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Prone to Failure: Why CRM and Billing Systems Implementations Are High Risk

Dr. Raul Katz, Adjunct Professor in the Division of Finance and Economics at Columbia Business School, Presents Findings from Research on Why Certain Telecom Implementations Are Doomed from the Start

This article studies the risks involved in the implementation of billing and CRM systems in the telecommunications industry. It is based on five case studies of carriers that recently have attempted to implement such systems resulting in either outright failures or lengthy delays, and in costly overruns and negative business impact. We conclude that project failures are due to at least one of four factors: 1) intrinsic project complexity (such as attempting to implement billing and CRM systems within three carriers simultaneously); 2) limitations in the software platform (such as shortfalls in integration capabilities or abundant customization requirements); 3) project management shortfalls (including limited user involvement); and 4) lack of implementation capabilities (either in-house or within the systems integrator). A number of recommendations are made to limit the influence of these variables.

Introduction

The management of telecommunications service providers is becoming increasingly complex. Multiproduct lineups, pricing complexity, bundling, customer experience improvement and ever-shortening time-to-market are some of the challenges facing carriers. However, investment in information systems is nondiscretionary. Information systems remain the necessary tool to address complex business requirements, yet, they themselves are becoming increasingly difficult to manage. While information technology is a necessary competitive requirement, its deployment and operation can be fraught with risks.

This article focuses on the potential failures in implementing billing and CRM systems. These applications lie at the center of a carrier's architecture. Their implementation requires significant investment, and although the industry is shying away from homegrown applications, the customization of off-the-shelf packages remains a lengthy project, entailing a large amount of resources, both in-house and from systems integrators.

We have studied the experience of carriers that have failed in implementing such systems. Our definition of failure is twofold: the straightforward case is canceling the project and decommissioning the system. This could be due to an inability to overcome implementation complexity, limitations of the chosen software package, lack of management commitment, or a combination of all three. The second situation is where the solution is implemented successfully, but after incurring a significant economic and schedule overrun.

Our analysis and conclusions are based on five case studies[1]:

- A North American wireless operator's implementation (13 million subscribers) of a CRM system from 2004 through 2006
- A North American satellite content distribution company's implementation (12 million subscribers) of a CRM system from 2004 to 2007
- The Asia/Pacific operations of a global wireless carrier implementing a billing and CRM system from 2003 to 2007 (4.5 million subscribers supported by three subsidiaries)
- A European wireline incumbent's implementation (35 million customers) of a CRM system in 2007 and 2008
- The wireless arm of a Latin American full service provider implementing a CRM system from 2006 to 2008 (8.5 million subscribers)

The Nature of the Problem

Of the five companies studied, three were able to conclude the project after costly overruns and two decided to cancel it:

The European wireline incumbent successfully implemented a Siebel CRM solution, with the purpose of simplifying the systems architecture and decoupling the BSS and OSS layers to allow for rapid development of new services. Originally envisioned to require 1.5 years, the project demanded 2.2 years. The carrier is in the process of completing the migration strategy and dealing with lingering issues, such as data integrity.

The Asia/Pacific wireless subsidiaries tackled the simultaneous replacement of their billing and CRM systems with Portal and Siebel[2] solutions, respectively. The project was conceived as a template to be rolled out worldwide. The new platform was targeted to be installed initially in three subsidiaries and was expected to last 2.3 years. The final implementation timeline was 4.5 years. The objective of having the billing system become a flagship for other subsidiaries was not fulfilled since other carriers canceled the project mid-course.

The Latin American wireless carrier tackled the replacement of an obsolete, non-scalable CRM platform with Siebel to support the call center and PoS systems. In addition, the wireline side of the business decided also to purchase the same platform. The wireless project finally was implemented and the carrier now has the capability of handling in-bound campaigns, conducting cross-selling pilots, and cleaning up the portfolio of delinquent subscribers. However, the project required 2.5 years rather than one, as originally estimated. On the wireline side, project delays resulted in the cancellation of the project.

The North American wireless carrier tackled the replacement of a legacy CRM application with a Siebel solution in order to support marketing analysis and channel activities. After approximately two years of implementation work, the project was canceled and the carrier continued relying on the legacy application.

The satellite content distribution company decided to replace a legacy CRM application with Siebel. The project was expected to last 1.5 years but ended up requiring three years. However, once the application partially was implemented, a combination of factors (management changes in the company, higher than usual software license fees, and potential scalability problems) led to the cancellation of the project and consequent decommissioning of the project.

Figure 1 presents the schedule and budget outcome of the five cases:

the figure shows, the projects that led to a final cutover incurred cost overruns ranging between 44 percent and 125 percent and schedule extensions of seven months to two years. On the other hand, cancellations were decided after a timeline extension of more than a year, and a cost overrun exceeding 133 percent. What was the business impact of all these problems?

Impact on the Business

In addition to the economic losses, the impact of cancellations and delays varied by project. They can be categorized into two areas: technical and business impact. The technical impact (e.g. downtime, problems with data integrity) can be directly linked to the project itself. The business impact pertains more to the hypothetical inference of cause-effect from the delay or the cancellation of the project and business performance.

The technical impact can be easily ascertained in the case of projects that were completed.

In the case of the European wireline carrier, the carrier originally planned for a parallel transition for three months but finally decided against it. Around cutover time, the carrier did not have CRM support for one week. Even a month later, there was some unplanned downtime. Because of the initial downtime problems, the carrier allowed users to continue using the legacy applications, which perpetuated data inconsistencies. It is believed that these problems will continue to occur until the system is stabilized.

Figure 1

Company	Original Budget		Actual Budget		Final Outcome
	Time (Years)	Cost ($M)	Time	Cost ($M) (*)	
Wireless Carrier (North America)	1.0	$25	2.0	$80 (220%)	Decommissioned
Satellite Distribution (North America)	1.5	$15	3.0	$50 (133%)	Decommissioned
Wireless Carrier (Asia/Pacific)	2.3	$200	4.5	$450 (125%)	Implemented
Wireline Carrier (Europe)	1.5	$135	2.2	$195 (44%)	Implemented
Wireless/ Wireline Carrier (Latin America)	1.0	N/A	2.5	N/A	Implemented in wireless; canceled in wireline

*Percentage indicates budget overrun.

In the case of the Asia/Pacific wireless subsidiaries, the first phase of the billing and care platform was released 18 months after project start-up. Some reliability problems were discovered in production, which were resolved during a three-month period. The second phase of the project was due to start deployment 12 months later and be completed for all three subsidiaries after 18 months. It actually took another 2.5 years for the first subsidiary and three years to finally complete the project. Part of the delay resulted from a decision to change the deployment approach and to upgrade the hardware and software technology in a separate deployment, thus lowering the risk in the business migration cutover. During the final cutover, the system also did not have CRM support for one week. This meant customers could not check their account balances, set up their phones to roam overseas, add new connections, change plans or pay bills[3].

The business impact on all the cases studied was hypothesized along three dimensions: customer acquisition, churn and new service revenue (see figure 2).

While it would be wrong to exclusively attribute these shortfalls in performance to the decommissioning or implementation delay of a billing and/or CRM application, it would be reasonable to assume that this factor played a contributing role in not allowing each of the carriers to improve their business metrics significantly on time.

What Went Wrong?

It is difficult to attribute a single factor during the problems encountered in any of these case studies. Each situation was generated by multiple reasons, which can be categorized around four areas:

- Intrinsic project complexity
- Platform limitations
- Project management shortfalls
- Limited implementation capabilities

Intrinsic project complexity:

Implementation of a billing or a CRM application in a telecommunications carrier is an exceedingly complex project[5]. It is remarkable, however, that all of the projects studied exhibited, in addition to their natural complexity, specific features that made them, by choice, even more complicated.

Figure 2

Case Study	Status	Customer Acquisition	Customer Churn	New Services
Wireless Carrier (Asia/Pacific)	Implemented	The subsidiaries continued to perform at similar rates of growth during the project although the introduction of new services restricted growth over and above what previously had been achieved[4]	Churn remained stable	Unclear
Wireless/Wireline Carrier (Latin America)	Implemented in wireless; canceled in wireline	Carrier is worst performer in terms of share of net adds	Carrier remained worst performer in the industry	Unclear
Wireless Carrier (North America)	Decommissioned	Carrier dropped to distant third in terms of share of net adds	Carrier remained worst performer in the industry	Carrier's data share of ARPU stayed below industry average
Satellite Distribution (North America)	Decommissioned	Unclear	Unclear	Unclear
Wireline Carrier (Europe)	Implemented	Unclear	Unclear	Unclear

Project complexity at the European wireline incumbent was driven by multiple factors: 1) The carrier's sheer size (more than 30 million wireline subscribers, combined with 5,000 products); 2) the number of end users supported by the application (35,000, of which up to 20,000 accessed it concurrently); and 3) the technical design comprised an abstract interface layer, which had not been developed before and had to be tailored to the carrier's business processes.

A lot of the complexity at the Asia/Pacific wireless subsidiaries was driven by the scope of replacing simultaneously the main transaction systems at three operators. As such, while the size of operations was relatively small (4.5 million subscribers), the requirements gathering phase was more complex since it meant addressing needs from three different carriers.

Similarly, the project complexity at the Latin American carrier originated in the objective to simultaneously replace the CRM application both at the wireline and wireless businesses; this situation was magnified by reducing the implementation timeline beyond what was reasonable.

In the case of the North American wireless carrier, the complexity was induced by the software vendor. In response to the vendor's commercial aggressiveness, the carrier purchased the entire CRM library without having a precise vision of what it intended to achieve with it. This put the carrier in a position to have to implement all modules simultaneously.

The obvious question that these facts raise is whether management at each carrier could have reduced the implementation risk by limiting the additional features, which increased the project complexity.

Platform limitations:

While all solutions chosen in the case studies were commercially off-the-shelf, they required significant customization. This was compounded by four types of platform limitations:

1) Cumbersome development tools

In the type of software under consideration, the availability of a state-of-the-art set of tools is critical to improve programmer productivity. This was not the case in two of the projects studied. The European wireline carrier, for example, commented that the programmers experienced considerable difficulty in performing configuration management and that it was almost impossible to manage more than three parallel development streams. Furthermore, their application lacked adequate load and performance test tools[6].

Similarly, the North American wireless carrier considered that the front-end development tools of the CRM software were extremely complex, thereby requiring a lot of programmer training[7].

2) Myth of "configurable software"

It is common that applications are marketed as highly flexible to enable easy adaptation to the carrier's specific business processes. However, we found that in our cases, "configurability" led to implementation complexity. Furthermore, "configurable software" was found to be, in at least two case studies, "a set of tool kits sold in conjunction with systems integration services"[8] and "more like a spreadsheet that requires significant amount of configuration and modification to perform any useful function."[9]

In the case of the Asia/Pacific wireless subsidiaries, the billing system required significant configuration and modifications before installation. In particular, the software needed numerous core enhancements to address the carrier's specific requirements for performing suspense management, revenue assurance, common CDR format, product catalogue, adjustments and disputes, and payments interface.

3) Myth of the "integrated software"

Module integration is a fundamental requirement in the systems architecture of telecommunications carriers[10]. In the case studies, integration remained an elusive concept, ranging from non-existent to cumbersome.

The Asia/Pacific wireless subsidiaries experienced a situation in which, while the billing and CRM systems were sold as modular systems that could be easily integrated by middleware, the latter remained undefined and there was no integration road map[11]. In fact, the complexity of telecommunications business processes resulted in a complete mismatch between the proposed and required middleware[12].

4) The scalability problem:

In an industry in which the subscriber base has been growing in the double digits for the past 10 years, scalability is a critical concern. Scalability appeared to be a problem in most case studies, both at the module level and as a result of cumbersome module integration.

A typical case of module scalability limitations was experienced by the North American satellite company. For example, in the case of the CRM software, the product catalog was found to be a drain on system resources. The system generated so many internal transactions requiring overhead that it resulted in structural scalability problems.

A problem of a similar nature was experienced by the Latin American wireless carrier. Although its software was a subsequent version of the same CRM platform which the satellite operator intended to install, scalability problems persisted.

At the integration level, some of the case studies identified problems between billing and OSS for order management. In this case, the integration between both systems resulted in a high volume of data transfers, which also affected systems performance.

In a similar way, the North American satellite operator experienced numerous issues attempting to integrate the CRM platform with other applications. The system generated innumerable internal transactions requiring overhead, which resulted in structural scalability problems. Unfortunately, the company's IT staff could not address them because in order to get around them, the original systems architecture needed to be rethought completely.

Project management shortfalls:

The case studies identified numerous areas where implementation problems could be attributed to project management problems:

Limited user involvement:

While the project Steering Committee in the North American wireless company was composed of senior functional representatives, systematic delegation of attendance to deputies resulted in the participation of junior people that were less familiar with the carrier's strategic requirements or the systems architectural[13]. While participation by the user community in the Steering Committee of the Asia/Pacific wireless subsidiaries was high, the participants were not very familiar with the specifics of the project, which impacted the quality of the decisions.

The lack of involvement on the business side of the North American wireless carrier was rooted in the passivity deployed throughout the project. For example, the marketing department was not focused on developing a vision as to what were the strategic needs of a CRM.

Conversely, a conscious approach to include the end-user community in all key project decisions was a key contributor to salvaging the projects at the European wireline carrier and the Latin American wireless company. It was at both companies that, at the urging of business owners, the IT function renegotiated agreements with the systems integrator and made sure that a commitment for delivery by the outside vendor was made.

Limited implementation capabilities:

The correlate of project complexity in implementing CRM and billing systems at telecommunications carriers is that if the project does not have the appropriate set of human resources (technical and business), the risk of failure or significant delay increases. This could be increased exponentially if the product chosen has limited integration capabilities.

At the European wireline carrier, the complexity derived from the need to develop middleware capable to abstract interface requirements was beyond the expertise of the original systems integration technical team[14]. A similar situation occurred at the Latin American wireless carrier. In both cases, the solution was to force the systems integrator to improve the profile of the team and bring in additional in-house IT staff that assumed the responsibility of key project steps that required in-depth knowledge of the business[15] (see figure 3 below).

Figure 3

Carrier	Project Tasks
European Wireline Carrier	• Management of the OSS integration (requirements definition, link up to product structure) • Data migration, integration testing
Asia/Pacific Wireless Subsidiaries	• Requirements definition for numerous modules (revenue assurance, product catalogue, accounts receivable, etc.) • Data migration (assisted by the systems integrator)
Latin American Wireless	• Installation of middleware • Customization of call center query tools
North American Satellite	• Data migration • End-user training

Figure 3. Tasks assumed by in-house IT staff

Interestingly enough, in two projects that were completed after significant delays, the critical failure point was the integration layer. In the other one, integration was a concern from the start since the initial solution did not work. As a result, it was addressed mid-way and worked well. To sum up, each case study had more than one factor contributing to the outcome (see figure 4 below).

Figure 4

Figure 4. Primary areas contributing to the outcome

	Intrinsic project complexity	Platform limitations	Project management shortfalls	Limited implementation capabilities
Wireless Carrier (North America)	x	x	x	
Satellite Distribution (North America)		x		
Wireless Carrier (Asia/Pacific)	x	x	x	
Wireline Carrier (Europe)	x	x		x
Wireless/Wireline Carrier (Latin America)	x	x		x

Figure 4. Primary areas contributing to the outcome

Conclusion:

The analysis of the five case studies is quite enlightening with regard to the reasons why complex billing and CRM systems projects in the telecommunications industry tend to fail. Some of the drivers are quite common and not necessarily specific to the industry. In fact, best practices already have been codified to address issues such as limited user involvement, or faulty project governance.

Nevertheless, the studies identified a number of factors that are specific to telecommunications. Carriers should pay attention to the management of complexity limiting the scope of areas of systems renewal to be addressed simultaneously. Sequential implementation might be advisable in order to limit the complexity attached to whole transformation projects.

In addition, the selection of commercial off-the shelf packages needs to be tackled very carefully, particularly when it comes to differentiating between the promise of integration and configurability and reality, or when assessing the true scalability capacity of an application. In particular, the product integration capability (especially, its integration layer) has a tremendous impact on the project's likelihood of success. Along these lines, the evaluation of product maturity is a critical assessment metric when selecting a commercial off-the-shelf package.

Finally, carriers need to carefully define their approach for retaining the services of a service integrator. First and foremost, retain a single service provider that assumes full accountability for delivering results. Do not fragment across multiple integrators, which results in the impossibility of designating a responsible party. Secondly, when selecting the integrator, make sure it is well versed in the product chosen and that it has a solid implementation track record. Third, when negotiating the contract, ensure that the integrator will staff the most experienced team in the engagement. Similarly, when determining the scope of services to be purchased, opt for assigning end-to-end responsibility and accountability, ranging from requirements gathering to conversion.

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Footnotes:

1. Data on these five case studies was collected through a series of multiple interviews of executives of the IT and business functions at each carrier. Given that our purpose was to focus on implementation risks and failures, our sample is biased toward carriers that have encountered problems in installing systems. Furthermore, since we are interested in understanding the influence of commercially available off-the-shelf solutions on implementation, all our cases entail the customization of packaged software. Please refer to www.teleadvs.com for detailed case study data.

2. Both companies have been acquired by Oracle Corp.

3. To the carrier's credit, this service interruption was managed through a highly effective communications strategy that surprisingly showed an increase in customer satisfaction during the cutover period.

4. This was largely due to the rating capability introduced in phase 1 of the project which offset the impact of inability to launch new services (the business was able to introduce new services only if they fitted the configuration models of the system. However, once the system was implemented the improved functionality has delivered significant benefits to the businesses with one of the subsidiaries gaining significant market share over its competitors.

5. As one of the CEOs stated in the course of his interview, "an ERP implementation has a potential risk level between 4 and 5 out of 10, while CRM and billing have a risk between 8 and 9".

6. Vendor appears to have corrected this shortfall in a recent release.

7. The problems pointed here are not uncommon. See Gliedman, C. Oracle Siebel CRM leads in record-centric customer service management software (May, 2007): "...applications complexity, high cost, a clunky user interface, and lengthy implementation schedules are drawbacks".

8. North American wireless carrier.

9. Asian subsidiaries of global wireless carrier.

10 See Katz, R. Assessing TCO for Best-of-Suite versus Best-of-Breed in the communications service industry (2007)

11. Part of the problem was based on the fact that the vendor assumed that it could apply to a telecommunications carrier the integration roadmap originally developed for a financial services company.

12. Of the 65 business processes, the middleware supported three to a useable level, and only one fully.

13. In many cases, the business people involved in project tasks were very junior or were not the top talent (in other words, only the staff considered being less critical to end user functions were the people made available to the project).

14. This added a minimum of six months to the original project schedule.

15. In the case of the North American wireless company there was not one but over 20 systems integrators involved in the project, while in the Asia/Pacific wireless carriers the systems integrator did not have end-to-end contractual responsibility including migration.