

Challenges of Online Services for Older Users

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ABSTRACT

Computers, the Internet and online services have been developed for young educated individuals' needs and abilities. Online services have become widely accepted and are replacing physical services. This pressure to use online services can be a catastrophe for older adults who are otherwise able to take care of themselves, but are confused by the digital environment. This paper presents a study of older adults who use online banking services and characterizes older users as a competent user group with special features.

Categories and Subject Descriptors

K.4.2 [Social Issues]: Special Needs

K.4.4 [Electronic Commerce]: Payment Schemes

General Terms

HCI, Experimentation, Human Factors

Keywords

Seniors, older adults, older users, accessibility, usability, and online banking services.

1. INTRODUCTION

Older adults represent the fastest-growing demographic worldwide. This development is an outcome of longer life expectancies. The aging process brings changes to the health of older adults, for example, problems with vision, hearing, cognitive functions [1], and fine motor actions [2, 3, 4]. The ability of older users to learn new skills [1] and adapt to changes in an environment decreases. Thus, using new technology can be quite difficult for older adults even though the new technology could increase their autonomy, safety, and everyday comfort. In studies of the attitudes of older adults toward using new technology, findings reveal that older adults do not like to use computers and have low self-esteem as technology users; they try to avoid using technology as long as they can [5].

Because of the increased availability and popularity of Internet connected devices, many services have been turned into Internet services with great success. The popularity of online services leads to decreased physical service points thus accelerating the process of change.

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However, for an older adult, the ability to use online banking services at home can bring great benefits to everyday life: accessible banking services at any time of day without the need to travel or hurry. The benefits of online services are clear, but are these services too demanding to use for an older user? Is the lack of motivation the greatest barrier? In this study, we attempt to answer these questions by conducting a usability test in which a group of motivated older adults use online banking services.

2. RESEARCH PROCESS

In this study, online banking services were tested by eight retired older users: five women and three men (ages: 66-81). They lived in Finland, in the municipality of Raahe, which has a population of 26,000 [6].

The participants are educated, moderately healthy, active and motivated older users who have basic computer skills. The most common ways the participants learned these skills were computer use in past work life, support of younger relatives or friends, and computer courses for seniors. The participants were divided into two groups, as shown in Figure 1, according to their computer use habits: group 1 and group 2.

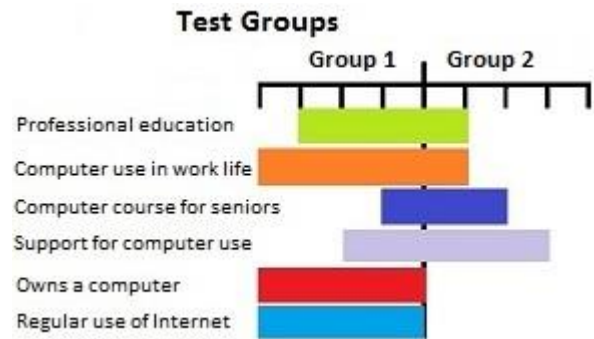


Figure 1. The participants were divided into two groups according to their computer use habits.

Group 1 had the following characteristics: All had a personal computer, used the Internet regularly in different ways; and had a history of using a computer in their work life. This group included one man and three women (mean age: 69).

Group 2 had the following characteristics: None owned a computer, though all had access to a computer. They seemed to be much less experienced in computer use than a group 1. This group included two women and two men (mean age: 77).

The apparatus (picture 1) used in the test case was a laptop with standard accessories: a mouse and a keyboard. The recording equipment consisted of a video camera and a screen capture program. The usability test [7, 8] of online banking services involved a working online environment. This online banking services environment was familiar to the participants; everyone had at least minor experience with it (picture 2).

To exclude computer and web browser-related problems [9], all participants had opportunity for a brief orientation that included the test apparatus, software, and browser before the test.

The tasks in Table 1 were selected to reflect common tasks that might be carried out by using online banking services. The language of the tasks was related to bank terms and functions. The participants were asked to think aloud as they carried out the tasks.

Table 1. The task list for the test case¹.

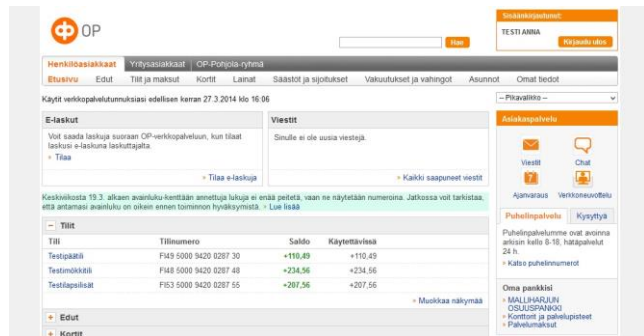
Task	Description	Complexity
T1 Log in	Log in to the test account on online banking service by using the given username, password, and key number list.	5
T2 Find balance of an account	Recognize the balance; this information was located in the middle of the main page.	0
T3 Find an account statement	Navigate to account information.	1
T4 Pay a paper bill	Fill in multiple fields and use scroll-down bar. A bill must be accepted by using a key number list.	11
T5 Pay a bill by using a bill template	A multiphase task that requires selecting bill information from a dropdown menu.	8
T6 Find information about bills before the due date	Navigate and recognize information.	2
T7 Send a message to the bank via the online service	Using the online service, send a message to a bank.	6
T8 Find contact information for nearest bank	Find the contact information for the nearest bank, which requires the use of a search engine.	5
T9 Logout	Log out from the online banking service.	2

¹ The complexity describes the minimum number of steps required to accomplish a task.



Picture 1. A test set.

In Table 1, tasks 1-4 and 9 are fundamental features of the system. Tasks 5-8 provide added value to the user, but mastering these features is not necessary to use online banking services successfully.



Picture 2. A user interface of the online bank service.

3. RESULTS AND DISCUSSION

The time participants used for the tasks, errors, interventions, and moments of confusion were counted from recordings. This data was organized under tasks and user group -related topics. The participants also verbally evaluated their own use of the online banking services.

3.1 Task Difficulty

The test task difficulty is characterized in this study as follows: multiphase task, time consumed, errors made, expressions of confusion, and interventions made by a test monitor.

Confusion describes all actions that can be interpreted as related to confusion: asking the test monitor for advice, talking to oneself (such as "I cannot ... I do not understand"), letting the cursor wander around the screen while searching for the right option, browsing, reading aloud, making a comment, opening menus or clicking links randomly. The action itself is not an error, but it takes time and makes completing the task take more time.

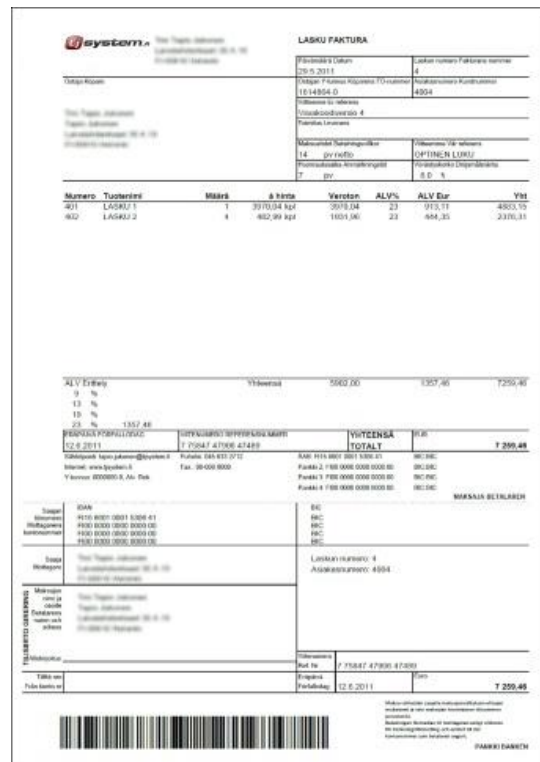
Error is an action that is different from an expected action to complete a task. This indicator requires an interpretation by the researcher, because in some cases there were several paths to complete a task successfully. The participants recovered from errors mostly by themselves and only in some cases did a test monitor intervene. Despite the high number of errors, only few tasks were not completed.

Intervention is an action when a test monitor was asked to help a participant during a problematic situation or give an answer to a direct question (picture 3). A test monitor did not encourage a participant to ask and gave him or her time to solve a task rather than intervening.



Picture 3. A test monitor encourages the participant and gives a little support on a clear request.

Figure 2 shows the most challenging task of the test was task 4, in which a participant was asked to pay a paper bill (picture 4) by using online banking services. In addition to the many steps the task required, it caused a lot of expressions of confusion, errors, and interventions, which led to longer time to complete the task.



Picture 4. A paper bill. Some participants experienced problems with long number series.

Tasks and Difficulty Indicators

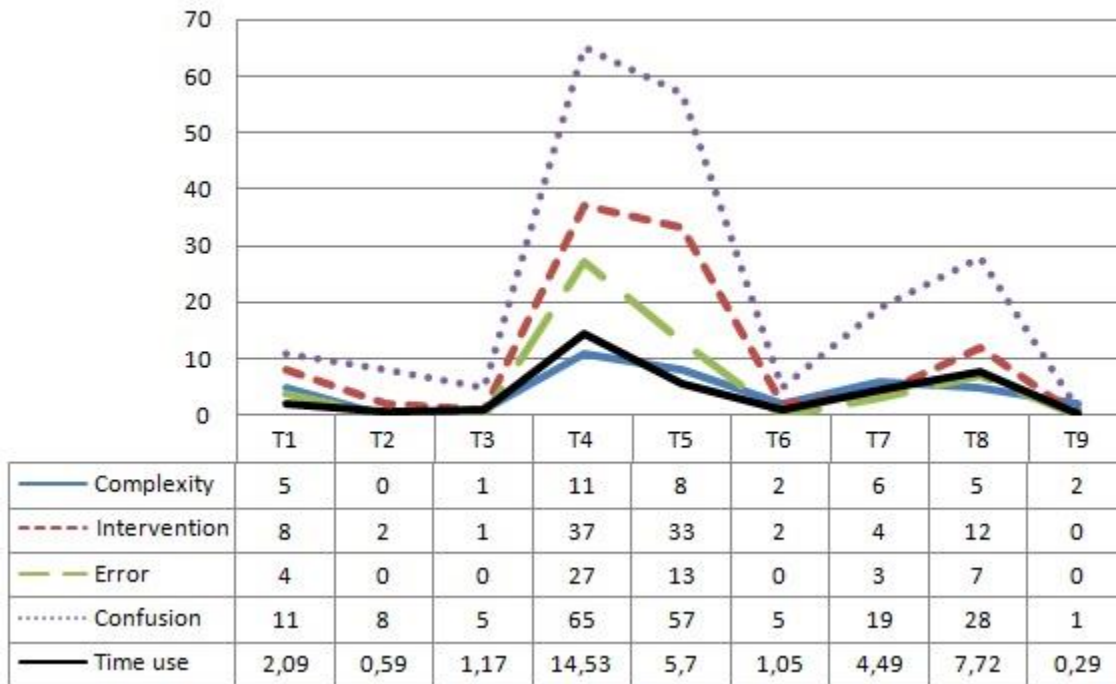


Figure 2. The more complicated a task was, the more time in minutes the participants used to complete the task. The more complicated a task was, the more errors, interventions, and expressions of confusion it caused.

3.2 Comparison of the Test Groups

Figure 3 shows that the group 1 users made remarkably fewer errors, they were not as confused during the test as the group 2 users, and they did not need as much support from the test monitor. Older users seem to benefit regular and versatile Internet use and easy access to the Internet, when they have to use online services. If the older users had to use a computer in their past work life, the threshold for using a computer and the Internet seemed to be lower now.

Difficulty Indicators and Time Used by Test Groups

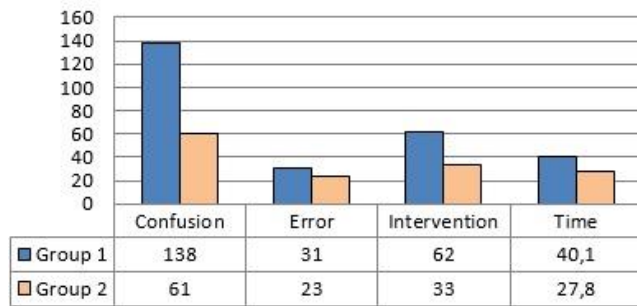


Figure 3. Group 1 users experienced less confusion, made fewer errors, and required fewer interventions. They completed the test faster on average than the group 2 users. The difficulty indicators confusion, error, and intervention were counted as an amount, and the time was in minutes.

According to the test results, older users felt a lot of confusion; they needed support from the test monitor, and they made many errors. Nonetheless, they recovered from difficult situations and completed the tasks.

3.3 Older Users Experiences

After the test the participants had an opportunity to analyze their performance. There were differences between evaluations of the group 2 and group 1 users; the users in group 1 evaluated their performance well and the online service as easy to use. The users in group 2 (who faced difficulties more often) – gave themselves positive evaluations, too. A common belief was the following:

"I just need a bit more practice to use this online banking service fluently."

These positive evaluations were a puzzling surprise to the researchers. The participants used plenty of time, but this did not seem to concern them. Only one participant criticized the online banking service: he was a customer of another bank too, and he preferred their online services more.

4. CONCLUSIONS

A background of computer use in work life and versatile Internet use habits today make a clear difference between user groups; users with regular computer use habits completed the tasks faster and with less anxiety than the group of less active users. The study suggests that the earlier people learned their computer skills, the easier it was later on, although the computer software, browsers, and concept of the Internet were new.

Although earlier experience gave an advantage to regular users, casual users also completed the test, but at a slower pace. The time consumed did not seem to bother them. All participants shared a positive and persistent attitude, which might be the secret of their success into adopting a digital lifestyle.

Today, the number of older people who have the ability to adopt new technologies (– such as the users in this study) will increase. In addition, they can easily adopt more technology than earlier generations of older people, because of their longer experience. There will be a new generation of older users with significantly better technology use abilities.

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