Systems in the Popular Financial Sector: Two Case Studies Based on the SImplE Framework

Implantación de Sistemas de Información en el Sector Financiero Popular: Dos Casos de Estudio Basados en el Marco de Trabajo SImple

Irving Reascos[1], Fausto Salazar[1], Carpio Pineda[1], Luz Córdova[1], Jonathan Segovia[1]

[1]Irving Reascos, Fausto Salazar, Carpio Pineda, Luz Córdova, Jonathan Segovia.

Cite as: Reascos I, Salazar F, Pineda C, Córdova L, Segovia J. Implantation of Information Systems in the Popular Financial Sector: Two Case Studies Based on the SImplE Framework. Data and Metadata. 2025; 4:833. https://doi.org/10.56294/dm2025833

Submitted: 22-08-2025 **Revised:** 17-10-2025 **Accepted:** 02-12-2025 **Published:** 03-12-2025

Editor: Dr. Adrián Alejandro Vitón Castillo

Corresponding author: Irving Reascos

ABSTRACT

The failure of information system implantations in small-scale organizations, such as savings and credit cooperatives, remains a recurring challenge in Latin America, primarily due to a lack of awareness and the underutilization of structured frameworks. This article presents two case studies conducted in Ecuadorian Segment 5 cooperatives to analyze their experiences in adopting financial management software using the SImplE framework (Simple Implantation of Enterprise IT Applications in SMEs) as an analytical reference. Although each cooperative carried out the implantation process empirically and under the guidance of its technology provider, the SImplE model enabled a structured analysis across three phases: pre-implantation, implantation, and post-implantation. The research employed a qualitative methodology, based on semi-structured interviews and document analysis. Findings reveal that the absence of formal planning, ad hoc definition of system requirements, empirical software selection, and the lack of written contracts all contributed to the system's long-term sustainability. Nonetheless, the implantation was made possible through institutional commitment and technical support. The study concludes that proper software selection, a well-managed stabilization phase, and the adoption of structured frameworks such as SImplE are critical factors for improving the effectiveness, continuity, and scalability of technology implantation processes in resource-constrained organizations.

Keywords: Case Study; Digital Transformation; Financial Inclusion; Software Implementation; SImplE Framework.

RESUMEN

El fracaso en la implantación de sistemas informáticos en organizaciones de pequeña escala, como las cooperativas de ahorro y crédito, sigue siendo un desafío recurrente en América Latina, principalmente debido al desconocimiento de marcos de trabajo estructurados. Este artículo presenta dos estudios de caso en cooperativas ecuatorianas del segmento 5, con el objetivo de analizar sus experiencias en la adopción de software de gestión financiera utilizando el framework SImplE (Simple Implantation of Enterprise IT Applications in SMEs) como marco de referencia analítico. Si bien cada cooperativa llevó a cabo el proceso de implantación de forma empírica y guiada por su proveedor tecnológico, el modelo SImplE permitió estructurar el análisis en tres fases: pre-implantación, implantación y post-implantación. La investigación empleó una metodología cualitativa, basada en entrevistas semiestructuradas y revisión documental. Los resultados revelan que la falta de planificación formal, la definición improvisada de requisitos, la selección empírica del software y la ausencia de contratos escritos afectaron la sostenibilidad del sistema, aunque la implantación fue posible debido al compromiso institucional y al soporte técnico recibido. Se concluye

que una adecuada selección del software, una fase de estabilización bien gestionada y la incorporación de marcos estructurados como SImplE son factores críticos para mejorar la eficacia, continuidad y escalabilidad de los procesos de implantación tecnológica en organizaciones con recursos limitados.

Palabras clave: Estudio de Caso; Transformación Digital; Inclusión Financiera; Implementación de Software; Marco Simple.

INTRODUCTION

The integration of core financial systems is a fundamental pillar for the integrated management and operational optimization of small credit unions. These systems serve as the backbone by interconnecting multiple branches and digital channels, enabling the execution of critical operations, such as loan management, deposits, withdrawals, and payments, in real-time. This integration significantly improves operational efficiency, ensuring consistent, reliable, and continuous service delivery. It also facilitates financial transparency, regulatory compliance, and the availability of strategic data for decision making.[1,2,3]

In recent times, credit unions have played a crucial role in the financial inclusion of traditionally underserved populations, especially in rural contexts and emerging economies.[4,5] However, smaller cooperatives face major technological, organizational, and financial challenges to successfully implanting modern core systems. A lack of specialized resources, resistance to change, and limited infrastructure often hinder technological migration and operational adaptation processes, putting both business continuity and long-term sustainability at risk.[2,6]

The Superintendency of Popular and Solidarity Economy (SEPS) of Ecuador classifies cooperatives into five segments according to their size and volume of assets, with segment five corresponding to the smallest entities.[7] These organizations usually operate with limited technical and financial resources, which significantly conditions the implantation of technological solutions. Among the main obstacles are the low technical capacity of staff, limited technological infrastructure, resistance to organizational change, and the need to adapt solutions to local regulations.[8,9]

Despite the growing offer of modular and cloud-based solutions that could suit the needs of this type of entity,[10] the scientific literature presents few empirical studies documenting implantation experiences in this context, especially from a contextualized and comparative perspective.

With this background, this article aims to analyze the core financial systems implantation process in two small-scale savings and credit cooperatives, located in segment 5 of the SEPS classification. Through a qualitative multiple-case study approach,[11] the key phases of the process—pre-implantation, implantation, and post-implantation—are described, along with critical success factors and lessons learned. The study is guided by the SImplE (Successful Implantation of Enterprise IT Application) framework, which enables the analysis to be structured from an integrated perspective, considering both technical and organizational, as well as regulatory, aspects.[9,12]

This paper contributes to the body of knowledge on digital transformation in financial institutions of the popular and solidarity economy, offering practical insights for decision-makers, financial software developers, and regulators interested in promoting effective and sustainable technological adoption in the cooperative sector.

This article is organized as follows: First, it presents the background, focusing on core banking systems and the SImplE framework as a guide for implementing Enterprise IT Applications (EITA). Next, the methodology used to develop the case studies is described. After that, the two analyzed cases are detailed. Finally, the lessons learned are discussed, followed by the conclusions and recommendations derived from the study.

Core Banking Systems

Financial information systems, commonly known as core banking systems or core financial (CF) systems, represent the technological backbone of financial institutions. These systems integrate and automate the main operations of an organization, such as account management, lending, deposits, accounting, regulatory reporting, and risk control.[13] The primary advantage of these systems lies in their ability to centralize financial and operational information, enabling organizations to enhance efficiency, reduce manual errors, and strengthen data-driven decision-making.[3]

In the context of small savings and credit cooperatives, adopting a core banking system is not only a strategic decision but also a requirement for adapting to the regulatory and market environment. These institutions, particularly in emerging economies, must comply with increasingly stringent regulations concerning transparency, solvency, and risk management.[7] However, many small cooperatives face significant barriers to adopting such technologies, including budget constraints, limited technological infrastructure, and low levels of digital competence among operational staff.[10]

Despite these limitations, successful implantation of a financial information system has been documented to enhance member trust, professionalize institutional management, and facilitate organizational growth.[14]

Software Implantation Model: A Focus on the SImplE Framework

The software implantation process in small organizations or those with horizontal structures requires specific methodological approaches that consider their operational, cultural, and technological realities. Although there are generic models such as the classical software life cycle, agile methodologies, or frameworks like ITIL and COBIT, these are not always suitable for institutions with limited capacities.[15]

In this context, the SImplE framework emerges as a model specifically designed to describe the software implantation process in micro, small, and medium-sized enterprises, including financial cooperatives.[9,12] Figure 1 shows the SImplE framework.

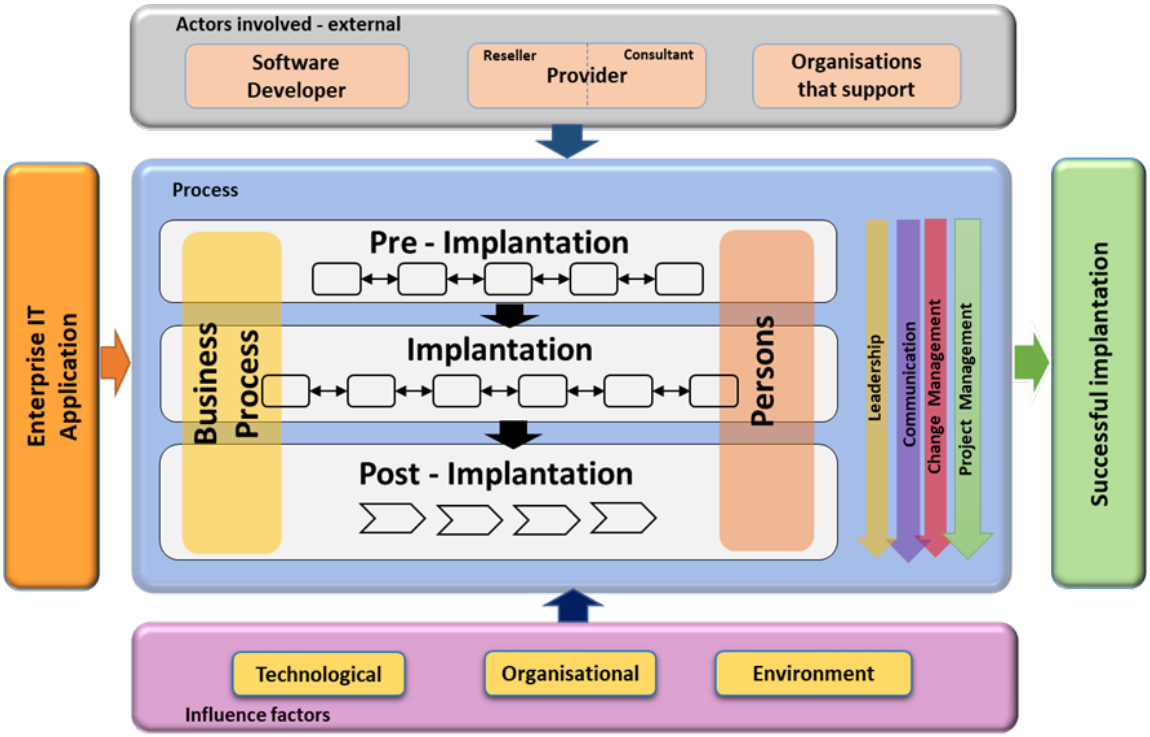

Figure 1. Framework SImplE for the Implantation of Enterprise IT Applications in SME
Source: adapted de Reascos, I. Carvalho, J.[12]

The SImplE framework proposes an integration process with three phases (pre-implementation, implementation, and post-implementation) and four cross-cutting areas of concern (leadership, communication, change management, and project management).

- Pre-implantation involves identifying needs, searching for software and vendors, evaluating options, selecting a solution, and contracting.
- Implantation includes setting up the infrastructure, adjusting processes, installing, configuring, parameterizing, training users, testing, and going live with the system.
- Post-implantation encompasses system stabilization, technical support, performance monitoring, and continuous improvement.
- Cross-Cutting Areas of Concern (leadership, communication, change management, and project management) played a key role in the success of the Financial Core System implantations.

This model not only focuses on technical aspects but also emphasizes the organizational and human dimensions of the change process, enabling small cooperatives to implant technology in a sustainable and context-sensitive manner. Unlike more prescriptive approaches, SImplE adopts an inductive perspective that aligns with the user organization's technological maturity level.

METHOD

This research employed a qualitative approach aimed at achieving an in-depth understanding of the implantation process of core financial systems in small savings and credit cooperatives. Due to the exploratory and contextual nature of the study, which focused on the experiences of key stakeholders, we adopted the case

study methodology proposed by Yin[11]. This methodology is particularly suitable for examining contemporary phenomena in their real-life context, especially when the boundaries between the phenomenon and its context are not clearly defined.

Research design

A multiple-case study design was selected to strengthen the validity and analytic generalization of the findings. Following the recommendations of Yin[11] and Eisenhardt et al.[16], the use of more than one case enables both within-case and cross-case analysis, thereby allowing for replication logic and the identification of common patterns as well as contextual differences.

Two cooperatives classified under segment five by the Superintendency of Popular and Solidarity Economy (SEPS) were chosen. This segment corresponds to the smallest-scale entities within Ecuador's solidarity-based financial system. The selection was intentional and based on three criteria: (i) the existence of recently implemented core financial systems, (ii) the willingness of the institutions to participate in the study, and (iii) access to relevant institutional documentation. The study was organized into four phases: planning, data collection, data analysis and presentation of results.

Case study planning

In this initial phase, data collection instruments were designed, including invitation letters for participants, informed consent forms, semi-structured interview guides, and an interview protocol outlining application criteria, duration, ethical considerations, and recording conditions. Additionally, key stakeholders involved in the implantation process at each institution were identified and selected.

Data collection

Interviews were conducted with various stakeholder group executives, IT specialists, functional users, and vendors—both in person and virtually, with an average duration of 45 to 60 minutes. Complementary to the interviews, relevant institutional documents were gathered, such as implantation schedules, service contracts, follow-up reports, and technical system manuals.

Data analysis

This phase was structured in two stages. First, the SImplE framework was employed as an organizing lens to structure the information around the three stages of the implantation process: pre-implantation, implantation, and post-implantation. Subsequently, a qualitative coding process was carried out using the demo version of MaxQDA software, which enabled the identification of patterns, thematic relationships, and emerging critical factors based on the analysis of interviews and institutional documents.

Presentation of results

In the final stage, the findings of each case were interpreted and explained, enabling comparisons and contrasts to be established between the two institutions.

This methodological strategy enabled data triangulation and a deep understanding of the technical, organizational, and human elements that influenced the success or limitations of the implantation process. Methodological rigor was ensured through the development of a research logbook, intersubjective validation of the findings, and adherence to ethical procedures in handling personal and organizational information.

RESULTS

Case 1 – Financial Institution

The institution under study is a Segment 5 cooperative that offers financial services in savings, credit, and investments. It was formed through the merger of a savings and loan association and a small cooperative. As a result, an entity was established with approximately $200,000 in assets and a team of nine employees. Its management model was traditional, relying on manual processes and limited technological infrastructure, which made it difficult to comply with regulatory requirements issued by the "Superintendencia de Economía Popular y Solidaria (SEPS)".

Figure 2 depicts the implantation process of the financial core system, structured into three main phases—pre-implantation, implantation, and post-implantation—along with four transversal activities regarded as critical to its success: leadership, communication, change management, and project management. The following sections provide a detailed explanation of each phase of the process and the transversal activities that accompany it.

Pre-implantation phase

The Core Financial (CF) system implantation in the cooperative was structured around an initial pre-implantation phase comprising four key stages: identifying motivations and needs; searching, evaluating, and

selecting proposals; negotiating with the provider; and making the final decision regarding the system and its implantation.

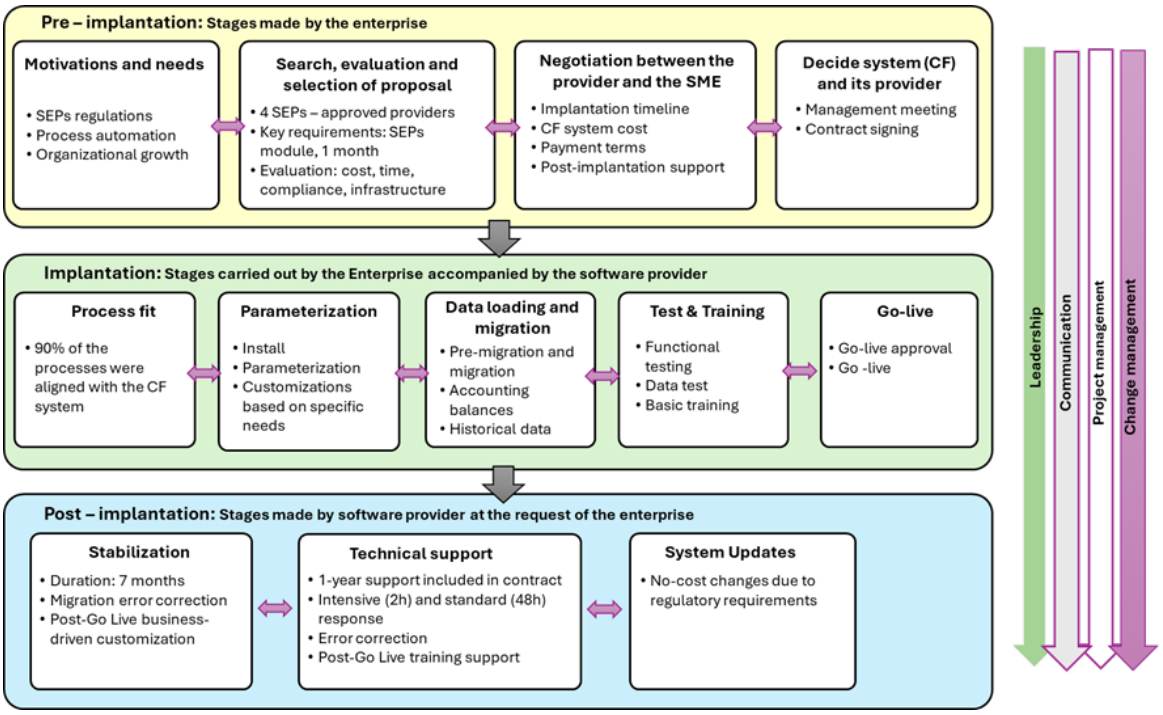

Figure 2. Case 1 – Implantation process

- Motivations and Needs. The decision to adopt a core financial system was primarily driven by regulatory requirements set by SEPS. Key changes included an increase in the frequency of financial reporting, moving from quarterly to monthly, and the mandatory implantation of an Information Security Management System (ISMS) based on the principles of confidentiality, integrity, and availability. The cooperative had been using manual processes that were prone to errors, duplication of efforts, and limited traceability. Furthermore, the open-source software that was previously utilized did not meet the functional requirements established for regulated entities. The sustained growth in membership and operations following a merger intensified existing operational limitations, prompting the new management to prioritize the adoption of a robust information system. This system would be aligned with digital transformation principles, aiming for a more professional, efficient, and sustainable management model.
- Search, Evaluation, and Selection of Software. The search for a banking solution was restricted to providers certified by SEPS to ensure compliance with regulatory standards. Four viable alternatives were identified. Due to the urgency caused by delays in the regulatory processes, two key criteria were established: the inclusion of an SEPS-compliant module and the ability to complete implantation within one month. The proposals were evaluated based on these criteria, as well as implantation costs and minimum infrastructure requirements, with a focus on finding a solution that was both technically feasible and financially accessible.
- Negotiation with the Provider. Negotiations centered on establishing an implantation schedule that aligned with the cooperative's critical deadlines. The cost of the banking system was determined with consideration of the organization's budgetary constraints. A mixed payment plan was agreed upon: 40 % upfront and 60 % on credit, with a financing term of two years. As part of the agreement, the provider committed to delivering technical support and guidance during the operational stabilization phase.
- Decision on the System and its Provider. The final decision was made during a management board meeting after evaluating the technical and financial proposals received. Provider 3 was selected due to its experience, the availability of a modular cloud-based solution, and its ability to meet the cooperative's needs. The decision was further supported by positive feedback from team members. Although multiple system versions were available, a more economical basic edition was chosen, as it adequately addressed the cooperative's immediate operational requirements. The formal signing of the contract marked the beginning of the implantation process.

Implantation phase

With the signing of the contract, the implantation phase formally began. The provider initiated the system

installation and delivered the data migration templates. The SME actively collaborated in the preparation of the information, enabling progress in the subsequent stages of the process. This phase was organized into five key stages: process adjustment, system installation and parameterization, data migration, testing and training, and finally, system go-live.

- Process Adjustment. The cooperative primarily adopted the standard processes offered by the CF system, allowing for the integration of roughly 90 % of its operations without any modifications. However, during testing and the initial production days, unexpected requirements surfaced. Some of these adjustments involved minor operational changes, while others necessitated significant technical modifications. These issues were resolved through specific customizations.
- System Installation, Configuration, and Customization. The vendor was responsible for installing the CF system and setting up the initial database. Due to time constraints, data migration was prioritized, while system parameter configuration was postponed to a later phase. Midway through the project, the institutional configuration template was delivered. This template included fields for financial products, certificates, credit types, and specific operational notes. However, it was completed in haste, resulting in errors that were discovered just one day before the system's go-live, which necessitated a joint review between the vendor and the cooperative. The system customizations, carried out by an external developer, included the following:
    - *Elimination of physical passbooks*: The original system required physical passbooks for transaction validation, but it was modified to support member identification and operations solely through national ID.
    - *Adjustments to the programmed savings module*: The module's logic was adapted to align with the cooperative's internal policies, incorporating rules for monthly deposits and automatic linkages between primary and secondary accounts.
    - *Mobile service window functionality*: A custom extension was developed to allow information retrieval and collections management from mobile devices, thereby enhancing service delivery in rural areas.

- Data Loading and Migration. The data migration process was carried out in two stages: pre-migration and final migration. The pre-migration phase was executed module by module, following a weekly schedule agreed upon with the vendor. The cooperative provided the required data using Excel templates, after extracting, cleaning, and structuring the information from the legacy system and physical records. The vendor loaded this data into a testing environment, identified inconsistencies, and reported them for immediate correction. Once all modules were validated, the final upload to the production environment was performed. Only historical data related to active loans were migrated, while balances for savings, contributions, and investments were entered directly. Although the process was completed within the planned timeframe, minor inconsistencies required manual validation.
- Testing and Training. Functional testing was conducted jointly by the vendor and the cooperative. Each migrated module underwent internal validation by the cooperative, followed by a review by the vendor, who assessed both the functionality and data accuracy. However, the lack of prior staff training hindered the initial validation efforts, resulting in undetected errors that were only corrected after the system went live. Training was delivered in two virtual sessions held at the end of weeks three and four of the implantation schedule. These sessions focused on the system's core modules and were documented through signed attendance records. The strategy aims to minimize operational disruption and ensure effective knowledge transfer to the staff.
- Go-Live. Before the system went live, the vendor requested a comprehensive review of the system. To facilitate this, the cooperative suspended operations for one day to establish operational cut-off point, prevent new transactions, and validate the final data and parameters. During this review, configuration errors were identified, resulting in a one-day delay. After applying the necessary corrections, the vendor assessed the system's readiness and determined that, although minor inconsistencies remained and some users had not yet received full training, these issues did not compromise the core functionality. Consequently, the go-live was authorized, and a progressive support plan was established to address outstanding operational issues.

Post- implantation phase

The post-implantation phase covered the period following the CF system's go-live, during which operations were consolidated, technical support was managed, and software update policies were established. This stage was structured around three key components: system stabilization, technical support, and software updates.

- Stabilization. Operational Stabilization of the system required approximately six to seven months. The accounting module was the most time-consuming, as it was critical to ensure the accurate generation

of monthly and quarterly financial reports and the proper functioning of fixed-term deposit operations. This effort occurred within the context of an accelerated implantation process. In contrast, the client, credit, savings, and investment modules achieved functional stability in approximately three months. During this period, additional customizations were also developed, based on specific requirements identified both prior to and following the go-live, because of real-world system usage.

- Technical Support. The initial contract included one year of technical support, starting from the system's go-live date. During the first 15 days, intensive support was provided, with prioritized service and response times of up to two hours. After this initial period, support continued under a standard scheme, with remote assistance and response times of up to 48 hours. At the end of the contractual year, due to budgetary constraints, the cooperative chose not to renew the service and instead accessed support only when strictly necessary. However, in 2024, a new requirement issued by the regulatory authority mandated the reactivation of continuous technical support. Consequently, a new agreement was established with the vendor, setting a monthly fee of $200 for ongoing support services.
- System Updates. Two main criteria govern system updates. First, when regulatory agencies require modifications and do not involve restructuring the system or developing new modules, the vendor assumes the associated costs. Second, when the client requests new functionalities, the vendor evaluates the request, prepares a technical and financial proposal, and the client decides whether to cover the corresponding cost. This approach aims to ensure regulatory compliance while also enabling the system's functional evolution to meet the cooperative's operational needs.

Cross-Cutting Areas of Concern

Alongside the sequential phases involved in the CF implantation process, four key cross-cutting areas were identified that significantly impacted the project's execution and success: leadership, communication, change management, and project management.

- Leadership. Project leadership was a shared responsibility between both parties. On the vendor's side, the general manager directly oversaw the implantation process. On the SME's side, a manager was appointed as the project administrator. This individual was responsible for task planning, coordinating between institutions, and managing feedback and emerging requirements throughout the implantation.
- Communication. Given the tight project timeline, internal communication was conducted directly and efficiently. During the vendor selection phase, the manager briefly informed the staff about the decision to implement a new system and the upcoming training sessions. After the contract was signed, a general meeting was held to present the project schedule, although no formal presentations were made. During the execution phase, operational communication mechanisms were established, including daily instant messaging updates on completed tasks and weekly virtual meetings to report progress, with a particular focus on data migration.
- Change Management. No significant resistance to change was observed among staff members. This can be attributed to the small size of the team, the clear objectives of the change, and the active involvement of several employees in key tasks during the implantation process. This participation fostered a sense of ownership over the new system and helped facilitate the transition to the new operational procedures.
- Project Management. The project was executed according to a contractually defined schedule lasting 23 working days. While no formal project management methodology was employed, the work was organized into distinct weekly phases: installation, parameter configuration, data migration, functional testing, and system go-live. Both parties maintained close coordination to ensure adherence to the timeline. As part of the monitoring and control process, various documentation was produced, including module handover records, data migration logs, and signed attendance sheets for training sessions. These documents contributed to the overall traceability of the implantation process.

Implantation Challenges

The implantation of the CF system in the SME faced various challenges that impacted the project timeline and overall quality of the go-live. The main difficulties identified during the process include the following:

- Poor Data Quality. One of the most significant challenges we faced was the low quality of the existing data in the legacy systems. We identified numerous inconsistencies, incomplete records, and varying data formats. These issues greatly hindered the data migration process, as extensive data cleansing, validation, and standardization efforts were necessary before importing the data into the new system.
- Tight Deadlines. The project took place under significant time pressure because the cooperative was approaching the expiration of an extension granted by the regulatory authority to meet specific requirements. This time constraint limited several critical stages of the implantation process:

- *Staff training* was limited and focused solely on basic aspects of the system, reducing the team's ability to detect early-stage errors.
- *Functional testing and data validation* could not be performed with the necessary depth, resulting in the system going live with errors that had to be corrected during the stabilization phase.
- *The parameter configuration* template provided by the vendor was delivered midway through the project, at a time when the team was already fully engaged in data migration. As a result, the template could not be thoroughly reviewed, and several parameters were defined incorrectly or incompletely.

The deficiencies in parameter configuration were identified just before the go-live, during the final system validation. This discovery required urgent corrections, resulting in a one-day delay to the original schedule.

Success Factors in CF Implantation

The successful implantation of the CF system within just one month was made possible by a combination of technical, organizational, and human factors that facilitated efficient project execution. Key elements that significantly contributed to achieving the project objectives include:

- Reduced Data Volume. The limited volume of data to be migrated significantly streamlined the transfer process. This condition minimized the likelihood of errors, reduced the time required for data preparation and validation, and simplified the initial system loading. This advantage proved especially valuable during the implantation phase, a stage in which data cleansing and standardization often become major bottlenecks.
- Provider's Experience and Track Record. The selected vendor brought over 25 years of experience in developing and implanting technological solutions for credit unions in Ecuador. This background allowed the provider to apply agile methodologies, a proven implantation framework, and sector-specific best practices. Their familiarity with the regulatory and operational environment enabled them to respond promptly to unforeseen issues and deliver technical support tailored to the cooperative's specific context.
- Cooperative Staff Experience. Several members of the SME's team had previously participated in CF implantation processes with the same vendor. This prior experience offered a strategic advantage, as it facilitated understanding of the system's functional modules, improved communication with the technical team, and enabled more efficient internal coordination. Moreover, it accelerated decision-making at critical moments of the project.
- Engagement of Management and Administrative Staff. Active engagement from both the general manager and the administrative team played a pivotal role in the project's success. Their direct involvement in planning, monitoring, and resolving issues ensured alignment between the strategic and operational objectives of the implantation. Notably, the manager had previously worked with the vendor, which reinforced process leadership and strengthened trust in the chosen technological solution.
- Software Adaptability. Despite being a non-updated version, the CF system demonstrated a high degree of flexibility in adapting to the cooperative's specific needs. This adaptability significantly reduced the need for complex custom developments, thereby expediting the implantation timeline. Additionally, the system's user-friendliness and intuitive interface facilitated staff training and integration into daily operations.

Case 2 – ABC Financial Institution

ABC Financial Institution, based in Ecuador, began operations with an initial capital of approximately USD 50 000 and a small team of six employees. Since its inception, the institution has focused its mission on delivering inclusive financial services to communities within the popular and solidarity-based economy, with a particular emphasis on rural sectors that have been historically excluded from the traditional banking system.

As its membership base expanded and its product offerings diversified, the institution recognized the need to strengthen its operational management. To address this, it initiated a digital transformation process, implementing a financial management system tailored to its administrative and regulatory requirements.

This case study explores how the institution achieved technological modernization despite limited resources, guided by a clear vision for institutional improvement. Figure 3 illustrates the implantation process of the financial core system, structured into three main phases: pre-implantation, implantation, and post-implantation. The pre-implantation phase is further divided into five stages: (i) identification of motivations and needs, (ii) definition of requirements, (iii) search, evaluation, and selection, (iv) negotiation with the provider, and (v) decision on the system and provider. The implantation phase comprises the following stages: (i) preparation, (ii) installation, customization, and configuration, (iii) data loading and migration, (iv) testing and training, and (v) go-live. Finally, the post-implantation phase encompasses four stages: (i) system stabilization, (ii) technical

support, (iii) system upgrading, and (iv) future improvements.

Pre-Implantation Phase

The pre-implantation phase enabled the identification of the needs that motivated the adoption of the system, although it was characterized by limited planning and implantation. The absence of a formal definition of requirements and contractual agreements, combined with an accelerated selection process based on practical references, defined this stage. Nevertheless, it established the functional groundwork for initiating the technological project.

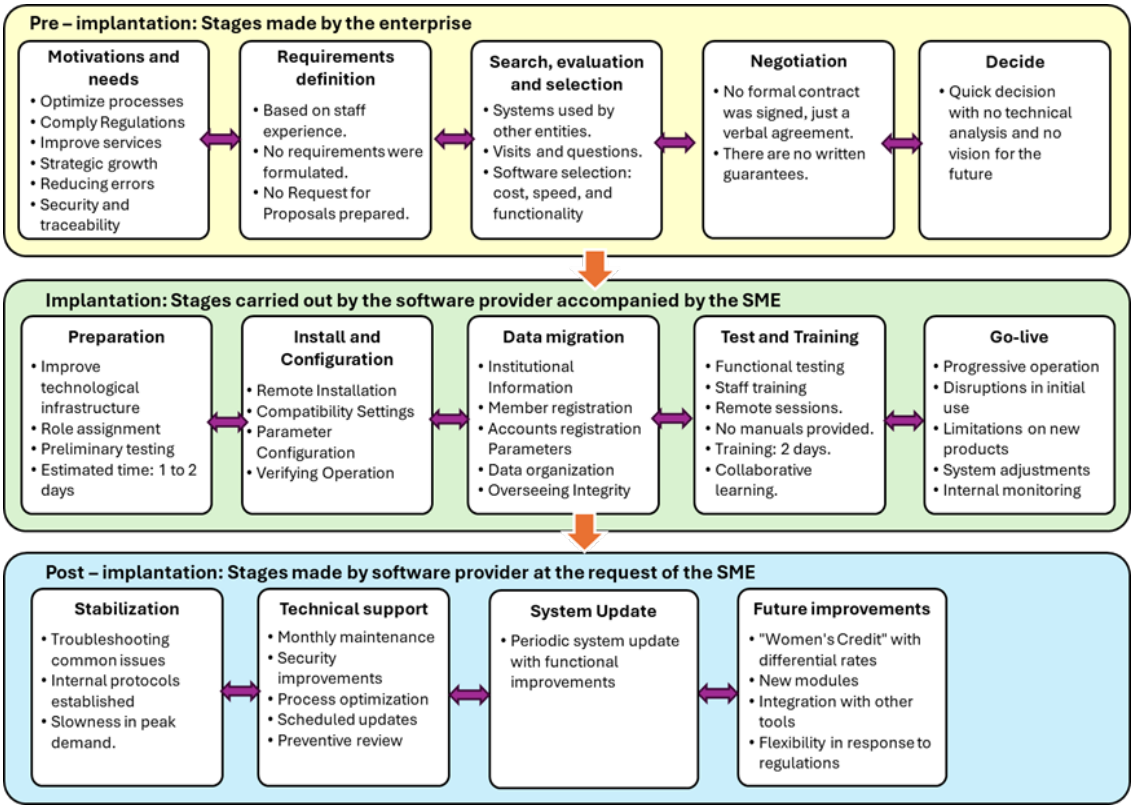

Figure 3. Case 2 – Implantation process

- Motivations and Needs. Strategic, operational, and regulatory considerations drove the decision to implant a CF system at ABC Financial Institution. As a recently established entity, the institution lacked adequate technological tools, resulting in inefficiencies in managing key processes, such as account opening, loan administration, savings management, and report generation—all of which were performed manually and prone to error.
- A primary motivation was compliance with the requirements of the "Superintendencia de Economía Popular y Solidaria (SEPS)", which mandated accounting traceability, automatic report generation, and adherence to information security standards. Implanting specialized software became essential to ensure the institution's legal and operational viability.
- Additionally, the institution recognized the need to enhance its competitiveness compared to other technologically advanced cooperatives. Adopting a modern system was seen to optimize internal processes, deliver more efficient services, and strengthen its positioning as a trustworthy institution aligned with the expectations of the financial sector.
- Requirements Definition and Terms of Reference. Defining system requirements was a significant weakness in the project because no formal document was created to guide the system's technical design. Decisions were made reactively, based on operational experience and immediate needs, without considering factors like scalability, interoperability, or security. This lack of planning resulted in functional errors during the early stages, leading to necessary rework and adjustments after implantation. The experience highlighted the importance of documenting system requirements from the beginning to align development with institutional needs and reduce technical risks.
- Software Search, Evaluation, and Selection. Software selection was conducted using a practical approach, based on visits to local cooperatives and direct feedback from users already operating similar systems. This informal inquiry enabled the evaluation of various options based on usability, operational

agility, regulatory compliance, technical support, and acquisition and maintenance costs. The final decision favored a system whose functionality had already been validated in similar contexts and that offered an affordable price point, supported by positive sector recommendations. However, the absence of a structured technical analysis at this stage later led to the need for functional adjustments to the selected system.

- Provider Negotiation. The negotiation with the software vendor took place without a formal contract and relied solely on verbal agreements based on trust and sectoral recommendations. This informality posed legal and operational risks, as it failed to define key aspects, including the scope of technical support, warranties, response times, and update policies. Although initial services such as installation, basic training, and remote support were delivered, the absence of a contractual framework limited the institution's ability to enforce responsibilities or negotiate subsequent improvements. This situation highlighted the importance of formalizing all agreements in writing, especially in technology implantation projects where system stability is critical.
- System and Provider Selection Decision. The system and vendor selection took place over a very short period (just three days) driven more by urgent operational needs than by strategic planning. The decision was based on field observations from other cooperatives, without the application of formal methodologies. Key aspects, such as scalability, long-term compatibility, and integration capabilities, were not considered, which limited the institution's long-term vision. While the chosen solution enabled rapid operational deployment, the lack of a structured evaluation prevented the anticipation of future technological challenges, emphasizing the need for informed and sustainable decision-making in technology adoption processes.

Implantation Phase

The implantation phase signified the operational launch of the system and was carried out in a structured and progressive way. This phase involved preparing the infrastructure, configuring software to align with internal processes and regulations, and manually entering data while initiating live operations. Functional testing and hands-on training helped facilitate user adoption of the system. The go-live was completed, thanks to continuous monitoring and prompt technical support. Each of these stages is described below.

- Preparation. The preparation stage played a critical role in ensuring orderly and uninterrupted system deployment. The team focused on adapting the physical and technological infrastructure, including the installation of equipment, structured cabling, network access points, and a dedicated server, as well as securing a stable internet connection. The technical staff and systems engineer oversaw the configuration process, conducting connectivity and compatibility tests to identify and resolve issues prior to system installation. This effective preparation of the environment minimized technical risks and facilitated a more stable initial integration.
- Installation, Configuration, and Customization. This stage was essential for aligning the system with the institution's operational requirements. The team configured core parameters, including interest rates, terms, credit conditions, and financial products, ensuring compliance with internal policies and regulations. They also defined user profiles with varying access levels, thereby strengthening system security and traceability. The process was carried out jointly with the vendor due to the absence of prior technical documentation, which enabled the resolution of compatibility issues, customization of report formats, and adjustment of operational templates. These efforts ensured that the system accurately and efficiently reflected the organization's real workflows.
- Data Loading and Migration. Given that the institution was still in its early stages, data migration involved the manual and progressive entry of key information, including member records, financial products, accounts, and institutional catalogs. This process occurred in parallel with the start of live operations, enabling the validation of the system in a practical setting while staff became familiar with its use. The strategy combined gradual implantation with continuous verification, which not only prevented critical errors but also enhanced team learning and demonstrated the system's robustness from the outset.
- Testing and Training. Before the official launch, the team conducted functional tests that simulated real operations using authentic data, allowing for the identification and correction of minor errors in calculations, formats, and validations. They also assessed data integrity, role-based access management, and system stability under concurrent use. These tests confirmed the system's solid performance under operational conditions, reducing risks and strengthening staff confidence. Moreover, they served as a valuable hands-on learning opportunity, easing the transition to digital operations.
- Training took place over two days, combining remote sessions led by the vendor with in-person guidance provided by an internal staff member familiar with the system. Although no formal manuals were distributed, daily practice and peer collaboration strengthened learning, enabling team members

to resolve questions and adopt shared strategies. The team's proactive attitude, along with timely support from the vendor, facilitated smooth system adoption. This experience demonstrated that brief training, when supplemented by practical and collaborative learning, can be highly effective in resource-constrained environments requiring rapid adaptation.

- Go-Live. The CF system went live successfully on the first day of official operation, immediately integrating key functions such as account opening, credit management, and transaction logging within a real environment. Continuous monitoring enabled the team to detect and resolve minor issues quickly, without disrupting customer service or compromising the integrity process. The vendor provided prompt and effective technical support, while the system's stable performance and the internal team's commitment ensured a smooth transition. Although some adjustments were required to support new financial products, the team documented these as opportunities for improvement, thereby consolidating the successful implantation of a new digital management model.

Post-Implantation Phase

The post-implantation phase marked the start of ongoing system use within the institution's operational environment. This phase was crucial for consolidating functionality and assessing long-term performance. During this phase, the institution concentrated on stabilizing processes, addressing emerging issues, receiving continuous technical support, and implanting necessary updates to ensure the system remained operational. Additionally, it began documenting incidents systematically, enhancing its internal response capabilities, and identifying opportunities for functional improvement. This phase strengthened technology adoption and established a foundation for future initiatives that align with the organization's strategic objectives.

- Stabilization. After going live, the institution entered a period of operational stabilization, focusing on monitoring system performance in real-world conditions. During this stage, several unexpected issues were identified, including delays in monthly processes, technical failures in hardware, and accidental software uninstalls. To address these challenges, the institution implemented contingency protocols, automated backups, and regular technical maintenance. Over time, staff gained the skills to resolve minor problems independently, and daily feedback contributed to fine-tuning configurations and documenting incidents. This process ultimately enhanced operational management and improved the institution's responsiveness.
- Technical Support. Technical support from the vendor was essential in ensuring uninterrupted system operation. The provider offered agile remote assistance in response to questions or incidents, enabling activities to continue uninterrupted. This support was supplemented by an external technician who assisted with specific technical issues. Although most problems were resolved promptly, some critical incidents experienced longer-than-expected response times. This experience underscored the need to formalize incident management, which led the institution to implement an internal reporting and prioritization system. As a result, control, traceability, and responsiveness to technical failures improved significantly.
- System Updates. The institution periodically updated the system to fix minor bugs, optimize functionalities, and enhance security. Initially, these updates were handled reactively, without a defined schedule, due to the absence of a formal maintenance agreement with the vendor. Over time, the institution adopted a monthly update cycle, with each update reviewed in advance to ensure compatibility and avoid service interruptions. While this practice improved overall system stability, limitations persisted—particularly delays in accounting closures—which led the institution to consider strengthening its technological infrastructure, especially by increasing server capacity.
- Identification of Future improvements. As system use became more routine, the institution identified concrete opportunities to strengthen operational management. Among the most relevant initiatives was the proposal to develop a financial product called "Woman credit", which would offer preferential interest rates aimed at promoting financial inclusion with a gender-sensitive approach. The institution also proposed enhancements, including more detailed analytical reporting for informed decision-making, improvements in accounting process automation, and interface adjustments to enhance usability for operational staff. These initiatives reflect the institution's commitment to aligning technological tools with strategic objectives by incorporating efficiency, equity, and social impact as core criteria.

Comparative Analysis of CF Implantation in Two Regulated Financial Institutions

The analysis of the two CF implantation cases reveals both converging and diverging elements in terms of institutional capacity, project planning, execution, and post-implantation outcomes. Although both institutions operated within the regulatory framework of the Superintendence of Popular and Solidarity Economy (SEPS) and shared the common goal of improving operational efficiency through digital transformation, their trajectories and strategies varied considerably due to their differing contexts and organizational maturity levels.

The first case corresponds to a Segment 5 cooperative formed by the merger of two smaller entities, operating with a relatively larger asset base and facing pressure to comply with intensified regulatory requirements, including the monthly submission of financial reports and the implantation of an information security management system. The second case involved a newly established financial institution with a lean organizational structure and limited capital, whose strategic aim was to modernize operations and expand its reach within rural and underserved communities. While the former faced challenges derived from the integration of legacy systems and growing operational complexity, the latter embarked on its digital transformation from a clean slate, without pre-existing technological infrastructure.

In terms of pre-implantation planning, the first institution demonstrated a more structured and formalized approach. It carried out a targeted evaluation of CF vendors approved by SEPS, negotiated the scope and timeline of the project through contractual agreements, and prioritized regulatory compliance as a guiding criterion in the selection process. In contrast, the second institution engaged in a more informal and reactive process, characterized by the absence of documented requirements and reliance on verbal agreements based on sectoral recommendations. Although this approach enabled faster decision-making, it also introduced legal and operational risks, particularly regarding service guarantees and future system evolution.

During the implantation, both institutions managed to configure and deploy the CF systems within short time frames, yet their methodologies differed. The first case followed a phased and modular strategy, integrating standard processes into approximately 90 % of its operations while applying targeted customizations to address specific institutional needs. Despite time constraints, the project was executed with a clear schedule and a defined scope of responsibilities. The second case, by contrast, employed a more flexible and experiential approach. The implantation began with infrastructure setup and continued with progressive data entry that coincided with live operations. This approach, while less formal, allowed staff to learn through practice and adapt incrementally to the new system, which proved effective given the institution's limited resources and low digital maturity.

Post-implantation practices also diverged between the two cases. The first institution organized this phase around three structured components (system stabilization, technical support, and software updates) with clearly defined service levels and contractual conditions. It required approximately six to seven months to stabilize the accounting module, reflecting the system's complexity and the intensity of regulatory oversight. Conversely, the second institution adopted a more adaptive model, gradually introducing incident tracking mechanisms and monthly updates in response to emerging needs. Although it initially lacked formal maintenance protocols, the institution succeeded in enhancing internal response capabilities and aligning technological operations with its broader strategic vision.

From a cross-cutting perspective, both cases highlight the relevance of leadership, communication, change management, and project governance. In the first institution, project leadership was formally distributed between the general manager and the vendor, and internal communication was structured through daily operational reports and virtual coordination meetings. The second institution relied more on informal peer-based knowledge sharing and internal mentoring. However, both cases reported high levels of staff engagement and minimal resistance to change, largely due to the clarity of objectives and the small size of the teams involved. Notably, while the first project operated under a contractually defined timeline of 23 business days, the second case advanced without a formal project management methodology, relying instead on iterative checkpoints and internal coordination.

In both cases, several challenges affected the quality and timing of the implantation. The first institution faced significant issues related to data quality and insufficient time for functional testing and user training, which led to post-go-live corrections. The second case suffered from weak requirement specification and the lack of formal support agreements, which constrained its ability to enforce vendor responsibilities. Nonetheless, both institutions achieved successful go-live transitions and progressively integrated the system into daily operations.

Finally, the success of each implantation was influenced by a combination of technical, organizational, and human factors. In the first case, the CF vendor's extensive experience in the cooperative sector, the adaptability of the system, and the active involvement of management were decisive. In the second case, the institution's clear vision of transformation, strong commitment from staff, and the simplicity of its operational model allowed it to overcome planning deficiencies and achieve sustainable system adoption.

CONCLUSIONS AND RECOMMENDATIONS

The comparative analysis of the two CF implantation cases in financial institutions within Ecuador's popular and solidarity economy sector reveals valuable lessons about the factors that enable or hinder successful system adoption in resource-constrained environments.

Both cases demonstrated that the decision to adopt technology was driven by the need to strengthen internal management, comply with SEPS regulations, and improve institutional efficiency. However, one of the

most critical factors was the appropriate selection of software—this decision should not be based solely on cost or availability but must also consider the system's alignment with internal processes, its scalability, and the level of vendor support offered. The absence of a formal technical evaluation at this stage led to subsequent functional adjustments that could have been anticipated through more rigorous planning.

During the implantation phase, both institutions highlighted the relevance of preparing the technological infrastructure adequately, along with configuration and functional testing processes that enabled the early detection of errors and supported a smoother operational transition. Despite limited time and resources for formal training, practical and collaborative learning strategies proved effective in accelerating staff adoption and familiarization with the system.

In the post-implantation phase, the stabilization stage was particularly important. During this period, the institutions refined system configurations, resolved emerging issues, and strengthened their internal response capabilities. This stage was essential for consolidating the system's performance under real operating conditions and for building trust among staff and users. Complementary practices such as continuous technical support, incident documentation, and periodic system updates contributed to sustaining operability and laid the groundwork for future enhancements aligned with the institutions' strategic objectives.

These findings emphasize that successful CF implantation in small financial institutions is not solely dependent on technological solutions, but rather on the synergy between software selection, organizational readiness, vendor support, and continuous institutional learning.

REFERENCES

1. Alcazar J, Baird S, Cronenweth E, Hayashi F, Isaacson K. Market Structure of Core Banking Services Providers. Payments System Research Briefing. 2024. Available from: https://EconPapers.repec.org/RePEc:fip:fedkpb:97990

2. Maia SC, de Benedicto GC, do Prado JW, Robb DA, de Almeida Bispo ON, de Brito MJ. Mapping the literature on credit unions: a bibliometric investigation grounded in Scopus and Web of Science. Scientometrics. 2019 Sep 1;120(3):929-60. Available from: https://doi.org/10.1007/s11192-019-03165-1

3. Soto-Acosta P, Popa S, Martinez-Conesa I. Information technology, knowledge management and environmental dynamism as drivers of innovation ambidexterity: a study in SMEs. J Knowl Manag. 2018 Feb 14;22(4):824-49. Available from: https://www.emerald.com/insight/content/doi/10.1108/jkm-10-2017-0448/full/html

4. Diniz E, Birochi R, Pozzebon M. Triggers and barriers to financial inclusion: The use of ICT-based branchless banking in an Amazon County. Electron Commer Res Appl. 2012 Sep 1;11(5):484-94. Available from: https://www.sciencedirect.com/science/article/pii/S1567422311000433

5. López Sabater V. Cooperación financiera reembolsable. In: Movilizando los recursos y los medios de apoyo para hacer realidad la Agenda de desarrollo post-2015, 2015, págs 33-40. Agencia Española de Cooperación Internacional para el Desarrollo; 2015. p. 33-40. Available from: https://dialnet.unirioja.es/servlet/articulo?codigo=9882956

6. Reascos I, Carvalho JA. A Conceptual Framework for the Implantation of Enterprise Applications in Small and Medium Enterprises (SMEs). In: Rocha Á, Guarda T, editors. Proceedings of the International Conference on Information Technology & Systems (ICITS 2018). Springer International Publishing; 2018. p. 50-61.

7. SEPS. Segmentación de entidades del SFPS, año 2024. Superintendencia de Economía Popular y Solidaria. 2024. Available from: https://www.seps.gob.ec/institucion/segmentacion-de-esfps/

8. Cafer AM, Rikoon JS. Adoption of new technologies by smallholder farmers: the contributions of extension, research institutes, cooperatives, and access to cash for improving tef production in Ethiopia. Agric Human Values. 2018 Sep 1;35(3):685-99. Available from: https://doi.org/10.1007/s10460-018-9865-5

9. Reascos I, Carvalho JA. A Framework for implanting EITA in SMEs: Leadership, communication, project management, and change management. INNOVATION & DEVELOPMENT IN ENGINEERING AND APPLIED SCIENCES. 2022;4(2):18-18. Available from: http://201.159.222.149/index.php/ideas/article/view/860

10. Olakunle Jayeola, Shafie Sidek, Azmawani Abd Rahman, Anuar Shah Bali Mahomed, Jimin Hu. Cloud Computing Adoption in Small and Medium Enterprises (SMEs): A Systematic Literature Review and Directions for

Future Research. Int J Bus Soc. 2022 Mar 31;23(1):226-43. Available from: https://publisher.unimas.my/ojs/index.php/IJBS/article/view/4610

11. Yin R. Case Study Research and Applications: Design and Methods. 6th ed. Los Angeles: SAGE Publications; 2017. 352 p.

12. Reascos I, Carvalho J. SImplE: A Framework for the Successful Implantation of Enterprise IT Applications in Small and Medium Enterprises. In: International Conference on Information Systems Development (ISD). 2019 Dec 10. Available from: https://aisel.aisnet.org/isd2014/proceedings2019/ISDMethodologies/15

13. Fethi MD, Pasiouras F. Assessing bank efficiency and performance with operational research and artificial intelligence techniques: A survey. Eur J Oper Res. 2010 Jul 16;204(2):189-98. Available from: https://www.sciencedirect.com/science/article/pii/S0377221709005438

14. McKillop D, Wilson J. Credit Unions: A Theoretical and Empirical Overview. Financ Mark Inst Instrum. 2011;20(3):79-123. Available from: https://onlinelibrary.wiley.com/doi/10.1111/j.1468-0416.2011.00166.x

15. Pressman RS, Maxim B. Software Engineering: A Practitioner's Approach. 9th ed. McGraw Hill; 2020. Available from: https://www.mheducation.com/highered/product/Software-Engineering-A-Practitioners-Approach-Pressman.html

16. Eisenhardt K, Graebner M. Theory Building From Cases: Opportunities And Challenges. Acad Manag J. 2007 Feb;50(1):25-32. Available from: https://journals.aom.org/doi/abs/10.5465/AMJ.2007.24160888

FINANCING

This article has been funded by the "Universidad Técnica del Norte".

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

AUTHORSHIP CONTRIBUTION

Conceptualization: Irving Reascos.
Data curation: Fausto Salazar, Carpio Pineda.
Formal analysis: Luz Córdova, Jonathan Segovia.
Research: Luz Córdova, Jonathan Segovia.
Methodology: Irving Reascos.
Project management: Irving Reascos.
Resources: Irving Reascos, Fausto Salazar, Carpio Pineda.
Software: Luz Córdova, Jonathan Segovia.
Supervision: Fausto Salazar.
Validation: Irving Reascos.
Display: Carpio Pineda.
Drafting - original draft: Luz Córdova, Jonathan Segovia.
Writing - proofreading and editing: Irving Reascos.