

M&A driven IT transformation

Empirical findings from a series of expert interviews in the German banking industry

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ABSTRACT

Technological, economical, cultural, and political changes constantly lead to new opportunities and challenges in today's highly dynamic business environment. Increasingly, modern enterprises leverage the strategic instrument of Mergers and Acquisitions (M&A) to seize these tempting opportunities and adapt to the altering market conditions. As Information Technology (IT) penetrates the business of almost all enterprises, it has to be considered during virtually any M&A endeavor. Particularly the resulting need for IT transformation in the course of the M&A post merger integration (PMI) phase represents a complex and intricate task in which problem-specific models and tangible methods are of utmost importance. In all cases, the design of such helpful artifacts requires a solid foundation and a profound understanding with regards to the specific context, drivers, and influence factors in reference to the IT transformation.

Based on related literature in the field of M&A, we conducted 15 explorative expert interviews with industry partners from the German banking industry, who were involved in a bank merger. In doing so, the interview partners revealed illuminative insights into possible problems, solutions, and pitfalls occurring during the transformation of IT. This article summarizes the key findings of the semi-structured talks and compares them with approaches and statements suggested by current M&A literature resources. In this vein, the stage is set for future research in the realm of IT transformation during M&A situations which can benefit from the empirical grounded results presented within this document.

Keywords

Mergers and Acquisitions, M&A, IT transformation, Post Merger Integration, PMI

1. INTRODUCTION

In the last century *Mergers and Acquisitions* (M&A) have been established as a strategic management instrument by many enterprises [18, 34, 49]. Even today, the appearance of corporate consolidations and re-organizations, which affect the whole enterprise in the form of a multitude of complex transformation projects, remains remarkably high [23]. Thereby, M&A are not individual events, but rather represent common elements of modern business strategies [48].

Although the two words “merger” and “acquisition” are often applied as synonyms, both terms denote slightly different concepts and should not be misperceived [11]¹. While the former concept refers to a deal, where two separate enterprises agree to form a single corporate entity, latter alludes to friendly or hostile take-overs, usually involving a big enterprise which acquires a smaller one. For ease of reading, the terms “merger” and “acquisition” are applied interchangeably throughout this article. A more detailed delimitation between both concepts is provided by general M&A literature, e.g. [18, 23, 52].

Figure 1 depicts a typical M&A process which in total consists of three distinct phases occurring in stringent succession: merger planning, transaction, and *post merger integration* (PMI) [23, 52].

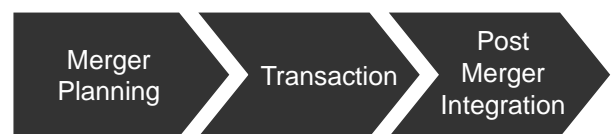


Figure 1: M&A process [23, 52]

The merger planning phase typically includes strategic planning of corporate M&A activities, environmental analysis, identification of acquisition or merger candidates, and a high-level valuation of target scenarios. The transaction phase commences with the initial contact and negotiations between

¹Whereas the terms are sufficiently defined and consistently applied in the Anglo-Saxon publications (especially in the United States), German literature still lacks a commonly accepted distinction between both concepts [23].

the enterprises involved. This phase includes financial planning, the due diligence, pre-closing integration planning, and corporate valuation. It ends with the official announcement of the merger, contract signing, antitrust clearance and is completed with the final closing which includes the payment. At this time (also called “Day 1”) the formerly independent enterprises close their deal and legally become one single company. During the PMI phase, a post-closing integration plan is worked out to plan and implement the integration of strategy, organization, business processes, systems, administration, operations, culture, and external relationships of the enterprise. Further activities include monitoring of progress, a formal post merger audit, and a possible follow-up restructuring.

The pivotal motivation for M&A activities consists in the realization of an increased market power through inorganic growth, leading to economies of scale and cost reductions or revenue enhancements and new business growth opportunities [4, 17, 50]. Moreover, new markets may be accessed through the enlargement of the product and service portfolio targeting at economies of scope [41]. On the reverse side, recent empirical studies still reveal high failure rates with regards to the achievement of previously defined merger objectives [2, 17, 18, 34].

Regarding the different industries, particularly the banking sector is subject to recent reshaping activities [17]. According to European Central Bank’s (ECB) reports on banking structures, the number of credit institutions especially in the German market strongly declined in previous years [13, 17]. Furthermore, the economic effects of the financial crisis catalyze the already prospected changes in the established market structure. This significant reduction in Germany, depicted in Figure 2, is by far the largest in comparison to other European countries [13].

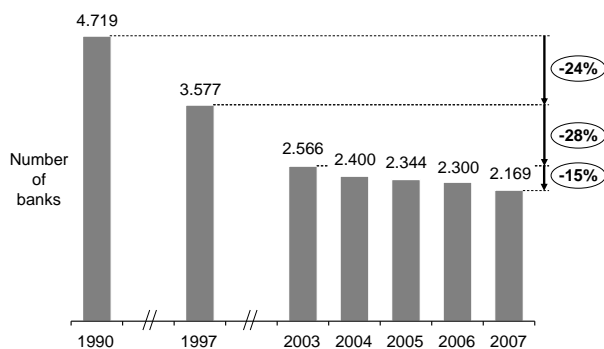


Figure 2: Consolidation of the German banking industry in the last 20 years [13]

Still, the number of different banks in Germany outweighs other European countries. The ECB and other finance experts predict further bank mergers in this highly fragmented market, in particular between relatively small savings and cooperative banks [25, 50].

Among others, the *Information Technology* (IT) represents one significant dimension in the present-day banking business model [8, 43], as

- banking establishments intensively rely on gathering, processing, analyzing, and providing information,
- banking core business processes are strongly dependent on IT support, and
- IT is one of the main assets with regards to annual spendings.

Consequently, considering IT during a banking merger is indispensable for the overall success of the transformation project. Especially IT integration carried out in the course of the PMI phase deserves closer attention given that this phase implies the substantial part of the overall transformation workload [2, 7, 35, 52]. For ease of reading, the terms integration, merge, and consolidation are used synonymously in the following by referring to a complete amalgamation of two or more enterprises resulting in one remaining company. Nonetheless, the authors are aware of further refinement as for instance provided by [29, 36, 51].

However, as stated by several authors in scientific literature, the issue of IT transformation in the context of M&A has only received little consideration on the part of academia so far [1, 33, 34, 49]. As one example, Alranta et al. [1] advocate the need for research “*since literature on post-merger IS issues is sparse, and furthermore, it has been claimed that the research has been case-specific and anecdotal in nature, and has appeared in practitioners’ rather than academic journals.*” Nonetheless, before starting out to diligently build new theories and design new artifacts, a solid foundation with respect to the specific context, drivers, and influence factors of the IT transformations during M&A is indispensable. This can be accomplished in conducting field research aiming at understanding organizational phenomena in context [39].

Continuing merger activities in the German banking sector, researchers who argue for further research in the realm of IT transformation during M&A, in addition to a research discipline which is contingent on previous field research prompted us to carry out 15 explorative interviews. The present document represents the research findings from a series of semi-structured expert interviews with different stakeholders involved in IT transformation during mergers in the German banking industry. Among others, we intended to address subsequent questions:

- Which “white spots” found in the practical field of M&A deserve further consideration by researchers?
- Are there specific best-practices, thus reoccurring methods and models applied by the practitioners during the M&A process in particular the PMI phase?
- Do practical findings match with current literature centering around M&A?

The remainder of this article is structured as follows: Section 2 illustrates the research approach consisting of the three steps: literature study, expert interviews, and data evaluation. Section 3 presents the collected results by also

taking related work from academia and practice into account. Section 4 concludes our work with a critical reflection of the research approach as well as the results and provides indications on future research topics in this area.

2. RESEARCH APPROACH

In order to shed light on IT transformation during M&A from an empirical perspective we carried out 15 interviews involving different experts actively participating in merger situations. Originating from social science, *Grounded Theory* (GT) is an approach to evaluate primarily qualitative data (e.g. interview transcripts or observation minutes) to generate theories. According to Glaser and Strauss [19], so-called grounded theories relating to a certain phenomenon can be discovered, elaborated, and preliminarily confirmed by systematical collection and evaluation of data. Furthermore, both researchers propose *theoretical sampling* as a method for comparative analysis. The idea is to analyze a collection of independent pieces of information by selecting a set of cases according to their potential to reveal new insights and findings, while a representative character has less priority. In our research, we followed a structured approach consisting of three sequential steps: literature study, expert interviews, and data evaluation.

During the first step, we carried out an extensive literature study on the multifaceted research topic of M&A comprising more than 170 sources. The basic working result was consolidated by means of an interview mind map, which points out a general structure of our defined research area. The mind map is structured around 13 core topics we as the authors judged as relevant to research for IT transformation in the context of M&A: the main characteristics of a merger project, key success factors for PMI, the role of IT, the IT integration team, a knowledge repository, the target IT organization, usage of common terminology, application migration, data migration, testing, metrics and KPIs, workarounds, and merger readiness. The decision for these topics was motivated by the following reasons: research need explicitly stated by scientific literature, topic mentioned in preliminary talks with practitioners, personal experiences, and interest of our research group. Finally, a conversation guideline containing 58 open questions centering around these core topics was compiled as a basis for subsequent expert interviews (cf. [24]). Due to space limitations the mind map as well as the conversation guideline cannot be provided here but are available by the authors on demand.

The second step consisted of a series of semi-structured interviews we carried out between September and December 2009. The target group comprised merger-experienced professionals holding different roles in different companies from the German banking sector. Thereby, the interview partner selection relied on theoretical sampling as key technique of GT [19]. Due to their different perspectives on IT transformation in the context of M&A, the sample group born the potential to reveal new insights and findings. Figure 3 shows the distribution of our interview partners across the different IT stakeholder groups involved in a merger: the bank's internal IT organization, external IT service providers, and external consultants. Obviously, our interview partners originated from IT organization and their suppliers. Table 1 lists the different roles of our interview partners and the type of

their organization. Due to confidentiality reasons, we have omitted the real names of the participants as well as the name of their organizations.

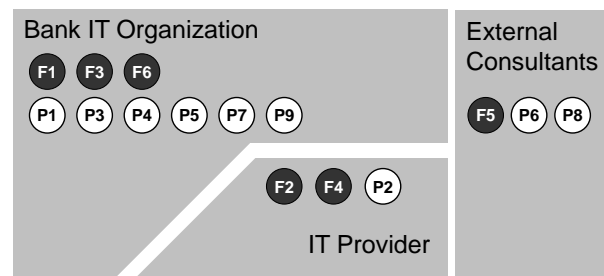


Figure 3: Grouping of the interview partners

ID	Role of interviewee	Organization type
F1	Principal IT architect	German universal bank
F2	CEO	German IT provider for banking
F3	Chief IT architect	International universal bank
F4	Divisional head	German IT provider for banking
F5	IT consultant	International consultancy
F6	Head of IT	German universal bank
P1	Principal IT architect	German universal bank
P2	Lead business architect	German IT provider for banking
P3	Enterprise architect	Captive bank automotive
P4	IT process manager	International universal bank
P5	Managing director	European financial institution
P6	IT consultant	International consultancy
P7	Lead business architect	German universal bank
P8	Business consultant	Financial services
P9	Lead application architect	International universal bank

Table 1: Roles & organization types of the interview partners

In all, we performed six face-to-face ([F1]-[F6]) and nine telephone interviews ([P1]-[P9]) with an average duration of two hours. During the interviews, the order of addressing the different core topics was kept flexible and some leeway was given in favor of the specific knowledge of the expert. However, we insisted on answering the complete set of questions. All interviews were performed by at least two persons allowing for questioning and minutes writing in parallel. In addition, face-to-face talks were taped via voice recorder, a fact all the interview partners were aware of when responding to the questions.

As a third step, collected data was prepared, analyzed, and consolidated. Therefore, the voice recordings were transcribed by re-listening to the interviews. Afterwards, they were paraphrased together with the minutes in adhering to the structure of the elaborated interview mind map. For each core topic, the interview statements were compared to the literature studied in the course of step 1. The resulting research findings of the interviews are presented in Section 3. The sequence of core topics follows the idea of starting with the general merger context (e.g. special characteristics of a merger project and key success factors) before focusing on the IT transformation (e.g. role of IT during the merger, project team, different migration tasks, decisions).

3. RESEARCH FINDINGS

In this section, the main results regarding the 13 core topics of IT transformation during M&A are presented. For each topic, the research findings originating from the interviews are pointed out and compared to current literature.

3.1 Characteristics of a merger project

Mergers are complex business transformation projects which affect the entire enterprise by including massive reengineering and integration efforts [30]. In addition, a merger is typically performed under a multifaceted set of boundary conditions given by legal regulations (e.g. company law, labor legislation, fiscal law, and competition law) and the regulatory environment (e.g. market regulations or corporate governance guidelines) [44]. Furthermore, a large number of stakeholders from multiple disciplines have to be managed [43] and cultural differences have to be considered [10, 50]. Like any project, a merger is performed and completed within the interdependent constraints of given scope, time, and costs [28, 40].

The high complexity and strong external influences have been reconfirmed by our interviewees. They especially stressed the interdependence of the different components of an enterprise (organization, business processes, IT application landscape, infrastructure, etc.). The interviewees reported, that time as a project constraint was often fixed for immediate measures during the transaction phase and the early PMI phase, e.g. the establishment of a common presence in the market regarding brand, products, and customer service. Later, during the PMI phase, additional mid/long-term measures were initiated for internal integration work between the enterprises as well as for business and IT optimization. The interviewees confirmed the importance of comprehensive stakeholder management and the establishment of adequate communication means. They also emphasized that cultural differences of the merging enterprises have lead to substantial loss in working efficiency.

3.2 Key success factors

The availability of a clear business vision, a stringent approach with clear decisions, defined roles and rules for collaboration, as well as strong stakeholder management and communications are key success factors during a merger. Our literature research produced the subsequent list, which is mutually agreed upon by the majority of authors ([15, 21, 22, 23, 43, 44]:

- Clear business vision, commitment, explicitly described and measurable
- High aspiration level, definite directions, common performance indicators
- Stakeholder management, effective communication, and corporate cultures
- Project organization (structures and processes)
- Coordinated and holistic planning of business and IT
- Consistent decisions for business and IT
- Knowledge management

- Risk management
- Realize growth and demonstrate early wins

The interviewees mainly stressed the availability of a clear business vision, a stringent approach with clear decisions, defined roles and rules for collaboration, as well as strong stakeholder management and communications. According to our interview partners, the aspired merger goals and benefits have been defined by the business organization. Nevertheless, in their opinion business planning should also incorporate dependencies and constraints on IT level. Therefore, they demanded a clear business vision to identify potential conflicts and dependencies, which arise from requirements and constraints (e.g. aspired time-to-market vs. actual merger readiness, achievement of estimated cost savings vs. fast integration progress).

3.3 Role of IT

During a merger, IT has to fulfill multiple roles: backbone of daily business operations, basis for business process target design, and subject for integration and rationalization [8, 41]. There was a mutual consent among our interviewees, that IT is not the main driver for M&A in the German banking industry. In addition to general economies of scope and scale, they pointed out cost reductions on the business side (e.g. rationalization of functional units, consolidation of the branch network) and extensions of the business model (e.g. direct banking) as main motivation.

Regarding IT, the partners confirmed that the consolidation of application landscapes and infrastructure also provides a remarkable potential for cost reductions. Consequently, the progress and quality of IT integration can significantly influence business operations with potential negative implications on customer retention and compliance to law and regulation. Among the interviewees, PMI of IT was considered to be one of the most challenging tasks during a merger. They stated, that IT should be in the scope of planning activities directly from the beginning of the M&A process, in order to estimate the feasibility and costs of the integration. Today, PMI of IT is planned and moved forward by the IT department itself so the partners. They also reported about positive experiences from close collaboration between business and IT departments to ensure a clear understanding of the bank's new strategic orientation and the implied consequences for IT.

3.4 IT integration team

As emphasized by [9, 18, 32, 35, 43], IT transformation during M&A requires an immediate strong staffing level including experienced experts in order to cope with the additional and complicated work besides the day-to-day tasks of an IT department. This was confirmed by several interview partners, who additionally pointed out that IT employees from both merging enterprises were needed in order to merge the existing application landscape and technological infrastructure.

Outsourcing and offshoring integration tasks were not regarded as a valuable mean due to their intrinsic complexity. Aside from small and simple outsourcing activities, interviewees admitted to prefer their own in-house work force

to outsourcing or offshoring labor, even if induced costs are higher in the first run. Instead, the partners underlined that internal staff originating from the merging companies is partly supported by third-company consultants bringing in their experience from past IT transformations in order to help out on an operational and routine level. This matches with literature [5, 31, 53] which additionally emphasizes the insufficient knowledge of external workforce regarding the existing application landscape. However, for some key areas (e.g. specialized on process analysis, data migration, IT infrastructure consolidation) the interview partners confirmed to purposefully employ consultants who advised and guided internal staff not possessing the necessary proficiency.

As major contributions, interview experts highlighted the specific integration know-how, experience, and tools (e.g. meeting schemes, data migration methods, testing models) consultants brought to the table when being assigned to the different integration tasks. Furthermore, the partners stated that consultants were also able to remedy social problems occurred in the course of the transformation, i.e. arbitrating the arguments emerging from the heat of discussion over the future application landscape and infrastructure. Many partners confessed that since the external moderators were considered as being neutral, independent, and unprejudiced, energy-taking friction and tension between the merging IT departments could be reduced significantly.

3.5 Knowledge repository

Preserving and holding ready the specific IT transformation know-how which was gained in the course of past M&A activities is vital for an organization which pursues an inorganic growth strategy. If stored in a centralized and well-prepared knowledge source, the structured experiences ease the successful planning, implementation, and accomplishment of future mergers. Literature suggests to establish a shared merger repository [30, 31, 35, 43] also referred to as M&A knowledge management system. Once set up, this valuable resource may serve as a common basis by making important integration decisions more transparent, comprehensible, and methodologically sound for the participating stakeholders.

The idea of a knowledge repository was spawned during the interviews, whereas no distinction between high-level and precise IT transformation domain knowledge (e.g. specific data migration methods, application selection processes) was made to allow a broad range of answers. According to the majority of interview partners, practical experience was predominantly implicitly available among the individual team members at the time IT integration work was started. They also acknowledged the mutual learning process the prior separated IT departments went through when working jointly on the different integration tasks.

Only two out of 15 experts referred to written textbooks representing a structured collection of the enterprise's past M&A experiences. However, both partners emphasized the valuable guidance those books provided during subsequent merger endeavors. Besides these more textual related means to sustainable IT transformation in the future, no explicit composition and fostering of a shared data source was mentioned by the interviewees. Mainly due to the high opera-

tional workload in the course of the integration phase, only temporal knowledge exchange solutions (e.g. web portal, wiki) but no sustainable efforts were made aiming at preserving know-how and experience.

3.6 Target IT organization

As described in [18, 43, 50] the majority of interviewees mentioned that the organizational structure as well as the actual role allocation of the new merged enterprise was established in a cascading style. In respect thereof, top management appointed second level management, which in turn appointed middle management, and so forth. All interview partners agreed upon an early and fair communication of the company-internal application process regarding the available job positions and roles connected in order to avoid unclarity and frustration among the IT staff. Further, some partners emphasized the usage of an application scheme consisting of interviews and feedback sessions with the former as well as the new line manager whereas such a schema served to measure the degree of the applicant's suitability by also guaranteeing a comprehensible, reproducible, and transparent application process for all applying candidates. Only one partner considered the geographical closeness of two enterprises as a relevant factor to make a staffing process easier.

The risk of resistance by internal staff is often characterized as a main stumbling block in literature [18, 32, 42]. The advice given most frequently is to clearly and transparently communicated changes within the IT organization as soon as management has come to a decision. When questioning the interviewees about the lack of future perspectives regarding selected IT employees (e.g. an application owner integrates his/her application which will be phased-out after the IT transformation), the partners stressed again the importance of an early communication. They also suggested the identification and demonstration of future tasks besides incentive means and additional fringe benefits as an appropriate mean to address the risk of personal resistance. Furthermore, one interviewee pointed out to strictly separate between the application process for the new IT department and the integration work.

Another phenomena described in literature consists in the increased employee fluctuation amplified by uncertainty and instability a merger situation brings usually along [18, 43, 45]. In particular, the loyalty and motivation of high potentials and technical experts are at stake given that both groups are aware of their value on the job market and have probably already contacted competing enterprises. The criticality of core human capital of the merging enterprises also known as "brain drain" was confirmed by the interview partners, who additionally emphasized that especially external recruiters give the newly formed enterprise a hard time.

3.7 Terminology

Before the actual transformation work is initiated, a common terminology for business and IT as well as between both departments must be discussed and clarified. Only with a common and shared understanding of the fundamental concepts and their interrelations, the different elements of the merging enterprises (e.g. organization, business processes, IT application landscape, infrastructure) can be integrated. Surprisingly, when having a look on M&A literature, the

challenge of establishing a uniformed terminology between enterprises as well as business and IT departments is not addressed in detail. However, the value of a shared vocabulary is explicitly referred to when it comes to data migration [14, 32].

According to the interviewees, the question of a common terminology should be tackled at the outset of the transformation. In most cases, dedicated planning sessions were scheduled aiming at the definition of a stable foundation of terms. Some interviewees regarded these activities as being less of an issue, others emphasized that an unification of terminology is a crucial task that cannot be neglected. Generally, the vast majority of interview experts distinguished between the business and IT terminology by also pointing out, that even slight syntactical differences of both enterprises' word pools may have a huge impact on the semantics sense (e.g. concept of customer: single person, family, couple, household).

Even if the interview partners commonly stated that determining a common word set can be painful, they do not consider this phase as a major pitfall during the integration process. Very often, terminology is substantiated when detailing the PMI plan and elaborating its specific content. A subset of them mentioned industry-specific regulations e.g. *Basel II* [12] or the *Markets in Financial Instruments Directive* [16] as being a valuable source for predefined and well-understood set of terms since those official documents turned out to facilitate the labor-extensive task significantly.

3.8 Application migration

Considering the application selection process, no standardized strategy in valuating and selecting the applications of a landscape could be identified throughout the interviews. However, in most cases, the partners' enterprises either opted for an absorption (a.k.a. "steamroller" or "take-over approach" [37, 45, 52, 53]) of one landscape by a second or for a replacement of both landscapes' applications in favor of one core banking system. As the interviews revealed, bank organizations tended to the first alternative, while IT providers preferred the second one. The interviewees were aware of the commonly known "best-of-breed", "cherry-picking", or "symbiosis" approach ([37, 45, 52, 53]), but admitted that pursuing this strategy becomes too complex and time consuming. Interesting to know, that several of them described cherry picking as "*the death of interfaces*" one would die after attempting to modify the selected applications' interfaces. Another interviewee confessed, that his enterprise attempts to pick an application depending on the technical, functional, and economic perspective. In each situation, a case differentiation is made by sticking to the three perspectives. Finally, approaches like greenfield or co-existence of different applications, often evoked in literature [37, 45, 52, 53], were not regarded as being realistic by the interviewees due to high implementation costs and complexity.

To each interviewee it seemed crystal clear that the subsequent migration workload was inherently tied to the decision which application is going to survive or decommissioned respectively. Everyone agreed upon the complex and time-consuming work entailed by application landscape transformation activities. The experts added that migration work

possess a mid- to long-term character, normally starting with the official announcement of the merger. Furthermore, they stressed the importance of quickly consolidating the formerly independent IT project portfolios interrelated to each landscape in logical consequence of the application selection.

Almost all partners confessed a considerable influence of the merger type (e.g. friendly takeover, merger of equals, acquisition, etc.) and the induced political behavior of business on the selection of future applications. Notwithstanding, the interviewees emphasized that the IT departments support the decision process from a technical perspective. The general decision, which application landscape is the dominant one and thus absorbs the second landscape, was primarily taken by business. Even in some cases, the technical less attractive and seminal landscape was picked based on the business decisions made before. From the perspective of the interviewed IT providers, the choice which application has to be kept alive, was less severe since it was obvious to all stakeholders that the hosted standard solutions would be selected. Nonetheless, specific subsystems were often tolerated and integrated via adapter technique, given that a functional extension of the standard solution with the functionalities of the subsystems would be too expensive.

After defining the future application landscape, migration work has to start, a topic which was covered by a second set of interview questions. The partners stressed the fact, that the actual migration work is still ongoing even when the closing of the merger occurred months or even years before. However, several among them highlighted that not the migration objects themselves (thus the underlying technology reflected in applications and infrastructure) or the tools are decisive, but the specific methodology, i.e. the way how these objects are integrated.

Regarding the migration, a distinction between banks and IT provider has to be made again. When asking the former group, the interviewees preferred a *big bang* migration weekend representing a dedicated point in time when old applications are decommissioned and new ones are instated. The shorter time frame was mainly justified by a reduced complexity. However, the interviewees also admitted to soften this harsh approach in the course of the migration work. Hence, several mostly independent or less critical applications in terms of customer impact were already migrated before the big bang weekend took actually place. In contrast, applications with a lower priority regarding the customer could wait. IT provider reported on setting up their standard software solution in a first step before integrating individual subsystems afterwards. For the providers, the application migration process represents a repetitive task, which is processed similarly irrespective of the individual customer. The concerned interviewees reported to have developed a professionalized migration approach over time and also added, that the transformation on standard software was mostly implemented in series on a subsidiary level ranging from 5-10 offices each time.

A couple of interview partners recommended to prepare the old application landscape, which is subject to abandonment by implementing necessary migration changes (e.g. manda-

tory data interfaces). Afterwards, the applications are integrated or replaced in (or respectively by) new applications, whereas now the customers are already familiar with these changes. In this vein, these customers associate the discomfort and inconvenience with the former enterprise instead with the new one. However, most of the interviewees consider the migration of application as a challenging aspect from both, a technical and organizational perspective.

3.9 Data migration

The integration of business applications during M&A situations represents one main reason for data migration endeavors as described by [14, 20, 43, 46]. Interviewees were questioned regarding the data migration challenges they were facing. Thereby, many partners accentuated that data migration represents a critical point when transforming the application landscape caused by the enormous complexity of the interrelating data sets as well as the changes made in parallel to the target applications. This is confirmed by literature [6, 20, 43], which further points out that data migration is often underestimated in the context of the PMI phase. All interview partners emphasized the challenging and labor-extensive character of data migration and suggested a big bang approach during days of less business activity. Since the participating enterprises are still offering their services to the customer, data of one specific set (e.g. account, customer, contract, transaction, product, country, etc.) cannot be transferred in part, making migration in bulk inevitable. Several interviewees highlighted the importance of a logical and physical mapping of the data before the migration work can be carried out. Logical mapping contains the semantic mapping process between source and target data model (e.g. definition of customer, taxes, revenue development, addresses, rating results) and is performed as a first step. Secondly, the physical source data model is mapped to the target model before a migration process is initiated.

In literature a differentiation between primary- (e.g. customer, contract, etc.), secondary- (derived data through e.g. business intelligence), and archive data (mostly for legal reasons) as well as master- and transaction data is typically made [14, 32]. However, only few interview partners elaborated on the different data types in detail when being asked regarding the data migration process. This may be justified by the fact, that data migration only represented one subject discussed in the interviews. The partners commonly confirmed that their data migration process and results steadily improved due to staff's experience as well as the adaption of supporting tools. Latter consisted mostly in migration tools, *extract transform load* (ETL) software, as well as self-developed tools. When being asked for improvements of data migration in the past years, several interviewees pointed out that tools have become more efficient and easier to use, particularly for large data volume. Looking up specific data migration methods, models, and concepts, very few literature turns out to be precise and elaborated enough in providing detailed pointers. As a prominent example Brodie and Stonebraker [6] as well as Moris [38] are cited here who both cite M&A as one driver for data migration. Especially in the case of IT providers and banking establishments possessing a standard core banking system, the conducted interviews showed that those enterprises carry

out migrations by repeatedly applying a standardized and optimized transformation scheme.

3.10 Testing

As a main symptom of a merger, a huge number of self-developed or commercial applications are built and extended requiring unit-, integration-, and user acceptance tests in order to ensure the fulfillment of the desired functional and non-functional requirements [3, 5]. The time constraints in M&A scenarios coupled with the huge transformation scope and the variety of stakeholders demand for a well-defined and sophisticated approach aiming at comprehensively testing the functioning of the transformed and adopted IT. However, literature does not propose dedicated testing methods which are explicitly dedicated to merger situations.

Testing of the recently integrated application landscape and the underlying IT infrastructure was deemed important by all interviewees. Hence, testing strategies as well as elaborated methodology were worked-out in detail before the test runs were performed. In particular, a couple of partners highlighted the early availability of a testing environment before the actual migration takes place, covering basic functionalities of the target IT landscape. This dedicated environment should contain the main properties of the new bank's IT in order to allow simulations beforehand. The interviewees emphasized the value of realistic data test samples. Especially the group of IT providers reported, that since their target system landscape always consists of their respective core banking application, several test methods with a high maturity level are applied each time the old landscape has been transformed to the new one. Considering the different test types, automated load and stress tests in combination with user consistency, plausibility, and completeness checks were performed by several interviewees. Subsequently, the results were manually and automatically compared to the figures calculated by the applications which were subject to a phase-out.

3.11 Metrics and KPIs

Unfortunately, extensive literature research did not reveal specific metrics and key performance indicators (KPI)s used to a considerable degree during M&A situations. In turn, general literature like [26, 27] may be adopted to the specific context of a merger. In the course of the interviews, the partners were also asked about metrics and KPIs they were explicitly applying during the IT transformation project. Thereby the questions aimed at the integration progress indicators as well as at metrics for the single integration objects (e.g. application security, application interoperability, infrastructure component performance).

Several interview partners confirmed the usage of the standard project management KPIs which follow the project triangle, hence costs, schedule, and scope (cf. [28, 40]) as well as the resulting quality. Furthermore, the interviews stated to not make use of any integration or migration metrics to measure the overall transformation progress during the transformation. The majority of the partners rather explicitly focused on performance measurements regarding concrete integration objects, e.g. the fulfillment of non-functional requirements of a target application. When it comes to concrete indicators, million instructions per sec-

ond (MIPS) and central processing unit (CPU) cycles were named among others as being collected on the part of the partners in order the measure application performance. As a main reason, one interviewee reported an intensified application of metrics and KPIs to ensure uninterrupted business operation during the PMI phase.

3.12 Workarounds

Especially in the ongoing heat of the PMI phase, time is a very precious and limited resource given that each day with an unstable application or infrastructure business's effectiveness and efficiency [18, 43] is compromised. Interview partners were questioned about auxiliary workarounds and temporary makeshift solutions they deliberately implemented in the course of their IT integration projects, a topic which again is not profoundly addressed by current M&A literature.

As valid reason, several interview partners pointed out that short-term workarounds may help to mitigate risks and to save valuable time besides the fulfillment of regulatory constraints requiring a quick response on the part of IT through the realization of specific application functionalities. As a concrete example, two interview partners stated that they functionally extended a legacy application, which was not part of the target IT landscape. Not surprisingly, the interviewees were aware of the sub-optimality of these intermediary steps and clearly documented these temporary solutions. After the higher prioritized initiatives have been implemented and synergy potentials were realized in IT, cleanup projects were launched to rectify those auxiliary solutions.

The majority of the interviewees confirmed workarounds and makeshift solutions as being a veritable alternative during IT integration since business value often prevails over IT development efficiency. Hence, in the first place it was important to realize synergy potentials and render enhanced or completely new designed services to business before particular emphasize was placed on application landscape and infrastructure.

3.13 Merger readiness

In case an enterprise's corporate strategy includes inorganic growth, a professional M&A process can turn out to be a competitive advantage [35, 47]. In this case, an established M&A process is part of an actively managed capability with clear ownership [47]. Several interview partners mentioned that the maturity of their capability for integrating IT increased with the number of mergers the enterprises has performed in the past.

Furthermore, the M&A organization needs a suitable knowledge management system to collect and systematically store experiences [30, 31, 35, 43]. During the interviews, various information sources were named when the question about merger competences was raised. According to the experts, the merging enterprises were mutually contributing to the IT transformation success by exchanging their company-internal merger know-how and experiences. This was especially important during the first steps of the IT transformation. Additionally, all partners made a clear distinction between business and IT related merger competences. The

interviewees who were engaged in mergers between universal banks of equal size mainly focused on the ex-post debriefing of experiences made. Furthermore, representatives from banks with a communicated growth-oriented business strategy highlighted the value of a pro-active establishment of a dedicated M&A competence team.

4. CONTRIBUTION, LIMITATIONS, AND FUTURE WORK

In a constantly changing business environment M&A represent a powerful strategic instrument which is increasingly applied by today's enterprises. In particular, the fragmented German banking industry is subject to market consolidations through mergers as demonstrated by recent statistics. Since IT represents a pivotal dimension especially for the banking sector, its transformation in the course of a merger has to be accorded top priority besides other topics like juridical, financial, and organizational integration. However, current literature which on the one hand provides a sound empirical basis for IT transformation during M&A and on the other hand may be helpful in devising design artifacts is sparse.

Based on 15 semi-structured interviews with IT experts from the German banking industry we shed light on a variety of crucial aspects enterprises are confronted with when transforming IT in M&A situations. Adhering to the idea of grounded theory, the resulting set of key findings complemented by current M&A literature provide researchers a qualitative foundation they may draw on when building further theories. Possible continuative studies should comprise a validation on a broader empirical basis as well as an elaboration of predictions considering the future role of IT during mergers. This could also include the formulation and evaluation of concrete research questions arising from the findings presented in this paper. Moreover, cognition and comprehension of the subject should be advanced in order to identify common opinions as well as to extract reoccurring problems in addition to methods and models addressing them. This may also comprise the analysis of completed merger events as well as the according IT transformation activities in conjunction with an assessment of the present situation.

We are aware of the introductory character of the results treating the topic IT transformation during M&A only in limited depth. Since the primary goal was to cover a wide range of concerns in order to identify white spots given the time constraints of an interview, we did not dwell on each core topic in detail. However, during further empirical research activities the scope of the interviews may be limited in favor of an increased level of detail. For instance, work on a dedicated topic in close cooperation with additional feedback of interview experts will unfold new and relevant insights for a specific sub-area of M&A.

Besides the different stakeholder groups of the the interviewees (i.e. Bank IT organization, IT provider, external consultants), this article does not make any distinction with respect to the different banking types (e.g. commercial banks, saving banks, and cooperative banks). By reason of their diametral business models and roles in the German banking industry, we assume that there are significant dispari-

ties regarding the IT transformation concerns. Furthermore, this article does not make any distinction regarding different merger types and their proper characteristics (e.g. cross-border vs. national, merger vs. acquisition) which may correlate with the main goals and principal conditions an IT transformation endeavor is exposed to.

In our research, we chose the German banking industry knowing about the importance of IT as well as the M&A activities particularly in this field. In the following, the scope of our work could be extended by examining other sectors (e.g. information technology, pharmaceutical industry) and by comparing industry-specific with industry-independent IT transformation aspects. Thereby, one decisive factor may consist in the annual spendings for IT compared to the overall costs. It may be assumed that enterprises which spend relatively more money for IT are confronted with a different dimension of transformation problems than companies where IT solely fulfills an inexpensive supporting function.

This article mainly focuses on the PMI phase, as the main period where IT transformation is planned and implemented. Since planning for IT may take place at an earlier stage, the merger planning and transaction phase have to be factored in as well when carrying out further research. In this respect, more attention should be ascribed to the business perspective, given that business decisions in the early merger phases have a significant impact on subsequent transformation of IT. In this respect, next steps could comprise the conduction of interviews with representatives from the banking business organization, revealing their distinctive views and insights considering the role of IT during mergers.

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