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Bayer HealthCare Delivers a Dose of Reality for Cloud Payoff Mantras in Multinationals

"Cloud services provide high cost advantages" is one of several often-quoted assertions (called mantras in this article) about payoffs from cloud computing. These mantras, however, have their origins in the experiences of small and mid-size companies, but, as the case of Bayer HealthCare's cloud-based CRM rollout program shows, may not always be true for large multinational companies. To ensure payoffs from the cloud, multinationals must adopt strategies for coping with the inhibitors identified in this article.[1,2]

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Accepted Beliefs about Cloud Payoffs

In recent years, companies worldwide have enthusiastically embraced cloud computing technologies and services because of their potential business payoffs. Forrester Research estimates that the total global cloud computing market will grow from $61 billion in 2012 to $241 billion in 2020.[3] Small and mid-sized companies have been at the forefront of cloud service adoption, and their accumulated experience has created a set of often-repeated cloud payoff mantras (or assertions). These mantras, regardless of whether they are true or false, have shaped IT managers' understanding of the cloud's financial benefits,[4] technological implications[5] and organizational impacts[6] (see Table 1).

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2 The authors are very grateful to all of the Bayer HealthCare managers and members of the program team who shared their insights and experiences. We also acknowledge the senior editors and anonymous reviewers for their valuable advice during the review process for this article.

3 Ried, S. and Kisker, H. *Sizing The Cloud – A BT Futures Report. Understanding And Quantifying The Future Of Cloud Computing,* Forrester Research, 2011. See also Venters, W. and Whitley, E. "A Critical Review of Cloud Computing: Researching Desires and Realities," *Journal of Information Technology* (27:3), 2012, pp. 179-197.

4 See Choudhary, V. "Comparison of Software Quality under Perpetual Licensing and Software as a Service," *Journal of Management Information Systems* (24:2), 2007, pp. 141-165; Lacity, M. C. and Reynolds, P. "Cloud Services Practices for Small and Medium-Sized Enterprises," *MIS Quarterly Executive* (13:1), 2014, pp. 31-44.

5 See Benlian, A., Hess, T. and Buxmann, P. "Drivers of SaaS-Adoption—An empirical study of different application types," *Business and Information Systems Engineering* (1:5), 2009, pp.357-369; Benlian, A. and Hess, T. "Opportunities and risks of software-as-a-service: Findings from a survey of IT executives," *Decision Support Systems* (52:1), 2011, pp. 232-246.

6 See Susarla, A., Barua, A., and Whinston, A. "Multitask Agency, Modular Architecture, and Task Disaggregation in SaaS," *Journal of Management Information Systems* (26:4), 2010, pp.87-118; and Winkler, T. J. and Brown, C. V. "Horizontal Allocation of Decision Rights for On-Premise Applications and Software as a Service," *Journal of Management Information Systems* (30:3), 2014, pp. 13-47.

Table 1: Cloud Payoff Mantras

Financial Benefit Mantras
1. High cost advantages can be achieved through minimizing upfront investments and turning fixed costs into variable costs.
2. Implementation time is extremely short because cloud-based systems are made for "plug and play" and agile extensibility.
Technological Implication Mantras
3. Customization of cloud-based systems is generally limited, but available solutions have enough built-in capabilities to meet most organizations' idiosyncratic needs.
4. Compliance and security risks have to be accepted so they do not become a "show stopper" (i.e., risks cannot be mitigated).
Organizational Impact Mantras
5. Business units can focus on their core competencies because the cloud provider takes over all operational tasks for managing the application system.
6. Companies can become less dependent on internal IT staff due to access to a better technical skill set that resides at the site of the cloud provider.

With cloud computing increasingly being adopted by large corporations and mounting pressures on corporate IT units to cut costs, it would be tempting for IT and business leaders to simply accept these mantras as true without thinking twice about them. Because cloud computing is often heralded as a "silver bullet" that can provide benefits to all organizations regardless of their size and geographical scope, it is no wonder that many large corporations simply accept the mantras as true. However, given the complex realities that large and multinational companies face today—with business process idiosyncrasies, numerous legacy systems and regulatory differences across the geographies, to name a few—a one-size-fits-all approach to realizing cloud benefits will simply not work. Rather, large corporations have to challenge the widely held cloud payoff mantras and, in some cases, even "turn them upside down" to find their own successful paths to cloud computing.

This article describes how a global multinational, Bayer HealthCare (BHC), managed to cope with a set of inhibitors that made achieving payoffs from the adoption of a cloud-based customer relationship management (CRM) system particularly challenging. (The case study approach used for this research is described in Appendix A.) Before this large-scale cloud project, BHC operated numerous in-house and vendor solutions to support its diverse CRM landscape. The main motivation for the cloud initiative was, besides supporting global marketing and sales capabilities, to reduce the complexity of and costs incurred by the legacy systems that were maintained.

Our analysis of the BHC case considers the truth of the cloud payoff mantras for large corporations and reveals the coping strategies that BHC used to tackle various obstacles and that enabled it to achieve cloud payoffs. We provide key lessons learned from the BHC case, as well as a management tool for assessing cloud inhibitors, that have wider implications for managers in other large corporations.

Overview of Bayer HealthCare and its Cloud CRM Program

Bayer HealthCare Organization and Strategy

BHC is a legally independent corporation and one of the three subgroups of the Bayer Group. BHC operates in over 100 countries with a vision to improve the health of people and animals through its global value-added chain of research, development, manufacturing and marketing

of healthcare products. BHC's four divisions—Pharmaceuticals (Pharma), Consumer Care, Medical Care and Animal Health—employ more than 55,000 people and provide pharmaceutical products to healthcare professionals and consumers worldwide. BHC's global operating model supplies different markets and caters to local healthcare demands. The country organizations traditionally are responsible for sales and ensure proximity to the local market, with the result that global and local business processes are of comparably high complexity and heterogeneity.

BHC's business strategy places strong emphasis on innovation as well as expansion into emerging markets, targeting above-industry, profitable and sustainable growth. The global healthcare environment at present is in a state of flux, with greater patient and consumer influence on health-related decisions, and national healthcare systems that need to find new ways to curb rising costs, improve the quality of healthcare and extend its reach. This environment creates increasing pressure on BHC to demonstrate the value-added of new products. The company's development pipeline is driven by the potential for novel therapies that address a growing demand and an aging population—while the most recognized product in over 150 years of Bayer's history is still the original brand of Aspirin.

There are three sets of stakeholders involved in drug research and development: producers such as BHC, healthcare professionals and consumers. To avoid conflicts of interest and safeguard the independence of healthcare professionals, the healthcare industry is highly regulated, both in terms of drug research and approval as well as the marketing and sales of medical products. BHC's corporate compliance policy is governed both by company-specific regulations and by statutory regulations of the countries in which it operates, which can vary widely, e.g., regarding prescription requirements, pricing, benefits for healthcare professionals and privacy protection.

IT Organization at Bayer

The organization of IT at the Bayer Group follows a shared services model with both global and local IT units.[7] Global IT units are divided into demand IT functions at the subgroup level (i.e., BHC, Bayer CropScience and Bayer MaterialScience) and supply IT functions provided by an independent service company at the group level (Bayer Business Services). BHC's demand IT function sees itself as a partner to the business and provides IT expertise to the major business functions, such as marketing and sales, production and supply chain through dedicated centers of excellence (CoEs). The group-level supply IT function provides a full range of IT services (e.g., systems integration, application management, data center operations and user support) for the entire Bayer Group. In addition, some of the larger country organizations have their own local IT units. These have traditionally exerted strong ownership over IT systems, including the sales and marketing legacy IT solutions used across BHC's divisions prior to implementing the cloud-based CRM system.

The Cloud CRM Program

The initial thrust for cloud CRM at BHC originated when a new CEO brought cloud experience from his prior appointment. The main motivation was to achieve payoff from introducing a company-wide CRM solution and savings on maintenance costs for the numerous heterogeneous CRM systems that had grown historically and were operated for different countries and business units. To leverage these cost advantages, there was also a clear mandate to harmonize marketing and sales processes globally. These processes included core operational and analytical CRM activities (such as sales planning, customer segmentation, sample management and territory management) across the four business areas as well as contiguous activities in specific business areas that required advanced CRM functionality (e.g., order entry for sales representatives in the consumer business).

A program organization headed by the marketing and sales CoE in BHC's demand IT function was created to define a global template

7 The shared services model, which balances between centralized and decentralized organization, has become a common model to structure the IT function in large corporations; see Winkler, T. J., and Brown, C. V. "Organizing and Configuring the IT Function," in Topi, H. and Tucker, A. (eds.) *Computing Handbook, Third Edition: Information Systems and Information Technology,* Volume 2, 2014, CRC Press, Ch. 57, pp. 1-14.

for future CRM processes, select the provider (including due diligence), check compliance and security requirements, and decide on the global rollout approach. After a thorough evaluation, BHC decided to adopt a combination of a pharma-specific software-as-a-service (SaaS) solution from a specialized cloud vendor and a cross-industry platform from a leading cloud provider.

Seduced by the cloud payoff mantras and vendors' promises about the benefits of cloud-based systems, the lines of business and country organizations pressed for the program to move forward quickly, which put the team under significant pressure to deliver fast. One of our interviewees considered that *"The dynamics and speed at the beginning of the project induced by the business was too high."* and noted, *"This was ... something that we have never had at Bayer, that there was such a dynamic from the business, which also generated such a strong demand."*

Several challenges arose when the program reached the first pilot rollout, which eventually caused a full halt of the implementation activities. This break was crucial because it enabled an intermediate reflection phase to analyze the lessons learned before moving forward with the remaining country rollouts. In this article, we first describe the challenges faced at BHC and the underlying inhibiting factors that caused the challenges. We then provide insights into the coping strategies adopted by BHC that helped mitigate the inhibitors and led to the significant payoffs from this cloud implementation program.

Myths and Realities of Cloud Mantras at BHC

Below we describe the challenges BHC faced as it implemented the cloud CRM solution. For each cloud payoff mantra, we provide both an example that supports and one that refutes the mantra. These examples—or mini-cases within the overall cloud rollout program—are drawn from various BHC subunits. Based on these mini-cases, we identify the inhibiting factors that prevented the mantras from being completely true at BHC.

Mantra 1: High Cost Advantages Can be Achieved Through Cloud Computing

One dominating argument is that cloud computing significantly reduces a firm's IT costs because there is almost no upfront investment and ongoing costs are variable according to the needs of the firm.

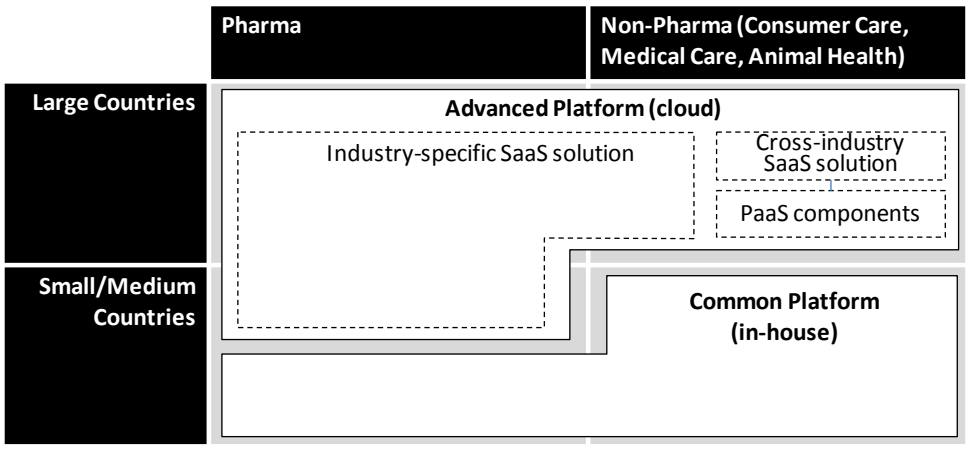
At BHC, the business case compared the service fees of different cloud providers (based on different usage scenarios) with the cost of providing and operating the most sophisticated in-house CRM system. Given that BHC has a strong focus on growth and business innovation, this evaluation placed an equally high emphasis on how the in-house solution would support existing and future business requirements. The challenge with this "best-of-breed" comparison was that BHC's country organizations had dissimilar needs, diverse prior solutions in place and different budgets at their disposal.

The comparison showed that the accepted belief that cloud computing reduces costs was true only for the large countries that operated several expensive legacy systems. For them, the cloud solution, despite considerable provider fees, promised to provide business innovation at lower total cost, based on its novel approach to collaborative CRM, integration of digital channels and mobile device independence. For smaller countries with less complex CRM processes and much simpler needs, however, the cloud solution would have been more costly. For them, one of the existing in-house CRM solutions was preferred as a common future solution.

Thus, when evaluating a cloud-based solution for a multinational, the complexity of business process requirements in different subunits needs to be considered as a potential cost driver. Process complexity determines the business requirements of a solution, which in turn likely affects the cost because cloud vendors charge a premium for the most innovative product features. Moreover, as the BHC case shows, the availability of legacy systems can significantly reduce the comparative benefits of moving to a totally cloud-based solution.

Following its cost-comparison analysis, BHC embarked on an intense series of negotiations with cloud vendors and decided early in the project to implement a two-platform strategy (see Figure 1). An "advanced cloud-based platform" is used for the larger countries with more complex requirements, and an in-house system is used as a "common platform" for the smaller countries. Both platforms are operated concurrently. One

Figure 1: Two-Platform Approach for Global CRM at BHC



of our interviewees recalled, *"The two-platform strategy is needed because we said the world is very different. We have small and medium countries, which are … not so demanding but also don't have the big budgets. And there are countries that are more mature, so that we have to offer a platform to them which might be more expensive, but therefore also has a greater degree of coverage and sophistication to model our requirements."*

Mantra 2: Implementation Time for Cloud Solutions is Extremely Short

There is a common assumption that cloud solutions can be implemented quickly in a "plug-and-play" fashion and be incrementally extended in an agile way, thus enabling companies to gain cost-related benefits more quickly.

At BHC, the first set of requirement workshops uncovered the different regulatory requirements that had to be integrated into the CRM solution, and these requirements had a large impact on the program timeline. For example, in some countries, government regulations on managing inventories of drug samples prohibit a negative inventory, while in other countries—as well as in the industry-standard solution for the pharma segment—temporary negative inventories are common, caused by timing issues in the transfer of products or samples.

The maturity and extent of existing legacy CRM systems also impacted the cloud CRM timeline. In large European country organizations, for example, highly customized applications had grown over the years to provide a huge set of functionality, while in emerging markets like China, the CRM rollout would practically be starting from scratch. One interviewee noted, *"countries … that have their own custom-built system for order entry, contract management, etc. have such complex processes that these cannot … be modeled by the cloud solution. For this, you have to create completely new objects, and this makes the requirements very complex."*

Thus, there were differing experiences at BHC relating to the quick implementation mantra. In countries with less regulatory requirements, low process complexity and without CRM legacy applications, cloud pilots with reduced functionality could be implemented fairly quickly. BHC had implemented a first workable solution in these countries long before the completion of the global implementation program. However, the implementation of the global solution that catered to all country-specific requirements took a huge amount of time because of the need to take account of the different regulatory requirements and process heterogeneity across different countries, and the time required to migrate from legacy systems. To manage the timeline challenges of the cloud implementation, BHC managers agreed on major modifications to the overall program approach during the learning and reflection phase.

Mantra 3: Customization of Cloud Solutions is Limited, but Meets Most Needs

A widely held technological assumption is that the degree to which cloud-based systems can be customized is generally limited. However, since most solutions available on the market are

designed to be used by multiple organizations, they are commonly thought to provide enough capabilities to meet even idiosyncratic needs.

At BHC, different levels of customization of the cloud CRM solutions were required. Partially supporting this mantra, customization to implement the industry-specific (vertical) solution for the pharma division was fairly easy and limited. Adapting this original U.S. solution to the European and other market environments was achieved mainly through configuration, with just a few custom developments. On the other hand, the modules of the (horizontal) SaaS solution that were implemented for the non-pharma segments needed customized extensions because the built-in capabilities were not sophisticated enough to meet the heterogeneous requirements of a multinational. One interviewee pointed out, *"The product is not really mature for large global firms that do not stick 100% to the out-of-the-box standard."* An example is picklists where *"for a specific data field, often completely different picklists are required in different countries. … This means that the non-industry specific SaaS solution looks nice at first sight, but the moment I let users search elements or parameterize reports, they suddenly encounter the whole list of all global values, although only a fraction of this would be of interest to them."*

Thus, a relevant factor for companies' customization needs is whether a cloud solution comes equipped with an industry-specific template or has a lack of industry focus. Customization needs are also determined by the business process complexities of different subunits, as well as the scope of the implementation (i.e., whether the cloud solution is implemented for one or multiple business units).

BHC's cloud CRM program tried to cope with these customization challenges by exploiting the potential of platform-as-a-service (PaaS) to add missing functionality, primarily to the cross-divisional (horizontal) SaaS solution (as indicated in Figure 1). A large number of business objects, reports and interfaces were custom-developed on the cloud provider's platform. As one interviewee pointed out, *"The program had the vision to utilize SaaS, but … based on the specific requirements … we have roughly 70% to 80% of custom-developed objects, which means that we are more in an environment of a PaaS program."* The extent of custom development also posed additional challenges for the capabilities of the program and increased BHC's dependency on external help: "*We want externals, but we also want more internal know-how, and that's where we have our learning curves right now. … For example, whether to implement certain things in the industry solution or on the platform … that is where we have to believe the consultants, and this puts us in a certain dependency."* At the same time, BHC also sought to exert influence on the cloud providers to further develop their solutions and fill in the functional gaps.

Mantra 4: Compliance and Security Risks Have to Be Accepted

Another common technological mantra when moving data and applications to the cloud is that there are certain compliance and security risks that must be accepted if they are not to become "show stoppers."

Compliance and security issues at BHC were handled by having all shortlisted cloud providers perform detailed risk and security assessments. An expert group under the office of the CIO (supply IT) developed new cloud computing guidelines in consultation with the country IT security and privacy officers. This process also increased the country officers' awareness of the potential risk and security issues before getting the countries' buy-in to the program. One of our interviewees from supply IT recalled that the cloud providers had to respond to a long catalog of questions related to *"data encryption, recovery scenarios, where the data is located, the demarcation between Bayer's data from those of other firms and contractual agreements about who owns the data in case of contract termination, how would Bayer get the data back, etc."*

Compliance and information security requirements were major issues considered in the cloud rollout across all BHC subunits. However, despite the highly regulated healthcare environment, these issues did not become "show stoppers" because they could be diligently addressed from the outset. Regulatory differences, company compliance guidelines and specific data security laws had to be considered early on in BHC's cloud initiative. In addition, the type of cloud application and how specific it is to the company's business are relevant to the security assessment. Different types of

business applications (e.g., ERP, CRM, clinical trial management) are subject to different compliance and data security requirements depending on the data that is stored.

Mantra 5: Cloud Solutions Let Business Units Focus on Core Competencies

At an organizational level, one common mantra is that cloud solutions free business units from "IT worries" and thus let them focus on their core competencies. Moreover, it is said, cloud solutions require less business involvement than conventional (in-house) solutions because the provider is taking over all operational tasks.

BHC's top managers may have been seduced by this mantra when they assigned responsibility for the cloud CRM implementation program to the demand IT function (to the marketing and sales CoE). Indeed, this IT-driven approach largely worked in pilot countries with no legacy systems and little local IT ownership. In these countries, any new CRM system was an improvement on the previous state, and the implementation succeeded smoothly without an urgent need to have global business managers involved. However, in countries that operated legacy systems and where there was stronger local IT ownership, the fit and acceptance of the planned global template solution was rather limited. One of the local rollout managers remarked, *"It is somehow the fundamental problem of this project that we said we have a global approach, global processes and a global template ... but we have forgotten to adapt this global strategy to local needs ... This makes it more difficult for the country managers to stick to the global template because we see ... that ... as it is now, it does not fulfill the requirements of the countries."* In these countries, cloud implementation required much more effort from the global business organization to deal with local idiosyncrasies and develop the global template further.

Thus, important factors that determine the degree of involvement needed by global business units in a cloud initiative are the locus of IT ownership and the legacy systems that are in place. To cope with these challenges, BHC had to rethink the entire governance structure for the cloud CRM program and re-orient global business leaders.

Mantra 6: Cloud Computing Makes Companies Less Dependent on Internal IT

Finally, an often-heard mantra is that cloud solutions allow firms to become less dependent on internal IT staff because cloud vendors provide a much better technical skill set.

At BHC, this mantra was certainly true for parts of the IT operations infrastructure, such as application hosting and data center operations, where the company used to have large expenses in operating global CRM systems. One manager from the supply IT function estimated, *"In the past, we spent about a quarter of efforts on operating the on-premises solutions, installing patches, fixing configuration problems on the server side etc.; this is, of course, something we save."* However, the mantra was not true for the remaining three-quarters of IT efforts directed at managing the cloud solution and coordinating across the different internal and external parties during and beyond the implementation program. In fact, the governance model for the two globally harmonized CRM platforms (advanced and common, see Figure 1) made internal coordination and decision making even more challenging. *"So much internal coordination is needed within the organization, and certain workflows and interfaces are not so clearly defined ... that we simply cannot be as up to speed as we could be,"* a country rollout manager said.

Thus, the implementation scope (local or company-wide) was an important factor that determined the role of IT units. The cloud initiative needed to be managed by IT teams at the corporate level (both demand and supply side) because of their specialization in the coordination of these tasks and the economies of scale in the enterprise-wide cloud solution. In addition, the complexity of business processes and the specificity (to the business) of the cloud solution were factors in determining the capabilities required from IT units. More complex and globally integrated processes drove the needs for coordination and integration with other internal systems, making strong involvement of global IT units essential.

Table 2 summarizes the supporting and refuting mini-case examples for each cloud payoff mantra, as well as listing the underlying

Table 2: Cloud Mantra Mini-Case Examples and Inhibitors at BHC

Mantra	Supporting Example	Refuting Example	Relevant Inhibitors
Financial benefits			
1. High cost advantages can be achieved	Organizations in large countries with complex requirements and costly legacy systems saved on costs.	Smaller country organizations with lower process complexities and simpler needs preferred an existing in-house solution.	• Business process complexity • Legacy systems
2. Implementation times are short	Organizations in emerging countries with less regulatory requirements, fairly low process complexity and no legacy systems had a working cloud solution in a relatively short time.	Overall cloud implementation globally was a multi-year program driven by different process heterogeneity and regulatory requirements.	• Business process complexity • Regulatory differences • Legacy systems
Technological implications			
3. Customization is limited, but meets most needs	In the more narrow scope of the pharma business, where an industry-specific cloud solution was available, the customization proceeded merely with adaptations to the different market environments.	The cross-industry (horizontal) cloud solution for the non-pharma segments needed extensive customization to the different business process needs across this enterprise-wide implementation.	• Solution's lack of industry focus • Business process complexity • Implementation scope
4. Compliance and security risks have to be accepted	Compliance and regulatory requirements for the cloud rollout were major issues to consider, particularly in the highly regulated pharma business.	Compliance and security issues were not accepted blindly, but addressed early on, creating mindful awareness of risks and preventing "show-stopper" barriers.	• Regulatory differences • Solution's business specificity
Organizational impacts			
5. Business units can focus on their core competencies	Business units in countries with no legacy systems and under global IT governance accepted the cloud solution without the need to involve the global business organization.	Business units in countries with existing CRM systems and strong local IT ownership required governance through global business leaders to drive the template definition and acceptance of the new solution.	• Legacy systems • Distribution of IT ownership
6. Companies become less dependent on internal IT units	BHC became less dependent on CRM hosting and data center capabilities—i.e., on non-business-specific IT functions.	The enterprise-wide cloud CRM rollout affecting complex business processes made global IT functions indispensable as a governance function; a cloud expert was also needed for all business-specific issues.	• Implementation scope • Business process complexity • Solution's business specificity

Table 3: Inhibitors to Realizing Cloud Payoffs

Inhibiting Factors	Key Dichotomies	Description
Firm Context (organization level)		
Business process complexity	Standardized processes vs. heterogeneous processes	Degree to which business processes within and across countries (or regions) deviate from each other
Regulatory differences	Few, similar regulations vs. many different regulations	Degree to which the firm is regulated by different national laws that affect compliance and information security
Distribution of IT ownership	Strong global IT governance vs. strong local IT ownership	Distribution of IT decision rights and resources between global IT functions vs. country (or regional) entities
Cloud Solution Context (system level)		
Implementation scope	Insular scope vs. enterprise-wide scope	Breadth of (planned) use of the cloud-based solution within the organization
Legacy systems	Greenfield approach vs. "brownfield" approach	Extent to which the cloud-based solution replaces prior information systems
Solution's business specificity	General purpose tool vs. core business application	Extent to which the cloud solution supports core business processes vs. general purpose or collaboration tools
Solution's lack of industry focus	Vertical solution vs. horizontal solution	Extent to which the cloud solution comes without adaptation to a specific industry

contextual inhibitors that were at work at BHC. These inhibitors are described below.

Inhibitors to Realizing Cloud Payoffs

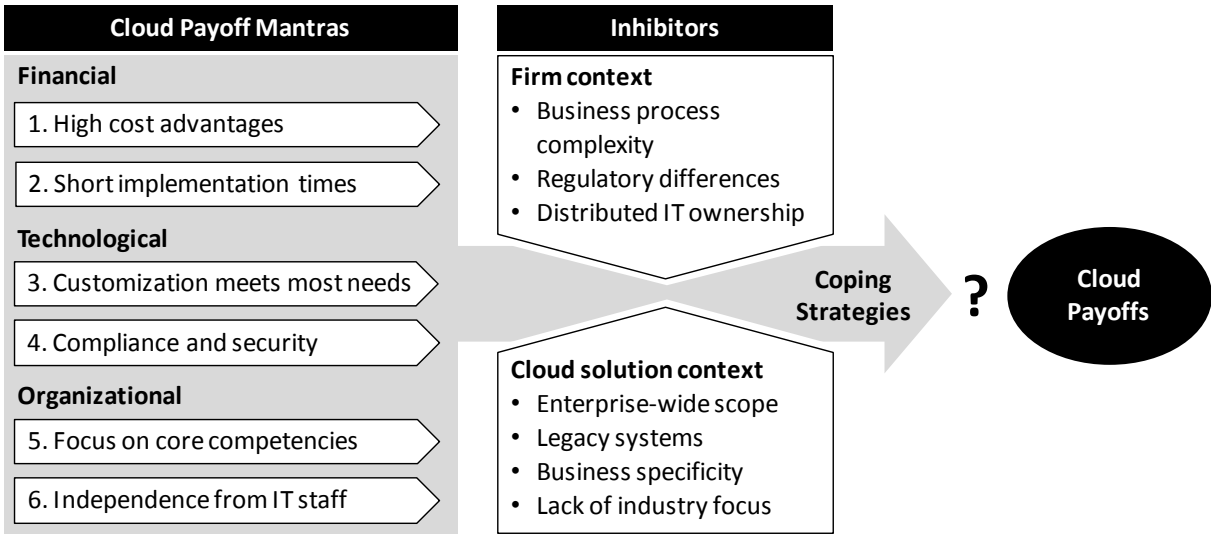
The inhibitors that influenced whether the six cloud payoff mantras described above were true or false at BHC can be classified into firm level and cloud-solution level context factors (see Table 3).

At the firm level, business process complexity, regulatory differences and distributed IT ownership can make it difficult to achieve a quick payoff from implementing cloud solutions. Business process complexity at a large multinational can range from globally standardized processes that are replicated in each business unit and region, to high heterogeneity with different processes and process variants across the organization, as was the case at BHC. Greater business process complexity primarily impacts potential cost savings (Mantra 1), implementation times (Mantra 2), customization efforts (Mantra 3) and the required IT capabilities during and beyond the program (Mantra 6).

Regulatory differences refer to the extent to which the company's industry is governed by disparate regulations across the different regions. Numerous regulatory differences among the subunits of a multinational, as at BHC, can slow down cloud implementation times (Mantra 2) and raise additional compliance and security issues (Mantra 4).

Finally, at the firm level, the distribution of IT ownership in a multinational organization can range from strong global IT governance to strong local IT ownership at the business unit and/or country level, as at BHC's larger country sites. More distributed IT ownership, however, calls for greater involvement of global business units (vs. allowing them to focus on their core competencies—Mantra 5) in cloud implementation programs, especially if global

Figure 2: The Need for Coping Strategies to Achieve Cloud Payoffs



process harmonization is inherent to the implementation.

At the cloud-solution level, enterprise-wide scope, existence of legacy systems, the business specificity of the solution and (partly) the solution's lack of industry focus were inhibiting factors at BHC. The scope of a cloud implementation and its planned use in an organization can range from small insular cloud solutions to enterprise-wide implementations. The latter—as shown in the BHC case—can entail significant challenges for the amount of customization work (Mantra 3) and favor more governance through globally centralized IT units (Mantra 6).

The question of whether the cloud solution replaces legacy systems (i.e., a brownfield situation) vs. implementing a new business solution (i.e., a greenfield situation) makes a difference primarily for the financial savings expected in a business case (Mantra 1), for the implementation duration and rollout approach (Mantra 2) and for the involvement of global business units to manage the change (Mantra 5).

The specificity of the solution refers to how specific it is to the core business of the company. Some cloud solutions are only supporting tools, such as for office productivity, collaboration and communication, while others are essential for business success, such as the provider's cloud CRM solution at BHC. The more specific a solution is, the greater are the compliance and security requirements (Mantra 4), as well as the required coordination through IT units (Mantra 6).

Finally, as industry-specific cloud solutions ("verticals") and industry templates become increasingly available, the degree to which a cloud solution lacks industry focus (i.e., it is merely a "horizontal" market solution) is another factor that primarily drives the required customization efforts (Mantra 3).

Lessons Learned: Coping Strategies for Achieving Cloud Payoffs at Multinationals

The organizational and cloud solution inhibitors that BHC faced had significant ramifications for the program's timeline and budget. This forced BHC to halt all implementation activities for several months and initiate an intermediate learning and reflection phase. During this phase, BHC managers analyzed possible strategies for dealing with the different inhibitors and designed actions to move forward with their cloud CRM journey. Figure 2 illustrates this reflection phase and how the inhibitors limited the path for realizing the expected cloud payoffs.

The lessons learned from the BHC case are presented as the nine coping strategies that BHC developed before and during the reflection

Table 4: Learning from BHC's Coping Strategies to Achieve Cloud Payoffs

Lessons Learned (Coping Strategies) at BHC	
Financial	1. Consider multi-platform cloud strategies
	2. Perform a competitive vendor review and negotiate contract terms
	3. Design a global template approach for rollouts
	4. Manage strategic benefits and costs expectations
Technological	5. Use PaaS to complement standard SaaS customization options
	6. Partner with cloud vendors and third parties for functional and technical needs
	7. Ensure regulatory compliance and data security to mitigate risks
Organizational	8. Establish a global business governance and change management process
	9. Strengthen IT units' involvement and expertise

phase (see Table 4). These strategies helped BHC tackle the different inhibiting factors and achieve payoffs from the CRM cloud implementation. We describe how each strategy could help large multinational organizations overcome similar inhibitors and contribute to achieving cloud payoffs.

Lesson 1: Consider Multi-Platform Cloud Strategies

Large multinational companies with complex and heterogeneous legacy IT landscapes should address the question of cloud platform strategies in an open and unbiased way. Instead of consolidating all sub-entities onto a single platform, it may be more valuable and cost-efficient to consider a multi-platform strategy that combines in-house systems with the more sophisticated cloud solutions. Such a strategy may better reflect the needs of different sub-entities for an enterprise-wide cloud solution.

BHC opted early on for a two-platform strategy. The initial business case revealed that the cloud-based solution was going to be too costly for the smaller country organizations with less complex needs, while those in larger countries saw greater benefits in adopting a cloud-based solution.

Lesson 2: Perform a Competitive Vendor Review and Negotiate Contract Terms

As with other outsourcing engagements, performing a thorough vendor evaluation and challenging the standard contractual terms of the cloud provider is an absolute necessity. Enterprise-wide cloud-based projects in large companies are very different from the commonly heralded stereotype of "one-mouse-click" cloud subscriptions, and typically require intense and complex price negotiations as well as customized and detailed contract terms. Large companies should expect contractual (cost-reducing) benefits from their significant volume sourcing advantages.

BHC managers had intense negotiations with several competing cloud vendors and used BHC's size to negotiate more favorable, individual contractual agreements than those stated in the standard "pay-as-you-go" schemes.

Lesson 3: Design a Global Template Approach for Rollouts

When planning rollout strategies, neither a "big bang" strategy of doing everything at once nor classic sequential rollouts with one sub-entity (e.g., country) following after another will likely be adequate given the complexity of large-scale cloud solutions. Instead, as the BHC case shows, companies should choose a template-based rollout approach where a global template for the target processes and systems is developed during one or very few concurrent pilots, before rollouts to other entities can proceed at a more accelerated rate. Allocating sufficient time and resources to the initial template definition and its ongoing adaptation is crucial for successful cloud implementation.

Costs of the cloud solution at BHC were challenged during the initial pilot rollout projects because different entities had different drivers of complexity. BHC paid a price for having rushed the template definition and trying to implement several pilots concurrently in a "too agile" fashion. It had to call a halt for a period of reflection. Two central goals of the reflection phase were to agree on the necessary changes to the program approach and to manage business stakeholders' expectations accordingly (see Lesson 4). After heated discussions, BHC management decided to proceed in a more sequential manner with two of the initial four pilot rollouts: one in a low-complexity country (where immediate benefits were visible) and one in a high-complexity country selected because its characteristics could serve as a blueprint for the future global processes.

At the same time, discussions about the global template were channeled through much clearer governance processes (see Lesson 8). The remaining country rollouts were then rescheduled after the countries could cope with the inhibitors, and were planned to take a shorter time. This modified rollout approach helped BHC to reduce the program's complexity and use program resources more effectively, speed up the later rollouts and thus keep the overall program duration in check. As the Head of CRM Program Management emphasized, *"the revised global template approach was crucial to concentrate our efforts and get the program back on track."*

Lesson 4: Manage Strategic Benefits and Costs Expectations

In the face of inflated expectations from business units that want to benefit quickly from cloud computing's big promises, IT units responsible for managing firm-wide cloud initiatives need to manage business managers' expectations of the potential benefits. Managing expectations includes emphasizing that the often-repeated cloud payoff mantras may not always be true.

Driven by the promises of vendors, there was a strong business demand-pull for the cloud CRM program at BHC, which aggravated the program timeline challenges. During the reflection phase, the program managers had the opportunity to prepare revised plans and present the new realities to top management, which approved corrective actions and a stricter governance regime for the program (see Lesson 8). The revised approach became a central part of the message communicated to business managers at the country level to manage their expectations. Other companies should therefore not accept cloud vendors' promises at face value and aim to set realistic expectations right from day one.

Lesson 5: Use PaaS to Complement Standard SaaS Customization Options

Cloud platform-based component development (platform-as-service—PaaS) can be used as a complementary approach to customize a cloud solution when the existing SaaS solutions cannot meet the unique and/or complex requirements of large enterprises. Although PaaS customization may dilute the alleged financial and implementation time savings promises for cloud solutions, using PaaS-based components may technically still be a better alternative to the "re-inventing the wheel" approach used in many traditional enterprise software rollout projects.

When BHC encountered complex CRM requirements gaps in the cloud solution (e.g., the missing functionality of the horizontal solution implemented for the non-pharma business), it was forced to exploit PaaS to develop custom business objects with specific functionality. Although this PaaS approach created additional challenges, it helped to fill the biggest gaps in the solution in relatively short time frames.

Lesson 6: Partner with Cloud Vendors and Third Parties for Functional and Technical Needs

Large enterprises need to partner with cloud vendors and use the services of third parties in the cloud ecosystem to tap into and complement needed expertise in the earlier phases of implementation. Firm size can be an advantage here, because cloud vendors will generally be more open to co-creation and feature development with their key large customers. In addition, external capabilities from the cloud ecosystem, such as specialized third-party consultancies, can be leveraged to fill temporary knowledge gaps in PaaS-based customization and speed up large-scale cloud implementation projects.

BHC relied heavily on third-party resources as a short-term strategy to acquire the necessary technical capabilities needed to move the cloud CRM program forward. Additionally, BHC managers decided to strategically intensify the partnership with the SaaS vendor for the pharma solution and exerted influence on this vendor to build non-pharma-specific processes into its offering. As the program continued, this vendor gradually expanded its product range to include the missing functionalities, so that BHC could ultimately use parts of the vertical solution across all its divisions. The Head of CRM Program Management reflected that *"the collaboration with the [SaaS vendor for pharma] has helped us to minimize PaaS-based custom development needs in the long run and to provide a standard solution also for the over-the-counter business of the non-pharma units."*

Lesson 7: Ensure Regulatory Compliance and Data Security to Mitigate Risks

Prior to implementing cloud solutions, large multinational companies should make compliance and security requirements a priority and take proactive measures to address them. Companies using cloud solutions are ultimately accountable to their customers and trading partners, and have the strict responsibility to ensure compliance and data security. A first step is to conduct comprehensive due diligence investigations of their prospective cloud vendors. The more company-specific the data and processes in the cloud are, the more rigorous due diligence will need to be. This demands some creativity and courage to develop worst-case scenarios and critically assess a vendor's capabilities to prevent and respond to risks. In addition, the middleware that connects cloud-based solutions with in-house systems is a critical component of the technical cloud security strategy.

BHC's information security challenges largely resulted from different national statutory requirements related to protecting customer data in the pharmaceutical business and ensuring its cloud CRM solution complied with these rules. All cloud vendors were subjected to detailed risk and security assessments during the vendor evaluation phase. As a technical mitigation measure, BHC implemented a middleware solution for the CRM systems that protected internal systems against intrusions from outside the firewall.

Lesson 8: Establish a Global Business Governance and Change Management Process

To achieve the payoffs from cloud services that involve the harmonization of business processes, it is critical that corporations define a business-driven program governance structure that includes senior managers and networks of business process owners nominated from across all levels of the organization. Global change management procedures should be defined, and the business process owner networks should develop definitions of global vs. local requirements. This structure can help to globally facilitate process harmonization while sustaining local flexibility where needed. Although such governance approaches might be well known from the "old world" of in-house system implementations, senior managers should recognize that a cloud-based approach requires the need for their involvement in strategic IT matters to help ensure the payoffs.

BHC dealt with major challenges related to distributed IT ownership in countries with legacy IT solutions; these countries claimed major decision rights in the global template definition and local rollouts. A key outcome of BHC's reflection phase was the recognition that the CRM program would not succeed with only sporadic top management involvement, but needed strong backing across all levels of the program and global ownership of the business requirements. Senior business leaders from different divisions and locations were appointed to the program steering committee, as well as to the program management level, and a network of business process owners was established to decide on all changes to the global CRM processes and systems. Business stakeholders' knowledge of different drivers of complexity (e.g., local knowledge of different markets, knowledge about laws and compliance requirements in different countries, etc.) could now be leveraged, and decisions about the global template could be significantly streamlined as the program proceeded. The Head of CRM Program Management commented,

"The whole topic moved much higher on the top management's agenda, and it was led with a much stronger business governance. And then they also started seeing the benefits, e.g., when we are coordinating global marketing activities and launching new campaigns, this is now where we have a real global capability."

Lesson 9: Strengthen IT Units' Involvement and Expertise

When an enterprise is implementing a large and complex cloud-based solution, the IT unit becomes indispensable as an expert buyer and intermediary between business units, corporate management, cloud providers and consultants. To cope with the traditionally more distributed patterns of IT ownership in large organizations, IT units should be empowered with central IT-governance and supplier-steering functions. For long-term success with cloud solutions, an organization also needs to build up and train its own cloud specialists so they can conduct quality checks and oversee third parties in the cloud program. For example, they should have a deep understanding of the technological intricacies of the vendor's cloud solution and its implications for business processes.

Strengthening the global business governance at BHC did not mean weakening the involvement of the IT function. BHC's global IT functions (both demand and supply) remained the linchpin of the program and continued to coordinate across the different internal and external parties involved in the program rollout. Given the decision to decrease the dependency on third-party resources, IT managers at BHC also invested significantly in training IT staff in the cloud technologies underlying the "advanced platform" (e.g., specific configuration tools and new development environments). As a consequence, BHC was able to reduce the need for external support over time and improve the quality of implementation-related decisions for its large-scale cloud initiative.

Concluding Comments

While it is tempting for IT and business leaders at big corporations to accept the cloud payoff mantras as true and follow the well-trodden paths of smaller companies, this approach is likely doomed to failure because it overlooks essential distinctions. Large multinational companies face unique corporate- and system-level complexities that mean the mantras may not be true in their particular contexts. This article has assessed the truth of these mantras for a large multinational company that has varying sizes of business units throughout the world with various levels of process complexity. Insights from BHC's experience reveal that multinationals should not simply accept these often-quoted mantras at face value. Instead, they must work to uncover the inhibitors for their unique corporate context and adopt appropriate coping strategies.

To help managers assess potential inhibiting factors in their own organizations, we have developed a tool (described in Appendix B). This tool helps to identify the most prevalent cloud payoff inhibitors and points to the potential coping strategies that can be used to mitigate them.

After considerable learning and proactive adjustments to its coping strategies, BHC is now reaping bottom-line payoffs from its cloud program, including reduced costs for global CRM systems, as well as top-line benefits from improved marketing and sales capabilities that allow for more global organizational agility. Despite the challenges encountered during this multi-year initiative, BHC's top management recognizes that the cloud program has been instrumental to fulfill the company's marketing and sales strategy and ultimately to increase shareholder value. We believe that the lessons learned from this multinational help to debunk the often-quoted cloud payoff mantras and will aid other large organizations in deriving effective coping strategies to maximize their own cloud payoffs.

Appendix A: Case Study Approach

The case study presented in this article is based on 13 interviews with professionals involved in the cloud CRM implementation program at Bayer HealthCare, including staff in global IT and business roles, country

Figure A1: Management Tool for Assessing Cloud Inhibitors

Inhibiting Factors	Assessment by Key Dichotomies (1-5) (see Table 3 for descriptions)			Financial Benefits: Affecting costs and implementation time?			Technological Implications: Affecting customization and security/compliance?			Organizational Iimpacts: Affecting business involvement and IT capabilities?		
Firm												
Business process complexity	Standardized processes	1		no –	yes 1-5 →		no –	yes 1-5 →		no –	yes 1-5 →	
	Heterogeneous processes	5										
Regulatory differences	Few, similar regulations	1		no –	yes 1-5 →		no –	yes 1-5 →		no –	yes 1-5 →	
	Many different regulations	5										
Distribution of IT ownership	Strong global IT governance	1		no –	yes 1-5 →		no –	yes 1-5 →		no –	yes 1-5 →	
	Strong local ownership	5										
Cloud System												
Implementation scope	Insular scope	1		no –	yes 1-5 →		no –	yes 1-5 →		no –	yes 1-5 →	
	Enterprise-wide scope	5										
Legacy systems	Greenfield approach	1		no –	yes 1-5 →		no –	yes 1-5 →		no –	yes 1-5 →	
	Brownfield approach	5										
Solution's business specificity	General-purpose tool	1		no –	yes 1-5 →		no –	yes 1-5 →		no –	yes 1-5 →	
	Core business application	5										
Solution's lack of industry focus	Vertical solution	1		no –	yes 1-5 →		no –	yes 1-5 →		no –	yes 1-5 →	
	Horizontal solution	5										
				Financial inhibitor strength		∑ =	Technological inhibitor strength		∑ =	Organizational inhibitor strength		∑ =
See Table 4 for potential coping strategies that can be applied.												

managers and selected external consultants. Eleven primary interviews were conducted in early 2013, and transcribed and analyzed by one of the authors using inductive and deductive content analysis techniques. Two supplementary interviews were required to complete the analysis, which was reviewed by the entire author team. The authors synthesized a case narrative from this analysis and conducted additional interviews with co-author Marc Piper (Head of CRM Process Management and part of the marketing and sales center of excellence) during 2013 and 2014 to validate the revisions of this article and provide additional insights into the program experiences and outcomes.

Appendix B: Cloud Inhibitor Assessment Tool

This tool compiles the potential cloud payoff inhibiting factors in a scoring matrix (shown in Figure A1). On the left side, managers rate the inhibiting factors that are at work at their companies on a scale from 1 to 5 based on the key dichotomies described in Table 3 (e.g., business process complexity is rated on a scale of between 1 for standardized processes and 5 for heterogeneous processes). These ratings are then mapped into the three right-hand columns for the financial benefits, technological implications and organizational impact criteria. If an inhibiting factor applies to a manager's organization and impacts some or all of the criteria stated in the column headers, the rating for this factor should be transferred to the applicable column(s) on the right; if it does not impact these criteria, the column cells are left blank. This mapping has to be made in the organization's specific context setting but can be informed by the BHC mini-case examples (see Table 2). After scoring each of the inhibitors in the right-hand columns, the scores for each column are summed in the bottom row. These bottom-line scores can help managers identify the most critical areas (i.e., financial, technological or organizational) affected by the cloud payoff inhibitors and thus point to potential coping strategies for mitigating them (see Table 4).

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