# IT MANAGEMENT IN THE ROMANIAN BANKING ENVIRONMENT: LOSSES IN THE CORE-BANKING

PhD. Student **Camelia Elena CIOLAC**[1,]
The Bucharest Academy of Economic Studies
E-mail:ciolac_c@yahoo.co.uk

**ABSTRACT**

*This paper aims to present a synthesis of the flagship projects of investment in core-banking systems in the Romanian banking environment. Replacing core banking systems was determined both by the Romanian bank market dynamics during 1999-2008 (characterized by mergers and privatizations), the legislative changes, and to the domestic business, such as the need to centralize data integration in a unified infrastructure to alternative channels of distribution (m-banking, internet banking) and gaining a competitive advantage over competitors.*

*Supply are concerned both the development of the IT market segment of core-banking and how banks in Romania have invested in these systems.*

**KEYWORDS:** *IT management, core-banking systems, the Romanian banking environment*

## 1. Introduction

Banking activity can be classified into the following structure: retail-banking/consumer-banking (outstanding credit, Loans, pension funds), asset management and services to investors (private-banking, brokerage derivatives) and corporate-banking / wholesale-banking (loans, factoring - receivables financing and risk coverage for non-payment of bills, leasing, financing).

A Capgemini study [1] defines the core-banking system as "the application responsible for transactions deposits, payments, current accounts and savings, loans and securities.

Figure 1 is made of a semantic network investment in the area of core-banking, in which are highlighted: trends in the industry, the causes underlying the decision of replacing existing systems, the benefits identified by bank management if you buy new systems the core-banking and the main solutions that were implemented in the divisions of retail, corporate-and private-banking respectively.
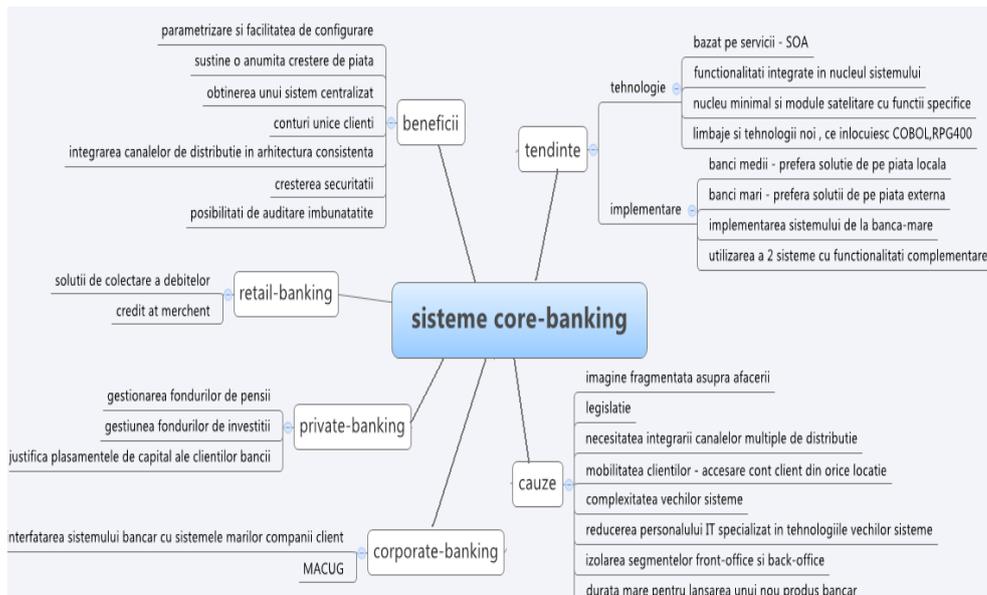
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**Fig 1. Semantic networks of investment in core-banking systems**

## 2. Trends in technology and IT market segment offer core-banking

### 2.1) at the central bank's information system

The main changes that bring new generation core-banking IT products are summarized based on Capgemini study [1] in Table 1:

**The main changes in the new core-banking IT systems, based on [1]**

Table 1

| Domain | Characteristics of the old core-banking system | Characteristics of new core-banking systems |
|---|---|---|
| Back-office | Product oriented | Customer oriented |
| Front-office | Fragmented data silos | Integrated channels |
| Services | Efficiency oriented | Oriented to customer satisfaction |
| Sales | Reactive | Proactive |
| Vision | Local / Differential | Global / Integrated |
| Operations | Per Office | Wide banks |
| Procesess | Batch / Manual | Online / real time |
| Arhitecture | Lead processes and products | Led by services and events |
| Pay systems | In the back office | Alignment with SEPA<br>Uniformity between the types of payments (cash, check, debit, credit, e-payments, m-payments) |
| Client savings | A savings product with differential rates of interest | Products combined savings (investment funds, pensions, government bonds)<br>Sustainable Savings |
| Loans and mortgages | Fixed products, without flexibility for the customer | Flexible products, to the interest rate is directly proportional to the options<br>Strategy based on risk |
| Securities | Strategy based on price | Creating trading platforms |

IT market has evolved in the direction of industry-specific banking products developed based on the experiences of IT suppliers banking environment. In this way, the new core-banking products may be comparable to the old systems built in-house and highly personalized. The table in Figure 2 is a summary of the main core-banking solutions on the market:

| SOLUTII CORE-BANKING INTEGRATE | | | Componente functionale elitiste | | |
|---|---|---|---|---|---|
| **Vendor** | **Package** | | **Domain** | **Vendor** | **Solution** |
| Accenture | Alnova Financial Solutions | | Payments | ACI Worldwide | ACI Payments Framework |
| Callataÿ & Wouters S.A. | Thaler | | | Dovetail Systems | Dovetail Systems |
| Delta Informatique | Delta-Bank | | | Fundtech | Global PayPlus |
| Fidelity National Information Services (FIS) | Corebank | | | CBA | IBAS |
| | Profile | | | Clear2Pay | OPF |
| | Systematics | | | TietoEnator | Global Payments Solution |
| Fiserv, Inc. | ICBS | | Lending | Fidelity | ACBS |
| i-flex solutions | Flexcube | | | Misys | Loan IQ |
| Infosys Technologies Ltd | Finacle | | | SS&C | LMS Loan Suite |
| Misys | Equation | | | BAI | Component Banker |
| | Midas | | | AFS | AFS Lending Solution |
| Nucleus Software | FinnOne | | | Nucleus | FinnOne |
| Polaris Software Lab Ltd | Intellect Suite | | Securities | T-Systems | Geos |
| SAP AG | SAP Transactional Banking | | | ADP | Gloss & Tarot |
| Sungard | System Access Symbols | | | DST | HiPortfolio |
| TCS Financial Solutions | TCS BaNCS | | | SS&C | Different solutions |
| Temenos | T24 | | | Sungard | Different solutions |
| | TEMENOS™ CoreBanking (TCB) | | | | |
| TietoEnator Corporation | Core Banking Suite | | | | |
| T-Systems Enterprise Services GmbH | MBS banking suite; GEOS | | | | |

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**Fig 2. Synthesis of core-banking solutions, taken from [1]**

Some of the integrated core-banking systems (Thaler, Corebank, Profile, Flexcube, Systematics, financial, CBS, TCS BaNCS) enable services on an SaaS (Software-as-a-Service), while other systems (Alnova, Thaler , Profile, Systematics, Flexcube, financial, Intellect Suite, SAP TB TCS BaNCS) allows operation in BPO (Business Process Outsourcing), according to [1].

From Capgemini study [1], follows a geographical distribution of implementations of core-banking solutions, which is represented in Fig 3, in a European and Eastern Europe:
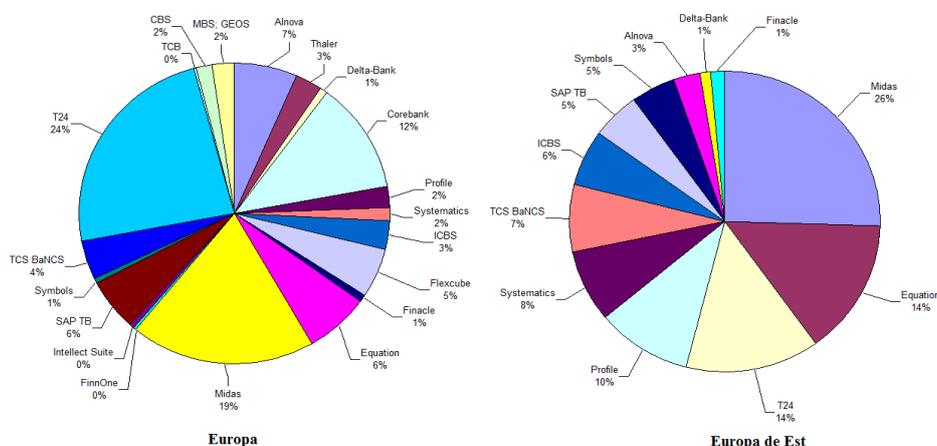


**Fig. 3 Implementations of core-banking solutions in Europe**

Note an interesting distribution of core-banking solutions deployed in Eastern Europe over the whole of Europe: Temenos T24, the system implemented at European level, dealing only 3rd in Eastern Europe as implemetari number, and Fidelity Corebank, the third system as a number of implementations in Europe has no implementation in banks in Eastern Europe.

A Gartner study (2008) [2] identify major strengths and weaknesses of the main core-banking solutions available on the market in 2008, synthesized and combined with Capgemini study [1] in Table 2:

**Comparison of the main core-banking solutions, synthesis of information from [2], [1]**

**Table 2**

| Solution | Strengths | Weaknesses |
|---|---|---|
| Alnova | Customer-centered, parameterization, SOA architecture based on processes | High level of customization |
| Thaler | Modularity, SOA flexibility through parameterization, customer focused | Some components in developing |
| ICBS | Parametrization, real-time, SOA functionality for operating in many countries with different currencies, managing customer interactions, based on processes | The product is mainly designed for IBM iSeries, although developed versions for other platforms |
| CorebankC | Based on COBOL, use the Framework data model, IBM Financial Services | The delivery of features is done simply by SaaS method |
| Corebank | According to J2EE, platform-independent, structured and documented data model based on standard IBM. SOA, client centered | |
| Profile | Low TCO, fast reaction to market changes, easy integration | Support for Oracle DB and ensure versiunea7 since DB2 is supported since 2008, is preferred BD FNIS GM.T |
| Systematics | Functionalities advanced especially in the loans, options for developing inhouse / outsourced | Designed mainframe platforms |
| Finacle | Finacle Studio allows expanding financial component solution to the implementing bank, SOA, consolidated view of customers, automation | |
| Flexcube | Using BPEL for modeling language, use CMMI 5 for developing, deposits of knowledge, SOA, niche segments (virtual bank) | Not provide the source code, does not provide definitions for data tables |
| Transactional Bank (SAP TB) | Using NetWeaver as the integration broker that enables collaboration and integraera multi-channel, operating in many countries with different currencies, SOA parameterization | |
| BaNCS | Ease of implementation, flexibility, performance and scalability, SOA | Another strategy to re-develop the system components |
| T24 | Flexibility to introduce a new product / channel / location / process | Centralization of resources |
| TCB | Supports COBOL or Java development, data model based on standard IBM N-tier architecture, reuse, parameterization products | SOA introduced later |
| CBS | Standard CMMI, "Product Composition"-enable managers to introduce new banking products, SOA, Multi-channel, operating in many countries with different currencies | |

**The main suppliers of the IT market have proposed core-banking solutions, based on their vision and best practices in the industry.**

• **Microsoft**. Microsoft [3] proposed a new approach for core-banking system, in which monolithic systems of this type will be reduced in size and replaced with a collection of reusable banking and orchestrated under the specific business needs. Microsoft

Research has identified three trends in modernization of core-banking:

- Surrounding the old systems with new features
- Outsourcing of specific processes (payments, CRM, document management)
- Old system migration to a new platform

Microsoft study [3] introduces the concept of "competitive disadvantage" product for use by banks of the old core-banking systems. Microsoft points out in the same study [3] the importance of language to which it migrates core-banking system and consider that an RPG migration to Java / C + + / C # is more expensive than a migration to RPG. NET, which preserves the semantics used by the old system.

For banking information system, Microsoft offers a complete solution consisting of products summarized next. Windows Server is a platform for connecting the working groups on-center connected by web services and applications. Microsoft SQL Server is part of the next generation of management systems of databases, which provides scalability, availability, security. Microsoft BizTalk Server is a server in the category Business Process Management that enables automation and optimization of processes within the bank. Microsoft Office SharePoint Portal Server is a server that supports all operations of the organization: intranet, extranet, web and integrates them into a coherent platform. Microsoft Visual Studio is a platform for developing applications focused on data, distributed or as web services. Microsoft Dynamics is a suite of applications for ERP, CRM. Microsoft System Center is a dynamic solution for managing the entire IT infrastructure of an organization, according to [4].

Pexim introduced in 2008, in partnership with Microsoft and IBM, core-banking system called "Revolution" based exclusively on the. NET from Microsoft and using information models provided by IBM (IBM Banking Industry Framework [5] ).

• **IBM.** IBM, on a large scale provider of core-business solutions, has an important share of this market by AS/400 server package (later renamed the iSeries server) and the main languages associated RPG/400 and ILE RPG. According to a Microsoft study [3], it is noted the difficulty of creating an SOA using RPG/400.

It should be noted that the AS/400 server supports the following set of programming languages [6]: ADTS/400 (Application Development Toolset), C, C + +, Java, CICS/400 (Customer Information Control System), CL (command language), Shell (command), COBOL/400, MQSeries (interconnect applications that communicate via message queues ), Rexx, RPG/400.

To provide flexibiliatea new generation core-banking systems, IBM together with Temenos offer a complete hardware-software solution, consisting of the following products: Temenos T24, IBM Power Systems, IBM System z, System Management Database IBM DB2, IBM WebSphere middleware, IBM Rational Storage.IBM also offers the core-banking solution designed for financial and banking sector.

• **Probass.** Romanian IT market designed for the banking system stood out, besides the core-banking solutions analyzed above, the system AB-Solution provided by the company Probass [7].

Built as an architecture based on open standards, ab-solution allows parameterization of reports and level of user interface models, and definition of new banking products that the implementing bank. Also allows defining an appropriate access topologies organizing branches / agencies of the bank. The ab-solution is constructed as a web application, running over an Oracle Application Server, on three levels, where application logic is run by Oracle Forms and Oracle Reports server.

Modules core-banking system ab-Solution include, according to [7]: Client Management, Account Management, National Settlements, Client deposits, Cashier, Loans, Treasury, International Accounting, Payroll, Fixed Assets, Reports, Taskuri, Classified General management system.

A core-banking system is flexible and modular JVM provided by the company under the name UBIS-QL [30]. The main modules of the application, developed with Microsoft technologies, are [30]: BSAdmin (allows parameterization new bank products), FrontOffice, Cash Office Management, Treasury Management (Treasury), Report Generator (predefined reports mode), Payment Incidents' House, Credit Modules and Consumer Loans (credit management), Collection (outstanding credit record), Card Management, Portfolio Management (the private-banking), UBIS-QL Hist (messaging system), TBILLS (management of securities), Fixed Assets Management (the management fixed assets of the bank).

### 2.2) In the specific solutions for retail banking

Capgemini study [8] on the evolution of retail banking systems, highlights how the migration of old systems to a service oriented architecture: isolation functionality that will convert to office, creation of web services and interface with the rest of the system. By doing so, time is done gradually replace the old system.

• **Probass**. For the Romanian retail banking, Probass [7] proposed a product that can be delivered independently or as part of the solution ab-solution, called ab-Retail solution. This software is addressed lending process, from completing the file, setting credit limits to the collection SII scoring rate.

• **FASMA**. In the area of lending, another product spread on the Romanian IT market is designed for retail-banking eCheck, provided FASMA. ECheck solution evaluates credit applications and maintains records in real time to the scheme, and file documents related lending.

• **Ingenio**. A solution based on web technologies for the management of credit and scoring is provided by Ingenio company and includes the following components [9]: I-scoring Loan App - modules that automate the management of credit application, Credit Bureau Gateway - interface with existing credit schemes, Microscoring - how lending to SMEs, SMS Debt - how to alert customers owed.

• **JVM.** A credit management solution that facilitates all stages of the life cycle module Loans Loan is offered by the company JVM. The solution enables cross-client account information, assessing performance of a particular type of credit, guarantees offered assessment, periodic reports on the updated situation of clients credited.

• **London Bridge**. For tracking debtors bank, the company developed the London Bridge Debt Manager product. This application is interfaced with the credit system automatically notifies customers of the bank and credited on reimbursement of the loan.

• **Solve Networks**. A similar product is provided by the company Solve Networks: EXPERT COLLECTION SYSTEM automatically generates tasks for operators of call centers for clients debtors and automatically sends warning e-mails this information to alert customers.

• **i-flex solutions**.Pe international IT market, is remarkable product Revelus Retail Credit Risk Analytics provided by i-flex solutions, which allow officers to conduct financial officer pursuit of customer financing.

• **PayNet.** The "instant credit at merchant", which has experienced a pronounced growth in recent years has attracted the interest of suppliers of IT solutions. A specific product was developed by PayNet, Informer partner, which in half an hour maximum may be in store credit for purchasing a product type appliance.

• **IBM WebSphere HATS**. For reduction of credit period from 30 minutes to 2-3 minutes, according to [10], to build an application based on technology IBM WebSphere HATS (Host Access Transformation Services). The bank may grant loans on-line stores through a portal that is connected to the bank credit system.

• **Loxon.** Credit management, a solution is implemented on the Romanian banking market Loxon, which provides support on the entire lifecycle of a loan [11].

### 2.3) In the private-banking-specific solutions

In the private-banking sector, the evolution was performed by systems that can justify the capital investments of clients, and to make recommendations based, according to a Capgemini study (2005) [12].

To reduce operating costs, private-banking sector turned to a customer segmentation based on owned capital, followed by the adoption of IT solutions differentiated on customer classes identified: reduced capital for clients to adopt a solution and call center solution self-documentation online, while more significant capital for clients to provide support online and in real time by staff advisors.

In terms of solutions offered by major IT vendors in banking, distinguish three classes [12]:

- Private-banking-specific solutions (Portfolio Manager Workstation, G3, APSYS III XENTIS, Wealthmaster Front Office),
- Solutions to individual components retail banking and private-banking (Finantix components, Deadline T24, Custody Services eXimius, Client Advisory Suite Avaloq Banking System, Thaler, FLEXCUBE) and
- Solutions that deal in a united fashion, retail and private banking areas (OLYMPIC Banking System, wealth.manager, Prospero).

According to Capgemini study [12], in 2005 there were in Eastern Europe following implementation of private-banking systems: Deadline T24 (25 deployments), FLEXCUBE (15 implementations) and Finantix components (1 deployment). It is noted that banks in Eastern Europe preferred implementation of IT solutions that provide functionality for all banking activities, not for each individual area.

### 2.4) Specific solutions to the corporate-banking

On the corporate banking systems, ICT markets headed for interfacing with the banking systems of major corporate clients systems.

According to [13] we aimed to replace electronic banking systems with an architecture MACUG (Member Administered Closed User Group). MACUG is defined by a group made up of a company and its stakeholders and manages bank payments between these entities.

An example of solution on the Romanian IT market to allow an MACUG building consists of qPayIntegrator and ReconS products, industry leading BIS [13].

## 3. Remarkable implementations on Romanian banking system

▪ ***BCR.*** An important migration recorded in the years 2006-2007 held in BCR. This project is remarkable in the context of replacing the core-banking systems to banks in Romania by the fact that the solution SIBCOR v2 was built and specially adapted for the BCR [14].

Among the *determinants of migration decision* of core-banking system there were these shortcomings of the old system [14] fragmented image to customers and bank products, processing and reporting times, isolated segments of front-office and back office , significant time to set up and launch a new banking product.

Project size can be estimated by the number of territorial units (over 500 units, with more than 300 branches), the volume of processing daily user sessions and competition that had provided the new system, as represented in Fig 6, taken from [14]



**Figure 6. Scale migration project core-banking system with BCR, taken from [14]**

***The benefits*** of replacing the core-banking system to have materialized through the BCR [14]: getting a central banking system (with unique catalogs to customers and products, unique accounts for customers), improved availability, easy introduction of new banking products and shortened their launching on the market, integration of the various distribution channels in an integrated and consistent architecture, increasing the bank's customer loyalty, increase security and possibilities for improved auditing banking operations.

In terms of technical solution, SIBCOR v2 is based on the following Oracle products: Oracle E-Business Suite 11.5.10, Oracle Database 10g Real Application Cluster, 11i workflow and messaging, disaster recovery facilities.

Kernel core-banking system offers features SIBCOR booked individually or transaction processing system batch.Componentele include [14]: Products (current account, deposit, loan), transactions, commissions (constant percentage percentage point).

Subsequently, in 2007, BCR card processing module integrated with core-banking system [15]. Integration was done in 2 days by transfer of 2 million cards and accounts related to core-banking system.

It should be noted how, in the Erste group to achieve integration of core-banking systems of local banks with the central system Symbols [16]

**Figure 7. Core-banking system in the Erste Bank Group, taken from [16]**

In the **retail-banking sector**, BCR acquired Loxon credit management solution [11] and opted for management credited with industry leading products Ingenio [9].

In the **private-banking sector**, BCR - Asset Management Division acquired Clavis Asset solution [17] for efficient management of investment funds and the solution provided by Clavis Pension ascent-Dorsum for Division Pension Fund [18].

▪ **Transilvania Bank**. Transilvania Bank place in 2008 for investments in modernization of communications and the migration of core-banking system [19]. Core-banking solution deployed at Transilvania Bank is Bankmaster Plus [20], provided by Misys.

Also, Transilvania Bank has felt the need to develop around core-banking system robust software applications that provide certain specific features of different compartments. The complexity of these projects occurred at the technical level, the need to centralize data from multiple heterogeneous sources (SQL Server, Oracle, C-Isam) with integration of information with the core banking system [21].

Transilvania Bank has worked with the company Endava (Cluj-Napoca) and implemented the following software [21]: FastCredit - web application for processing credit loans legal and natural persons booked quickly (in 2005), AGER (Risk Management Groups ) - Credit application designed for officers in the files of credit scoring (2004), SMS Communicator-application notification credited the customers on time due (since January 2005).

***The benefits*** of outsourcing software, Transilvania Bank notes [21]: access to specialized skills for each project without the need for differential allocation of the bank's IT staff in application development cycle stages mentioned, the possibility of launching new bank products (1 credit hour).

Endava technologies used in developing applications included [21]: Visual C #. NET, ASP. NET, Visual C + +, C + +, Oracle 9i DB Server, IIS, Oracle 9iDatabase, Crystal Reports, PL / SQL, Windows 2003 Server and Data Warehousing .

In the **retail-banking**, credit management throughout the life cycle, Transilvania Bank has implemented module "Loans" provided by the company JVM [22]. For consumer loans, the bank implemented a product supplied by another company JVM, UBIS-QL Consumer loans as [30].

In the **private-banking**, Transilvania Bank chose BT Trade developed by Endava Trade, which has implemented it in May 2006 [21]. Web application allows customers to place orders for trading bank, to assess the evolution of securities listed and base their decisions based on different indicators of money market and capital market.

▪ **Piraeus Bank.** Another core-banking solution provided by Misys, called Equation, was implemented

by Piraeus Bank, both in central location in Greece and in countries where the bank is represented [23].

According to bank representatives Piraeus [23], the main criteria that led to the choice of options they have set up facility Equation Integration with other middleware modules developed in-house, the ease of use, ease of parameterization and the specific requirements of local law each country where the bank is represented, robust operation on IBM iSeries system owned by the bank.

In the **retail-banking**, lending management is done using industry leading products Ingenio [9].

▪ **Raiffeisen Bank Romania**. Romanian banking market there are cases which uses two core-banking systems simultaneously, but in this case, their functions are complementary. One example is the bank Raiffeisen Bank Romania, which according to [24], had in 2003 a main core-banking system ICBS, provided FiServ and a core-banking system for international payments, treasury and corporate-banking, Midas, provided of Misys.

Communication between the two systems is done through a middleware to provide transparent data location.

In the **retail-banking**, the bank acquired management solution provided by the company Ingenio lending (bank lending Microscoring module implemented and SMEs) [9]. Lending activity to support retail-banking, Raiffeisen Bank has implemented both the Debt Manager solution, but HATS technology to provide "instant credit at merchant" [25].

In the **private-banking**, in managing pension funds, Raiffeisen Asset Management - Accumulation Pension Fund acquired Clavis Pension solution provided by ASCENTA-Dorsum [17] software has been implemented at major pension funds in Romania.

▪ Commercial **Bank Carpathian.** The Commercial Bank Carpatica investment decision to replace core-banking system was motivated by these *arguments* [25]:
- Difficulty in terms of information management decentralized regional network expansion units
- Delays in obtaining reports holistic
- Regulations imposed by legislative changes

Also, the Bank identified the need for centralization of core-banking system under pressure from customer mobility. Thus, the solution of customer loyalty in 2006 Carpathian Commercial Bank moved from a distributed computer system at one central bank that enables a customer to access account information from any location [26].

The choice was based Probass solution provided, inter alia, on grounds such as [25]: experience and reputation of implementations in the Romanian banking environment, short of the migration system, roll-out simultaneously for all branches.

One advantage of centralized organization of the solution ab-solution is parameterization and configuration facility in a period of 10-20 minutes of a new territorial

unit of the bank [25]. Specific elements of the implementation process of the solution provided by Probass they are replacing the old full core-banking system, without retaining any old way and commissioning live system on the 1st of the month following completion of migration [25].

Duration of migration from old system to the solution ab-Solution to Commercial Bank Carpathian was 5-6 months in a network of 180 units [25].

▪ **Alpha Bank.** Alpha Bank has chosen FLEXCUBE solution that integrates modular all central bank operations (retail, private, corporate) [25].

Bank over Full migration to the new core-banking project after two years and the main reason for operation was replacement of the Central Bank "system capacity to support a certain increase in the market. The system provides those elements that make the difference", according to bank representatives [27].

In the **retail-banking**, the bank has opted for the module "Loans" JVM provided by the company for the management of credit across the entire life cycle [22]. Alpha Bank acquired the collection solution flow Capone, provided the company Advantage Software Factory [28].

■ **Other projects**

**At the central bank's information system**
\*      Implementation of core-banking system ab-Solution provided by Romanian company Probass were made to these banks [32]: **Export Import Bank of Romania - Eximbank, Credit Europe Bank, Bank Leumi Romania, Romania CRFirenze Bank, Anglo Romanian Bank Limited, Romanian International Bank, Commercial Bank Carpatica ATEBank Romania, Romania OTPBANK** (module retail banking, cards and Internet banking).

Also according to [25], implementations of the solution ab-Solution has been achieved and the banks: **Daewoo Bank, Franco-Romanian Bank, Eurom Bank, Finansbank, Mindbank**.

The average duration of migration from the old system to the solution ab-solution has been 3 months: Mindbank (3 months), Romanian International Bank (2.5 months to a network of 14-16 branches), Commercial Bank Carpathian (5 -- 6 months to a network of 180 units). It should be emphasized that the solution ab-solution is a centralized architecture such as [25], during the implementation of the solution does not depend on the number of bank branches than in terms of training staff and the volume of data to be migrated.
\*      For centralized solution that integrates modular FLEXCUBE all banking operations (retail, private, corporate) opted banks [25]: Citibank, Banc Post.
\*      Core-banking solution provided by Temenos T24 has been successfully implemented in Libra Bank [34]. Libra Bank should be noted that the bank in 2000 implemented core-banking solution provided by JVM UBIS-QL [22].
\*      Core-banking solution was implemented UBIS-QL and bank Emporiki Bank, which included in the core and the card processing [22].

**Specific solutions to the retail-banking**
\*      The Romanian retail-banking environment, is remarkable product implementations eCheck from banks such as Banc Post [33], Libra Bank, Finans Financial Services.

\*        Administration loans with Loxon solution is achieved in these banks [11]: OTP Bank, UniCre**dit Bank, EximBank Romania**.

\*        Management is credited with industry leading products Ingenio was implemented in banks such as ABN - AMRO, Unicredit, BCIT, Moldova Agroindbank [9].

\*        To manage loans throughout the entire life cycle, such as bank Finansbank, Volksbank Ro**mania** have implemented the module "Loans" provided by the company JVM [22].

\*        Another product supplied by the company JVM addresses to consumer credit Consumer credit UBIS-QL, and was implemented according to [30] on these financial institutions: Volksbank Romania, Finans Financial Services.

\*        Solution flow Capone collection, provided by the company Advantage Software Factory is implemented in banks like ING, Unicredit Tiriac Bank, Credit Europe Bank, **Millennium Bank or Bank Romanian** [28].

### Conclusions

Banks have changed the core-banking system are classified into two categories:
- The first category are those banks that have turned to a solution developed by a Romanian company, identifying the benefits and availability of technical support knowledge specific Romanian banking
- The second category are banks that have replaced the core-banking system with a solution of the external market for IT

**In the retail-banking**, IT investment focused a considerable proportion of the collection of credit solutions. The main factors leading to the achievement of such investments include [29]:
- growing number of credit-delayed,
- constantly increasing need for division staff officer of the bank,
- dificulty on reporting and holistic analysis for management.

*Benefits* may be obtained from implementing a software solution for collecting credits include [29]: decrease delayed credit, improvement of customer behavior payment, lower costs associated with this division.

A Deloitte study [31] grouped the causes that lead to replacement of core-banking system in two categories. The external factors include: legislative regulations, increased competition in banking, increasing demands from customers. Internal factors include: the need for flexibility, redundancy and inefficiency of the old core-banking systems, reducing capabilities among new employees on the technology that led to the development of old systems.

It can be concluded that the main arguments of the decision of replacing the core-banking system were regulations and legislative changes in financial and banking sector, the attractiveness of a SOA, integrating multiple channels of communication with bank customers and the wave of industry mergers and acquisitions banking.

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