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Design decisions in the front office - back office issue

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1 Introduction

This chapter provides an introduction to the research that is reported in this thesis. We present the issues that gave rise to this study, followed by our main research objectives and research questions. Next, we explain the operations management perspective we take in addressing the research questions and introduce the field of financial services that serves as the empirical domain for this study. The chapter is concluded by an overview of the thesis.

1.1 The front office – back office issue

Compared to delivering goods, one of the most distinguishing features of delivering services is the amount of customer contact involved in the service delivery process. Services such as haircuts, surgery, psychotherapy, transportation, consultancy or private loans cannot be provided without the customer being present, interacting or participating in the service delivery process. However, although a large amount of customer contact can be required for a particular service, there will also be parts of the service delivery process that can be carried out in absence of the customer. In fact, most service organizations will have at least some activities that take place “behind the scenes” or “back stage”. Consequently, the activities that require customer contact are called *front office activities*, whereas activities that take place without customer contact are called *back office activities*.

The distinction between front office activities on the one hand and back office activities on the other hand is important for delivering services, because the two kinds of activities have different operational consequences. In general, the customer contact that characterizes front office activities introduces uncertainties and variation in the service delivery process that are uncommon for back office activities. The uncertainties are related to the arrival times of customers, their specific demands and role readiness or tendency to participate. Put differently, it is hard to predict when customers will come, what they will want exactly and whether they know what is expected from them with regard to their role in the service delivery process. This makes front office activities harder to control than back office activities and often decreases the efficiency of the process. Furthermore, the customer contact in front office activities makes demands on the design of facilities, staff and technology in the production system, as they should be able to deal with customers. Back office activities, on the other hand, do not suffer from these customer-induced

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Table 1.1: Major design considerations in high- and low-contact systems		
Decision	High-contact system	Low-contact system
Facility location	Operations must be near the customer	Operations may be placed near supply, transportation or labor
Facility layout	Facility should accommodate the customer's physical and psychological needs and expectations	Facility should enhance production
Product design	Environment as well as the physical product define the nature of the service	Customer is not in the service environment so the product can be defined by fewer attributes
Process design	Stages of production process have a direct immediate effect on the customer	Customer is not involved in the majority of processing steps
Scheduling	Customer is in the production schedule and must be accommodated	Customer is concerned mainly with completion dates
Production planning	Orders cannot be stored, so smoothing production flow will result in loss of business	Both backlogging and production smoothing are possible
Worker skills	Direct work force comprises a major part of the service product and so must be able to interact well with the public	Direct work force need only have technical skills
Quality control	Quality standards are often in the eye of the beholder and hence variable	Quality standards are generally measurable and hence fixed
Time standards	Service time depends on customer needs, and therefore time standards are inherently loose	Work is performed on customer surrogates (e.g. forms) and time standards can be tight
Wage payment	Variable output requires time-based wage systems	"Fixable" output permits output-based wage systems
Capacity planning	To avoid lost sales, capacity must be set to match peak demand	Storable output permits setting capacity at some average demand level
Forecasting	Forecast are short term, time-oriented	Forecasts are long term, output-oriented

Source: Chase (1978, p.139)

uncertainties and do not have to be designed to accommodate customers. For this reason, they are easier to control and can even be organized according to manufacturing principles. Table 1.1 displays some major design considerations that differ for high-contact (front office) and low-contact (back office) systems.

The difference between front office and back office activities in a service delivery process generates a few issues that require attention. To begin with, one of the main issues regards choosing between front office and back office activities. Although some process steps in a particular service delivery process are evidently back office activities, such as administration, and others front office activities, like taking an order, for certain process steps the choice between front office activities and back office activities is not straightforward. This decision is often characterized by a trade-off between the efficiency potential of back office activities and the benefits related to front office activities. In fact, although front office activities generally have less efficiency potential than back office activities and make additional demands on the design of service delivery systems, they can

be quite valuable as well. The main strengths of front office activities are that the contact between the service provider and the customer provides opportunities for customizing a service to the customer's wishes, for personalized service delivery and, most important, for additional sales. For several services, the longer the customer spends in the service system, the greater the potential for sales, following from impulse purchases or cross-selling attempts by the service provider. Hence, the choice between front office and back office activities is a significant issue and triggers decisions regarding the amount and location of customer contact in a service delivery process.

Another issue regards how to combine front office and back office activities in one service delivery process, given their different characteristics and requirements. An evident solution is to entirely decouple front office parts from back office parts, creating, for example, two groups of employees, two facilities, two information systems and two sets of planning and control procedures. In this way, each can get an optimal design and the efficiency potential in back office activities can be realized. Still, this might not be beneficial from the perspective of the service delivery process as a whole, as it can lead to unwanted interruptions and interface problems that harm the speed and quality of the process. Moreover, a clean cut between front office and back office activities is not always possible, particularly when front office and back office activities are alternating process steps. Here, separating front office and back office activities would create a vast number of interfaces. Therefore, in some cases it is best to keep front office and back office activities closely coupled, i.e. without strict separations in staff, facilities and planning and control, to avoid interface problems. This illustrates there are several strategies for dealing with front office and back office activities in service delivery processes, each with their own benefits and drawbacks. Developing such a strategy requires careful considerations and can be complicated. Therefore, it is an important issue related to the occurrence of front office and back office activities in service delivery processes.

Several authors have addressed these issues. Some recommend the industrialization of services by substituting tools or technology for people and basically eliminating front office tasks, to improve the efficiency of service production (Levitt, 1972; 1976). Morris and Johnston (1987) present three strategies for dealing with variability following from "processing customers" in service processes. Other authors have concentrated on the issue of decoupling between front office and back office activities, e.g. Chase (1978; 1981), Chase and Tansik (1983) and Metters and Vargas (2000). Bowen and Lawler (1992; 1995) and Bowen and Youngdahl (1998) advocate empowerment of frontline employees to improve customer satisfaction and production efficiency. The boundary spanning role of front office employees is further examined by e.g. Bowen and Schneider (1985). Matteis (1979) and Verma and Young (2000) address back office or low-contact systems. Finally, Shostack has developed service blueprints for the design of services (Shostack, 1982; 1984). These blueprints are characterized by a "line of visibility" that separates the front office activities from the back office activities.

However, despite the value of these contributions, the issue of front office and back office activities in service delivery processes requires more attention, as the current body of knowledge does not seem to provide enough help for the issues service organizations in practice are confronted with. We identify three limitations of the current insights. First, the current body of knowledge mainly addresses elements of the issues involved in combining front office and back office activities in service delivery processes. As we shall see in the next chapter, several strategies for dealing with front office and back office activities have been presented, as well as factors that influence the design decisions and some of the trade-offs involved. It nevertheless remains unclear how these insights relate to each other and can be combined.

Second, as most contributions address only one or few dimensions of performance, an overall effect on process performance is hard to determine. Chase mentions the lack of a design theory underlying service process (re-) design and calls for more research on the precise linkages between the existence of customer contact in a service delivery process and performance dimensions, such as service quality and customer satisfaction (Chase, 1996). Such insights are particularly desirable now that most service organizations are forced to perform well at multiple performance criteria. Not only should they operate efficiently, but also provide high quality, flexible and fast services in order to compete. They can hardly afford to make trade-offs between these objectives. This sincerely complicates the design of service delivery processes and the issue of front office and back office activities. Yet, the current body of knowledge does not seem to provide guidance in this respect.

Third, recent developments in information technology are having a large impact on the way service organizations do business, including the way in which they deal with front office and back office activities. For example, communication technologies enable large distances between front office and back office facilities without severe problems of exchanging information. Many financial service organizations now operate centralized back office departments that are situated at convenient locations in terms of labor and serve several front office facilities spread around a country. In addition, database technologies empower front office employees, so that they can deal with many tasks themselves, often without the need for follow-up back office work. This has greatly enabled the concept of one-stop shopping and instant service delivery, either by phone or face-to-face. Whereas opening a bank account used to take a couple of days, it can now be bought “off the shelf” at a financial supermarket. Furthermore, developments related to the Internet have encouraged self-service options. In this way, front office activities can be omitted from a service delivery process and even back office activities can be transferred to customers, as happened with electronic banking. Thus, recent developments in information technology have created new opportunities for dealing with front office and back office activities in service delivery processes. Apart from this kind of anecdotal evidence, though, these developments are not yet fully integrated in the current theoretical insights, leaving service

organizations that are interested in changing their service delivery options with little guidance regarding the available options and their consequences. See Hill et al. (2002) for a list of research questions related to service process design, driven by new technologies.

To conclude, the body of knowledge regarding front office and back office activities in service delivery processes requires expansion through integrating existing insights and developing new ones, in order to obtain a more coherent perspective on the issue of front office and back office activities in service delivery processes. Such a perspective should be tailored to today's competitive environment and the recent advances in information technology so that it addresses the complexities service organizations in practice are confronted with.

1.2 Research aim and research questions

In this research we address the need for a more coherent and updated perspective on the issue of front office and back office activities in service delivery processes. We will contribute to the current insights in the front office – back office issue. This contribution is partially guided by the ambition to support service organizations in practice in making design decisions with regard to front office and back office activities. It is our aim *to develop a framework that provides insight in and so supports design decisions regarding front office and back office activities in service delivery processes*. The insights refer to three areas:

- First, we assume there are several design decisions regarding front office and back office activities in service delivery processes, such as the choice between front office and back office activities and the way in which front office and back office activities are decoupled or integrated. A concise overview of the relevant decisions and the way they relate to each other is currently unavailable. Yet, insight in the aspects that require a design decision is a prerequisite for making accurate design decisions. This research seeks to identify the design decisions in the front office – back office issue, as well as the dependencies between them.
- Second, we expect several design options to be available, each having different effects on the performance of a service delivery process. We already mentioned, for example, the trade-off between the efficiency potential of back office activities and the benefits of sales opportunities, customization and personalization of front office activities. Furthermore, we put forward some of the performance effects related to decoupled or coupled processes. However, the performance effects are not necessarily straightforward, as often multiple dimensions of performance will be affected, such as the efficiency, quality and flexibility of a process or service. Thus, making these design decisions involves careful considerations. Understanding the considerations that underlie each design decision not only provides some of the integrated insights in the

front office – back office issue that are presently missing, but also offers support for design in practical situations. Therefore, in this research, we seek to provide insight in the considerations and trade-offs that underlie the design decisions.

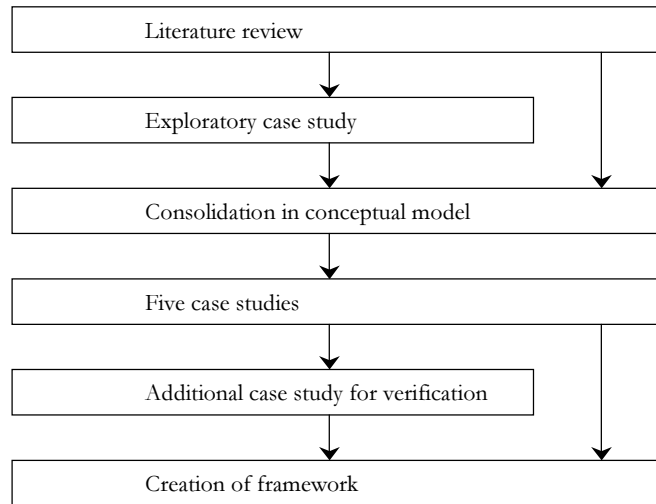
- Third and finally, we assume that the considerations regarding front office and back office activities in service delivery processes are influenced by a number of factors. For example, we expect that different types of services and different service strategies require different design options. A service strategy that is aimed at providing fast and cheap service most likely requires a different design than a service strategy that is aimed at personal and high quality service. Likewise, we assume highly customized services make different demands on a service delivery process than standardized services. A comprehensive overview of factors that are particularly relevant for the design decisions regarding front office and back office activities in service delivery processes is not yet available. Furthermore, it is unclear how such variables work together in influencing the outcomes of the design decisions. Yet, as we expect multiple variables to exert influence on the design decisions, it is important to understand their mutual relations. This includes, for example, how the impacts of service strategy and service type can be combined and how potential conflicts between them can be reconciled. Thus, particularly a list of influencing variables and insights in their effects on the design considerations is a valuable contribution to the current body of knowledge. We seek to identify which variables influence the design decisions and in what ways.

Following these areas of interest for the framework, the research questions that are central to this research can be stated as follows:

1. What are the design decisions regarding front office and back office activities in service delivery processes?
2. What are the considerations and trade-offs that underlie these design decisions?
3. Which variables influence the considerations and in what ways?

In order to provide the answers to the research questions and to develop the framework, this research contained a number of phases, as is illustrated in figure 1.1. First, we reviewed the literature with regard to the front office – back office issue to improve our understanding of the context in which this research is situated and to identify the theoretical insights we can use to build our framework on. This provided us with several insights in the design decisions, the underlying considerations and the variables that influence the considerations. The literature review also pointed out which particular insights regarding the front office – back office issue were still missing in order to develop our framework. We decided to obtain these insights through an empirical study. The primary empirical domain for this study was the field of financial services (this is explained in section 1.4). To provide directions for the empirical study, we conducted an exploratory

Figure 1.1: Overview of research phases



case study, concentrating on three service delivery processes in a Dutch bank. The case study was meant to indicate design decisions, considerations or variables that needed to be added to the findings from the literature review and to provide directions for some methodological choices. In addition, the case was meant to reveal which issues regarding front office and back office activities were considered particularly complex in a practical situation and served as an introduction to the field of financial services. Third, the results from the literature review and the exploratory case study were consolidated in a conceptual model to guide the main empirical part of this study. The model contains our interpretations of the design decisions, underlying considerations and variables that influence the considerations. Taking the conceptual model as starting point, we conducted five case studies in financial service organizations to collect the empirical data needed to fill the voids in the current literature in order to develop the framework. We investigated the considerations underlying the design decisions for fifteen service delivery processes in total. Within-case and across-case analyses were used to identify common considerations underlying the design decisions, as well as the variables that had influenced the considerations. Next, we conducted an additional case study in which we investigated whether the same pattern of considerations and factors occurred in another financial service organization. Sixth and finally, we consolidated our findings in a framework that provides insight in the design decisions regarding front office and back office activities in service delivery processes, the underlying design considerations and the variables that influence them.

We plan to develop a framework that provides an overview of the design decisions regarding front office and back office activities in service delivery processes, including the underlying considerations and the variables that influence the design decisions. In this way, the framework can provide some of the integrated insights in the front office – back office issue that are currently unavailable. Compared to the existing insights, we aim to develop a framework that addresses several design decisions, performance aspects and influencing variables simultaneously. In addition, the framework should pay attention to the coherence between them and the role of information technology. Ultimately, the framework can lead to a better understanding of the front office – back office issue, in particular of the related design decisions. Moreover, the framework can be one of the steps towards a design theory for front office and back office activities in service delivery processes. On the one hand, the uncovering of design decisions, underlying considerations and variables that influence them and the incorporation of these elements in a single framework can already provide support for design in practical situations. On the other hand, the findings from this study can form the basis for the formulation of hypotheses and their testing in large-scale studies to eventually arrive at a solid theory regarding the issue of front office and back office activities in service delivery processes, as research study builds upon research study.

1.3 Research perspective

The research questions we have presented in the previous section can be addressed from several different perspectives, including organization design, human resource management, marketing and operations management. These perspectives have slightly different perceptions of the front office – back office issue, in particular of the contents of the design decisions and the underlying considerations. Below we describe how each of the four perspectives views the front office – back office issue and elaborate our own perspective that reflects an operations management point of view. The perspectives are briefly characterized in table 1.2. For the sake of the argument, we rely on rather stereotype classifications.

First, from an organization design perspective, the design decisions regarding front office activities and back office activities in service delivery processes have to do with organizational structuring. The primary questions are concerned with the establishment of front office and back office *departments* and the appropriate coordination strategies. The issue is how departments should be formed, given the existence of front office and back office work. The options roughly are separate front office and back office departments, just one department or several departments based on different grounds. A large body of knowledge is available to address departmentalization issues, including contingency approaches and systems thinking. In general, the considerations underlying departmentalization decisions reflect the need for a fit between characteristics of the

Table 1.2: Different perspectives on the front office – back office issue		
Perspective	Design decisions regard:	Considerations regard:
Organization design	Front office and back office departments	Fit between contingency factors and structure Minimizing coordination costs
Human resource management	Front office and back office employees	Degree of horizontal and vertical job specialization
Marketing	Service encounters	Customer-focus Visible parts sending the right messages
Operations management	Service delivery processes	Minimizing variation and uncertainties Avoiding unwanted interruptions

organization's environment, technology, age or size on the one hand and its structure on the other hand. Furthermore, organizational structures are often designed to minimize the coordination costs (Thompson, 1967) or to decompose the organization in relatively independent subsystems.

Second, the front office – back office issue can also be addressed from a human resource management perspective. Here, the main focus is on job design for front office and back office employees. We already mentioned that front office activities require different skills from employees than do back office activities. Whereas front office employees should excel in personal and communication skills as they have customer contact, back office employees should often show more technical or analytical skills. In addition, front office activities may require different management styles than back office activities, including reward systems and empowerment strategies. See, for example, Bateson (1985), Bowen and Schneider (1985), Chase and Bowen (1989) and Bowen and Lawler (1992). Yet, the allocation of front office and back office activities to different jobs can create jobs that are quite specialized. This might negatively influence an employee's motivation and so the job performance. In summary, from a human resource management perspective, the front office – back office issue is one of job design and subsequent design decisions. A significant consideration underlying the design decisions is related to the degree of job specialization, both horizontal and vertical.

Third, from a marketing perspective, the main issue related to front office and back office activities in service delivery processes is reflected in the line of visibility in service blueprints (e.g. Shostack, 1982; 1984). Here, the point is what elements of the service organization can be seen or experienced by customers and what parts are hidden. Generally, only the front office parts are visible to customers. They are part of the "service encounters", the interactions between a customer and service provider, or where the customer meets the service organization. During these service encounters, customers perceive the functional quality of the service they are purchasing (process quality or "how" the service is delivered, as compared to "what" is delivered or outcome quality) and form an opinion about the organization in general by evaluating the company's human resources,

the physical environment (or “servicescape” (Bitner, 1992)) and operating methods. For example, the appearance, attitude and behavior of service employees, the way systems and technology function, and the environment all send messages that influence customers’ expectations and perceptions (Grönroos, 2000). Taking this point of view, every part of the organization that customers come into contact with is seen as a front office element. This means that customer interactions with technology, such as automated teller machines (ATMs) or a company website, are also considered to be part of the front office of the organization. Compared to the operations management perspective on front office and back office activities, this is a rather broad conception of front office activities. In summary, from a marketing perspective the main design decisions related to front office and back office activities in service delivery processes regard the creation of customer-focused service encounters and servicescapes, with the appropriate back office support.

Fourth, from an operations management perspective, the issue of front office and back office activities in service delivery processes is related to designing processes, instead of departments, functions or service encounters. Here the delivery of a service, from beginning to end, is central. In general, the design of a service delivery process, including the activities that have to be carried out, in what order and by whom, determines the flow of goods, information and customers through the service organization. Common operational objectives for a process are efficiency, speed, flexibility, quality and reliability. As we already explained, front office activities bring about uncertainties and variation that hinder efficient control of the service delivery process. In addition, front office and back office activities have different design requirements and different effects on the performance of a process. However, strictly separating the two kinds of activities can create severe interruptions in the process and might therefore not be beneficial for the process as a whole. The key issues to process design in this respect are how to deal with the uncertainties and variation caused by customer contact and how to manage the interruptions and interfaces between front office and back office activities. To briefly return to the different perceptions of front office activities in the operations management and marketing perspectives, from the operations management perspective ATMs and the Internet are very efficient ways of service delivery that reduce the uncertainties and variation in the operating core of the organization. In fact, in service delivery through an ATM or the Internet front office activities are eliminated and replaced by self-service and back office activities.

From the above descriptions we can conclude that each of the four perspectives emphasizes different aspects of the front office – back office issue, leading to several design decisions and different considerations. In this research, we address the issue from an operations management perspective, concentrating on the design decisions regarding front office and back office activities in service delivery processes. Taking this perspective means we concentrate on service delivery processes from beginning to end, the customer contact

therein, the way in which the contact activities are combined with non-contact activities and the subsequent consequences for the process performance. One of the reasons for this perspective is that we adhere to the point of view that process decisions precede decisions related to job design and organization design. That means a design project starts with a set of activities or process steps that are required in order to deliver a particular service. These activities are combined into tasks, which are allocated to positions or functions. Next, these positions are grouped into units or departments, which are grouped into larger units. In this way, the operations decisions often form the basis for the other decisions, such as jobs, departments and servicescapes. By concentrating on processes, we address the front office – back office issue bottom-up and lay the foundations for the design decisions in the other perspectives. Another reason for the operations management perspective regards the numerous initiatives under the heading of business process reengineering and business process management, indicating that service organizations have recently started to think about their business in terms of processes. Yet, given the intangibility of most services, for service organizations a process perspective is less evident than for manufacturing organizations. In fact, the front office – back office issue has not often been addressed from a process perspective. Therefore, a process perspective on the front office – back office issue is desirable.

1.4 Empirical domain

The issue of front office and back office activities in service delivery processes is applicable to virtually every service or service provider. Still, the issue will not be equally relevant or complex for the diversity of services that exist in the real world. For example, for services that predominantly consist of either front office or back office activities, such as restaurants, psychotherapy, hairdressing, car repair and dry cleaning, the issue is less demanding than for services that are characterized by a mixture of front office and back office activities. These so-called mixed services (Chase, 1978) provide a rich empirical domain for this study. In fact, it seems rational to concentrate on those services that, on the one hand, illustrate the complexities involved in dealing with front office and back office activities in great detail, and, on the other hand, will benefit from the framework to be developed. This involves tailoring this research to a particular group of services or service industry.

In this research we concentrate on financial services. Financial services are excellent examples of mixed services. They can be characterized by the appearance of both front office and back office activities in the service delivery processes and the importance of both of them. Most financial services require a front office part in which the product or service is sold or defined, and a back office part for producing or at least registering the newly acquired products and services. However, the design of service delivery processes for

financial services is hardly ever straightforward. The competition and customer base of financial service organizations demand outstanding performance in terms of efficiency, quality, flexibility, reliability and speed, all at the same time. As these performance objectives not necessarily concur, this puts great strains on the design of processes, including the way in which front office and back office activities are dealt with. This aspect makes financial services a rich and interesting object of study and illustrates the need of this sector for a framework that supports the design decisions regarding front office and back office activities. Furthermore, the relatively large information component in most financial services makes them particularly subject to developments in information technology. In fact, the financial services sector provides many examples of new forms of service delivery and new ways of dealing with front office and back office activities. For this reason, we expect financial services to reveal some of the frontiers of the front office – back office issue. Finally, the diversity that can be found within the domain of financial services, from standard saving accounts to highly complex business loan agreements, provides us with the opportunity to study the issue of front office and back office tasks for different types of services and thus preserves some of the breadth of the study. To conclude, by focusing on financial services we expect to observe many facets of the front office – back office issue in service delivery processes and expect to develop a framework that will be valued. From the perspective of gaining access to service organizations for data collection, this is not a minor point. Thus, this research concentrates on financial services.

Some of the practical implications of the focus on financial services are the following. Most importantly, we use data from financial service organizations and tailor the framework to the financial services situation. This means that typical finance aspects, such as legislation to adhere to, are included. Nevertheless, we try to avoid that this research is only of interest for financial service organizations and their members or researchers. For example, we do not confine ourselves to literature regarding the financial services sector and use universally applicable language and constructs instead of financial jargon in developing the framework. After all, this research addresses a common service operations problem, rather than a specific financial services problem.

1.5 Outline of the thesis

The research that has been introduced in this chapter is documented in this thesis. We describe the research phases in detail, including the research design decisions, the results and finally the framework. The thesis is structured as follows, see also table 1.3. Chapter 2 presents the findings from the literature review we carried out to determine which insights in the front office – back office issue are currently available and which ones are missing. In chapter 3, we address the exploratory case study we conducted to investigate the front office – back office issue in a practical situation. Combining the insights from the literature

Table 1.3: Outline of the thesis in chapters		
1	Introduction	Introduces the front office – back office issue and what this research is about. Explains the research perspective, the empirical domain and the outline of the thesis.
2	Review of Existing Insights	Presents the current insights in the front office – back office issue, as well as more general characteristics of services and service operations. Goes into trade-offs and financial services. From this, several voids are identified.
3	An Exploratory Case Study	Reports the research design and the results of an exploratory case study. Provides initial insights in the design decisions, design considerations and influencing variables and directions for the remaining methodological choices.
4	The Conceptual Model	Presents the conceptual model step-by-step. Specifies three design decisions and five broad categories of influencing variables. Introduces the term <i>mechanism</i> to capture the collection of design considerations.
5	Research Design for Empirical Study	Describes the methodological choices for the five main case studies. Addresses the use of case studies, the role a priori knowledge, sampling of cases and processes, data collection methods and data analysis strategies.
6	Case Descriptions	Provides the data on the service delivery processes in the five cases we studied. Presents within-case analysis for each case. Ends with a summary of the case data.
7	Variables Influencing Design Decisions	Addresses the impact of the variables that were part of the conceptual model on the design decisions. Presents an overview of the variables and the way in which they influenced the design decisions in the cases.
8	Unraveling the Mechanism	Describes the general pattern of design considerations we derived from the case studies. Presents the trade-offs involved in the design decisions and the factors that influence how choices are made. Results in a mechanism.
9	Verification of the Mechanism	Reports the research design and results of an additional case study we conducted in a different setting to verify the common pattern of design considerations, trade-offs and influencing variables.
10	Consolidation and Conclusions	Concludes this research by answering the research questions, presenting the framework, addressing the applications and limitations of the framework and presenting recommendations for future research.

review and the exploratory case study, we present the conceptual model that we developed to guide the remainder of the study in chapter 4. This model also shows which particular insights we plan to obtain. Chapter 5 reports the methodological considerations and research design for the five main case studies. In chapter 6, the case data are presented per case. We introduce each case and describe the design decisions and design considerations we investigated. The data are further analyzed across-cases in chapter 7. Here we adhere to the conceptual model we constructed in chapter 4. This provides sufficient grounds for presenting a *mechanism* of considerations that underlies the design decisions regarding front

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office and back office activities in chapter 8. Chapter 9 reports the research design and results of a final case study we conducted to verify the mechanism we derived from the five main case studies. Finally, in chapter 10 we consolidate our findings by presenting the framework and addressing its area of application, three ways in which it can be applied and recommendations for future research.