

Potential for optimising organisational structures in the technical due diligence for real estate transactions in Germany

Organisational
structures in
the TDD

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Abstract

Purpose – The individual levels involved in real estate management are thoroughly discussed in the literature. This paper provides a structured meta-analysis of the different theoretical approaches in German-speaking countries. It also investigates the integration of transaction management and technical due diligence into the concepts of organisation theory. In this process, the interfaces are analysed and optimised models are developed for transferring the technical due diligence findings to the operational level.

Design/methodology/approach – Interviews with transaction management experts were conducted based on a narrative literature review. These interviews shed light on how the components of transaction management and due diligence are integrated into the transaction process, with a particular focus on technical due diligence. They also provide insights into how the related results are taken into account in relation to the transaction, and how they are transferred into the operational phase.

Findings – It becomes apparent that the role of transaction management is not clearly defined and delimited in the structural model of the real estate industry. Technical due diligence findings are usually transferred to the operation of the property via several, manual interfaces with corresponding losses of knowledge. The related models derived and developed for the purpose of operational optimisation define the role of transaction management against a technical background and identify the interfaces to be considered.

Practical implications – The significance of transaction management for subsequent operations is discussed and elaborated on. More specifically, transferring safety-relevant, high-priority findings from the technical due diligence exercise plays a crucial role for the modelling stage. On the implementation level, the derived models serve as a basis for customising the internal organisational structure.

Originality/value – In Germany, there has hardly been any research into the involvement of technical experts in the real estate transaction process to date. This paper provides initial approaches to optimising organisational structures and sustainably integrating technical due diligence findings into real estate operations.

Keywords Real estate asset management, Technical asset management, Transaction management, Transition management, Technical due diligence

Paper type Research paper



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1. Purpose

In 2019, real estate transactions accounted for a significant 15.3% share in the total gross value of €601bn (ZIA, 2019) added by the real estate industry in Germany. In the same year, the transaction volume reached a new all-time high of €91.8bn (JLL, 2021). For 2020, the JLL investment market overview states an 11% year-on-year decline of this volume to about €81.6bn owing to the impact of the COVID-19 pandemic. Since the real estate sector assumed an even stronger decline particularly due to the uncertainties prevailing in the office, retail and hotel asset classes, we can still classify this investment volume as high. Amid the crisis, the demand for housing and logistics as well as office properties has been on the increase, which potentially results in a stronger investment pressure, and thus shortened due diligence cycles. An efficient transaction, transition and portfolio management process must be in place to counter this trend (Thelen and Tanner, 2015, p. 59).

The structure of real estate transactions has been researched extensively both through guidelines and descriptive studies. These studies generally divide the transaction process into the preparation (pre-phase), transaction (transaction phase) and follow-up (post-phase) stages (McNamara, 1998, p. 27; Crosby and McAllister, 2004, p. 9; Preuß and Schöne, 2016, pp. 322–325). On the seller's side, the preparation phase deals with preparing the property and the document room, whereas general market analyses and preliminary analyses of individual properties are prepared on the buyer's side. In the transaction phase, the due diligence exercise is conducted involving a detailed property analysis, which also incorporates the technical due diligence part. The post-phase focuses on the handover of the property and its integration into the buyer's portfolio. This phase is also referred to as transition phase (Seilheimer, 2013, pp. 225–230).

In the German-speaking real estate market, similar organisational structures are discussed within the scientific discipline of real estate economics. We will provide a related summary in the real estate management reference model described in the following chapter. However, there are still no generally applicable definitions and allocations of tasks and responsibilities as well as defined interfaces, both in general terms but also specifically with regard to transaction management. The survey we conducted showed that such specifications support an efficient, target-driven transaction process, among other factors. This paper attempts to address the following questions:

- RQ1. How is transaction management integrated into the general organisational structure of real estate management?
- RQ2. What interfaces exist on the technical due diligence level, and how can they be integrated into the organisational structure in an optimal fashion?

1.1 Real estate management reference model

By establishing the level model, the Gesellschaft für immobilienwirtschaftliche Forschung (gif) e.V. (German Society of Property Researchers) laid the foundation for the current understanding of the discipline of real estate management in Germany. This model breaks real estate management down to the investment, portfolio and property levels, where the strategic significance decreases in the top-down direction, i.e. from the investment to the property level (gif, 2004, pp. 3–5). As a not-for-profit organisation, gif is tasked with merging the different interests of the real estate industry and developing uniform standards generally accepted by the market. In the literature, the basic framework for the real estate industry established by gif is continuously adapted and complemented by the concepts of real estate asset management (REAM), property management (PM) and facility management (FM) transferred from the Anglo-Saxon world to Germany. Whereas organisational models influenced by financial economics develop a holistic view of real estate management and

subordinate the management of specific properties to general asset management (Göötz, 2011, pp. 3–6), approaches influenced by real estate economics discuss such models to a greater degree of differentiation.

Different authors refer to the level model introduced above and modify it partly by adding sub-property levels (Ziola, 2010, p. 37) or by dividing the property level into strategic and operational aspects (Hoerr, 2017, p. 637). In general, however, there is consensus on the levels of investment, portfolio and property introduced by gif and incorporated into the reference model (see Figure 1). TEICHMANN is the first author to explicitly assign different work areas or management disciplines to the levels. His approach of assigning real estate investment management (REIM) to the investment level and real estate portfolio management (REPM) to the portfolio level has been widely adopted in later publications (Kämpf-Dern and Pfnür, 2009, pp. 15–17; Ziola, 2010, pp. 36–39; Hoerr, 2017, pp. 637–639). These models consider REAM to be a link between the strategic REIM and REPM areas and the operational PM and FM areas. REAM is located at the interface between the portfolio and the property level (Teichmann, 2007, pp. 15–19). REAM is the first management discipline in which a separation is made between commercial and technical responsibilities, which subsequently define the different flows of data and information in PM and FM whilst highlighting the operational property reference of REAM (Ziola, 2010, p. 39). This is why some publications introduce a more granular distinction between commercial and technical property management services. However, a general understanding of the individual management disciplines is sufficient for incorporating transaction management in the reference model; no further subdivision is necessary. The reference model for classifying the organisational structures of the real estate industry shown in Figure 1 was derived from pertinent literature. It assigns REIM to the investment level and REPM to the portfolio level. REAM establishes the link between the strategic and operational service levels and generally takes responsibility for proactive portfolio management. Specific project services, such as transaction management or the development of specific properties, are also pursued and coordinated on the REAM level. PM and FM implement the operational activities on the property level (see Figure 1).

1.2 Integration of transaction management

The structured meta-analysis of the scientific literature has shown that the role of transaction management as an independent discipline has been dealt with only to a negligible extent. A uniform delimitation and classification system is largely absent. The decision-making authority, and thus the strategic alignment of acquisitions, is generally assigned to REIM as



Figure 1.
Reference model for
locating organisational
structures in the real
estate industry

well as REPM. Only a few publications group the operational implementation of the transaction, i.e. the specific transaction management and, in particular, the execution of the structured due diligence exercise, under the REPM discipline (Kämpf-Dern, 2009, p. 8; Pfnür, 2011, p. 43). The majority of references assign operational transaction management to the REAM management discipline in its responsibility on the property level (Teichmann, 2007, p. 15; Ziola, 2010, p. 39; Gondring and Wagner, 2015, p. 366; Thelen and Tanner, 2015, p. 62; Hoerr, 2017, p. 637). Besides proactive portfolio management, property acquisition is described as a key part of REAM. HOERR, in particular, introduces a relevant sub-division to REAM. In the narrower sense, REAM encompasses proactive portfolio management; in the wider sense, it also includes specific project services such as the transaction. The reference model stresses this special role of transaction management within REAM. Rather than constituting a permanent REAM service, it is carried out on a case-by-case and project-specific basis.

Some models discussed in the literature establish a direct relationship between transaction management and PM (Kämpf-Dern and Pfnür, 2009, p. 26; Ziola, 2010, p. 52). This relationship should be interpreted as being both of a temporal and of an organisational nature. On the one hand, PM precedes transaction management from the seller's perspective. PM provides property-specific knowledge and supports the sell-side transaction team with relevant data and information within the existing structure. On the other hand, from the buyer's point of view, PM follows the transaction management stage and implements the findings derived from the transaction on the operational level. The current academic debate does not do justice to this specific role of PM within the context of transactions.

1.3 Transition management

The transition phase constitutes the follow-up to the transaction and integrates the property into the existing portfolio. The literature considers this stage to be increasingly important and warranting more comprehensive research in the face of the current lack of thorough scientific investigations (Seilheimer, 2013, pp. 225–230). In many respects, the real estate industry is confronted with poor interfaces, integration gaps and inefficient knowledge transfer (Preuß and Schöne, 2016, pp. 12–18; Balck, 2017, pp. 11–12; Kurzrock et al., 2019, pp. 271–273). Methods of digitisation, particularly advances in the field of Building Information Modelling (BIM), attempt to reduce these disruptions and make processes less error-prone.

In the transaction process, the transfer of data and information from the seller to the buyer often proves to be error-prone and inefficient since a large number of interfaces needs to be coordinated, as illustrated in Figure 2. Reliable data and information are crucial especially for the technical property analysis carried out as part of the due diligence exercise (Preuß and

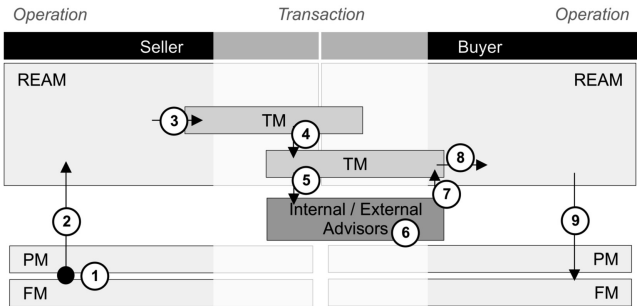


Figure 2.
Transaction
management interface
problem

Schöne, 2016, p. 380) because the transaction will generally be associated with an information asymmetry between the seller and the buyer.

- (1) Gathering of seller's data and information via PM and FM
- (2) Transfer of data and information from PM and FM to REAM
- (3) Transfer of data and information from REAM to transaction management
- (4) Transfer of data and information from the seller's transaction management to the buyer's transaction management
- (5) Transfer of data and information from the buyer's transaction management to specialist in-house functions or external advisors
- (6) Analysis of data and information by specialist in-house functions or external advisors
- (7) Transfer of results to the buyer's transaction management
- (8) Transfer of data and information to the buyer's REAM and transfer of results to the REPM or REIM decision makers
- (9) Transfer of data and information from the buyer's REAM to PM and FM

The large number of interfaces illustrates the complexity of the transaction process and the need for clear organisational structures as well as consistently managed flows of data and information. A basic distinction can be made between the processes of data and information provision (see Interfaces 1 to 5, Figure 2), data and information analysis (see Interface 6, Figure 2), and data and information transfer (see Interfaces 7 to 9, Figure 2).

Data and information provision is concerned with setting up the virtual data room on the seller's side (pre-phase), in which the data and information relevant to the individual property in the context of the transaction are compiled. This is usually achieved by providing the necessary documentation (if available). This virtual data room is made available to the other parties involved in the transaction process via the transaction management interface.

Within transaction management, the compiled data and information is evaluated and analysed (transaction phase). This step can be completed either internally or by resorting to external advisors. As part of the due diligence exercise, the aspects relevant to the buyer's investment strategy are reviewed in an interdisciplinary manner. Generally speaking, due diligence is a holistic process in which legal, tax, commercial, environmental and, if required, other factors are analysed and evaluated in addition to purely technical aspects (Blaschkowski, 2008, pp. 39–45; Just and Stapenhorst, 2018, pp. 12–13). Given the priorities of this research, the focus will be on the technical due diligence exercise, whereas the related interfaces to other disciplines represent another relevant field of research.

The buyer-side transfer of data and information from the transaction management to the REAM (post-phase) represents a particularly relevant interface because major synergies can be achieved at this point by enabling efficient knowledge transfer. This interface creates a challenge owing to the generally diverging interests of transaction management (successful completion of the transaction) and proactive portfolio management (optimal, efficient building operation) (Hoerr, 2017, pp. 640–645). Conflicts often arise at this point even though these two areas of interest are generally not mutually exclusive. Among other factors, this situation leads to the fact that the integration of a property into an existing portfolio often has to start with a detailed property survey and analysis, preventing the insights gained in the

course of the transaction from being integrated in a target-driven manner (Hoerr, 2017, p. 645; Müller, 2017, p. 20). Thus, this permits the general assumption that transition management is inefficient and, consequently, resource-intensive.

2. Design/approach/methodology

The research process comprises narrative literature reviews and guideline-based expert interviews. The expert interviews undergo a qualitative analysis.

The results of the literature review discussed above represent the current state of scientific research on the organisational structure of the real estate industry in Germany. In particular, the role of transaction management and the significance of the transition process receive only little attention in both the historical and current literature. Only little data and information is available on this topic owing to the limited extent of previous research. This is why we adopted an exploratory/informative approach and collected primary data in guideline-based interviews with experts in the field of transaction management. As a minimum requirement, the experts had to demonstrate at least ten years of professional experience in the field of real estate transactions as well as current employment in transaction management and responsibility for the selection, contracting and coordination of internal or external technical experts in the transaction process. Five of the twelve interviewed experts had a dual technical-commercial background, whereas the remaining seven had a purely commercial background. This distribution shows that transaction management is in possession of own technical expertise in 42% of cases. No statistical data is available on the general structure of transaction management. Based on the authors' professional experience, however, this distribution represents the general set-up of institutional real estate investors in Germany.

In the part relevant to this paper, the content of the survey focused on the real estate manager's own organisational structure, the integration of internal technical staff into the transaction process, and the involvement of external technical advisors and their scope of services. Moreover, the nature of data and information transfer and the relationship between transaction and portfolio management were discussed.

3. Findings

Conducting the survey among transaction management experts delivered relevant insights into the internal organisational structure, the involvement of external technical advisors in the due diligence process, and the organisation of interface management. Generally speaking, the qualitative interviews permit the conclusion that long-term portfolio owners deal more thoroughly with the technical aspects of a property already in the transaction phase compared to short-to medium-term institutional investors.

The types of organisation shown in Figure 3 provide a first overview, but they should explicitly be taken to reflect only the organisational aspect, rather than also including a temporal component. These models are primarily defined by the following three criteria:

- (1) Technical expertise of transaction management
- (2) Quality of technical communications between buyers and technical advisors
- (3) Dependency on external technical advisors

The following chapter discusses the four models derived from the interviews in more detail. In each case, the above-mentioned criteria are classified in conjunction with listing their benefits and shortcomings. Table 1 shows a clear evaluation of the criteria in the different models.

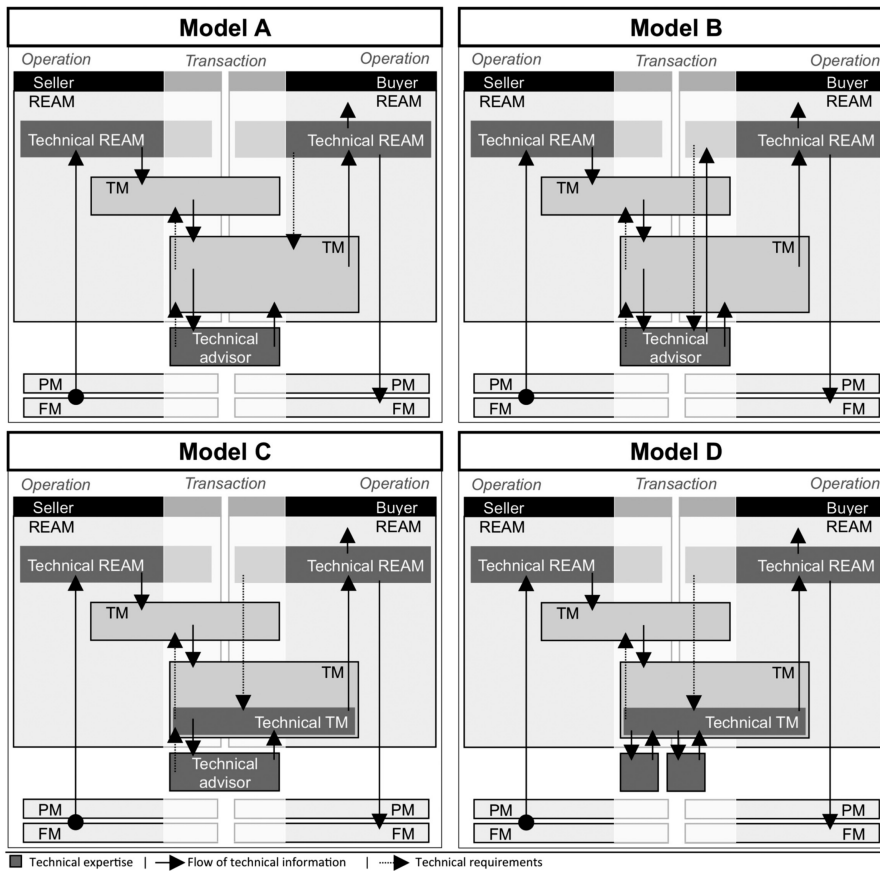


Figure 3.
Type of organisation
and involvement of
external advisors in the
purchase process

Criteria	Model A	Model B	Model C	Model D
(1) Technical expertise in transaction management	--	--	+	++
(2) Quality of technical communications	--	o	+	++
(3) Dependency on advisors	++	++	-	--

Table 1.
Model-based
significance of criteria

3.1 Types of organisation for technical due diligence and involvement of technical advisors

The qualitative analysis of the survey conducted among transaction management experts made it possible to group the different types of organisation into four differentiable models.

Model A: In this type of organisation, the buyer's transaction management does not have relevant *technical expertise*. Transaction management is responsible for the operational selection and coordination of external technical advisors, and thus for defining their services. Due to the limited technical expertise, transaction management is heavily dependent on a clearly defined scope of the technical due diligence exercise.

The quality of *technical communications* between buyers and technical advisors is low. The technical AM requirements can only be defined in advance by the technical REAM,

but are then taken into account in the transaction after transaction management has made its decision. In this context, particular emphasis should be put on the conflict of interest between transaction management and proactive portfolio management within REAM frequently arising in this setting. This situation means that the focus will be on the purely transaction-relevant parameters within the technical due diligence exercise. There is no direct communication between technical advisors and technical REAM, which can lead to a loss of knowledge.

In buyer organisations structured in accordance with Model A, buyers are highly *dependent* on the quality and integrity of technical advisors. The poor level of technical expertise in transaction management prevents the findings of the technical due diligence exercise from being scrutinised properly, which is why they inform the results of the transaction management process almost “as is”. This (potentially insufficient) information base is used for decision-making.

Benefits of Model A include the clear focus on the aspects of technical relevance to transaction management and the directly managed communication process between transaction management and external technical advisors. In this model, transaction management relies on a target-driven, error-free advisory service because there is only little expertise for critically analysing the results presented by the external technical advisors. This is why it will heavily depend on the quality of the external technical advisors. Focusing on the technical parameters relevant to the transaction poses the risk that no operationally relevant technical insights are gained from the technical due diligence exercise, thus preventing the continued use of data and information.

Model B: In this type of organisation, the buyer’s transaction management does not have relevant *technical expertise*. Transaction management is responsible for the operational selection and coordination of external technical advisors, and thus for defining their services. Due to the limited technical expertise, transaction management is heavily dependent on a clearly defined scope of the technical due diligence exercise in cooperation with technical REAM.

The quality of *technical communications* between buyers and advisors is higher than in Model A because there is a direct, technical-level exchange between the external advisors and the technical REAM. By bringing in internal technical expertise, the REAM requirements can be coordinated directly on the technical level, and a solid foundation can be established at least in the context of defining the scope of services. On the technical level, a clear definition of scope can have an influence on the expected output of data and information from the technical due diligence exercise. As a rule, however, this model does not include a continuous exchange between technical advisors and the technical REAM because REAM does not provide separate resources for transaction support, which is why feedback will be extremely limited. Technical REAM is overseeing the transaction simultaneously with its proactive portfolio management responsibilities. However, transaction management continues to take priority in this model, which can lead to a dilemma for the advisors: On the one hand, they will have to meet the requirements of the technical REAM; on the other hand, the temporal and financial conditions of the contractual relationship with the transaction management and its transaction-relevant parameters come into play. The results of the analyses conducted by the external technical advisors are communicated to transaction management and are considered for preparing the decision.

A Model B organisational structure will also lead to a high *dependency* of buyers on the quality and integrity of the technical advisors’ work. It is the advisors’ responsibility to

coordinate the potentially conflicting requirements of technical REAM and transaction management, and to adapt the advisory service to the requirements of the buyers.

Benefits of Model B include the possible technical-level exchange between technical REAM and technical advisors. When structuring an organisation according to Model B, care must be taken to ensure that sufficient resources are allocated to technical REAM for transaction support with the aim of creating a tangible (rather than theoretical) influence on the process. This will also require alignment of the interests of technical REAM and transaction management. Uniform systems of incentives should be in place in order to avoid a communications dilemma for the advisors and to take into account both transactional and operational parameters.

Model C: In the organisational structure presented in Model C, the buyer's transaction management possesses its own *technical expertise*. In coordination with technical REAM, it is thus possible for technical transaction management to take into account both the transactional and operational parameters as part of the technical due diligence exercise. Technical transaction management takes responsibility for selecting and coordinating the technical advisors; it is able to expertly define their scope of services and to implement the coordination of the due diligence process in a target-driven manner. In addition, it is capable of scrutinising the feedback and results delivered by the external technical advisors and to incorporate them into the decision-making process in a sound and correct manner. Findings of the technical due diligence exercise relevant to operations can be passed on to technical REAM in an efficient process.

The quality of *technical communications* between buyers and advisors is higher than in Models A and B because transaction management can engage in technical discussions with the advisors based on its own technical expertise, and is able to provide technical guidance but also to question specific findings. During the technical due diligence process, there is a continuous exchange of information between technical transaction management and technical advisors.

Compared to Models A and B, an organisational structure according to Model C will reduce the buyer's dependency on the quality and integrity of the technical advisors' work. Transaction management will still have to rely on the technically sound consultancy provided by the advisors, but it is able to manage and control this process by clearly defining the scope of services taking into account both transactional and operational parameters. Moreover, transaction management is in a position to effectively challenge the technical due diligence findings and to compare them with the internal requirements as early as in the transaction process. The results of the technical due diligence exercise should thus be of a higher quality, and can be incorporated in a more targeted manner both into the transaction management decision-making basis and into the transition to REAM.

Model C is associated with the benefit of a thorough professional exchange between technical transaction management and the technical advisors. If both transactional and operational parameters are reconciled and the conflict of interest between technical transaction management and technical REAM is reduced, this setting will allow for an operation-driven and thus sustainable due diligence process. On the other hand, the disadvantage of Model C is that it requires a larger amount of resources compared to Models A and B because the technical expertise, whose availability is limited anyway, is integrated into the time- and resource-consuming transaction processes, or must at least be kept available for these processes.

Model D: The organisational structure according to Model D differs from the other models in that a strong *technical expertise* forms an integral part of transaction management, and technical due diligence exercises can (essentially) be carried out internally. External technical advisors are only brought in if necessary for specific disciplines. Technical transaction management takes responsibility for selecting, contracting and coordinating the (usually external) technical advisors required in specialist disciplines, and the results obtained can be scrutinised in detail and integrated into the internal technical due diligence process. The results of the overall due diligence exercise relevant to the transaction and operation phases can be integrated into the decision-making basis in a consistent manner. Such a holistic generation and transfer of knowledge will require technical transaction management to demonstrate an understanding of the technical requirements arising from the proactive portfolio management of the property. For this purpose, it will be helpful to align the interests of the two management disciplines. The detailed internal exchange between technical REAM and technical transaction management enables optimal preparation of transitioning the property into the existing portfolio.

The high level of technical expertise in transaction management allows for a superior level of *technical communications* between the buyer's representatives and technical advisors. Technical transaction management is in a position to provide guidance to the advisors in their specialist disciplines in a targeted manner and to optimally incorporate the individual results into the findings of the technical due diligence exercise. Technical discussions between the parties are profound and provide knowledge that can be utilised in the longer term on both the transactional and the operational level.

An organisational structure according to Model D will reduce the dependency of buyers on technical advisors significantly. On the one hand, major parts of the technical due diligence exercise are carried out by in-house staff; on the other hand, any advisors needed over and above these requirements will be selected, coordinated, guided and scrutinised in the best possible way in order to achieve the defined targets. The advisors are provided with a clear definition of scope, which they can implement in a targeted manner thanks to the high quality of their professional service.

A particular advantage of Model D is the high level of internal technical expertise, which enables the sustainable use of the knowledge generated in the technical due diligence exercise. These insights can be aligned with the buyer's interests and targets in an optimal fashion. However, a structure following Model D will tie up technical expertise in the transaction process, which must be kept available for this purpose. In addition, a transfer of liability, which often plays an essential role in the context of the technical due diligence exercise, can only be implemented to a reduced extent. Whereas liability can be transferred to external advisors in Models A, B and C, this will not be possible in Model D (or only to a much lesser extent).

3.2 *Interface management*

The selected organisational structure influences the resulting interfaces and the flow of technically relevant data and information. The following sections discuss the interfaces relevant to the technical due diligence exercise, but there is a large number of additional links to specialist disciplines within real estate transactions. In the context of the technical due diligence exercise, its legal and environmental parts are particularly relevant because they reveal significant overlaps. This wide range of topics highlights the interdisciplinary nature of the communications that transaction management needs to ensure.

In the survey of transaction management experts, the interfaces between the buyer's and the seller's transaction management, to external technical advisors and to the internal REAM

function were analysed. In summary, we find that the transfer of data and information is primarily implemented by making documents available in mostly virtual document rooms. The experts exclusively mentioned file formats that were suitable for automated reuse only to a limited extent, or not at all, such as .pdf, .docx or .xlsx. These documents do not include metadata that can be analysed automatically; nor are aggregated data records made available. This situation becomes apparent both in the provision of data and information by the seller and in the transfer of data and information to transaction management as well as to technical REAM and operations.

The time and resources required for the purposes of classifying, reviewing and analysing the documents are primarily due to two aspects: Firstly, the data and information are not available in a structured, aggregated form, are thus incomplete and still have to be obtained. Secondly, the security and reliability of data and information, i.e. the correctness of the content, is fundamentally doubted (Jedelsky, 2018, p. 13). This artificial disruption in the availability of data and information means that a large number of documents need to be inspected and reviewed in the due diligence process (Müller *et al.*, 2020), tying up valuable resources.

3.3 Optimised transaction and transition management

The survey of experts in transaction management revealed potentials for optimising the organisational structure and definition of interfaces, particularly in the transition from the transaction to the operation phase. It became obvious that the integration of transaction management is not consistently managed across all areas.

As shown in Figure 4, an optimised organisational and interface model could be developed for both the organisational structure without technical expertise in transaction management (Model A/B) and the organisational structure with technical expertise in transaction management (Model C/D). The following sections discuss the two models and explain the individual interfaces.

Model A/B: In organisational structures without technical expertise in transaction management, it is crucial to involve the technical advisors in a consistent manner. In this structure, transaction management takes over the coordination and control of the advisors and uses the technical due diligence findings for developing the decision-making basis of the transaction process.

Specific interfaces exist in the following areas:

X1 Provision of knowledge to the technical advisors by the operational experts of the seller

X2 Continuous exchange of transactional requirements and findings between technical advisors and the buyer's transaction management

X3 Continuous exchange of operational requirements and findings between the buyer's technical advisors and technical REAM

X4 Transfer of findings established by the technical advisors to the buyer's operational property managers

The technical advisors forward the requirements for necessary technical input data and information both to the buyer's and seller's transaction management and directly to the seller's PM and FM, as illustrated by *Interface X1* (see Interface X1, Figure 4). The fact that PM and FM are in possession of the operational property knowledge imposes particular requirements on these management disciplines in terms of the provision of data and information.

Interface X2 illustrates the continuous exchange of findings between the transaction management and technical advisors within the technical due diligence process (see Interface

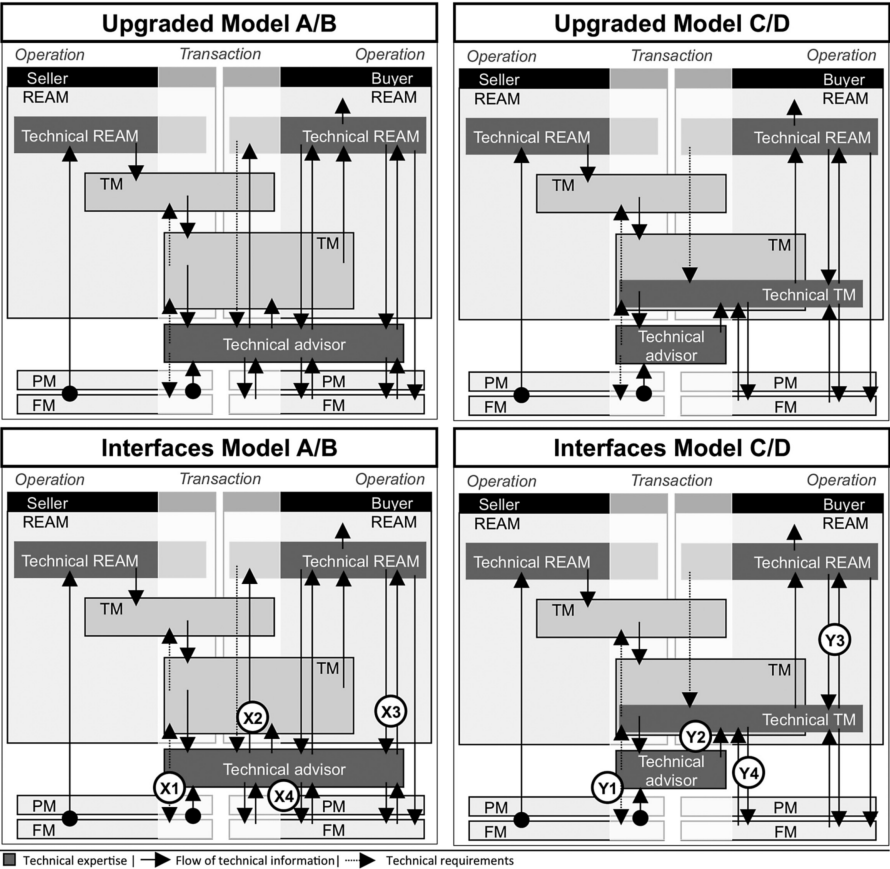


Figure 4.
Draft for model
optimisation including
a reduced number of
interfaces

X2, Figure 4). Most importantly, the transactional parameters are mirrored to inform the decision-making basis of the transaction management function. Transaction management coordinates and manages the technical advisors as required by the transaction.

A crucial aspect of a sustainable technical due diligence exercise is the early integration and consideration of the operation phase following the transaction. **Interface X3** represents this continuous exchange between the buyer's technical REAM and the technical advisors (see Interface X3, Figure 4). Including and establishing this interface makes it possible to consider operational parameters at an early stage in the transaction and to integrate the technical due diligence findings into the operation in a targeted and sustainable manner.

The same applies to **Interface X4** defining the exchange between the technical advisors and property operations ensured by the buyer's PM and FM (see Interface X4, Figure 4). This process requires the exchange of data and information between the technical advisors and PM or FM at the earliest possible stage in order to avoid losses of knowledge. In this way, the knowledge generated during the technical due diligence exercise can be transferred directly and in an unfiltered manner, and queries from operational property management can be answered immediately. To incentivise the technical advisors to engage in a target-

driven exchange in the transaction phase, it appears to be useful to also contract the technical advisors beyond the actual technical due diligence phase so that they continue to provide support in the transition phase, i.e. the integration of the purchased property into the buyer's portfolio. This will reduce the risk of losing knowledge after completion of the technical due diligence exercise whilst potentially shortening the familiarisation phase for efficient operation. Based on the findings derived from the technical due diligence, detailed analyses of individual aspects can be carried out in a target-driven manner to establish direct links to the existing knowledge. This contractual commitment of the external technical advisors beyond the transaction process potentially leads to more targeted, efficient and actionable recommendations because the external technical advisors are directly involved in the implementation phase. This is how operational aspects can be taken into account more effectively in the course of the transaction. The scope of services to be provided by the external technical advisors after the actual transaction process should be defined on a case-by-case basis. In principle, however, it appears to be useful that the external technical advisors closely monitor the resolution of safety-relevant and short-term issues. They would thus be in a position to contribute to monitoring the seller's compliance with the duties stipulated in the purchase agreement as well as the smooth integration of the property into the existing portfolio. After a successful transition phase, the external technical advisors hand over the collected data and information to the technical REAM and the operational PM and FM in the final phase of their advisory services.

Model C/D: In organisational structures with technical expertise in transaction management, reconciling the interests and requirements between technical transaction management and technical REAM is crucial for consistently using the findings derived from the technical due diligence exercise. Technical transaction management must take into account both the transactional and the operational parameters. It takes responsibility for defining, coordinating and reviewing the performance of the technical advisors, thereby enabling sustainable use of the knowledge generated during the technical due diligence process.

Specific interfaces exist in the following areas:

Y1 Provision of knowledge to the technical advisors by the seller's operational experts

Y2 Continuous exchange of transactional requirements and findings between technical advisors and the buyer's technical transaction management

Y3 Continuous exchange of operational requirements and findings between the buyer's technical transaction management and technical REAM

Y4 Transfer of findings established by technical transaction management to the buyer's operational property managers

The technical advisors forward the requirements for necessary technical input data and information both to the buyer's and seller's transaction management and directly to the seller's PM and FM, as illustrated by **Interface Y1** (see Interface Y1, [Figure 4](#)). The fact that PM and FM are in possession of the operational property knowledge imposes particular requirements on these management disciplines in terms of the provision of data and information.

Interface Y2 illustrates the continuous exchange of findings between the technical transaction management and technical advisors within the technical due diligence process (see Interface Y2, [Figure 4](#)). Technical transaction management lays the foundation for high-quality findings through a technically sound definition of scope as well as through a

thorough professional exchange during the technical due diligence exercise. Findings of this quality are crucial both for the decision-making basis of the transaction and in the transition phase. This means that both transactional and operational parameters are shared. Consequently, the buyer's side will begin to build operational knowledge already in the transaction phase.

This consistent way of generating knowledge continues in an efficient manner by ensuring the early integration of operational property management. **Interface Y3** represents this continuous exchange between the buyer's technical REAM and technical transaction management (see Interface Y3, [Figure 4](#)). Considering and establishing this interface will add the option of enabling feedback between the operation and the transaction sides in order to use the transaction phase for laying a solid foundation for the subsequent operation of the property. This regular exchange promotes a consensus between technical REAM and technical transaction management in terms of the requirements within the technical due diligence exercise, and there is an opportunity for internal insights to evolve from one transaction to the next.

Interface Y4 defines the exchange between technical transaction management and operational property management on the part of the buyer (see Interface Y4, [Figure 4](#)). This is where losses of knowledge can be avoided by ensuring an early exchange of data and information, and the property can be prepared in the best possible way for integration into an existing real estate portfolio. The knowledge generated in the technical due diligence process is thus transferred to operations almost completely. At this point, it makes sense to involve technical transaction management in the transition process beyond the actual transaction phase, so that a smooth transition can take place and technical transaction management can handle queries from technical REAM and operations. We should also assume that transmission errors are virtually eliminated and that the measures defined in the transaction can be implemented swiftly and in a targeted manner. The findings of the technical transaction management serve as a basis for a detailed analysis of the operational property management.

4. Conclusion

The conducted empirical analysis highlights the potential for optimising the management of transactions, particularly in the technical due diligence phase. The initially discussed research questions regarding the integration of transaction management into the general organisational structure as well as the resulting interfaces within the technical due diligence process were discussed from an analytical perspective, and approaches to optimisation were developed.

Consideration of the following aspects is essential for a target-driven, consistent use of the knowledge generated in the transaction phase:

- (1) A clear and unambiguous allocation and delimitation of responsibilities of the individual work or service areas is necessary whilst providing the corresponding resources.
- (2) The conflict of interest between proactive portfolio management and transaction management must be reduced by creating sustainable incentive systems. This step makes it possible to implement a resource-efficient transition phase.
- (3) The detailed definition of technical requirements arising from proactive portfolio management is the fundamental basis for a target-driven technical due diligence exercise.

5. Originality/practical implications

The findings derived from the empirical analysis lead to the following practical recommendations:

- (1) The ongoing digitisation of the real estate industry is an essential prerequisite for establishing smooth and efficient interfaces. Only by making data and information available in a standardised form can related processes be carried out efficiently. The technical due diligence exercise requires the specification of clear input data and information, on the basis of which a (partially) automated execution of the due diligence and appraisal process will be possible. Moreover, the data and information provided by the seller must be useable for a (partially) automated process, and the property data records need to be structured and standardised from a holistic perspective. A clearly structured technical due diligence process in conjunction with the subsequent proactive portfolio management as well as operational property management will permit the long-term, target-driven use of knowledge. The knowledge generated in the course of the technical due diligence exercise is made available to operational property management via clearly defined interfaces by taking into account operational factors in the transaction, thus reducing the resources required for the transition and familiarisation phases. Once generated, knowledge can thus be used sustainably.
- (2) Defining a clear organisational structure and delimiting different tasks, skills and responsibilities on the part of the buyer leads to a more efficient transaction process. Clearly defined roles of technical REAM, technical transaction management as well as PM and FM enable target-driven handling geared towards a sustainable investment result. More specifically, this will require PM and FM, who are responsible for operational property management, to be integrated into the transaction as subject matter experts (on the seller's side) or knowledge users (on the buyer's side), and that the corresponding resources are made available for transactions so that they benefit from the findings of the technical due diligence exercise.
- (3) Following the principle of integrating the different management disciplines, explicit attention must be paid to the diverging interests of the individual disciplines when defining the organisational structure. These interests must be reconciled by implementing consistent and uniform incentives, such as aligned remuneration systems. Current practice often reveals a discrepancy between transaction and portfolio management. This gap can be closed by taking a long-term view of investments made, so that the focus is already on the operational aspects in the course of the transaction and that technical due diligence concentrates on the aim of ensuring sustainable building operation.
- (4) Provided the availability of data and information improves significantly and the different interests of the stakeholders can be reconciled, an open, target-driven communication structure can unleash significant potentials of the transaction process. In this context, communications on the buyer's side deserve particular attention, i.e. between external (technical) advisors, transaction management, REAM, PM and FM, but also between the seller's and buyer's functions relevant to the transaction. A standardised communication platform allowing for the efficient transfer of data and information, coordinating responses to queries and reflecting the current work status including the relevant findings at all times will increase the efficiency of processing and enhance the quality of the results in all due diligence areas.

The results provide the basis for more detailed research in this field. As regards digitisation, the aspects of data and information transfer and data and information provision as well as the potential of (partially) automated analytics are particularly worth mentioning. In this respect, the issue of data and information ownership of a property is of crucial importance. What data and information does the seller have to provide, and in what form? What influence will this have on the value of the property? Furthermore, the above-described interfaces must be defined more clearly, so that the data and information requirements for different tasks are transparent and generally valid. In this context, an international comparison appears to be appropriate since the present analysis focuses exclusively on the German market. In addition, investigations can be carried out into the different interests prevailing in the context of real estate transactions.

Moreover, the findings of the empirical analysis can be transferred to other disciplines, such as tax, legal or commercial due diligence, and corresponding studies can be conducted in these fields. Of particular interest are the interactions and mutual dependencies of the disciplines and an optimised transaction and due diligence process in its entirety.

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