

## IT investments' features in the Romanian banking industry

### *Particularități ale investițiilor în IT în mediul bancar românesc*

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#### **Abstract**

*The paper aims to present some of the features of IT investments in the banking industry. Theoretical aspects, summarized from the literature come illustrated along with empirical findings from the Romanian banking industry. The present paper aims to provide the main drivers for IT investment in banks as well as the criteria involved when selecting a particular course of action in the associated decision-making process. The study is enriched with examples of software applications acquired by some of the major banks in Romania in the past seven years. The IT investment strategies presented in this paper can be considered proven successful practices of business-IT alignment in the Romanian banking industry.*

**Keywords:** *IT investments, Romanian banks, diversification, management, strategy*

#### **Rezumat**

*Lucrarea își propune să prezinte câteva particularități ale investițiilor IT în mediul bancar. Sunt prezentate atât considerente teoretice, sintetizate pe baza literaturii de specialitate, cât și date empirice obținute din practica bancară românească. În prezentul studiu se urmăresc factorii ce determină investițiile IT în mediul bancar, precum și criteriile ce stau la baza deciziilor asociate. Prezentarea este îmbogățită prin exemple de aplicații software achiziționate de principalele bănci din România în ultimii șapte ani. Strategiile de investiții IT prezentate în lucrare pot fi considerate practici dovedite de succes pentru mediul bancar românesc.*

**Cuvinte-cheie:** *investiții IT, mediu bancar românesc, diversificare, management, strategie*

**JEL Classification:** M15, O33

## Introduction

The need to efficiently connect to new technologies is a recurrent idea in the recent literature that deals with IT investments in banks. Studies carried out by Hensmans et al (2001) have identified as specific to the banking industry, the fact that supply overruns demand behavior in the field of information technology. As such, it is considered that ATM technology has been extended on the market before bank customers' readiness.

The banking sector is characterized by Lin (2007) as "information intensive" and IT investments can be crucial to the success or failure of banks on medium and long-term average. According to the same study, the capabilities gained from IT investments contribute to the organization's financial results over a period of 5 years. Lin (2007) also distinguishes between IT investment and IT capability acquired by the bank through a relationship type piece-to-whole. The other major component that forms the IT capability is represented by the IT management.

One of the features of IT investments in the banking environment is their significant impact that can exceed the boundaries of the organization, involving both the partner banks, banks in the same banking group to which it belongs and customer status. Therefore, IT investments in the banking environment are more prudent and the management is often risk-averse.

### **IT investments are affected by mergers/acquisitions between banks**

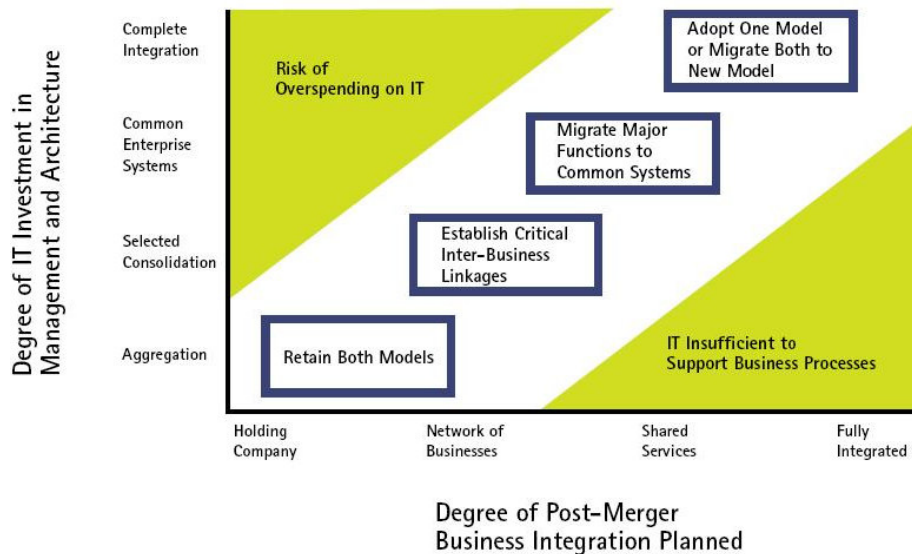
IT investments are affected by mergers/acquisitions between banks, as significant human and financial resources are involved in achieving convergence between existing information systems.

A separate decision regarding the IT infrastructure is driven by merger/acquisition of banks. If the management underestimates the importance of IT integration in the merger process, it appears the risk of obtaining a complex IT environment, consisting of many application packages that communicate with difficulty through artificially introduced interfaces, leading to discontinuity in the operating environment, according to Larsen (2005). IT costs in this situation have an upward trend due to high redundancy.

However, it is estimated by Larsen (2005) that one third of the synergy created by merging the two banks is driven by information technology. In Figure 1 come represented the ways to achieve integration of IT systems, in case of merger of two organizations, according to Accenture (2004):

- Retention of both IT models – is recommended if the two organizations will keep a high degree of independence, will share few business ties and will maintain separate distribution channels;

- Establishing critical inter-business linkages between IT systems and unify communication channels – is recommended if the new organization manifests a sensible degree of centralization, sharing of business practices and cross-selling;
- IT systems' migration to common major functions – is recommended if a significant centralization occurs, both in the processes and in the leadership. Also, it is recommended in this case to unify the distribution network and back office functions;
- Adoption of a single IT model implemented in the new organization resulting from the merger – is recommended if there is one organizational hierarchy with centralized management and a common product offer.



**Figure 1. IT vision after the merger of two organizations**

*Source: Accenture (2004)*

From the analysis of Accenture (2004) and Boston Consulting Group (2004) models, arise the following frequently used practices in integrating IT systems when the merger of two organizations takes place:

- At first, a third IT system will never be chosen, the choice will be made between the two existing IT systems;
- In the case of an acquisition of a small bank by large bank, the small bank will take over and implement large bank's IT system, except for specific modules;

- c) In the case of a merger between two banks of comparable size, the decision of keeping the IT infrastructure elements can be:
- Application-to-application selection based on operational and financial criteria. This strategy often results in a chaotic infrastructure, consisting of modules that require further interfacing work, and the merger may be delayed up to 18 months;
  - By choosing one of the existing systems to achieve migration. In this case the costs are mostly composed of staff training investments.

Boston Consulting Group (2004) recommends a balanced strategy, in which the selection is carried out at the level of clustering applications (corresponding to each line of business), using following selection criteria:

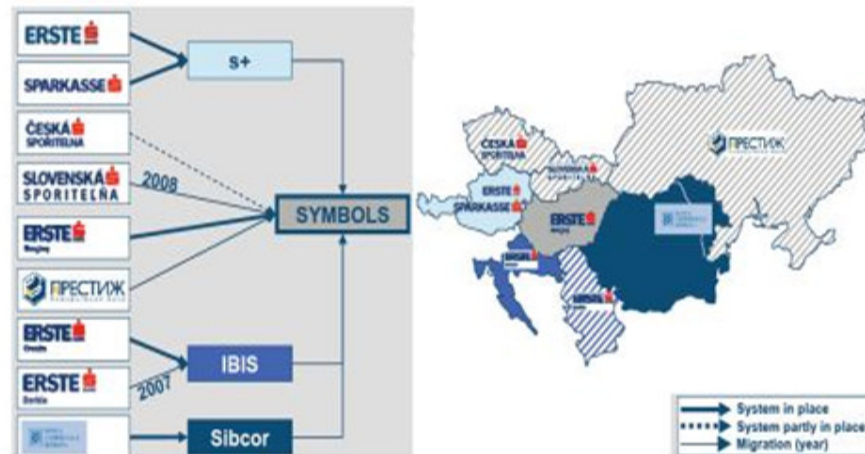
- Functionality in the new context and a new operational model. A Venn - Euler diagram is drawn in which functions of each cluster are represented and it comes estimated which of the 2 clusters provide more relevant features;
  - Quality and maturity of technology characterizing each cluster of applications;
  - Savings that can be obtained by removing the costs corresponding one of the clusters;
  - Effort and risks involved in migration to each of the two clusters of applications.
- d) Isolated applications are kept for providing specific local features (e.g. reporting modules to the National Bank of Romania, modules incorporating specific national legislation) or for maintaining competitive advantage.

#### *Case study: BCR Erste Bank*

Several interviews were carried out with IT management representatives from some Romanian banks that recently went through one or two mergers/acquisitions in the past 10 years. Two practices have been identified. The first approach is based on a vision of specific information systems for Romanian banking environment. Therefore it was decided to keep the acquired bank's systems during in the merger process, while the IT investments were directed to the local system's interfacing with the group's system, ensuring consistency in the messages sent between the two systems. The second approach is based on major functions migration to common systems, while preserving those modules that ensure local specificity. This approach was supported by the banking group's strategy to ensure global uniformity, imposing all banks its core banking system. For specific functions, joint teams of IT specialists, economic specialists in business areas that use such applications, external consultants and leading IT vendors from both banks, were formed, each for every party involved in the merger.

The choice for one of the existing applications was based on:

- Technical criteria, including compatibility issues, effort for integration with other computer system components, the possibility of application's parameterizations, staff training costs;
- Economic criteria, such as the degree to which each of the two existing systems is able to support the new products offer.



a) GRUPUL ERSTE



b) GRUPUL UNICREDIT

Figure 2. a) core banking systems at Erste Bank Group (Source: (Erstegroup, nd))

b) core-banking system Core02 uniformly used within UniCredit Group (Source: (Unicreditgroup1, nd; Unicreditgroup2, nd))

To illustrate the first presented approach, we shall consider the case of BCR Erste Bank. According to (Sibcor, nd), during 2006-2007 BCR invested in a performant new core banking system, SIBCOR v2, developed by Oracle, at the same time with entering Erste Group in 2006. In order to migrate to the core banking system at BCR “one of the largest partnerships for a computer project” was formed (Sibcor, nd). The team consisted of BCR, Oracle as a provider of core banking solution SIBCOR v2, IBM as a hardware infrastructure supplier and Ernst & Young company for consulting.

Within Erste Bank Group, the integration of core banking systems in local banks with the Central System Symbols (Erstegroup, nd), is presented in Figure 2 a).

To illustrate the second approach, we can consider the merger between Commercial Bank Ion Tiriac and HVB Romania, in 2006. Capgemini company participated in the project offering consultancy for integration of the two core-banking systems, implementing a new front-end solutions, supporting the introduction of a combined system of cards, data conversion, integration of distribution channels and personnel training (Capgemini, nd). This project took 10 months to complete.

Even if the merger between UniCredit Group and HVB Group take place in 2005, (Unicreditgroup3, nd), the local bank HVB Tiriac was included in the UniCredit Group only in 2007, when there was a new IT system migration, similar the previous one. Once again, came used the expertise of the same consulting company Capgemini (Capgemini, nd). Basically, after the second migration the bank adopted the IT standards of the banking group UniCredit.

### **IT investments in the banking industry are accounted centrally**

IT investments in the banking industry are accounted centrally, are estimated in terms of tangible financial measures and are correlated with past investments' performance.

IT investments in the banking industry, compared to the rest of economic fields in the services industry, usually gather IT spending issues under top management, which ensures a careful accounting of all costs involved, according to Shu & Strassmann (2005). Unlike the rest of the economic branches in which IT costs are shared between the financial, administrative costs and operational expenses, in the banking industry all IT spending is grouped into costs with information resources, according to Shu & Strassmann (2005) study.

In terms of assessing business value of IT systems, some studies conducted by Milis et al (2009) discuss the opportunity of using traditional methods for investment evaluation in IT services:

- Payback Period – defined as the time needed to offset initial investment costs by using cash-flow generated by investment – presents the drawback of giving advantage to projects of short duration, in the

detriment of those spread across many years, ignoring the benefits obtained by re-investment;

- Return on Investment – defined as the ratio between net income and the amount invested – presents the disadvantage of not taking into account the time value of money;
- Internal Rate of Return – representing the rate at which the present value of entering money flows is matched by the amount of spent money flows – has disadvantages of being rendered as a percentage, making it difficult to compare investment projects of different sizes.

Milis et al (2009) state as a feature of IT investments in banks the appearance of intermediaries among stakeholders and the type of software ownership, that facilitates the distribution of services, comparing it to "an iceberg" in terms of hidden benefits management. Also, according to Milis et al (2009), the discount rates do not allow incorporation of all types of IT risks in their value.

To overcome these disadvantages, the literature suggests alternative methods of evaluating IT investments:

- Strategic alignment – Porter (1985), quoted by Milis et al (2009) – proposes assessing IT investments in terms of contribution to the organization's competitive advantage;
- Information Economy – Parker & Benson (1987), quoted by Milis et al (2009) – proposes the formation of a group of evaluators within the organization to achieve consensus on the impact of benefits and risks of IT investments using relativization of scale options;
- Weighted Scorecard – Kaplan & Norton (1996);
- Options model – Favaro et al (1998) – borrow the model of stock market trading, where IT investments are considered an money placement that can bring income in the future. Disadvantages of this model are the IT management's difficulty of understanding of the mechanisms behind the stock market transactions and the fact that IT investments' frequency is more rare than the frequency of stock transactions, according to Milis et al (2009);
- Use of genetic algorithms – Fujiwara & Amemiya (2008) – proposes to use genetic algorithms to maximize a non-linear objective function measuring the economic performance of the organization, having as arguments tangible assets and intangible assets owned by it.

#### *Case Study: Romanian specific criteria for IT investment decision*

In the Romanian banking industry, the TCO (Total Cost of Ownership) indicator and the ROI (Return Of Investment) indicator are used for large projects' assessment, as discovered from interviews with representatives of bank management. Unlike the models proposed in the literature, in practice, specialists

give priority to the functional criteria, to the budget and time framing and to the effort of interfacing with the rest of the banking system, rather than a detailed calculation of financial metrics for efficient IT investments.

Specific criteria that are considered when an IT investment decision is taken refer to the past performance of investments, recorded in the same area. For example, if a department was the beneficiary of a “transformative” IT investment, in the last couple of years, and that system has not reached the projected financial targets, a new IT investment demand coming from the same department (to replace that system) is rejected.

The IT management and the financial management analyze the demands coming from the operational area in order to identify whether the benefits expressed in Business-Case for a particular investment, always estimated in commensurate terms - number of new attracted customers, expected sales for new product etc., justify that investment.

### **IT investments in the banking industry are coupled with complementary investments**

IT investments in the banking industry are coupled with complementary investments that enhance their benefits and facilitate their adoption.

Compared to other economic sectors the banking industry the complementarity of IT investments with other value-adding investments is more significant. According to Ou et al (2009), IT investments „encourage” other capital investments: process reengineering, structural transformation, staff training and the redesign of customer relations.

This idea of investments complementarity is discussed in a study carried out by Consoli (2005), who identifies the multitude of organizational adjustments that follow the implementation of new technologies:

- The transition from electrical communication to electronic communication has increased the need for management co-ordination of the regional network units and of financial intermediaries operating at national level with delegation from the bank;
- The transition from processing to databases caused the reduction of intensive labor activities, while new competences are being developed for ATMs network monitoring and management, and the operations are being centralized;
- The transition from competition to collaboration has resulted in the reduction of branch network size, staff retraining, information security becomes a strategic objective and networks of shared data are created (e.g. SWIFTNet).



Whilst IT investments fluctuate over time depending on the profitability of the organization and on other external determinants, the investments in human capital are a stable form of obtaining added value for the organization, according to Lin (2007).

Lin (2007) concludes that, in order to get additional value in a knowledge-intensive field, banks must continuously invest in IT and human capital.

### *Case study: complementary investments for the staff training*

A good example of complementary investments in the Romanian banking industry is the staff training.

Banks have combined modern means of learning, e-learning, with traditional ones. BCR and Raiffeisen Bank have implemented e-learning solution provided by Oracle, called Oracle iLearning. Among the benefits of implementing Oracle iLearning, Raiffeisen appreciates in (Oracle, nd): 50% reduction of time required to prepare a training, reduction of training costs by eliminating travel charges, improved launch times of new banking products to the market by shortening the period of learning for employees involved in their distribution.

From the interviews with management of some Romanian banks, results that the human factor (from the operational area) is the main factor leading to success/failure of an IT investment. There were delays of up to one month of calendar days in the launch of banking products because of the failure of bank employees to pass the verification tests on e-learning applications examination platforms.

Under-exploitation of some features of new information systems is explained by Romanian banks management in terms of inertia to change among employees, who often invoke their lack of specific IT skills for understanding the complexity of modern banking IT systems.

### **IT investments in the banking industry are frequently determined by legislative changes**

IT investments in the banking industry are frequently determined by legislative changes or updates of the national and international organizations' regulations.

IT investments are affected by the mandatory implementation of certain investments directions imposed by the legislation or by other organizations of the banking industry (NBR-The National Bank of Romania, the European Union, European Central Bank etc.). According to documents issued by the Basel Committee on Banking Supervision, quoted by Yenning & Iftekhar (2006), banking market

discipline can be obtained by high transparency, corroborated with rigorous risk management policies.

*Case study: IT solutions for risk management policies*

Some banks in Romania have implemented AML systems (Anti-Money Laundering) in order to identify unusual behavior of bank customers, which may constitute money-laundering actions. Thus, according to (Marketwatch, nd), Alpha Bank, Bancpost, Egnatia Bank, Emporiki Bank, HVB Bank and Piraeus Bank have implemented Oracle Mantas solution.

For the detection of money laundering attempts, Banca Transilvania implemented Endava EBS solution (Endava, nd). The EBS application was implemented in 2003 and is used both internally, to identify suspicious transactions, and to generate daily reports to ONPCSP National Office Prevention and Combating Money Laundering (Studiidecaz, nd).

Before the introduction of the reporting platform to NBR, solution that is called SIRBNR, banks have developed in-house reporting solutions or they acquired off-the-shelf applications provided by companies on the IT market. According to (Anis, nd), UBI Bank, Egnatia Bank and Banca di Roma have implemented DBF4BNR solution provided by JVM Technology company.

**IT investments in the banking industry  
has a significant impact on bank reputation**

Banks are trying in various ways to create an image of „active institutional citizen" (Berro, nd) and thus improve their reputation. For example they carry out social projects such as: sponsoring educational system, donations for the rehabilitation of local health centers, support sports performance, funding cultural events-concerts.

But all these actions by may be eclipsed by the proven vulnerability in their information systems security. An example of this is the phishing attack. Phishing is an information attack from which bank customers are determined to access clone copies of the official bank's website, via e-mail or SMS. Effect of phishing is stealing data.

**Conclusions**

In order to be competitive, the Romanian banks relied on intensive use of information technologies.

This approach allowed: synergies in mergers/acquisitions of banks, product and process diversification, giving incentives to those operational areas that show high profitability, achieving customer loyalty and empowerment by introducing self-serving and increasing reputation.

### Acknowledgements

This article is a result of the project „Doctoral Program and PhD Students in the education research and innovation triangle”. This project is co funded by European Social Fund through The Sectorial Operational Programme for Human Resources Development 2007-2013, coordinated by The Bucharest Academy of Economic Studies.

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