Designing Multi-Interface Service Experiences

The Service Experience Blueprint

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This article introduces the Service Experience Blueprint (SEB), a multidisciplinary method for designing multi-interface service experiences, and illustrates its application with two case examples of the redesign of the service experiences of a multichannel bank. The SEB method starts by studying the customer service experience to understand customer experience requirements for different service activities and how these requirements can be satisfied through alternative service interfaces. Based on this analysis, the multi-interface service is designed to allocate service activities to the interfaces best suited to provide the desired experience, defining channel specialization and integration. Finally, with the SEB method each service interface is designed to best leverage its unique capabilities and guide customers to other service interfaces whenever that interface better enhances the overall customer experience. By incorporating the contributions of service management, interaction design, and software engineering, the SEB method is a multidisciplinary tool and terminology for service design.

Keywords: *service experience; blueprint; customer experience; multi-interface*

INTRODUCTION

Modern technology has revolutionized the way services are delivered. Services such as banking were once done only at high-street branches through personal contact. Customers today can interact with their banks through multiple points of contact such as high-street branches, automatic teller machines (ATMs), the telephone, or the

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Internet. Today, technology is present in almost every aspect of service provision, whether supporting employees in personal contact, such as in modern bank branches, or creating new self-service technologies, such as Internet banking (Bitner, Brown, and Meuter 2000; Froehle and Roth 2004; Meuter et al. 2000; Parasuraman and Grewal 2000). Service offerings have evolved to multi-interface systems where technology plays a central role for both front-stage interactions and backstage support processes. This technology infusion requires a multidisciplinary approach and has motivated researchers and practitioners to propose a Service Science, Management, and Engineering (SSME) initiative, which aims to bring together ongoing work from different fields to develop the competencies required in this service-led economy (Bitner and Brown 2006; Chesbrough and Spohrer 2006).

Simultaneously, a new service-centered paradigm has emerged (Vargo and Lusch 2004). Previous marketing and economic paradigms viewed value as embedded in tangible products and exchanged through transactions. The new service-centered paradigm postulates that value is cocreated by customers through product usage or the service interaction experience in a relational exchange. Instead of delivering preproduced offerings, all that firms can do is to make value propositions, which customers then transform into value through usage (Grönroos 2000; Vargo and Lusch 2004). In this new context, service experiences become increasingly important to differentiate and add value to a firm's offerings (Pine and Gilmore 1998).

The emergence of technology-enabled multi-interface services represents a profound change in service design because these are technology-driven service innovations (Johnson et al. 2000). But the dynamics of trends in modern service technology contrast with the modest progress in new service development research and especially service experience design, which are some of the least understood topics in both marketing and operations research (Bitner and Brown 2006; Brown, Fisk, and Bitner 1994; Johnson et al. 2000; Menor, Tatikonda, and Sampson 2002; Tax and Stuart 1997). The purpose of this article is to introduce the Service Experience Blueprint (SEB) as a new multidisciplinary method for the design of technology-enabled multi-interface service experiences. The SEB method contributes to improving service design by unifying the contributions of different fields, carefully incorporating customer experience requirements (CERs), and providing integrated management of the multi-interface service system. The next sections of the article examine service design challenges and analyze existing service design methods. The SEB method is then developed and applied with two case examples of redesigning the service experience provided by a multi-interface bank. Finally, the last section summarizes the contributions of the SEB method.

SERVICE DESIGN CHALLENGES

Designing services today is quite different from when service firms had only physical storefront interfaces. In designing modern service offerings such as in banking, firms have to define their service interface mix, the technologies that support front-stage customer interactions and backstage support processes, and the service clues necessary to enable a satisfying customer experience. These changes have been a major step toward the emergence of the service-centered paradigm and the SSME field, which bring a new and challenging framework for service design.

The infusion of technology into services has created many opportunities for developing new offerings, but to take full advantage of these capabilities, technology and customer perspectives must be completely integrated into service design and management (Curran, Meuter, and Suprenant 2003; Meuter et al. 2000). Service design should incorporate the contributions of technology fields such as human-computer interaction (HCI; Preece, Rogers, and Sharp 2002; Shneiderman and Plaisant 2005) or requirements engineering (Mylopoulos, Chung, and Yu 1999). On the other hand, software engineers must understand customer needs to better design technology solutions. In short, modern service design requires multidisciplinary approaches, methods, and tools (Chesbrough and Spohrer 2006; Hill et al. 2002; Parasuraman and Zinkhan 2002).

Technology trends also enabled the emergence of multi-interface services. Service interfaces can be defined as "any place at which a company seeks to manage a relationship with a customer, whether through people, technology, or some combination of both" (Rayport and Jaworski 2005, p. 49). In this context, customer experiences are the result of all the different moments of contact with the firm using different channels (Shaw and Ivens 2002) and, as such, the different customer interfaces become intertwined (Birgelen, De Jong, and De Ruyter 2006; Curran et al. 2003; Montoya-Weiss, Voss, and Dhruv Grewal 2003; Patrício, Fisk, and Falcão e Cunha 2003) and multichannel integration gains more importance (Bendoly et al. 2005; Rangaswamy and Van Bruggen 2005; Sousa and Voss 2006). Therefore, modern methods must enable multichannel customer management with the goal of enhancing customer value through effective customer acquisition, retention, and development (Neslin et al. 2006). For example, banks today must decide which mix of channels to offer, which service experiences to enable in each channel, and how to integrate the different channel offerings to provide an overall satisfying customer experience.

The service-centered paradigm also changes the way services are viewed and managed as value is cocreated by customers through interaction experiences with products and services (Vargo and Lusch 2004). Service experiences can be defined as "the outcomes of the interactions between organizations, related systems/processes, service employees and customers" (Bitner et al. 1997, p. 193) and are enabled by a set of clues provided by goods, services, and atmospheric stimuli, which can be functional or emotional (humanic and mechanic; Berry, Carbone, and Haeckel 2002). Customer experiences therefore result from a combination of *what* is offered (function and outcome of the product or service) and *how* it is offered (process of usage, context of use, and emotional components of interaction; Berry et al. 2002; Grönroos 2000; Schmitt 2003). These experience design elements have been shown to influence customer loyalty behaviors through the mediating effect of emotions (Pullman and Gross 2004). Conceptualizing services as experiences has important implications for service design. Instead of viewing services as preproduced offerings passively received by customers, services are viewed as unique experiences resulting from customer interactions with products, services, and contexts (Gupta and Vajic 2000). From this perspective, the objective of service providers shifts from producing offerings targeted to existing customer preferences to designing service settings and orchestrating service clues that enable customers to cocreate unique experiences. With technology support, firms can now offer real-time services that are tailored to individual customer needs and that can adapt to customer changes over time (Rust and Oliver 2000).

In this new context, service design methods must carefully incorporate CERs to create the service clues necessary to enable a satisfying experience (Patrício et al. 2004). Moreover, they must accommodate the modularity needed to offer flexible solutions that enable customers to cocreate their unique value through multiple patterns of usage of the service offerings. This is particularly relevant for multi-interface services, where customers can choose among several channels and navigation patterns to undertake a service activity. For example, in a multi-interface bank, where customers can gather information or apply for a mortgage loan in several channels, the multi-interface offering must be designed in an integrated and flexible manner to enable customers to interactively build their unique real-time mortgage experiences across channels for the different stages of service usage.

SERVICE DESIGN METHODS

The service environment has changed profoundly, but service design methods have not changed to address this new environment. From an operations perspective, service design can be defined as the specification of the detailed structure, infrastructure, and integration content of a service operations strategy (Johnson et al. 2000). From an HCI perspective, interaction design involves establishing user needs and requirements, redesigning the system, building interactive prototypes, and evaluating them in an iterative process until the final solution is reached (Preece et al. 2002). From an experience-oriented perspective, service design and management can be viewed as "orchestrating an integrated series of clues that collectively meet or exceed people's emotional needs and expectations" (Berry et al. 2002, p. 85). Existing methods used for service interface design can be organized into a matrix according to two vectors of service design focus: (a) service process versus service clues and (b) service focus versus technology focus.

Process-oriented service design methods come from different backgrounds. Whereas service blueprinting (SB; Shostack 1984) and lean consumption (Womack and Jones 2005) come from service management, use case and activity diagrams (Booch, Rumbaugh, and Jacobson 1999) were developed in software engineering. SB was developed more than 20 years ago to clarify service concepts and systematize the process of service design. Developing an SB requires mapping all the key activities involved in service delivery and production and specifying the linkages between these activities, the physical evidence, waiting times, and points of failure (Shostack 1984). However, SB was developed to map the process for person-to-person, single-channel service delivery and does not address technology infusion and the multichannel nature of new services. Following lean consumption principles, a lean consumption map can be used to redesign service processes and identify and eliminate the steps that do not create value for the customer (Womack and Jones 2005). This approach is useful for designing support processes in an efficient manner, but the emphasis on efficiency and time reduction should be complemented with a stronger focus on customer experience needs.

Interaction design and software engineering methods, involving use case diagrams and activity diagrams from the unified modeling language (UML; Booch et al. 1999), also provide useful contributions for designing interaction processes. Use cases are descriptions of a sequence of actions that a system performs to produce a useful result for a user (Booch et al. 1999) and can be analyzed at essential or concrete levels. Concrete use cases assume that a specific interactive system is previously defined, such as gathering current account information through Internet banking, whereas essential use cases (EUCs) are defined in technology-free terms (Constantine and Lockwood 2001), such as mapping the process of gathering current account information without specifying the service interface used. When analyzing use cases at the concrete level, activity diagrams can specify the flows graphically (Nunes and Falcão e Cunha 2001). An activity diagram is essentially a flowchart that emphasizes the actions that take place over time by the different actors (Booch et al. 1999). Use cases and activity diagrams have the advantage of using a standard software engineering language (UML), which allows for the usage of these representations at subsequent stages of the software development process. However, they focus on the system being developed and functional requirements, ignoring CERs and business goals.

Other service design methods focus on translating customer needs into service clues. Quality function deployment (QFD) is a multidisciplinary technique for building customer requirements into product or service design, using the well-known house of quality (Hauser and Clausing 1988). QFD was first developed for manufacturing, but its ideas are also applicable to services (Stuart and Tax 1996; Zeithaml, Bitner, and Gremler 2006). However, QFD is not very powerful in addressing the process component of service design. Similarly, goal-oriented analysis (GOA), from requirements engineering, captures business softgoals or nonfunctional requirements (experience requirements) and translates them into system goals or functional requirements that can be used for software development and interface design (Mylopoulos et al. 1999). GOA provides a useful way to systematize the development of design alternatives to meet functional goals and to evaluate how these alternatives contribute to satisfying CERs or softgoals. GOA uses a language that software engineers are familiar with and, as such, is better positioned than QFD to support a unifying method for technology-enabled service design. However, GOA is system focused, does not address the process component of services, and assumes that requirements elicitation is done by software developers.

The service design methods and techniques summarized above provide partial views that should be integrated. Stuart and Tax (1997) and Berry et al. (2002) propose frameworks for service design and management that integrate service processes (functional clues), people (humanic clues), and physical facilities (mechanic clues), but the integration of technology into service design has so far been left unexplored. New service development researchers have stressed the need to explore the impact of technology on service design (Froehle et al. 2000; Hill et al. 2002; Johnson et al. 2000; Menor et al. 2002) and to address new issues such as the trade-off of efficiency versus personalization or the definition of the offline/online mix. Multi-interface services are technology-driven service innovations that pose important challenges to new service design, but many firms have simply introduced online services without any understanding of customer experience needs or an overall view of their multichannel offering. The result is frequently a collection of incoherent service fragments that fail to provide a satisfying service experience. In short, integrated design of the service interface is needed, which existing design methods do not explicitly support.

The infusion of technology into services requires the development of new multidisciplinary methods, with new language and new tools that can unite the different contributions for the service field (Fisk and Grove, forthcoming), but service innovation efforts have been mostly isolated in different academic disciplines, and unifying models are lacking (Chesbrough and Spohrer 2006). Service design methods should place greater emphasis on managing the service experience, enabling a flexible and modular design to accommodate the real-time cocreation of value through customer interactions with the firm across the different interfaces. These challenges and opportunities provided the major motivations for developing the SEB method.

THE SEB METHOD FOR MULTI-INTERFACE SERVICE DESIGN

The SEB method was developed specifically for designing multi-interface service experiences. SEB builds on existing methods, joining the contributions of service management and software engineering to create a unifying method to address technology infusion into services. The SEB enables integrated design of the multi-interface service, leveraging each channel's advantages to enhance overall customer experience. The SEB method systematically incorporates CERs, providing a modular service design that enables customers to cocreate their unique service experiences. The SEB method comprises three stages:

1. *Assessment of the service experience for different service activities:* This stage uses qualitative and quantitative research to identify CER dimensions and indicators, to analyze their importance and prioritization for the different service activities (independently of the channel used), and to assess relative service interface performance in satisfying those needs. By understanding customer experience needs independently of the service interface usage, SEB broadens the design space and enables designers to consider the various service interface alternatives.
2. *Service design at the multi-interface level:* Based on the results of the previous stage, a GOA is developed to understand the desired

service experience for given activities (through softgoal decomposition and prioritization) as well as to evaluate the contribution of different channel designs to satisfy CERs. This analysis allows for an integrated design of the multi-interface offering, defining interface specialization and integration.

3. *Service design at the concrete interface level:* After the multi-interface analysis, the design drills down to each service interface, using the SEB diagram. Based on the previous stages, each service interface is designed to support the specific activities previously defined, leveraging its capabilities to better satisfy CERs while carefully designing service links to guide the customer to other channels whenever that enhances the overall service experience.

The SEB method is presented in further detail in the next sections, with examples of its use in the context of a research project to systematically redesign the service experience of a multi-channel Portuguese bank. After the initial years of commercial Internet use, when the tendency was to replicate existing services on the Web, the bank needed to adopt an integrated design and management of its multi-interface services. This research provided a rich understanding of customer experiences with different interfaces and improved the methods for multi-interface service design.

SEB STAGE I: ASSESSMENT OF SERVICE INTERFACE EXPERIENCE FOR DIFFERENT SERVICE ACTIVITIES

The first stage of the SEB method involved understanding CERs and assessing the service experience for the four interfaces offered by the bank: Internet banking (IB), branch banking (BB), telephone banking (TB), and ATMs (Patrício 2005). No previously developed measures were available to assess CERs and service interface performance across the different channels, so a scale development method was adopted (Churchill 1979), involving qualitative and quantitative studies. Previous research related to technology service interfaces—such as service quality, e-services, innovation adoption, HCI, and information systems—provided the domain of the concepts being studied and supported the definition of the research plan.

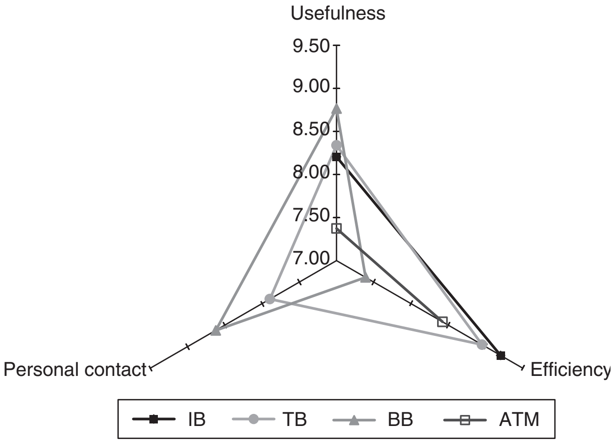
The study started with in-depth and focus group interviews with 36 bank customers and 13 bank personnel in three Portuguese cities, following qualitative methods (Strauss and Corbin 1998). The results showed that most customers used a mix of service interfaces in their general relationship with the bank, from which they then chose the one that was best suited for each specific financial activity (Patrício, Fisk, and Falcão e Cunha 2003). The qualitative study also identified a large sample of experience factors that were further used to develop the survey questionnaires for the quantitative study, following scale development guidelines (Churchill 1979).

The quantitative study involved two surveys to test two models. The first survey was administered by telephone to 2,142 bank customers and analyzed general customer satisfaction with each service interface. This survey measured the importance of a set of CERs for a customer's general relationship with the bank and the performance of each service interface in satisfying those needs. The second survey was administered via the Web to 1,935 IB users and analyzed IB satisfaction for specific financial activities. It measured the importance of the same battery of CERs for 12 different specific activities or EUCs (such as current account information gathering, stock trading, or mortgage loan application) and evaluated how IB satisfied those needs. The analysis of the survey data allowed for the refinement and validation of the measurement scales through exploratory factor analysis, confirmatory factor analysis, and structural model analysis (Hair et al. 2006). This scale development process identified three dimensions of CERs and their indicators that were important for satisfaction and usage of service channels (Patrício 2005):

- *usefulness*, comprising clearness of information, completeness of operations, and information available;
- *efficiency*, comprising accessibility, ease of use, and speed of delivery; and
- *personal contact*, comprising personalization, competence, and trustworthiness of employees.

Based on these dimensions, the study results allowed for comparative assessments of performance across different service interfaces and the importance given to CERs across different financial activities. As can be seen in Figure 1, IB is considered the most efficient service interface, but it does not provide personal contact. BB provides the best personal contact but is the least efficient interface. ATM, although underperforming TB and BB, is more efficient than BB and as such is still the preferred interface for some service activities that are available only at BB, such as cash withdrawals. Finally, TB falls between IB and BB: It is efficient, but not as much as IB; it provides some personal contact, but not as much as BB. If customers used only one service interface, TB could be considered the one that offered the best balance between efficiency and personal contact. However, from a multi-interface perspective, the value of TB to the overall service experience seems to be in question, as it is not the best on any dimension. This may explain the decrease in

FIGURE 1
Service Interface Relative Performance (Construct Means of Summated Scales from Telephone Survey Results)



NOTE: IB = Internet banking; BB = branch banking; TB = telephone banking; ATM = automatic teller machine.

TABLE 1
Service Interface Satisfaction and Usage for Different Service Activities (Web Survey Results)

	Current Account	*Mortgage Loan*	*Mean Difference*
Importance given to CERs			
Usefulness	8.94	9.04	–0.10
Efficiency	9.37	8.76	0.61*
Personal contact	8.07	9.10	–1.02*
IB			
Satisfaction	8.90	4.27	4.64*
Usage	8.85	3.27	5.59*
BB			
Satisfaction	6.11	7.92	–1.81*
Usage	2.51	8.19	–5.68*

NOTE: Construct means (summated scales) in 0-10 scales. Importance of customer experience requirements (CERs): 0 = *not at all important* to 10 = *extremely important*; Internet banking (IB) and branch banking (BB) satisfaction: 0 = *totally unsatisfied* to 10 = *totally satisfied*; IB and BB usage: 0 = *never use this service interface for this financial activity* to 10 = *always use this service interface*.
*Statistically significant at $p < .01$.

TB usage as new interfaces have been added to the multi-interface offer.

The study results also showed that the importance given by customers to the different CERs change according to the different financial activities, establishing requirements priorities. As can be seen in Table 1, whereas efficiency is the most important requirement for current account information, personal contact is the priority when applying for a mortgage loan. These differences strongly influence service interface usage, as customers choose the interface that performs best in satisfying their priority needs: IB is clearly the preferred service interface for gathering current account information, whereas BB is preferred for mortgage loan applications.

The study results showed that no service interface is best in satisfying every experience requirement. There are trade-offs, especially between the efficiency of IB and the personal contact of BB. Service interfaces therefore act as substitutes for each specific financial activity but complement each other in providing an overall satisfying experience. These results strongly support the need for an integrated design of the multi-interface service experience.

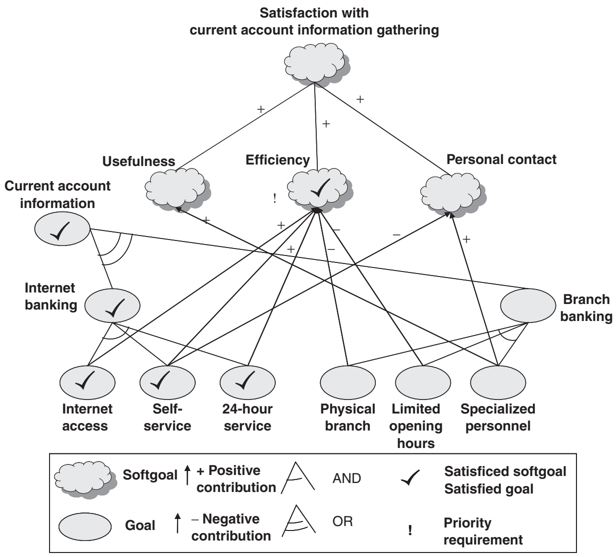
SEB STAGE II: SERVICE EXPERIENCE DESIGN AT THE MULTI-INTERFACE LEVEL

Stage II of the SEB method involves the design the service experience at the multi-interface level. At this stage, the study results were used to build goal-oriented trees to enable the analysis of channel design options and evaluate how they can contribute to satisfying CERs. From the set of multi-interface service experience redesigns that resulted from the study—such as stock trading, credit cards, and loans—two case examples were selected to illustrate SEB application: current account information and mortgage loan application.

Multi-Interface Service Experience Design for Current Account Information

Based on the study results, the integration of CERs into multi-interface design was systematized through a GOA, as shown in Figure 2 for current account information gathering. The previous identification of CER dimensions and their indicators was used to identify softgoals and their decomposition independently of the channel used; these are represented by clouds in the upper level of the diagram. In this case, a satisfying experience for current account information involves usefulness, efficiency, and personal contact, and each one of these softgoals is decomposed into its indicators. The study results also showed that efficiency is clearly the priority requirement for this service activity; it is represented by an exclamation mark. Based on the analysis of functional design characteristics of existing interfaces, the lower part of the diagram was created; it represents functional goals with ellipses. In this case, current account information can be gathered by IB or BB, and each one of these service interfaces satisfies the same functional goal

FIGURE 2
Goal Correlation Analysis for Current Account Information Gathering



through a different set of design options that decompose it. Whereas IB provides current account information on a self-service basis and 24-hour service, BB provides the same service through a bank employee in a physical store with limited opening hours.

In this GOA, whereas subgoals identify different functional alternatives for satisfying the current account information goal, experience requirements provide the evaluation criteria for selecting the design alternatives that best match customer softgoals. Based on the assessment of channel relative performance in the previous study, it becomes clear that the different functional subgoals necessary to satisfy the goal of getting current account information in IB or BB have important positive and negative contributions to experience requirements; these are represented by the arrows from goals to softgoals. The same service is functionally provided (the "what," or functional goal), but the customer experiences a very different interaction (the "how," or experience softgoal). In this case, personal contact in a physical location provided by BB contributes positively to personal contact softgoals but has a strong negative contribution to efficiency. On the other hand, the 24-hour self-service provided by IB does not allow for personal contact but contributes to the priority experience requirement of efficiency. When there are trade-offs, customer priorities previously identified in the first stage provide the support needed for design decisions.

This GOA points out several design directions. Since IB clearly outperforms BB in satisfying priority experience requirements for current account information, service providers can concentrate their efforts on offering efficient interaction in IB for this activity while guiding customers who request this service in BB to automatic channels through a set of purposefully designed service clues. This design decision is represented in the goal correlation diagram (Figure 2) by the check marks that signal the goals and softgoals that will be satisfied.

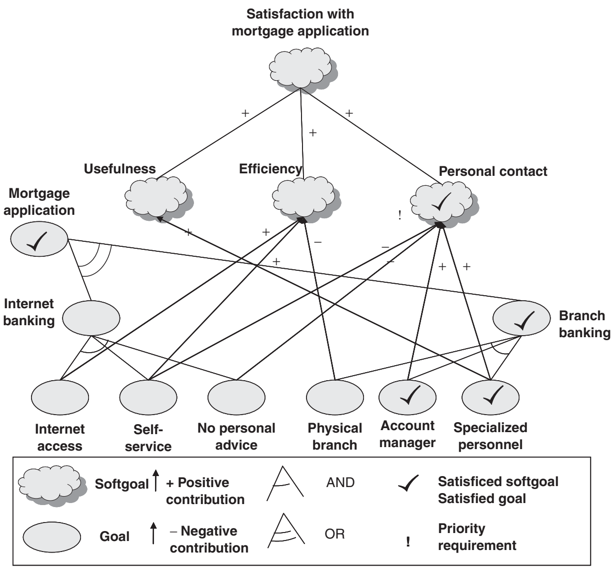
Multi-Interface Service Experience Design for Mortgage Loan Application

Whereas efficiency is the most important requirement for gathering current account information, priorities shift for mortgage loan applications, as this interaction is more complex, involving important information exchange and analysis. The study results already presented in Table 1 showed that for this financial activity, personal contact—involving personalization, trustworthiness, and competence of employees—is the most important experience requirement, closely followed by usefulness. Not surprisingly, customers were much more satisfied with BB, as this interface is the best performer on the two priority softgoals.

Again, GOA diagrams systematize this analysis at the multi-interface level, based on study results. As can be seen in Figure 3, the GOA tree depicts softgoal decomposition and priorities for mortgage loan application. The lower part of the diagram shows how this goal can be functionally satisfied by the two alternative service interfaces and how these different functional solutions contribute to the customer interaction experience. In this case, personal contact is the priority and, as BB provides the richest personal contact, it will be the preferred interface. Again, this analysis provides an integrated view of the multi-interface service. Service managers can therefore concentrate their efforts on providing useful information with IB and full personal contact mortgage service at the BB, while guiding customers who gather mortgage information by IB to account managers in the BB whenever it enhances the service experience.

The analysis presented for the two case examples can be extended to all other service activities. In the end, the objective is to create a multi-interface matrix of use cases, establish the preferred interfaces for each service activity, and define channel specialization in the activities for which they can add more value to the overall service. The two case examples presented before show how the analysis of CERs at the essential or multi-interface level can contribute to better design of the overall service experience by broadening the design space to all alternative interfaces. If experience requirements for current

FIGURE 3
Goal-Oriented Analysis for Mortgage Loan Application



account information had been analyzed only for the BB interface in isolation, service managers might have been induced to invest heavily in improving the efficiency of BB to overcome this disadvantage. However, from a multi-interface perspective, it may not be worth making such investments when the IB alternative can easily provide a satisfying interaction experience for this service activity. Similarly, although many banks have offered full-service mortgage loan applications processes through IB, customer adoption has been disappointing. By understanding that personal contact is still very important for a satisfying experience for this activity, service providers can concentrate their efforts on designing a mortgage service using IB that takes advantage of its information and interactive capabilities while they guide the customer to BB when personal contact is most needed. With this method, the bank tailors each service interface for what it does best, leveraging its contribution to enhance overall customer value.

SEB STAGE III: SERVICE EXPERIENCE DESIGN AT THE CONCRETE INTERFACE LEVEL

In Stage III of the SEB method, after assessing customer experiences across channels and designing the multi-interface service matrix, the design drills down to each concrete interface with SEB diagrams (the appendix contains a toolkit describing the key elements of the SEB method). This multidisciplinary method adapts existing service interface design methods to the new multi-interface service context:

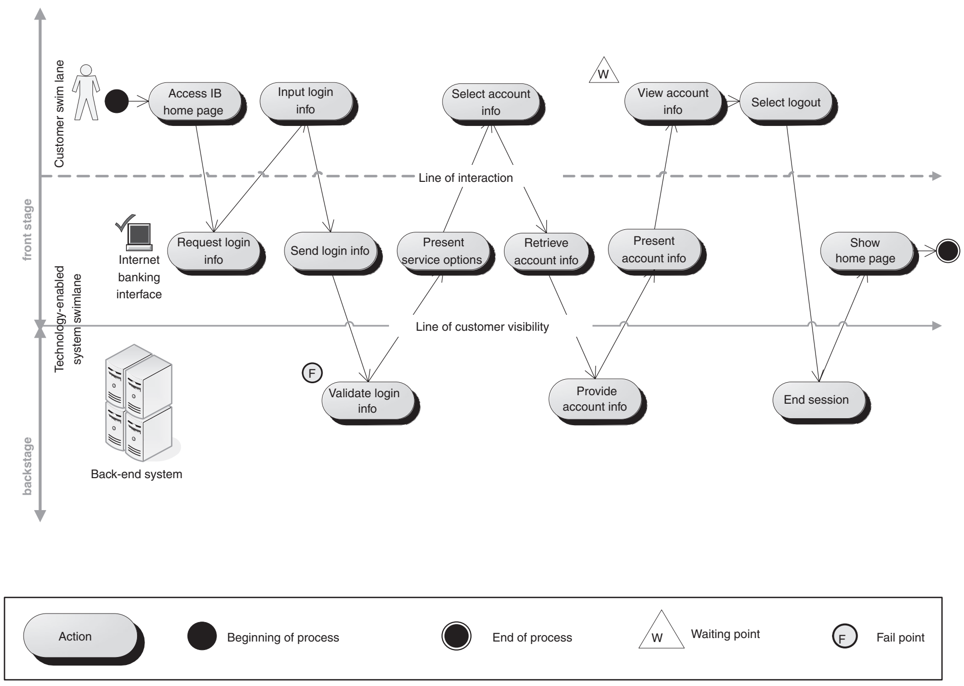
- The SEB diagram integrates concepts and representations from SB and activity diagrams and can therefore be used to integrate the work of service managers and software engineers to design technology enabled services.
- The SEB method enables a careful design of the service experience, integrating the design of the service process with the design of service clues through the use of GOA to evaluate how design options at the service interface level satisfy CERs.
- Through SEB, each channel is designed not in isolation but to best contribute to the overall service experience through explicit links that guide customers across different service interfaces. These service links provide the modular design needed to enable customers to cocreate real-time service experiences across channels.

Using the SEB Method to Redesign the Current Account Information Experience

The last stage of the SEB method is now illustrated for the redesign of current account information service. In Figure 4, the SEB diagram maps the existing service provision process using IB. This is a self-service provision, so the customer interacts directly with the technology-enabled system through the IB interface to get current account information. The SEB mimics activity diagrams in its visual representation of actors' actions, beginning of process, end of process, transitions, and swimlanes. For clarity, the SEB distinguishes *action*, which is a set of operations performed by an actor, from *activity*, which is a collection of actions undertaken with a given purpose (Constantine 2006). In this case, two swimlanes map the actions of the participants involved in service cocreation: the customer and the technology-enabled system. The actions of the different actors are linked by transition arrows that define the flow of events.

The SEB representation borrows the line of interaction from SB, which is used to divide the actions of the different participants (or swimlanes) in the service process. In this example, the line of interaction separates the actions of the customer from the actions of the technology-enabled system. This line of interaction helps designers decide which actions shall be undertaken by the customer and which actions shall be performed by front-stage employees or interactive systems. These decisions are important for multi-interface service experience design, as personal interaction and self-service interaction require very different levels of customer participation and therefore represent very different lines of interaction.

FIGURE 4
Service Experience Blueprint for Gathering Current Account Information Through Internet Banking

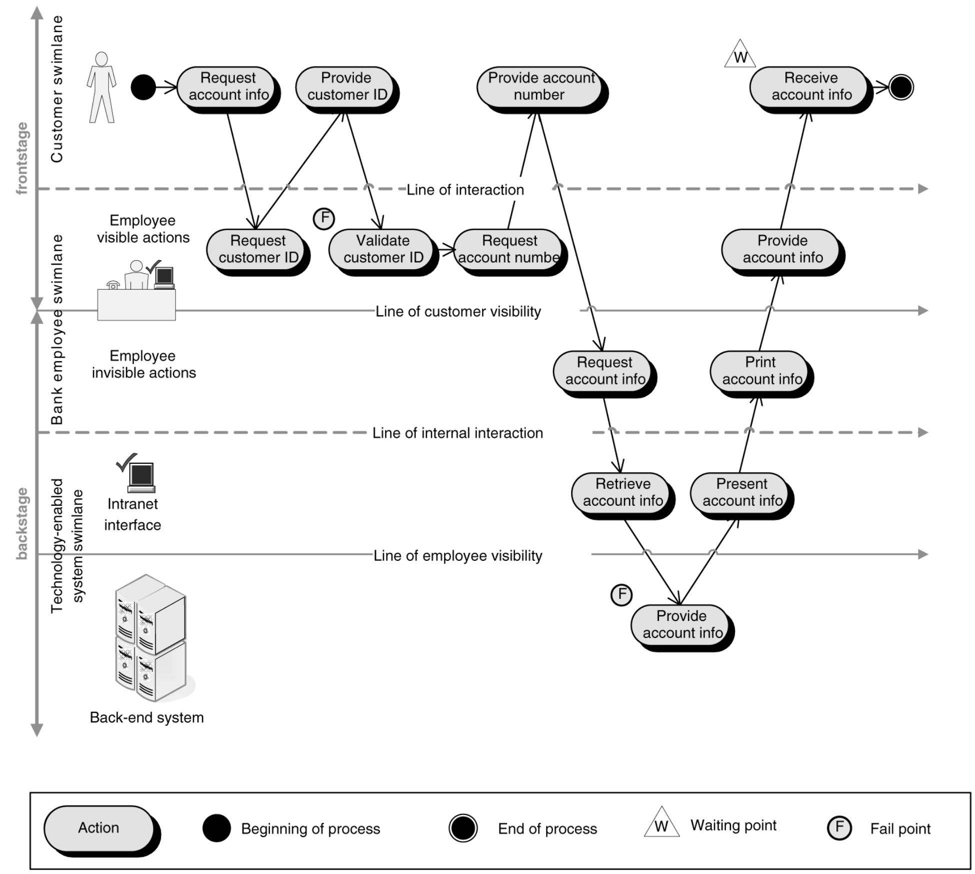


The SEB diagram also includes the line of visibility from SB, here called the line of customer visibility. With Lovelock and Wirtz's (2006) version of SB and the service theater framework (Grove and Fisk 2001), the line of visibility separates front-stage operations that are visible to the customer from backstage operations that the customer cannot see. This line of visibility, although not present in activity diagrams, is very important for service experience design as it separates the visible component of the technology-enabled system (interactive system) from the invisible component of the system (the back end). For example, many banks have hidden their back-office operations to improve the service experience, as customers frequently become annoyed when they wait for a service representative while they see bank employees dealing with administrative work instead of serving customers. On the other hand, in interaction design, sometimes moving backstage activities to the front stage can improve the interaction experience. Therefore, the line of visibility and the distinction between interactive and back-end systems should be taken not as givens but as important design decisions that strongly impact the customer service experience.

The SEB diagram can also be developed for the existing current account information service at BB, as shown in Figure 5. Although it provides the same functionality, the BB service experience is quite different. Self-service provision is substituted by personal contact with the bank employee, who mediates the interaction between the customer and the technology-enabled system, while enriching the service experience through humanic clues. Therefore, the BB SEB has one more swimlane than the IB SEB, mapping the bank employee's participation in the process of service delivery, and two lines of interaction are designated: the line of interaction between customer and employee, and the line of interaction between employee and technology-enabled system.

After mapping existing services, GOA is used again to evaluate in more detail how existing functional alternatives satisfy CERs and to analyze possible new service designs for each channel that can enhance overall customer experience. First, CERs provide guidance for designing the service process as well as the functional, mechanic, and humanic service clues. In the case of current account information gathering using IB, it is important to design a fast, easy-to-use service to provide the efficient experience desired by customers. CERs also provide guidance for designing links between service interfaces. In the previous examples, two SEBs were developed for current account information service at IB and BB as if they were stand-alone

FIGURE 5
Service Experience Blueprint for Gathering Current Account Information in the Branch Bank

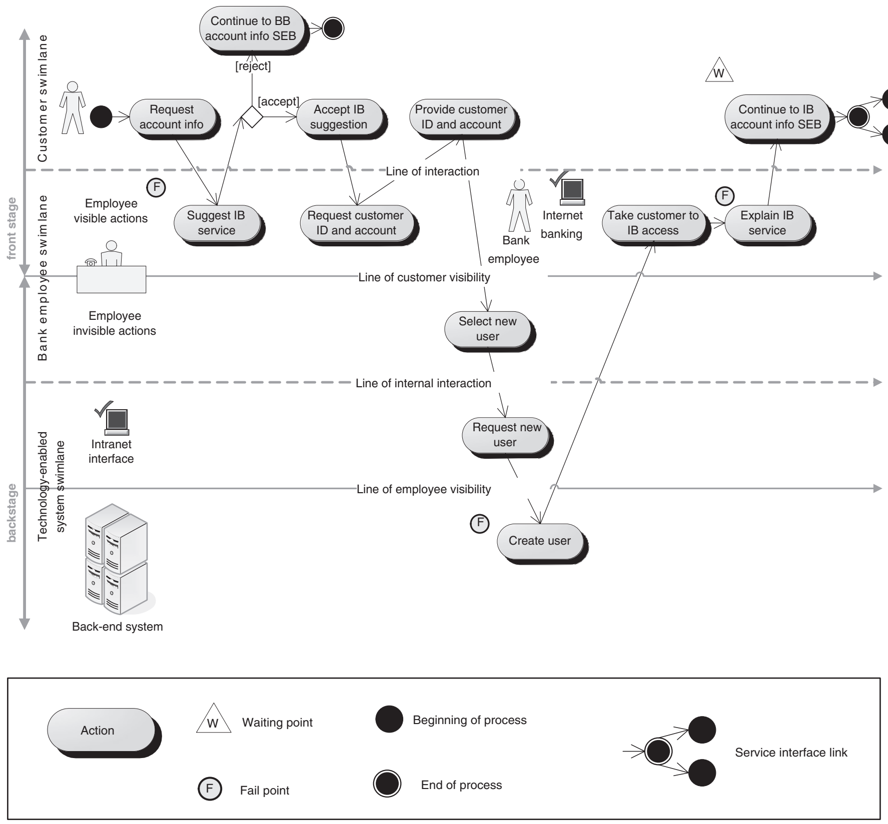


channels, but the GOA indicated that IB is best suited to provide the desired customer experience. Nevertheless, a segment of customers still requests current account information at the BB, which is less efficient for the customer and more costly for the bank. Previous research has shown that different customer segments have different preferences in terms of technology and self-service usage (Ding, Verma, and Iqbal 2007; Parasuraman 2000). But the study results indicated that some customers needed only some support and assistance for adopting new technology interfaces. Based on this analysis, the BB service for current account information was redesigned to guide customers to self-service interfaces.

Figure 6 presents the SEB for the design of a new activity for BB service: explaining the IB service for current account information. When customers arrive at the BB to request current account information, the bank employee suggests using the IB service, with the argument of increased service efficiency. Some customers will reject the idea and the employee will continue with the regular process, but many other customers will value the personal help in starting to use the new interface. If the customer accepts the idea, then the bank employee takes the customer to the IB service interface in the BB and explains IB usage for current account information. The connection flow between service interfaces is depicted in this SEB by a *service interface link*, which means that the service delivery process in this service interface (BB) will continue in another one (IB).

By taking into account the links between service interfaces, this service redesign builds on the personal contact advantage of BB to suggest and explain the efficiency attributes of IB to bank customers. Moreover, CERs captured through the study and systematized through GOA also guide bank managers in designing the service clues necessary for a successful linkage. In this case, it is important to specify functional clues (such as what is explained), mechanic clues (such as the physical environment where the IB interface is available), and humanic clues (such as the way employees provide the explanation to overcome potential adoption barriers). With this method, some customers who would otherwise continue using the inefficient BB for current account information can be guided smoothly to a better service alternative. Therefore, instead of simply pushing customers to automatic channels for cost reduction in a

FIGURE 6
Service Experience Blueprint for Explaining Internet Banking Service for Gathering Current Account Information



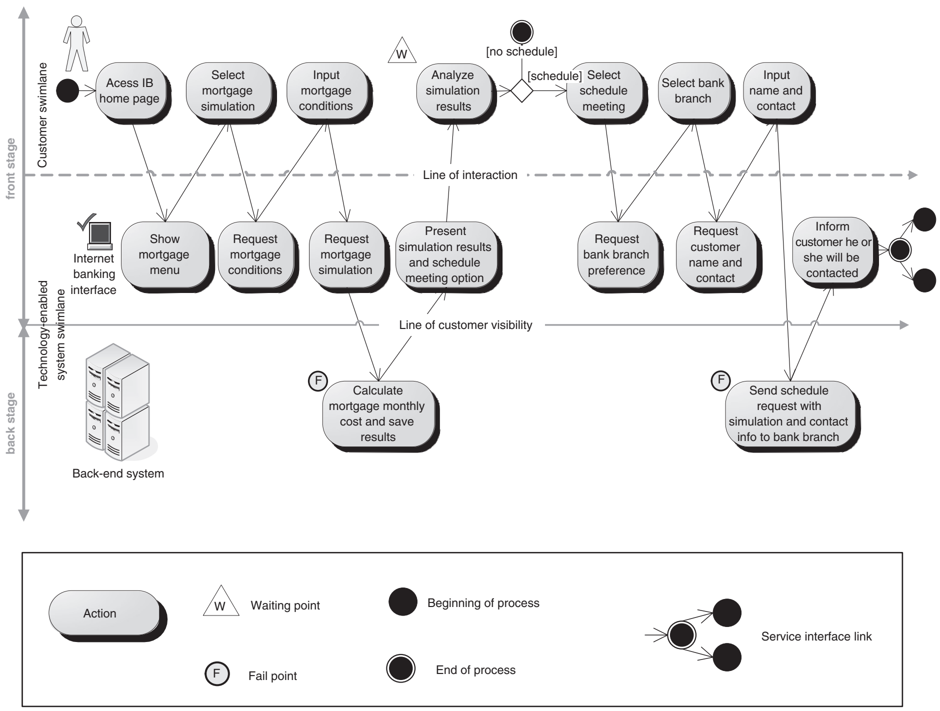
NOTE: BB = branch banking; IB = Internet banking; SEB = Service Experience Blueprint.

transactional perspective, the SEB method allows for a relational perspective, enhancing customer value by investing in educating customers through personal contact so that customers can use automatic channels to cocreate their experiences. In tune with the new service-centered paradigm, instead of focusing on preproducing specific service delivery options for each segment, service interfaces are designed in a flexible but integrated way, so different customer segments can cocreate in real time their experiences according to their personal preferences and financial activities performed.

Using the SEB Method to Redesign the Mortgage Loan Application Experience

The SEB method was also used to redesign the IB mortgage loan service. Based on study results obtained in the first stage, the GOA developed in Figure 3 showed that personal contact was the priority for mortgage loan applications; therefore, the BB with its full personal contact was the preferred channel. Then, by mapping the existing mortgage service at the BB and IB through SEB, it could be seen that although IB provided useful mortgage information such as simulations, customers still preferred BB for personal advice when they wanted to come to a decision because they believed that personalization, trustworthiness, and competence of employees were crucial for a satisfying experience. GOA further clarified this analysis by showing that requirement priorities changed for the different stages of the mortgage process and that the different channels could complement each other in providing an overall satisfying experience. Based on this analysis, instead of offering a full mortgage loan application, IB mortgage service was redesigned to satisfy customer information needs, while guiding the customer to a high-street branch when personal contact was most needed, as shown in Figure 7.

FIGURE 7
Service Experience Blueprint for Gathering Mortgage Information Through Internet Banking (IB)



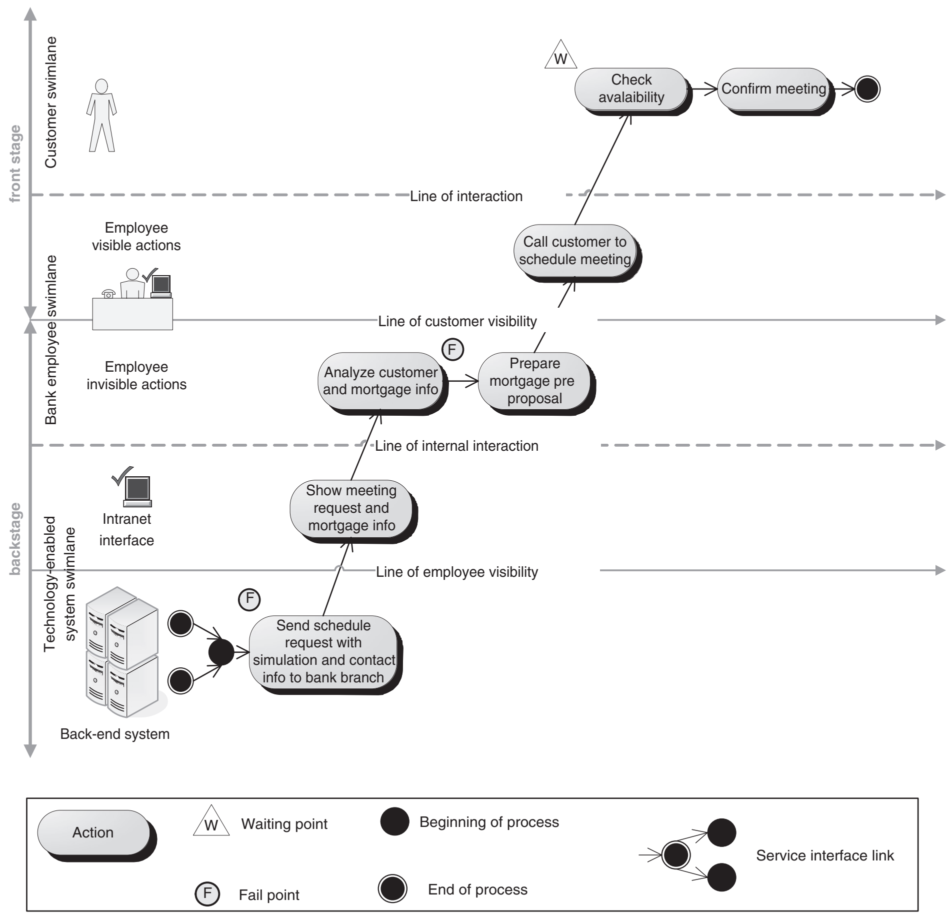
In this new SEB diagram, the IB service offers mortgage loan simulation to both customers and noncustomers of the bank. But when the customer makes a mortgage simulation, the interactive system also shows an option for scheduling a meeting with a BB service representative. If the customer chooses to schedule the meeting and send the simulation information, the back-end system sends a trigger to the BB, which shows up in the Intranet to the selected bank employee, as shown in Figure 8. The service representative can then prepare the meeting by analyzing mortgage simulation and available customer information while preparing a preproposal. After this backstage work, the employee can then call the customer to confirm the meeting, while being much better prepared to provide good personal contact service.

Again, this service redesign integrates service interface capabilities to improve the overall customer experience from beginning to end from a relational perspective. Through the design of a good mortgage information service in IB, the bank takes advantage of Internet information and interactive capabilities. By designing an efficient linkage between IB and BB when personal contact is needed, the bank increases the chances of transforming the customer interest expressed using IB into a mortgage application at the BB, managing the service experience from beginning to end. Finally, by getting information in advance, the bank employee can better prepare for the meeting and provide a higher quality of personal service. The integrated design of the different service interfaces, taking experience requirements to all levels of service design, can therefore improve the overall customer experience while helping to attain the service provider's business goals.

SEB CONTRIBUTIONS TO SERVICE RESEARCH AND MANAGEMENT

The SEB method improves on existing service interface design methods by addressing new service challenges and new service paradigms, and its application to redesign banking services provides useful insights to service managers. The SEB allows for better management of the trade-offs between efficiency and personalization and supports a better definition of the channel mix to enhance the overall customer experience. The SEB therefore makes a contribution to new service development by responding to the call for further research on new methods that address the profound impact of technology in service design. Some design approaches already address marketing, operations, and human resources

FIGURE 8
Service Experience Blueprint for Scheduling a Meeting in the Bank Branch for a Mortgage Loan Application



issues, but the incorporation of technology perspectives into service design has so far been mostly unexplored. The SEB method contributes a unified approach to service design that integrates the methods, tools, and languages of service management and information systems. This unified method can facilitate the joint work of service managers and software engineers when designing new service offerings today. In this way, the SEB makes a contribution to the development of the knowledge and competences needed for the new SSME field.

The SEB method provides for integrated design of the multi-interface service, explicitly designing not only the different service interfaces but also their interrelationships and fostering synergies that make the overall service more than the sum of the channels. The SEB method allows for a better design of the multi-interface mix with a specialization for each channel in the service activities, by which it creates more value for both customers and the firm: Technology specializes in what it does best; people specialize in what they do best. The two cases previously presented also exemplify how the SEB method provides new insights that existing approaches cannot offer. More than just using automatic channels to reduce costs, the SEB method treats new channels as complementary touch points through which the firm can develop relationships with its customers and foster loyalty. Therefore, the SEB method responds to the call for better multichannel customer management, which is increasingly important for modern services.

The SEB provides a systematic method for incorporating CERs into the design of service experiences from the multi-interface level to the concrete interface level, using techniques that are easily understood by both managers and software engineers. It uses well-grounded marketing research and HCI methods for eliciting CERs and assessing the current service experience. Then, through GOA and SEB representations, CERs are incorporated to generate design options and provide evaluation criteria for design decisions. The SEB method does not standardize or automate the design process but offers tools that systematize the process in a way that fosters communication between the different parts involved, allows for better supported design decisions, and builds a service design knowledge base that can be reused in other contexts. Therefore, the SEB method contributes to improving the design of customer experiences, especially for technology-enabled services.

The SEB method designs the multi-interface experience across the different stages of service usage and across the different channels from a relational perspective. The SEB interface links provide the integration that enables customers to navigate smoothly through the different points of contact. By providing a multi-interface offering and designing these service interface links, instead of defining preproduced service offerings targeted to specific customer segments, the firm offers modular services through a set of channel alternatives and provides guidance to enable customers to cocreate satisfying service experiences. Therefore, the SEB represents a significant departure from existing design methods toward the more interactive and experience-based view of the new service-dominant paradigm and real-time services. By designing the overall customer experience across channels and across usage stages, the SEB method contributes to a stronger focus on customer-firm relationships, with a positive impact on loyalty and long-term profitability.

The SEB method provides an open assessment of CERs, and its multi-interface perspective can improve many service designs. The SEB can be used to redesign an existing service offering to enhance its integration or to introduce a new service interface, such as mobile service, strengthening the value it adds to the existing offerings. In introducing a new service, the SEB method can also help designers consider a broader set of interface design alternatives to satisfy customer needs across the different stages of the overall service experience. Finally, the SEB method will help service managers design better services offerings by understanding how the multi-interface service as a whole enhances the customer experience.

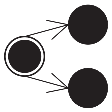
CONCLUSION AND FUTURE WORK

This research provides a better understanding of the challenges posed by new service environments and emerging service paradigms, and it introduces the SEB method, which incorporates the impact of technology in new service design. The development and application of the SEB method illustrate how new technology-enabled services raise problems that existing design methods do not address and how the SEB can bring new insights for better designing and managing multi-interface service experiences. The SEB method unites service management, HCI, and software engineering perspectives; enables an integrated design of the multi-interface service; and provides a systematic method for incorporating CERs. Furthermore, the SEB method contributes a more relational and experience-based conceptualization of services that is more in tune with emerging service trends and paradigms.

This research study involved a thorough redesign of a bank's overall service, but the SEB method needs further improvements and extensions. Applying the SEB method to other multi-interface retailing contexts, to the introduction of new services and new service interfaces such as mobile devices, or to business-to-business services can extend and further validate the method. The SEB development presented in this article focused on the front-stage components of service experiences, but this interaction perspective should be integrated with the design of the internal processes that provide support for service provision. Also, since people are crucial factors for service success, the interrelationships between service interface design and the management of human resources should also be addressed. Finally, it is important to extend and further integrate the SEB with the methods and tools used by new service development and software engineering, so technology is fully integrated into service design. The infusion of technology and the emergence of new service paradigms create a challenging service environment for service researchers and practitioners. The SEB method addresses these challenges but also opens up new interdisciplinary research opportunities.

APPENDIX A

Service Experience Blueprint Toolkit

	A service *action* is performed by one participant in the service delivery process.
	A *transition* arrow links the activities of the different actors, defining the flow of events.
Swimlane	A *swimlane* maps the activities that are the responsibility of an actor along the service provision.
Line of interaction	The *line of interaction* separates the activities of different actors that jointly cocreate the service.
Line of visibility	The *line of visibility* separates, within the activities of an actor mapped in a swimlane, the ones that are visible from the ones that are hidden.
Front stage	The *front stage* comprises the service setting and the actions of the service provider that are visible to the customer.
Backstage	The *backstage* comprises the service setting and the actions of the service provider that support the service process but are visible to the customer.
	The *beginning of process* represents the point when the process of service delivery under consideration starts.
	The *end of process* represents the point when the process of service delivery under consideration ends.
	The *service interface link* indicates that the process of service delivery moves from one service interface to another.
	*Fail points* represent points in the service delivery process where a failure can occur, with a negative impact on the customer experience.
	*Waiting points* represent points in the process where a delay can occur and can be used to establish time frames.
CERs	*Customer experience requirements* are used to evaluate design alternatives and guide the design of service clues.
Service clues	Functional, mechanic, and humanic *service clues* enable customers to cocreate valuable service experiences.

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