

## Using Essential Use Cases for Multiplatform Service Design

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**Abstract.** This paper addresses the problem of designing service interaction for multiplatform operations and is based on a qualitative study of the services offered by a large retail Portuguese bank in four channels: bank branches, telephone, ATM, and Internet. The functionality of bank services across such channels was captured with essential use cases, which are technology free. When customers are free to decide in which channel they are going to get the service they need, customer experience (non-functional) requirements becoming ever more important. Essential use cases were extended to take account of such customer experience requirements. This additional information in essential use cases is very helpful, as it provides concrete and objective guidelines regarding the most suitable channel for implementing and offering each particular service. Doing essential use case modeling for multiplatform service interaction helps service providers allocate resources to the most likely channels that customers will use. It also allows them to identify areas of interaction experience that need to be improved if services offered are likely to be effectively used in the platform.

### Introduction

The steady growth of Internet usage for the provision of services to customers has created new challenges for Interface designers. Interaction systems are now designed to provide services for a wide and diversified set of potential users, in a non controlled environment. In Internet service, designers and service providers can-not control the objectives, the place, the situation, or the hardware of the interaction. The interaction can be influenced, but cannot be controlled. In this environment, the experiences provided to the users make the difference, and non-functional requirements, especially customer experience requirements, gain more importance in the success of interaction systems (Preece et al., 2002).

On the other hand, in the Internet service environment, the interaction is part of the overall service, and is increasingly integrated in a multi-platform offering. The web interface is but one alternative of interaction between customer and service provider, complementing, more than substituting, person to person or telephone channels. As such, user interface designers have to consider how the interface compares and adds value, not only to other technological platforms, but also to more traditional service channels, such as telephone and personal interaction.

To respond to the increased complexity and openness of multi-platform services, interface design should be based on an accurate elicitation of customer requirements, being flexible enough to accommodate the diversity of customers and the interrelationships between service channels. To accomplish this task effectively in the service provision context, designers should also join the perspectives of both UCD and Services Marketing.

From the Interaction Design field, some studies have identified the most relevant user requirements in the Web interface (Nielsen, 2000) and other authors advocate the inclusion of experience requirements (Preece et al., 2002) and emotional requirements (Norman, 2003). From the Services Marketing field, several research efforts have been made in order to understand customer choice and usage of Internet service channels, especially what drives service quality on the web (Zeithaml et al., 2002; Yoo and Donthu, 2001; Loiacono, 2000).

Based on the study of the customers of a multi-channel bank, this paper shows how essential use cases (Constantine and Lockwood, 2001) are valuable in improving the elicitation of customer requirements in the context of multi-channel bank offerings. As essential use cases are platform independent, they allow the elicitation of customer requirements before any commitment to technology is made. With this approach, service providers can better decide which service platform is best suited to provide the desired service to customers, and designers can better understand how to develop service interfaces which add value to the existing channels, in order to convince customers to use them.

## The Study

This study aims at developing new methods of gathering user requirements for web interfaces, joining UCD and Services Marketing approaches. It focuses on a multi-channel bank, which provides services through high street branches (BB), telephone (TB), ATM and the Internet (IB). The research comprises a qualitative study and quantitative study to understand customer needs of interaction with the bank, in order to make an accurate elicitation of customer experience requirements, which can then be used to improve the Internet service channel, as shown in Figure 1. This paper presents the results obtained from the qualitative study.

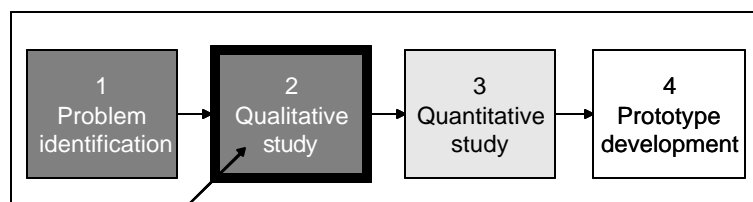


Figure 1 - The different stages of the study on improving the methods for designing Internet services in a multi-platform service offering.

After identifying the problem and understanding the business model, the study followed with in-depth and focus groups interviews with 36 bank customers and 13 bank senior staff in 3 Portuguese cities. The semi-structured interviews focused on the process of channel choice and were transcribed and analyzed with the support of the qualitative software NUD\*IST ([www.qsr.com.au/products/n6.html](http://www.qsr.com.au/products/n6.html)). The qualitative research aimed to elicit the potential factors driving or inhibiting the usage of Internet banking, which can be used for the identification of interface requirements.

In order to study the Internet banking interface in the context of the overall service offering, four different service channels were studied: Bank Branches (BB), Internet Banking (IB), Automatic Teller Machines (ATM), and Telephone Banking (TB). Data analysis was structured in terms of factors influencing positively and negatively the usage of each SDS, and organized into three main categories of influence factors: user profiles; essential use cases and customer experience requirements.

### **Customer Experience Requirements**

From the qualitative study, it is clear that customers do not express their preferences for each channel with technology features and functionalities, but with the service experience they can get (Patrício et al., 2003). In the customers' perspective, IB is usually seen as a more efficient interaction in terms of higher accessibility, convenience, ease of use and time saving. However, the view of IB as more efficient appears to be just one side of the overall perspective of the interviewees. IB also performs well in terms of usefulness of functionalities, quality and deepness of information, autonomy and feedback control.

It is interesting to note that customers enjoy the control and autonomy provided by IB, as they feel in charge of the interaction, which they can lead at their own pace. Feedback control is also seen as an advantage of IB, which is related to its visual and printing capabilities, especially when compared with TB. Security concerns are still a major disadvantage of IB, both for users and non-users. IB users are still concerned with this problem, although it seems that IB advantages outweigh this issue.

On the other hand, the great advantage of the BB is the possibility of having person to person interaction, which is expected to bring mutual knowledge, individualized attention, and professional competence of employees, responsiveness in non-routine situations, and even some social interaction. The bank branch also has a negative side in terms of lack of convenience, lack of accessibility, and time loss.

### **Essential Use Cases**

Essential use cases are particularly useful to understand customer interaction needs as they are independent from the platform through which the service is provided (Constantine and Lockwood, 2001). As essential use cases are technology independent, they are especially useful for eliciting experience requirements when the same service is provided through different interface technologies (Biddle, Noble, and Tempero, 2002). The qualitative study allowed the identification of several essential use cases, the associated customer experience requirements, and the most frequently used service channel.

In the interviewees' perspective, financial operations which are considered routine, unimportant, low risk, and well known by customers—such as current account transactions—are usually undertaken in the IB, or other automatic channel, although

they are also available in the bank branch. For these kinds of financial operations, customers give priority to the efficiency attributes of the Internet, such as convenience, ease of use, time saving and accessibility, as shown in Table 1.

“I make almost all my payments through the Internet. It’s faster, I don’t have to go anywhere, I don’t have to send a fax or a letter. (...) I use the Internet because it is easy, I save time, I don’t have to go to a bank for a money transfer or a cash withdrawal.”

Woman, 54, college graduate, user of IB

**Table 1 - Use case for money transfer.**

Use case	Basic functional-requirements		Most important experience requirements
	Customer Intentions	Bank responsibilities	
Transferring money	Request money transfer Request information about the operation (accounts to credit and debit, amount to transfer)	Provide required information Check data compatibility check account balance request data confirmation	Security Reliability Feed-back control Speed Convenience Accessibility Ease of use
	Confirm money transfer request confirmation of operation	Execute money transfer, provide confirmation of money transfer	

The identification of essential use cases and the associated experience requirements are helpful in understanding customer choice between IB and BB, but also customer usage and non-usage of other channels. In the case of money transfers, as the feedback control in terms of order confirmation is very important, customers tend to prefer IB over TB, because of its visual and printing capabilities.

“[I prefer the IB to the TB] because it’s faster. It is also more comfortable to get the current account balance, because I can see it, I can print it and I can keep it. In the TB I can only hear and I don’t get a paper copy. That’s the disadvantage I see when comparing the TB with the IB.”

Woman, 36, elementary school, user of IB

This information can be used by service providers to understand which channel is best suited for that service, but can also be used by designers, to develop the interfaces in order to best match customer interaction needs in the context of a multi-channel service. In this case, as the IB channel is more cost effective, the bank can decide to design the IB service in order to reinforce its visual and printing capabilities, but could also add printing and mail options to the TB service, in order to overcome that limitation.

If customers tend to use automatic channels for simple operations, for complex, unknown, important operations - such as mortgage loans - customers prefer the personal interaction in the bank branch, which is associated with mutual knowledge, individualized attention, and professional competence of employees, as these are the most important experience requirements for this use case, as shown in Table 2.

**Table 2 - Use case for mortgage loan application.**

Use case	Basic functional-requirements		Most important experience requirements
	Customer Intentions	Bank responsibilities	
Loan application	Request loan Request formal and informal information about customer Provide information requested Analyze information Approve/reject loan Propose loan conditions (amount, price, term...) Accept/reject/negotiate loan conditions		Mutual knowledge between customer and the bank Professional knowledge Individualized attention Responsiveness to customer's questions and requests

“When I apply for a loan of 30.000€, I like that a physical person is on the other side, not a computer. I don't like a depersonalized thing, I like to talk with a person and explain the situation, because there are always questions, and the information of the account manager is important.”

Man, 48, college graduate, regular user of IB

Once more, service providers can use this information in two ways. First, they can concentrate each channel's efforts in providing the services in which they can best satisfy customer experience requirements. Following this strategy, service designers should reinforce the bank branch mortgage advice service, and concentrate the IB's efforts in offering more routine operations, such as current account transactions. However, service designers can also use the essential use cases and the associated experience requirements for developing new interface characteristics which may overcome the channel limitations in providing the desired experience to customers. In the case of mortgage loans, the experience limitations of the IB and TB could possibly be overcome with videoconference capabilities, or other direct connection to a financial advisor.

The IB service has also been used intensively for stock trade, already representing two thirds of the bank's stock transactions. For stock traders, the most important requirements are speed, real time, quality information, completeness of functionalities, and 24 hours availability, as shown in Table 3. Identifying the most important customer experience requirements for this use case can also help managers understanding how to take advantage of IB capabilities to provide the experience customers want when making their transactions online.

**Table 3 - Use case for stock trade transactions.**

Use case	Basic functional-requirements		Most important experience requirements
	Customer Intentions	Bank responsibilities	
Buying stock	Request information on stock prices Provide information on stock prices Request information on stock market trends Provide information on stock market trends	Buying order Execute buying order Provide confirmation and conditions of stock transaction	Speed Deepness of information Real time information Clarity of information Complete functionalities. Immediate execution of orders Convenience Feed-back control

However, requirements also change according to different customer profiles. If customers with both technology and financial knowledge feel comfortable undertaking stock transactions online, other customers prefer to make this decision with the support of a financial advisor in the bank branch. Forcing these customers to go online may not be effective and may even damage the relationship between the customer and the bank.

“That’s how I see the Internet, to see my account at my own will, and for people who like it, and have some money and want to save it or invest it, to go to the Internet, see what are the best interest rates, make it, at midnight or 1 a.m.”

Man, 36, college graduate, IB user

“There is a group of operations that I don’t deal with through the Internet, which are the operations related to mutual fund investments. For those investments I still go to the bank branch, because I still need to talk with people, people who are knowledge-able and can help me. But that’s because of my lack of financial background, and my natural distrust in relation to money management.”

Man, 31 college graduate, IB user

A great number of bank operations can now be provided through the Internet, such as a simple view of current account balance, or the pre-approval of a complex mort-gage loan. However, the study shows that, in spite of the availability of all these functions, customers are reluctant to undertake some operations through automatic channels. It seems that, more than just making the operations functionally available, it is important to provide the service experience that customers require, to convince them to use the service. In order to design Internet service interfaces, it is necessary to understand the influence of both user profiles and use cases on customer experience requirements, such as in the example shown in Figure 2.

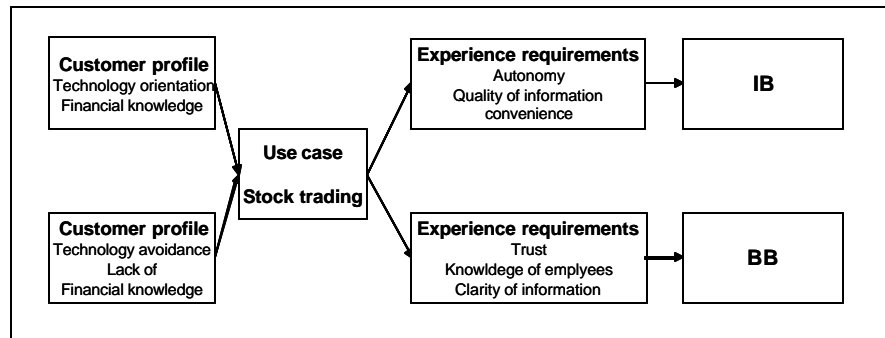


Figure 2 - The influence of use case and customer profile in service channel choice.

## Conclusion

To respond to the increased complexity of multiplatform service environment, there is the need to develop new methods of requirements elicitation which are flexible enough to accommodate different user profiles, different essential use cases and different service platforms in an integrated way.

Each essential use case previously described has a specific set of functional requirements, which are well studied, given the long tradition of the banking industry. The development of new technologies has made it possible to satisfy these functional requirements through web interfaces, and has expanded the potential use of the Internet for service provision. However, it seems that, more than just making services functionally available in new channels, it is important to understand what customer experience requirements are associated with each essential use case, in order to identify what platforms are best suited to provide the desired service or to improve the interface to better respond to customer experience needs.

The application of essential use cases, which allows the elicitation of requirements in a technology-independent way, can therefore improve requirements gathering before any commitment to technology is made. With this analysis, service providers are better positioned to make their decisions on what services are best suited to each channel, in order to effectively address customer needs, to make an efficient allocation of resources among channels, and to design successful interfaces.

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