Design decisions in the front office - back office issue

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5 Research Design for Empirical Study

Now that we have presented the conceptual model, based on the literature review and the exploratory case study, we discuss the methodological characteristics of the empirical study we carried out to create the theoretical insights that are required in order to build our framework. In fact, we conducted a number of case studies. In this chapter, we firstly explain why we chose the case study method, followed by the steps we took from defining the research question until verification of our conclusions and reaching closure. We follow the roadmap provided by Eisenhardt (1989) for theory building from case studies in order to present our design decisions. The eight steps in the theory-building process are addressed in separate sections. We end this chapter by discussing the construct validity, internal validity, external validity and reliability of this study. In the subsequent chapters, we present the case findings, the results from the analysis and our conclusions.

5.1 Taking a case study approach

From the conceptual model it can be concluded that the main objective for the empirical study was to unravel the mechanism underlying the design of front office – back office configurations. The mechanism is the collection of considerations that leads to a particular front office – back office configuration. Among the considerations are the "individual" considerations for each design decision, the considerations following from the coherence between the design decisions and the considerations related to the impact of several influencing variables. Knowing and understanding this mechanism will significantly contribute to the insights that are still required in order to arrive at a coherent and comprehensive framework for the design of front office – back office configurations. Hence, the primary question to be answered in the empirical study was: *What is the mechanism underlying the design of front office – back office configurations?* In this way, we can characterize this study as theory building, rather than theory testing. Although we do not expect to develop a complete theory for the front office – back office issue, this study is part of the process that eventually leads to such a theory.

Considering that we aim to identify this mechanism, case studies seemed to be the most appropriate research strategy. Compared to other research methods, such as surveys,

experiments or quantitative modeling, case studies provide a good opportunity for building theory (Yin, 1984; Eisenhardt, 1989; Meredith, 1998; Voss et al., 2002; Yin, 2003). More specifically, we identified four strengths of the case study approach:

- First, case studies provide the opportunity to study the "how" and "why" aspects of a phenomenon, concentrating on its operational links over time, rather than its frequencies or incidence (Yin, 2003). This particularly applies to our focus on unraveling the mechanism underlying the design of front office – back office configurations through understanding the complex constellations of considerations underlying the design decisions.
- Second, cases allow a phenomenon to be studied holistically (Yin, 2003), leading to "a relatively full understanding of the nature and complexity of the complete phenomenon" (Meredith, 1998, p.444). As we expect the design of a front office – back office configuration to be the result of a process of considerations in which several variables and relations are taken into account simultaneously and influence each other, it is important to study this mechanism holistically rather than by its individual elements. In addition, such a holistic approach facilitates the recognition of variables and relations that are not yet part of our conceptual model. As we do not yet have a complete list of variables that influence the considerations underlying the design decisions, nor a comprehensive set of considerations, enabling additional concepts to emerge from practice is desirable.
- Third, case-based research enables the inclusion of the context in which a phenomenon is situated (Meredith, 1998; Yin, 2003). As we expect several elements of the mechanism underlying the design of front office – back office configurations to be related to an organizational context, such as the service strategy and the available information systems and human resources, a research method that includes this context is particularly valuable. Although a survey can deal with the context of a phenomenon to a certain extent, the case study approach allows phenomena to be studied in their natural setting and deliberately covers contextual conditions.
- Fourth and finally, the case study approach lends itself well to using multiple methods of data collection or multiple sources of evidence (Eisenhardt, 1989; Meredith, 1998; Voss et al., 2002; Yin, 2003). Using multiple sources of evidence, e.g. documents, archival records, interviews and direct observations, allows the convergence of research findings through a process of triangulation, which reduces the risk of inaccuracies and provides stronger support for the findings, and allows a rich interpretation of the phenomenon and its context. With regard to the mechanism we aim to identify, we expect we have to rely on multiple sources of evidence in order to obtain all relevant information and to avoid respondent bias. In fact, we do not expect to find single key-informants that are capable of recalling exactly and comprehensively what were the underlying considerations for a particular front office – back office

Table 5.1a: Overview of study design (based on Eisenhardt (1989))		
Step	**Activity**	**Our choices**
Getting started	Definition of research question	What is the mechanism underlying the design of front office – back office configurations?
	A priori constructs	We developed a conceptual model containing constructs, but no specific relations, nor propositions.
Selecting cases	Sampling of cases	Multiple case design: five cases. Theoretical sampling. Information-rich cases and maximum variation in design decisions. Mix of large and small, rural and city banks. Different geographical areas.
	Within-case sampling	Unit of analysis: service delivery process. Theoretical sampling. Common processes and maximum variation of degree of service customization: ▪ Process for providing mass consumer products ▪ Process for providing mortgages ▪ Process for providing company loans
Crafting instruments and protocols	Data collection methods	Case study protocol. Multiple sources of evidence: ▪ semi-structured interviews ▪ company documents ▪ direct observations
	Sampling of target respondents	For each process: 2 advisors, 2 support employees, 1 process engineer and 1 manager.

configuration. Therefore, triangulation is desirable. Hence, we selected case study research as the appropriate research method for our empirical study.

Following Eisenhardt's (1989) roadmap for building theory from case studies, table 5.1a and table 5.1b provide a summary of the methodological choices in this research study. Each is addressed in more detail below.

5.2 Getting started

The first phase of a theory-building process consists of defining research questions and thinking about a priori specification of constructs. We already explained that the main research question for this study was: "*what is the mechanism underlying the design of front office – back office configurations?*". In addition to the research questions, it is important to consider the role of existing theory, when and how it will become part of the theory-building process. The *a priori* knowledge we based this study on, is reflected in the conceptual model we developed in the previous chapter. This model is the result of the trade-off between avoiding bias following from preordained findings and benefiting from insights that are

Table 5.1b: Overview of study design (based on Eisenhardt (1989))

Step	Activity	Our choices
Entering the field	Actual data collection	Each case took one month, multiple visits paid. Conducting 79 interviews of 1.5 h. Writing case study report. Receiving feedback from participating banks on case study report.
Analyzing data	Preparation	**Data reduction:** ▪ Working out interviews. ▪ Coding interviews.
	Within-case analysis	**Data display:** 15 flowcharts of process steps and design decisions. 5 matrices for underlying considerations for designs.
	Cross-case analysis	**Conclusion drawing:** ▪ Checking whether conceptual model captures design considerations in cases. Ruling out rival explanations. ▪ Investigating impact of influencing variables across cases. ▪ Detecting cross-case patterns in considerations. ▪ Working out patterns into detailed mechanism.
Shaping hypotheses	Verification	(I) Going back to data to check whether emerged mechanism fits the data and accurately reflects each situation. (II) Verifying mechanism in new case from different context.
Enfolding literature	Comparison with conflicting and similar literature	Comparing relations between input variables and design decisions with literature. Comparing general mechanism with existing insights.
Reaching closure	Looking for theoretical saturation	Number of cases was set in advance. No need to add or remove cases. Iteration between theory and data relatively limited, because more improvement is to be expected from additional empirical research.

already available. Below we firstly explain this trade-off, followed by our choices regarding the role of a priori knowledge.

In inductive theory-building research, it is sometimes recommended to begin with a blank sheet, to begin as close as possible to the ideal of no theory under consideration. Although it is virtually impossible to achieve this idea of a clean theoretical slate, avoiding existing work is important because preordained theoretical perspectives or propositions may bias and limit the findings. A well-known example is the grounded theory approach, a methodology for developing theory that is grounded in data which are systematically gathered and analyzed (see, for example, Glaser and Strauss, 1967; Strauss and Corbin, 1990). In this approach it is vital to keep an open mind, not being constrained by previously developed theory. Originally, Glaser and Strauss urged to "ignore the literature of theory and fact on the area under study in order to assure that the emergence of categories will not be contaminated" (1967, p.37).

On the other hand, however, there are several arguments in favor of a priori knowledge. Voss et al. (2002, p.199) argue that "in theory building research, no matter how inductive the approach, we need to have a prior view of the general constructs or categories we intend to study, and their relationships". Yin states that for case studies, developing propositions as part of the design phase is essential, whether the ensuing case study's purpose is to develop or to test theory. These theoretical propositions direct attention to something that should be examined within the scope of the study. Doing so, the use of theory is not only an immense aid in defining the appropriate research design and data collection, but also becomes the main vehicle for generalizing the results of the case study (Yin, 2003). To a lesser extent, Eisenhardt (1989) supports "advance knowledge" by suggesting *a priori* specification of constructs that are potentially important, with some reference to extant literature. This permits researchers to measure constructs more accurately and provides a firmer empirical grounding for the emergent theory if the constructs prove important as the study progresses. However, investigators should avoid thinking about specific relationships between variables and theories as much as possible, especially at the outset of the process. Miles and Huberman make a stand for relatively tight, pre-structured qualitative research designs. According to them, how pre-structured a design should be, depends on the time available, how much already is known about the phenomena under study, the instruments already available and the analysis that will be made. Trade-offs are involved here: "In multiple-case research, for example, the looser the initial framework, the more each researcher can be receptive to local idiosyncrasies - but cross-case comparability will be hard to get, and the costs and the information load will be colossal. Tightly coordinated designs face the opposite dilemma: They yield more economical, comparable, and potentially generalizable findings, but they are less case-sensitive and may entail bending data out of the contextual shape to answer a cross-case analytic question" (Miles and Huberman, 1994).

For the phenomenon central to this research study, i.e. the mechanism underlying the design of front office – back office configurations, we were confronted with, on the one hand, several theoretical concepts that are already available, and, on the other hand, certain concepts that are missing. In particular, we lacked information regarding the coherence and interaction between design decisions, underlying considerations and influencing variables. Yet, there are several contributions that address particular elements of the mechanism, i.e. detailed relations between a variable and one of the design decisions of a front office – back office configuration. A well-known example is the impact of the degree of service customization on the design of front office – back office configurations. Hence, the challenge for this research study was to ensure an open mind with a minimum amount of bias, while at the same time doing justice to and benefiting from theory that is already available. Furthermore, we had to take into account that this research study included multiple, comparable cases. Comparison across cases is facilitated by a common framework

or set of categories that is specified in advance (Miles and Huberman, 1994). Yet, we wanted to leave enough room for the context and peculiarities of each case. Therefore, given these considerations, we developed a relatively simple conceptual model that displays potentially important variables regarding the design of front office – back office configurations and the three design decisions, but the mechanism as a black box. Furthermore, the model does not contain propositions or hypotheses, other than propositions indicating there might be a relation between a particular variable and the design of front office – back office configurations.

5.3 Selecting cases

Sampling cases to be included in a study is one of the most important decisions to make. This decision regards the number of cases to be selected and the sampling itself. However, we first need to define what is a case in terms of this research. This is closely related to the unit of analysis in a study. In this study, the unit of analysis is a process, a service delivery process to be more precise. This is because we want to learn about these processes: what is their design and what are the underlying considerations, rather than about e.g. individuals or organizations. Hence, we needed to sample cases that provide an appropriate setting to study processes. As service delivery processes belong to or appear in organizations, we in fact needed to sample organizations "hosting" the processes. Yet, although we refer to these organizations as our cases, the process remains our unit of analysis. In this way, it is possible that one case study involves more than one unit of analysis (Yin, 2003). Put differently, we conducted five case studies in five organizations, each consisting of three processes, leading to a total of fifteen front office – back office configurations. With regard to the sampling decisions, this entails we not only needed to sample our cases (or organizations), which is described in this section, but also the particular processes to be studied within each case. This is called within-case sampling and addressed in the next section.

Single or multiple cases

First, when conducting case study research, one needs to choose between single-case designs and multiple-case designs. Although single cases provide a great deal of depth of observation, the generalizability of the findings is limited. Multiple cases, on the other hand, require more resources and often lose in depth, but augment external validity and guard against observer bias (Voss et al., 2002). Yin (2003) recommends the use of multiple-case designs over the use of single-case designs, because analytic conclusions will be more powerful and the external generalizability of the findings is improved through either literal or theoretical replications. Therefore, although studying one case (longitudinally) to see in great detail how the mechanism underlying the design of a front office – back office configuration operates could generate valuable insights in the mechanism, our research

strategy included multiple case studies. Being able to compare mechanisms from different cases will strengthen the precision, validity and stability of our findings (Miles and Huberman, 1994), although some depth of observation may be lost.

Sampling strategy

Second, the selection of individual cases is a crucial aspect in building theory from case studies, and qualitative research in general. Many researchers employ theoretical or purposive sampling models rather than random sampling (Denzin and Lincoln, 1994). The goal of theoretical sampling is to choose cases which are likely to replicate or extend the emergent theory (Eisenhardt, 1989). In any case, one should select those cases that offer the best opportunity to learn (Stake, 1994). General sampling strategies are, for example, maximum variation, typical case, extreme or deviant case, confirming and disconfirming cases or snowball sampling (Miles and Huberman, 1994). Yin (1984; 2003) advocates following a replication logic for sampling of cases and distinguishes between literal and theoretical replication. In the case of a literal replication, cases are selected to provide similar results, whereas in the case of theoretical replication, cases are selected to provide contrasting results, but for predictable reasons.

In this study, in order to obtain a sample that would enable us to learn the most about the mechanism that underlies the design of front office – back office configurations, we employed a strategy of *literal replication*. This means we selected cases for displaying the same mechanism. As we are still in the phase of unraveling the mechanism, it is most valuable for us to observe the mechanism a number of times, hence literal replication, from which we can derive a general mechanism.

In order to do so, we applied a strategy of sampling *"intense" cases*, i.e. information-rich cases that manifest the phenomenon intensely, but not extremely (Miles and Huberman, 1994). Within the context of this study, "information-rich" meant displaying careful considerations regarding the design of service delivery processes. In fact, we concentrated on "experts" in the field of designing front office – back office configurations. A case was considered an expert if it recognized the importance of sound process design (not just for control purposes, but also for commercial objectives), explicitly designed its processes, based on careful considerations and kept monitoring its process designs. We expected that in such cases, it would be easier to trace a mechanism, compared to cases that did not make explicit considerations, and that the resulting mechanism could serve as the basis for design guidelines, as it can be considered "sound practice".

In addition to information-rich cases, we sampled cases for *maximum variation*, i.e. cases that show a certain variety regarding the phenomenon to see whether a common pattern can be identified (Miles and Huberman, 1994). For this study, it was particularly important to look for a wide range of views and beliefs with regard to process design to include as much breadth as possible in the study. In this way, our study would capture a large number of

Table 5.2: Sample of banks			
	Small size	**Medium size**	**Large size**
City	*Unlikely*	Bank B	Bank D
Rural area	Bank A	Bank C	Bank E

possible considerations and the resulting mechanism would gain in external validity. Hence, we sampled information-rich cases that showed a variety of design considerations.

Our sample had to come from the population of financial service organizations. We decided to sample banks from a cooperative banking group that is one of the three largest players in the Netherlands for both business and individual clients. By sampling from this banking group, we had to gain access at the central board level only once, but nevertheless could obtain a large variety of cases due to the autonomy of the participating banks. Basically, the banking group is owned by the approximately 300 member banks and further consists of a number of specialized subsidiaries and a central support organization.
We firstly contacted the central department dealing with process design issues for supporting the member banks, to arrange that our study would be supported by the central support organization. Next, in cooperation with process design consultants from the banking group, we selected a number of banks that qualified as "information-rich", i.e. showed careful process design. We ensured the expert cases showed quite some variety in terms of their design decisions and views on process design. As the member banks of the banking group had sufficient local autonomy to design their own front office – back office configurations, we were able to identify several different approaches, to a greater or less extent close to common group practice. In fact, we sampled cases that were most different from each other in terms of their design decisions. In this way, we could also overcome possible bias following from sampling cases from one organizational context.
In addition, we deliberately varied the context of the banks to see whether certain circumstances would influence the considerations underlying the design of front office – back office configurations. If we find the same mechanisms, regardless the context of the banks, this will increase the external validity of our study (Yin, 2003). The dimensions we included were the size of the bank, measured by the number of employees employed (full-time equivalents) and the total of assets, and its regional area: city or rural. This is displayed in table 5.2. Moreover, we ensured a geographical spread of our cases, to avoid bias from e.g. regional connections between banks.

Number of cases

A final consideration in a multiple-case design regards the number of cases to be included in the sample. Ideally, it is time to stop adding cases when theoretical saturation is reached.

Theoretical saturation is the point at which incremental learning is minimal because the researchers are observing phenomena seen before (Glaser and Strauss, 1967). In other words, it is time to stop when you do not hear new things anymore. In practice, theoretical saturation often combines with pragmatic considerations, such as time, money or the need to plan cases well in advance (Eisenhardt, 1989). Another consideration in determining the number of cases relates to the breadth and depth of the study. Given a limited amount of resources, more cases often provide more breadth, but less depth to a study, and vice versa (Voss et al., 2002). In this empirical study, the final sample of banks consisted of five cases. We could not do more than five because of time and budget constraints, as for each case sufficient depth was required to study the mechanisms underlying the design of front office – back office configurations in detail. In addition, we expected five cases would be sufficient to derive a general mechanism with an acceptable level of external validity. Sampling five cases also was enough to satisfy our criteria for maximum variation and differences in size and regional area. We estimated that by adding more cases, the risk of adding volume instead of new insights to our findings would significantly increase. Leonard-Barton (1990, p.250) found that "the … interviews added bulk, not depth, to the research database. That is, the information gathered in the … study was largely redundant

Table 5.3: Description of the five banks in our sample

Bank A	Bank A is a relatively small bank in a rural area. Being the result of a recent merger of smaller banks, it had to redesign most of its service delivery processes. Yet, also after the merger the bank kept monitoring its processes actively. Bank A was considered to make design choices that were relatively common for most of the member banks in the banking group.
Bank B	Bank B is a city bank, yet relatively small. At the time of the case study, this bank was involved in a redesign project for the retail part of the bank, involving several changes in its front office – back office configurations, and had recently restructured the processes for serving business clients.
Bank C	Bank C, a rather large bank in a rural area, was included in our sample for making unusual choices. Contrary to the general trend of closing down offices and centralizing activities, this bank operates from a large number of small offices and intends to keep doing so. Furthermore, it deliberately avoids centralization of activities. Nevertheless, the bank is one of the most profitable banks of the banking group, providing an intriguing case.
Bank D	Bank D is a very large, city bank we also selected for design decisions that differed a great deal from the other banks. This bank was known for its strong financial performance and its history of developing its own solutions, independent from the central support organization of the banking group.
Bank E	Bank E was included in our sample as a large bank operating in a rural area. In addition, bank E is the result of a recent merger between four banks and has made some unusual choices for the processes in the new bank. For example, unlike other banks, the bank consists of four business units each serving a particular geographical area. Therefore, bank E does not have a head office and is not divided in segments, such as "mass consumer products", "private banking" and "corporate clients".

with the insights I had already obtained in the … pilot interviews." Yet, statistical generalization is often not the aim of case research.

The five cases are described in table 5.3. Even though the banks belong to the same banking organization, we were able to obtain quite some variety. We explain in the table on what grounds they ended up in our sample. In order to prevent the exact identities of the participating banks becoming known, we address them as bank A, B, C, D and E. To conclude, employing the sampling strategy as described in this section, we were able to construct a sample of banks that we expect to provide a suitable base for unraveling the mechanism underlying the design of front office – back office configurations.

5.4 Within-case sampling of processes

Although we have just described the sampling of cases to be included in this study, we have to address another sampling decision, i.e. within-case sampling decisions. As we attempt to unravel the mechanism underlying the design of front office – back office configurations through studying a number of processes, we needed to decide for each case which processes were to be included in the study. We decided to study concrete processes, rather than processes "in general" to improve the construct validity of this study. This is because it prevents part of the analysis is done by the respondents rather than by the researcher. As Weiss (1994, p.72) puts forward, respondents sometimes prefer to provide generalized accounts rather than concrete instances, because they feel they are more responsible reporters if they remain general. However, if they do so, they have already decided what is important and so take over part of the analysis from the researcher. Instead, by relying on concrete processes to collect the data that are required to identify the mechanism, the construct validity of the study increases.

Like the sampling of cases, within-case sampling decisions are also theoretically driven (Miles and Huberman, 1994). Again, we sampled processes that enabled us to learn about the mechanism. We studied more than one process per case, i.e. three different processes, to increase the range of processes covered by the mechanism and its external validity. Yet, we studied the same processes in each case to facilitate comparisons. This is a literal replication to strengthen our findings. The criteria for selecting these processes were the following:

- They should contain a mixture of front office and back office activities ("sales" rather than "transaction"), because that is the focal point of this study.
- They should be highly common for the banks. In this respect, common means the processes occur frequently and involve a relatively large group of customers, as well as a large proportion of the banks' resources. Although the number of different service

delivery processes in a typical universal bank can be as much as two or three hundred, most of them do not occur regularly. We expected that the banks would have put a great deal of design effort in the processes that are most frequent. In this way, it is easier to identify the considerations underlying the design decisions. In addition, as processes that are common for the banks in this study are likely to be common for the financial services sector as well, the findings can more easily be applied to other organizations.

- The processes should be relatively independent of each other, i.e. require separate resources in terms of employees and information systems. We expected that would enable us to learn the most about the mechanism, because we could observe three relatively independent mechanisms. Studying processes that share resources would decrease the breadth of the study and would introduce a complicating factor, while the basic mechanism is not known yet.
- The processes should vary with regard to the degree of customization of the service being delivered. Based on our findings from the literature review and the exploratory case study, we expected the degree of service customization to be an important factor in the mechanism underlying the design of front office – back office configurations. To be able to observe this influence carefully, we sampled processes with differing degrees of service customization. In fact, they were sampled to achieve maximum variation.

Given our experiences in the exploratory case study, we decided to study roughly the same processes as we did in that case study: the process for providing *mass consumer products* (which is a broader interpretation of the process for selling electronic banking agreements), the process for providing *mortgages* and the process for providing *company loans*. Table 5.4 addresses the prevalence of the three processes we chose.

In addition to the choice of which processes to study, we also had to decide whether we would concentrate on formal or actual processes in the case organizations, given the potential discrepancies between processes as they are designed and processes as they are executed. We decided to concentrate on the formal front office – back office configurations, thus the way they were designed. This is because we are interested in design decisions and design considerations, hence studying a process as designed will provide most insights. In fact, we expect the design efforts of the banks to be most visible in their formal process designs. However, discrepancies between formal and actual processes can provide important indications for the quality of a design or additional, perhaps "unofficial", considerations. Therefore, we decided to pay attention to both formal and actual processes in the case studies, but to base our analysis on the formal process designs. Consequently, in each of the five cases we studied the design and execution of the processes for providing mass consumer products, mortgages and company loans, leading to insights in fifteen

Table 5.4: Explanation of the prevalence of the three processes central to this study	
Process for providing mass consumer products	It is the primary commercial process related to individual customers. It involves the selling of a broad range of mass consumer products, such as checking accounts, savings accounts, credit cards, electronic banking agreements, loans etcetera. In addition to this sales process, there are so-called service processes, like changing a customer's address, providing information or dealing with complaints. Most transaction processes for individual customers, including withdrawing money or obtaining foreign currencies have been redirected to automated teller machines.
Process for providing mortgages	Most banks are structured in three divisions: a division for mass consumer products, a division for financial advice and mortgages and a division for business clients. Within the second division, mortgages are the most common service that is delivered by the banks. The commercial processes related to mortgages regard customers that are planning to buy a house and want to know which mortgage a bank can offer them, customers that directly need a mortgage because they have bought a house and customers that want to adjust their current mortgage. The process for providing mortgages covers all these groups. Yet, different parts of the process will be emphasized, i.e. the front office or the back office activities. In addition to this sales process, there are "maintenance" activities for running mortgages. These activities are often allocated to a separate department in the division.
Process for providing company loans	With regard to business clients, company loans are the main service to be sold. There are several other products, but they are far less common and are often combined with a loan. The staff that is involved with providing company loans often also is responsible for other commercial activities, such as acquisition and visiting existing customers, and "maintenance" activities related to current company loans. Yet, providing company loans is the main commercial process.

mechanisms underlying the design of the front office – back office configurations. The processes are introduced in detail in the next chapter.

5.5 Crafting instruments and protocols

Before entering the field, we developed a case study protocol to guide the data collection. Particularly in a multiple-case design, explicit and well-planned field procedures are desirable. This will increase the reliability of the study. The protocol consisted of, among others, the data collection methods, data sources and interview questions. In order to be able to identify the mechanism underlying the design of a front office – back office configuration and to collect sufficient information to develop a general mechanism, we basically needed to know for each process *what* it looked like and *why* it looked like that. We formulated the following information needs for each process:

- A description of the front office – back office configuration, in terms of the three design decisions (definition of front office and back office activities, decoupling decisions and organizational arrangements);
- A description of the role of information systems in the process;
- A description of company and competitive priorities for the process;
- Arguments for the design decisions (ensure to cover five categories of model);
- An evaluation of the functioning of the process, i.e. satisfying and dissatisfying aspects;
- A description of the context in which the process is situated, i.e. the case organization.

In order to obtain this information, we relied on multiple sources of evidence. As we explained in 5.1, using multiple sources of evidence enables triangulation of the findings, which creates stronger support for the conclusions. In addition, we expected multiple sources of evidence would be required to obtain a complete picture, free from respondent bias, of each front office – back office configuration and the considerations underlying its design. Primarily, we collected data from semi-structured interviews and company documents. We added to these findings through direct observations during our presence in the case study companies. Each is described in more detail below.

The definitions for the main concepts we needed information on, such as front office and back office activities, decoupling, information systems etcetera, have been provided in chapter 4, except for the evaluation of the functioning of a process. We included the functioning of a process to obtain a rough idea of how well the design of a front office – back office configuration works. Although this study is not aimed at identifying what works best or whether well-designed processes lead to better performance, data indicating the functioning of a process are desirable. Such knowledge provides insights in the performance effects of particular design decisions and indications for the occurrence or absence of trade-offs. We measured the performance of the processes by means of the bottlenecks in the processes that were reported by respondents. We realize this is quite far from measuring process performance objectively and quantitatively, yet it is acceptable for the purpose of this study: unraveling the mechanism. To avoid respondent bias, we interviewed multiple respondents and combined evidence from the interviews and our own observations.

Interviews

We conducted a large number of semi-structured interviews. Compared to unstructured or highly structured interviews, semi-structured interviews enable a combination of addressing the topics that have to be covered on the one hand and leaving enough room for the respondents to tell their story on the other hand. With regard to the respondents, we developed a list of target respondents that was consistent over cases, as displayed in table 5.5.

Table 5.5: Overview of target respondents, documents and observations per case

	Interviews		Documents	Observations
Providing mass consumer products	▪ Consumer advisors ▪ Process engineer ▪ Manager	2 1 1	▪ Process description ▪ Strategy plan ▪ Additional design information	▪ Work in progress ▪ Casual incidents
Providing mortgages	▪ Mortgage advisors ▪ Support employees ▪ Process engineer ▪ Manager	2 2 1 1	▪ Process description ▪ Strategy plan ▪ Additional design information	▪ Work in progress ▪ Casual incidents
Providing company loans	▪ Business advisors ▪ Support employees ▪ Process engineer ▪ Manager	2 2 1 1	▪ Process description ▪ Strategy plan ▪ Additional design information	▪ Work in progress ▪ Casual incidents
Total number of respondents		**16**		

For each process in the study, we conducted interviews with the employees that carried out the process, i.e. the *advisors* and *support employees* (as the process for providing mass consumer products in general does not involve support employees, we only included consumer advisors). In these interviews we concentrated on the actual process, rather than the formal process descriptions. We did this to discover potential discrepancies between the design and execution of the process that would provide insight in the suitability of the designed process and additional considerations. In order to avoid single rater bias (the possibility that a given respondent provides a skewed or warped perspective on the larger business unit being analyzed (Boyer and Verma, 2000, p.129)), we included two employees for each role in the process.

In addition, we conducted interviews with the *manager* and the *process engineer* for each process. In general, the managers run the departments responsible for delivering either mass consumer products, mortgages or company loans. Hence, they ultimately make the design decisions regarding the front office – back office configurations. Furthermore, the banks in this study were obliged to carefully document their processes and to check whether the employees worked in accordance with the process descriptions. These tasks were often allocated to "process engineers". Generally, the process engineers and the managers together hold the information regarding the considerations underlying the design decisions. Thus, we included them both in our study. In this study we should be particularly aware of recollection biases, as the design considerations have to be measured retrospectively. Recollection biases influence respondents' answers and make it difficult to determine cause and effect (Leonard-Barton, 1990). There are primacy and recency effects, post-rationalization (the interpretation of events in a different manner than respondents would have at the time (Voss et al., 2002, p.202)) and the risk of respondents showing socially desirable behavior, such as elaborating what they should have done instead of what

Table 5.6: Overview of topics covered in each interview

Advisors and support employees	Process engineers	Managers
▪ Job name, tenure, main tasks ▪ Detailed overview of process steps and information systems ▪ Three design decisions ▪ Bottlenecks in process ▪ Recent changes in process (what, why) ▪ Criteria for performance appraisal ▪ Company and competitive priorities of bank for process	▪ Job name, tenure, main tasks ▪ Sketchy overview of process steps and three design decisions ▪ Bottlenecks in process ▪ Recent changes in process (what, why) ▪ Arguments for design ▪ Company and competitive priorities of bank for process	▪ Job name, tenure, main tasks ▪ Three design decisions & arguments ▪ Bottlenecks in process ▪ General design considerations or policies ▪ Recent or upcoming changes in process (what, why) ▪ Company and competitive priorities of bank for process

they actually did. Using multiple "raters" and triangulating data collection methods can reduce the effect of recollection biases.

An overview of the specific topics that were covered in each interview is provided in table 5.6. Given these topics, we planned each interview to take approximately 1.5 hours. We decided not to tape the interviews, mainly because we do not need literal expressions and phrases as put forward by the respondents in order to construct the mechanisms underlying the designs of the front office – back office configurations. Hence, the enormous amount of work involved with transcribing taped interviews could be avoided. Instead, we took notes during each interview and worked out the interviews within a couple of days, so we were still able to capture most of the things that had been said. We expected the potential loss of information or depth of information would be limited and would not affect the outcomes of the study, given that we were mainly interested in factual information, i.e. *what* the respondents were saying, rather than *how* they were saying it.

Company documents

We also studied company documents to collect the information required. For each process, we studied the process description set up by the bank, describing the formal way of working. These process descriptions document the process steps, the actor for each process step and the information systems to be used. In addition, we included documents addressing the strategic priorities and plans for each product and its associated process. From these documents we could derive the company and competitive priorities of the bank for each process, as well as some considerations underlying the design decisions. Furthermore, at the outset of each case and in the interviews with the managers we inquired about documents that would give additional insight in their design decisions. This is summarized in table 5.5.

Observations

We added to the information obtained from the interviews and the company documents through direct observations. According to Yin (2003), observations following from visiting a case study site can range from formal to casual data collection activities. As in this study observations are not our primary source of evidence we could rely on a more casual approach. This means, for instance, that we did not specify observational protocols. Our observations were collected in two ways, see also table 5.5. First, we encouraged advisors and support employees to show us the contents of their work, such as the forms to be filled in, a layout for a mortgage offer and the information systems they used, during the interviews or afterwards. On the one hand this forced the respondents to talk about what they were actually doing, rather than should or wanted to be doing, while on the other hand it gave the richest picture possible of the process steps and potential bottlenecks. Second, we observed actual practice for the three service delivery processes central to this study when we spent time at the bank, for example in between interviews. We followed interactions with customers, either face-to-face or by phone, or between colleagues. Although we do not mean to draw conclusions from these incidents, they can help in corroborating the findings from the documents and interviews and can provide interesting lines of inquiry when the observations seem contradictory rather than consistent.

To conclude, the case study protocol for collection data as we have described it in this section ensured consistency over cases, maximizing the potential for comparisons and the reliability of the study, and ensured we could obtain the information we need in order to identify the mechanisms underlying each front office – back office configuration and to construct a valid general mechanism from them.

5.6 Collecting data

According to Eisenhardt (1989), building theory from case studies provides the opportunity for making adjustments to the sampling decisions and data collection methods as a study proceeds, because data analysis often overlaps with data collection. However, in this study we did not come across aspects that required modification. In this section we describe the resulting fieldwork practices for the five case studies, given the protocol we presented above. The cases were studied one by one in the period from January until July 2003. We finished one before starting another, in order to avoid mixing case impressions. We started each case with one or more introductory interviews with key informants that also acted as our contact persons. In these interviews we made arrangements with regard to the respondents and company documents to be included in the study. In the following period we paid multiple visits to the bank to conduct the interviews. In this way, each case took approximately one month. For each case we collected field notes in a log to capture

Table 5.7: Overview of total number of interviews and respondents in the case studies

	Introductory interviews	Providing mass consumer products	Providing mortgages	Providing company loans	
A	1 Process engineer	2 Consumer advisors 1 Process engineer 1 Manager	2 Mortgage advisors 3 Support employees 1 Process engineer 1 Manager	2 Business advisors 3 Support employees 1 Manager	18
B	1 Team leader mass consumer products 1 Team leader mortgages 1 Team leader company loans	2 Consumer advisors 1 Support employee 1 Process engineer 1 Manager	2 Mortgage advisors 2 Support employees 1 Process engineer 1 Manager	2 Business advisors 2 Support employees 1 Process engineer 1 Manager	20
C	1 General manager 1 Process engineer	2 Consumer advisors 1 Manager	2 Mortgage advisors 1 Manager	1 Business advisor 1 Support employee 1 Manager	11
D	1 Process manager	2 Consumer advisors 1 Process engineer 1 Manager	2 Mortgage advisors 2 Support employees 1 Process engineer 1 Manager	2 Business advisors 2 Support employees 1 Manager	16
E	1 Board member internal affairs 1 Board member commercial affairs	1 Consumer advisor 1 Support employee 1 Process engineer 1 Manager	1 Mortgage advisor 1 Support employee 1 Process engineer 1 Manager	1 Business advisor 1 Support employee 1 Process engineer 1 Manager	14
				Total number of interviews in study	**79**

the peculiarities of each case and our initial ideas regarding the mechanisms we were trying to unravel.

Interviews, company documents and observations

In total, we conducted 79 interviews of 1.5 hours each. The total number of interviews and respondents is displayed in table 5.7. We could not exactly follow the case study protocol in each case, as the cases showed different organizational structures and working practices. This means certain roles were absent, such as support employees in bank C, or had to be added, like a third support employee in bank A. In bank E we were unable to include second advisors and support employees for each process, because the organization set limitations to its participation. Yet, this was no reason to exclude the case from the study.

In addition to the interviews, we were able to study company documents as we planned. For each process, we studied its process description. Only in bank D we were unable to obtain process descriptions for the processes for providing mass consumer products and company loans. Furthermore, we obtained official documents with regard to organizational structures and corporate strategies from each bank. These provided valuable information about the company and competitive priorities of each bank regarding the products and processes in this study, as well as the considerations underlying the design decisions leading to the particular front office – back office configurations. The company documents we studied are presented in table 5.8. As planned, we added to the company documents and interviews by direct observations. In numerous instances, we observed actual practice by

Table 5.8: Overview of company documents that were studied per case	
Bank A	▪ Process descriptions of the three processes (equal to recommendations from central support organization) ▪ Organizational structure ▪ Corporate strategy 2003 – 2004
Bank B	▪ Process descriptions of the three processes ▪ Organizational structure ▪ Strategy for gaining / retaining market leadership with individual clients ▪ Strategy for improving quality and efficiency of service to business clients
Bank C	▪ Process descriptions of the three processes ▪ Organizational structure ▪ Corporate strategy 2002 – 2004 ▪ Corporate strategy 2003 – 2005
Bank D	▪ Process description of the process for providing mortgages ▪ Organizational structure ▪ Corporate strategy 2003 – 2005
Bank E	▪ Process descriptions of the three processes ▪ Organizational structure, including rationale ▪ Bank policy for delivering mass consumer products

means of the forms that were filled in by advisors and support employees and copies of letters or offers sent to customers. In addition, we received demonstrations of most of the information systems in use.

Case study report

After finishing the five case studies, we developed a case study report for the participating banks and the central department dealing with process design issues that was part of the central support organization of the banking group. We wrote an integral report, containing the findings from each case individually, as well as across-case conclusions and comparisons. The report provided each bank insights in the considerations underlying their own processes, but also in the considerations of the other banks. Furthermore, in order to compensate the banks for the time and effort they put into facilitating the case studies, they received recommendations for improvement. Before distributing the report, we gave each bank the opportunity to review the part regarding their processes. In this way, we could correct mistakes and see to what extent the banks agreed with our findings. Bank A, B and E expressed their agreement with our descriptions of their particular situations and with our conclusions. Bank D, the largest and most complex bank in the study, corrected a few inaccuracies with regard to, for example, the names of departments and historical developments, and indicated they would like to see a better explanation of the improvements we recommended for their process for providing company loans. Bank C also named some inaccuracies and clarified a few of their considerations underlying design decisions. In fact, bank C was quite keen on seeing their vision on process design expressed

in the report. Having implemented these suggestions, we can conclude the report accurately reflected the design decisions that were made in each bank and the considerations underlying them. As the total number of adjustments was small, this also provides confidence that our interpretations of the case situations were accurate. This adds to the construct validity of this study.

5.7 Data analysis

The data we collected in the case studies mainly were qualitative data. Qualitative data usually come in the form of words rather than numbers (Miles and Huberman, 1994). In our case, we had rich descriptions of the front office – back office configurations we studied and their underlying considerations and the context in which they occurred. Therefore, they cannot be analyzed like numbers, but require different techniques. A few authors have paid attention to qualitative data analysis, or how to draw valid meaning from qualitative data. It is particularly important to guard against unreliable or invalid conclusions and self-delusion, issues sometimes associated with qualitative research (Huberman and Miles, 1994). Although techniques for statistical analysis have received much more attention, today a number of guidelines are available for qualitative data analysis. Common practices include affixing codes to field notes, writing memos, within-case analysis and searching for cross-case patterns. A well-worked out methodology for qualitative data analysis is provided by Miles and Huberman (1984; 1994). According to Miles and Huberman (1994), qualitative data analysis consists of three concurrent activities: data reduction, data display and conclusion drawing and verification. We describe each of these activities for our study below. An overview is provided in table 5.9.

Data reduction

First, in order to reduce the data we collected in the case studies, we typed out the 79 interviews we conducted, based on the notes we took during the interviews. Second, we

Table 5.9: Overview of data analysis

Preparation	Data reduction	▪ Working out interviews ▪ Coding interviews
Within-case analysis	Data display	15 flowcharts on design decisions 5 matrices on considerations
Cross-case analysis	Conclusion drawing and verification	▪ Design considerations captured by model? ▪ Searching for rival explanations ▪ Detailed impact of each input variable ▪ Detecting cross-case patterns ▪ Working out pattern in mechanism ▪ Verification of mechanism with case data ▪ Verification of mechanism in new case

coded each interview using ATLAS/ti, software for qualitative data analysis. Coding data is an important part of the analysis and a highly valuable technique for facilitating data retrieval and generating initial ideas regarding conclusions. Coding means assigning tags or labels to the data collected, indicating what a particular passage is about. Codes can be attached to words, phrases, sentences or whole paragraphs. We used a code list of 63 codes we constructed prior to the coding activities, based on our conceptual model (see chapter 4) and case study protocol. The code list is provided as an appendix to this chapter.
In order to improve the efficiency of the study, as well as its validity and reliability, we used computer software to code and manage the interview data. In general, computer-aided analysis speeds up the process, compared to analyzing using paper, pencils and scissors, for example because transcribed interviews can be retrieved easily, coding can be done quicker than on paper (not to mention revising codes) and coded quotations are easily retrieved and compared. Another important reason for using software in this study is that it can improve the reliability of the research and guards against several kinds of bias. When analyzing interviews, it is important to include them all in the analysis and treat them equally (Eisenhardt, 1989; Yin, 2003). However, this is easier said than done, particularly when the total number of interviews is quite large and the study is spread over time. Primacy or recency effects, for example, make us remember the first or last interviews better than the others, giving them more weight in the analysis. Additionally, a particularly eloquent respondent or respondent we had good rapport with can dominate the sample. Furthermore, a nice juicy quote, although not necessarily representative for the whole theme, can be tempting. Using software that easily displays and retrieves all interviews, and every section of the interviews, helps to avoid these risks.

Data display

The second activity in qualitative data analysis as described by Miles and Huberman (1994) is data display. Displays are organized, compressed assemblies of information that permit conclusion drawing and action. They can be extended text, but matrices or other schematic overviews are often much more powerful. In this research, we heavily relied on data displays for drawing our conclusions. In fact, chapter 6 is largely devoted to data display. The displays we made are described in this section.

Figure 5.1: Modeling technique for processes (data display)

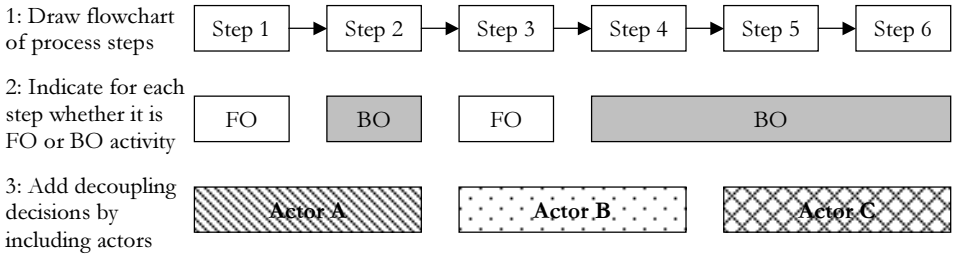

Table 5.10: Dummy matrix for display of considerations per bank			
	Definition of front and back office activities	**Decoupling decisions**	**Organizational arrangements**
Providing mass consumer products	Considerations	Considerations	Considerations
Providing mortgages	Considerations	Considerations	Considerations
Providing company loans	Considerations	Considerations	Considerations

As processes are the unit of analysis in this study, most displays are organized around processes. For each of the fifteen processes we investigated, we described the process steps and the three design decisions. We did this in words and graphically by means of a flowchart and the modeling technique we use to indicate the definition of front office and back office activities and the decoupling decisions. A dummy flowchart is provided in figure 5.1. This imaginary process consists of six process steps. Step 1 and 3 are front office activities, whereas step 2, 4, 5 and 6 are back office activities. In this case, the decoupling decision has resulted in three actors that are involved in the process: Actor A for step 1 and 2, Actor B for step 3 and 4 and finally Actor C for step 5 and 6. Developing such a flowchart for each of the fifteen processes we studied, provides easy overviews of the design decisions and is a practical base for comparing them. In addition to these flowcharts, we described the considerations that had led to the design of each front office – back office configuration, combining the information from the coded interviews and the company documents. This produced fifteen little "stories" on process design. We summarized the main considerations underlying the design decisions in the banks in matrices. For each bank, we developed a matrix addressing the three processes. Table 5.10 serves as an exemplary matrix. This is as far as we went with regard to within-case analyses.

Conclusion drawing and verification

The next step in the analysis of our data was conclusion drawing, i.e. unraveling the mechanism underlying the design of front office – back office configurations. This entails the steps we took to move from fifteen "stories" on the design of front office – back office configurations to one general mechanism. Several approaches and techniques are available to aid this process, such as making different cross-sections of the data for structured comparisons, pattern matching and logic models, yet much depends on the researcher's own style of rigorous thinking, along with the sufficient presentation of evidence and careful consideration of alternative interpretations (Yin, 2003, p.110). Our grand strategy was one of searching for patterns based on the descriptions and displays of the fifteen front office – back office configurations. The strategy can be characterized by two aspects:

we relied on cross-case synthesis rather than continuous iteration between cases and we did not develop interim mechanisms. This is explained below, followed by the four steps of our analysis procedure.

It is important to note that in this section, unlike in the other sections in this chapter, the term "case" is used to refer to the front office – back office configurations we studied, as they are our unit of analysis. Thus, when we say we compared cases, we were not comparing banks, but front office – back office configurations. We have to make this distinction, because we studied more than one unit of analysis per case and base our conclusions on individual front office – back office configurations rather than aggregate results for a bank. This has no consequences for the remainder of this thesis, where the term "case" again stands for a bank.

Cross-case synthesis

When analyzing multiple cases, there are roughly two general strategies. One is to analyze each case individually and then look for patterns across cases. This resembles Yin's strategy of cross-case synthesis (Yin, 2003). In our research, this would mean, for example, identifying fifteen mechanisms and developing one general mechanism based on their common patterns. The second strategy is a process of continuous iteration between cases. This is close to Yin's description of explanation building (Yin, 2003). For example, the mechanism underlying the design decisions is identified for the first front office – back office configuration and then "applied" to the second front office – back office configuration to see whether it holds and which adjustments are required. This adjusted mechanism is transferred to the third case, where it is applied and adjusted. Then it is applied to the fourth front office – back office configuration and so on until a general mechanism that holds for each case is derived. For this research study, a strategy of continuous iteration seemed less appropriate for three reasons.

- First, as we are dealing with a relatively large number of cases, the process of continuous iteration becomes very time-consuming and complex. This is because making adjustments to the mechanism-under-construction based on the evidence in e.g. case 5 requires going back to cases 1 through 4 to check the new insights with their evidence. Re-iterating in this way between fifteen cases would be highly impractical.
- Second, this method assumes mechanisms or other patterns providing starting points for a mechanism can be identified from single front office – back office configurations. However, as our current knowledge regarding the mechanism was limited, meaning that we did not exactly know what to look for, we expected cross-case patterns were required to initiate early thoughts about the mechanism. We did not expect that (a range of) single cases would provide much insight in a general mechanism.

- Third, a strategy of continuous iteration assumes relatively large similarities between the cases, facilitating the development of one general mechanism. In fact, as this method largely concentrates on transferring the effects that can be found in every case, it is less suitable for identifying multiple mechanisms that hold for a subset of cases. Yet, although we expected to be able to develop one general mechanism, we had to take into account that differences could be expected for the three processes we investigated: the processes for providing mass consumer products, mortgages and company loans.

With cross-case synthesis, however, we expected to be able to identify common patterns in the cases and distinguish between the three different processes, if required. Therefore, we relied on cross-case synthesis.

No "interim" mechanisms

Given that we employed a strategy of cross-case synthesis, we still need to explain how we moved from the fifteen cases to one general mechanism. The way we set up our empirical study, i.e. studying similar processes in five cases, enables "interim results", such as developing a general mechanism per bank or for each of the three processes. From there, an "overall" general mechanism can be developed. However, we decided not to do this. Instead, we unraveled the general mechanism from a review of the fifteen front office – back office configurations and their underlying considerations, remaining as close as we could to the original data. Although this strategy entails reviewing a large amount of data at the same time, it provides maximum opportunities for noting patterns across cases. This strategy also offers the richest possible base for the mechanism, because some depth of the original case stories will be lost when interim results are used. Moreover, developing a mechanism per bank or per process did not seem necessary, as a preliminary review of the data indicated there were similar patterns to be expected for the three processes or the five banks. There were no indications for different mechanisms. Thus, despite the different choices or different arguments, a general pattern seemed feasible. Therefore, we analyzed the fifteen cases based on a strategy of cross-case synthesis without interim mechanisms.

Now that we have explained our grand strategy, we address how we engaged in finding patterns across cases to unravel the mechanism underlying the design of front office – back office configurations. Although we did not yet have sufficient insights in the mechanism underlying the design of front office – back office configurations to engage into a process of pattern matching, i.e. comparing the case findings with predicted patterns (Yin, 2003), we were not entirely in the dark about where to start either. In fact, we could use the conceptual model we developed in chapter 4 to guide the analysis and our search for patterns across cases. The four steps we conducted for conclusion drawing and verification are described one-by-one below.

(I) Preliminary check

First we carried out a preliminary check to see whether our conceptual model was the right starting point for unraveling the mechanism underlying the design of front office – back office configurations. If the model seems capable of explaining the designs of the front office – back office configurations in the case studies, i.e. the model "fitted" our data, it will be worthwhile to adhere to the ideas behind the model and try to work it out in more detail. If parts of the design considerations are not yet captured by the conceptual model, they should be added to be included in the forthcoming analyses. We explicitly looked for rival explanations, such as the impact of the size, regional area or market share of a bank. If other influences appear, they should also be included in the subsequent analyses. We also checked whether there might be an effect from the fact that the banks in this study are part of the same banking group. If this is the case, the influence from the banking group should be investigated in more detail. Ruling out rival explanations is an important part of data analysis and a strong way to improve the validity of a research study (Miles and Huberman, 1994; Yin, 2003). This procedure is addressed at the beginning chapter 7.

(II) Investigation of input variables

Second, as the impact from participating in the same banking group was limited and our model seemed to capture the design considerations in the cases, we investigated the impact of each input variable in detail. By systematically going through the variables as part of our model, including the built-in option for additional variables to arise from the empirical data, we created a first overview of the impact of each variable. This included its frequency of occurrence as well as its effect on a particular design decision. Not only is this overview valuable per se, as it shows the "ingredients" for the general mechanism, it also provides indications for the larger patterns underlying the decisions. These patterns served as a starting point for unraveling the general mechanism underlying the design of front office – back office configurations. This procedure and its results are described in detail in chapter 7.

(III) Across-case patterns

The third phase for drawing conclusions involved working out the patterns that could be derived from the previous phase. We were able to identify a common pattern in the considerations underlying the design decisions in the banks. In our cases, the emerging pattern was one of firstly adhering to given choices, i.e. pre-determined design aspects that are inherent to providing a particular service, followed by making educated choices on trade-offs for each of the three design decisions in a front office – back office configuration. This pattern provided the "skeleton" for the general mechanism to be developed. Next, we used the detailed and rich information from the case studies to put flesh to the bones of the basic outline in order to arrive at a comprehensive and detailed mechanism. We worked out the given choices and each trade-off in detail, as well as the factors determining what choice was made on a particular trade-off. This is described in

chapter 8 of this thesis. Hence, at this point we have answered the main research question for this empirical phase, i.e. *what is the mechanism underlying the design of front office – back office configurations.*

(IV) Verification

Yet, as Miles and Huberman (1994, p.11) put it, conclusion drawing is only half of a Gemini configuration. The conclusions that emerge from the data have to be verified as well, which increases their validity. Therefore, for example, one needs to run tests on the data set or try to replicate the findings in another data set. In Eisenhardt's (1989) terminology, this process is called "shaping hypotheses". The emergent frame should be compared systematically with the evidence from each case in order to assess how well or poorly it fits with case data (p.541). In this study, we verified the general mechanism that we derived from the case studies in two ways. First, we used our own data set. We basically ran each of the fifteen front office – back office configurations we studied through our general mechanism and checked whether the particular considerations for each front office – back office configuration were captured by it. Hence, we did a final check to confirm the general mechanism accurately reflected the case study situations, i.e. could be used to explain each of the fifteen designs based on the underlying constellation of considerations. We concluded the basic logic in the mechanism was accurate, as well as the amount of detail included.

Second, in addition to verification of the mechanism in our original data set, we also conducted another case study to replicate the findings in another context. In fact, we verified the general mechanism in another bank, which was not part of the cooperative banking group. According to Yin (2003, p.37), a theory must be tested by replicating the findings in a second or even a third situation, where the theory has specified that the same results should occur. Once such direct replications have been made, the results might be accepted as providing strong support for the theory, even though further replications had not been performed. The design and results of this case are described in chapter 9.

5.8 Enfolding literature

One of the final steps in Eisenhardt's (1989) roadmap for building theory from case studies is comparing the emergent theory with the extant literature. Limiting the role of a priori knowledge at the outset of a study, as described in the section about getting started, does not mean existing theories have to be disregarded entirely. In fact, it is important to ask what the conclusions on hand are similar to and what they contradict. The result will be a theory with stronger internal validity, wider generalizability and a higher conceptual level (Eisenhardt, 1989, p.544). In this study, comparing our findings with previous findings is particularly important for increasing the generalizability or external validity of our conclusions. Tying our conclusions to existing literature is one way of making plausible that

the mechanism we unraveled is not just idiosyncratic for the five banks we studied, but is likely to be present in other situations as well. We compared our findings with existing insights at two instances. The first evident opportunity occurred after the second step in our data analysis, i.e. the investigation of the impact of each of the variables influencing the design of the front office – back office configurations across the cases. We compared the relations we observed with the insights we used for developing the conceptual model (see chapter 2 and 4). This is included in chapter 7. The second occasion for comparing our findings with previous findings regarded the general mechanism we unraveled from the case studies. We looked for insights that support or contradict our findings regarding the mechanism, such as the basic pattern or the contents of our trade-offs. This is part of chapter 8. In this way, we added to the internal and external validity of our general mechanism.

5.9 Reaching closure

Any inductive theory-building process needs to stop at a certain point to allow moving to subsequent phases of the research cycle. In general, the phase of inductive theory building can stop when theoretical saturation is reached. As we explained in the section on selecting cases, theoretical saturation is the point at which incremental learning is minimal because the researchers are observing phenomena seen before (Glaser and Strauss, 1967). This regards both the number of cases to be included in a study and the iteration between theory and data (Eisenhardt, 1989). In this study, we set the number of cases in advance at five. We expected that five banks would be sufficient for unraveling a general mechanism without creating bulk instead of depth and would be feasible given our time and budget constraints. During the study there was no need to change this decision, for there did not seem to be a lack of information, nor excessive redundancies. Therefore, we "closed" this study at five cases. For reasons of time and budget, we replicated the mechanism in just one case. As Miles and Huberman (Miles and Huberman, 1994) explain, even verification of the conclusions in one case can significantly add to the external validity of a study. With regard to the iteration between theory and data, as described in the previous section, we also looked for theoretical saturation. However, as we expect that the emerging theory will benefit more from additional tests against reality than from lengthy comparisons with current insights, we kept this activity limited. This is mainly because the key element in this study, the mechanism underlying the design of front office – back office configurations, has not often been addressed as a whole. Thus, additional insights in the mechanism as such to strengthen our conclusions are most likely to come from empirical research. Hence, we felt confident to put an end to this research phase of empirical data collection, conclusion drawing and comparisons with extant literature.

5.10 Conclusions

In this chapter we have described the research design for the case studies we carried out to unravel the mechanism underlying the design of front office – back office configurations. We have described what we did and have explained our particular choices. These choices regarded a wide range of aspects, including the sampling of cases, within-case sampling of processes and target respondents, data reduction techniques and general strategies for drawing conclusions. The design is summarized in table 5.1a and 5.1b at the beginning of this chapter.

We have carefully prepared and conducted this study in order to ensure its quality. General criteria for evaluating case study research are its construct validity, internal validity, external validity and reliability (Yin, 2003). As a conclusion to this chapter on our methodological considerations, we discuss these criteria in more detail and summarize the tactics we have employed to ensure the validity and generalizability of our findings. Table 5.11 provides a summary.

Table 5.11: Summary of tactics to improve the quality of the study

	To avoid	Tactics employed in this study
Construct validity	Measurement problems	▪ Studying concrete processes. ▪ Triangulation of data sources and data collection methods. ▪ Using multiple raters. ▪ Draft version of case report reviewed by key informants. ▪ Establishing chain of evidence from research questions until analysis.
Internal validity	It is not the mechanism or it is the wrong mechanism	▪ Relatively "open" conceptual model. ▪ Ruling out rival explanations. ▪ Verification of mechanism through replication with own data. ▪ Comparison of findings with existing theoretical insights.
External validity	The mechanism does not hold outside the five cases we studied	▪ Multiple case design based on literal replications. ▪ Theoretical sampling of banks that differ from each other. ▪ Sampling banks from different contexts, e.g. size and region. ▪ Sampling processes that are common to financial services sector. ▪ Sampling processes with maximum variation in customization. ▪ Comparison of findings with existing theoretical insights. ▪ Verification of mechanism through replication in a new case.
Reliability	A replication of the study produces different results	▪ Case study protocol to document the data collection procedures. ▪ Case study database of interviews and documents. ▪ Software for qualitative data analysis. ▪ Establishing chain of evidence from case descriptions until conclusions. ▪ Documentation of all other main choices, including analysis.

Construct validity

Construct validity has to do with establishing correct operational measures for the concepts being studied (Yin, 2003). Potential threats to construct validity are respondent bias (including recollection biases), wrong conceptualization and incomplete information. In terms of this research, low construct validity would mean we have not measured the designs of front office – back office configurations or their underlying considerations accurately. We employed several tactics to improve the construct validity of this study: (1) we studied concrete processes in the cases, (2) we used multiple sources of evidence to triangulate our findings, (3) we used multiple respondents where possible to avoid single rater bias, (4) we summarized our findings in a case study report that was reviewed by key informants and (5) we have tried to establish "a chain of evidence" from our initial research questions until the analysis procedures. Such a chain illustrates how the research questions guide the information needs for the cases, which determine the data collection methods and the interview questions. Furthermore, the techniques for data reduction, such as coding, and data display, were derived from the research questions and in their turn guided the analysis procedures. In this way, it is clear from the beginning what concepts will be studied and how, avoiding the risk of a case study becoming a "fishing expedition".

Internal validity

Internal validity is related to establishing a causal relationship, whereby certain conditions are shown to lead to other conditions, as distinguished from spurious relationships (Yin, 2003). Internal validity is mainly a concern for explanatory studies, where a researcher is trying to determine whether event *x* led to event *y*. Although this study is not exactly an explanatory study in this respect, we assume there is a causal relationship between, on the one hand, particular considerations and, on the other hand, the design of a front office – back office configuration. In particular, we argue it is the general mechanism that explains the designs of the front office – back office configurations in the banks. Therefore, we should ensure it is really the mechanism that explains the design decisions and that we have developed the "right" mechanism. We employed four tactics to improve the internal validity of this study: (1) we started with a relatively open conceptual model, to prevent bias from preordained findings and to enable the mechanism to arise from the case studies, (2) we explicitly looked for rival explanations, (3) we verified the general mechanism by replication with our own data and (4) we compared our findings with the existing literature. In this way, the general mechanism we present as the explanation for the design decisions in the case studies arose from the case studies, survived rival explanations, was verified through replication and is tied to existing insights.

External validity

External validity is related to establishing the domain to which a study's findings can be generalized (Yin, 2003). Within the context of this study, external validity entails whether we can infer that the general mechanism underlying the design of front office – back office

configurations we derived from the five case studies holds outside our case situations. Case study research is often criticized for offering a poor basis for generalization, because the sample size is often much smaller than in statistical research. However, as Yin (2003) puts it, generalizing from cases takes place according to analytical generalization instead of statistical generalization. This means one concentrates on expanding and generalizing theories rather than enumerating frequencies. In this research, it is the general pattern of considerations underlying the design of front office – back office configurations that should be generalizable. To improve the external validity of our validity, we employed three tactics: (1) the sampling strategy, (2) the comparison of our findings with existing insights and (3) the verification of the mechanism in a competing bank.

Important elements in the sampling strategy were the multiple case design (to look for literal replication of our findings) and the theoretical sampling of five very different banks that were known for making their own particular choices and the variety in terms of the size and regional area of the banks. As we covered such a broad range of banks within the cooperative banking group, we expect to have obtained roughly the same amount of variation as we would have with a sample containing banks from outside the banking group. Another sampling aspect was sampling common processes, which entails there is a relatively large group of organizations delivering the same services as we studied. Finally, distributing the processes for maximum variation with regard to the degree of service customization contributes to the transferability of the mechanism to other processes, because it already covers the range from highly standardized to highly customized services.

Reliability

The fourth and final criterion for judging the quality of a research design is its reliability. Reliability is about demonstrating that the operations of a study, such as the data collection procedures, can be repeated, with the same results (Yin, 2003). For case study research this means ensuring that another researcher (or the same researcher at another period of time for that matter) obtains the same results when following the same procedures for the same case. Reliability is often achieved through documentation and tactics for avoiding researcher bias. In this study, we have employed several tactics to improve the reliability of our findings: (1) we developed and adhered to a case study protocol, (2) we set up a database of case study material, (3) we used software for qualitative data analysis and (4) we have tried to establish a chain of evidence, allowing readers to follow our argumentation from the case descriptions until the final conclusions. For example, we present case descriptions as relatively raw data in chapter 6, subsequently condense these descriptions in summarizing flowcharts and matrices, and consistently work from these in the following chapters. In this way, it should be possible to trace the evidentiary process forward and backward. Finally (5), we have tried to document all our main steps and choices in this chapter. We expect this documentation to significantly contribute to the reliability of the findings of the study, which are presented in the next chapters.

Table 5.12: Code list for coding interviews

CODE	Quotations that refer to:	CODE	Quotations that refer to:
SCPresence	The impact of inevitable customer contact on process design	Labor-Division	The division of labor in the process
SCCusto-mization	The impact of the degree of service customization on process design	Appraisal	The criteria for performance appraisal
SC-Complexity	The impact of the degree of service complexity on process design	Process-DescrCSO	The process descriptions provided by the central support organization
SCOther	The impact of other service characteristics on process design	Process-DescrSelf	The process descriptions produced by the bank itself
EOPrice	Price as a competitive priority and its impact on process design	Bank-Characteristic	General characteristics of the banking group
EOQuality	Quality as a competitive priority and its impact on process design	BankA	General characteristics or peculiarities of bank A
EOSpeed	Speed as a competitive priority and its impact on process design	BankAOrg	The organizational structure of bank A
EO-Reliability	Reliability as a competitive priority and its impact on process design	BankB	General characteristics or peculiarities of bank B
EO-Flexibility	Flexibility as a competitive priority and its impact on process design	BankBOrg	The organizational structure of bank B
EOOther	Other competitive priorities and their impact on process design	BankC	General characteristics or peculiarities of bank C
IOCost	Reducing costs as a company priority and its impact on process design	BankCOrg	The organizational structure of bank C
IOSales	Increasing sales as a company priority and its impact on process design	BankD	General characteristics or peculiarities of bank D
IOOther	Other company priorities and their impact on process design	BankDOrg	The organizational structure of bank D
ITEnable	Information technology that enables particular design decisions	BankE	General characteristics or peculiarities of bank E
ITConstrain	Information technology that constrains particular design decisions	BankEOrg	The organizational structure of bank E
ITSupport	Information technology that supports particular design decisions	CAIS	The information systems for mass consumer products
ITOther	Information technology that otherwise affects design decisions	CATaskAdv	The tasks of consumer advisors
HREnable	Staff characteristics that enable particular design decisions	CATask-ComSup	The tasks of commercial support employees for mass consumer products
HR-Constrain	Staff characteristics that constrain particular design decisions	CATask-AdmSup	The tasks of adm. support employees for mass consumer products
HRSupport	Staff characteristics that support particular design decisions	CATime	How much time consumer advisors spend on FO and BO work
HROther	Staff characteristics that otherwise affect design decisions	MAIS	The information systems for mortgages
MC-Interaction	The interaction between input variables	MATask-Adv	The tasks of mortgage advisors
MC-Influence	A clear influence of an input variable on one of the design decisions	MATask-ComSup	The tasks of commercial support employees for mortgages
SDSProcess	The process steps that make up the process	MATask-AdmSup	The tasks of administrative support employees for mortgages

SDSFOBO	The definition of front office and back office activities in the process	MATask-MSC	The tasks of the central Mortgage Support Center
SDS-Decoupling	The decoupling decisions in the process	MATime	How much time mortgage advisors spend on FO and BO work
SDS-Organization	The organizational arrangements in the process	BAIS	The information systems for company loans
Bottleneck-General	General bottlenecks in the organization	BATaskAdv	The tasks of business advisors
Bottleneck-Design	Bottlenecks related to the design of the process	BATask-ComSup	The tasks of commercial support employees for company loans
Bottleneck-Execution	Bottlenecks related to the execution of the process	BATask-AdmSup	The tasks of administrative support employees for company loans
Internal-Goal	The internal objectives or company priorities of the bank	BATime	How much time business advisors spend on FO and BO work
External-Goal	The external objectives or competitive priorities of the bank		