

Older Adults' Experiences of Interacting with Online Forms

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ABSTRACT

This paper summarizes the current research findings of the Delivering Inclusive Access to Disabled and Elderly Members of the community (DIADEM) project; A three year, EU funded project that seeks to investigate and support the interaction needs of end-users' across Europe when accessing, completing and submitting online forms. After introducing the challenges faced by older adults whilst accessing and acquiring products and services online, the user-centred research approach adopted by this project is presented. This paper concludes with a discussion of the initial findings, organized around five key interaction challenges: Assistance, Trust, Layout, The Technology Paradigm and Language.

INTRODUCTION

As a result of age related declines in mobility, dexterity, and cognitive ability, growing numbers of older adults are living within their homes, but with restricted access to services, and in their ability to carry out independent living tasks such as grocery shopping, bill payment and accessing social services [1]. Cognitive declines are an unavoidable part of the ageing process [2], declines often occur in terms of orientation [3], memory, and attention [4]. In recent years, government initiatives across Europe have identified web-services as being a potential means of improving access and quality of life for older adults. However, the majority of online forms have not been designed specifically for the needs of older adults [5]. Therefore, it is likely that this user group would benefit from assistive technologies that tailor the web-based online form interface and functionality according to their specific needs.

The DIADEM project spans across three European countries: the UK, Italy, and Norway. It aims to develop an assistive technology, in the form of an Expert System (ES), that adapts the online form interface, according to the individual's on-screen interactions.

As a step towards developing such a technology, we have conducted trials with 80 users, in three countries, to gain a better understanding of older adults' experiences whilst interacting with online forms. The results of these trials will be used to specify requirements of the DIADEM prototype application, and to evaluate the functionality of the prototype after its development.

Trial methods

Procedure

Potential users were recruited via volunteer networks, local government agencies and rehabilitation units in the UK, Italy, and Norway. Based on the literature [2], and advice from healthcare organizations, the inclusion criteria was as follows: users were aged 55+ and had little or no experience of using online forms. The Mini Mental State Examination (MMSE) was also completed

by each user, which provided insight into the cognitive ability profiles of those who took part in the trial. As a result, 80 datasets relating to 49 females and 31 males were collected and deemed suitable for analysis. Users ranged in age from 57 and 81 years, with a mean age of 67.1.

It was important that the online forms, selected for use in the trials, were sufficiently 'complex' to ensure that a broad range of user scenarios were elicited as users interacted with the online forms. Consequently, all partner countries carried out the Bespoke Online Forms Selection (BOFS) procedure (see [6]) which was specifically designed to identify appropriate online forms for the older adult target group, to be used in these trials. The BOFS procedure is made up of a number of heuristics, which are based upon the sub-scales of cognitive decline as specified in the ACE-R cognitive examination [3].

On arrival trial information sheets were distributed to users prior to participation in the trial, the content of which was worked through with the user. Users were asked to complete a consent form in which their ethical rights were explained in terms of informed consent, withdrawal and anonymity. The MMSE was then completed by each user [7]. Each user was then asked to complete an online form, whilst adopting a 'think aloud' approach, which enabled them to verbally share their thoughts whilst interacting with the online forms. Specifically, users were asked to comment on positive aspects of the experience, and also on difficulties they encountered. All sessions were tape recorded, and the researcher also took written notes during the session. At the end of the trial, a short discussion was held with the user, giving them the opportunity to elaborate on any of the points they made during the trial session.

Data analysis

A thematic analysis of the data collected during the trials was conducted; providing a structured means of identifying overarching themes (categories) and associated sub-themes (sub-categories) that occur within the textual data [8].

After transcription, the dataset was initially perused to conceptualize the overarching categories existing within the transcripts at a high-level, and noted in a coding frame, with each concept assigned a code name, and a description and examples of text that fit each concept. The dataset was then examined iteratively, enabling categories and sub-categories to be developed further, these were spliced and linked together, and text relating to each category and sub-category was appropriately labeled. When no further refinement of the categorization could be derived a final group of categories and sub-categories, representative of the transcripts, were produced. These were then formulated diagrammatically into thematic mind maps (adapted from the thematic mapping approach presented in [9]).

Results

Results of the thematic analysis revealed a number of themes and sub-themes. Surprisingly, the results from all three countries seemed to be similarly structured, and there did not appear to be any notable cultural differences between datasets. Some positive themes included the ability to fill out forms without having to make a journey, for example, there being no need to post the form after completion. Less commonly, users mentioned the time saving aspect of filling out online forms. There were considerably more comments relating to difficulties encountered whilst completing the online forms, which confirms the need for improvement of online forms for this target user group. Figure 1 shows a thematic mind map of the difficulties encountered by older adults interacting with online forms. Five key themes were identified relating to: *Assistance*, *Trust*, *Layout*, *The technology paradigm*, *Language*.

Assistance: Users felt that there was generally not enough help provided. They felt that they needed someone to speak to and perhaps a more personalized assistance than was made available. The help that was available was overly complicated, and no examples were provided of how to correctly complete sections of the online forms. Password assistance was also felt to be lacking.

Trust: Users were concerned about where the information was going, and who was going to have access to this information, and how it would be used. There was also a concern that they may become vulnerable to virus attacks and unsolicited messages if they provided personal information. Users also seemed to be concerned that they may unintentionally change the format of the online form, or that the online form may change and thus leave them in a state of confusion.

Layout: There was strong feeling that font sizes were too small and lacking in contrast, and that input fields were not clearly signposted, and tended to require complicated input formats, particularly with regards to telephone numbers and date fields. Flashing symbols and multimedia also caused confusion. Users also felt that there was insufficient summary information, for instance an overview of where they were in the context of the whole form, and that in general there was too much unnecessary information, and too much information on each page.

Technology paradigm: Users made comments relating to the anxiety that they felt when using computing equipment. They felt it was an unfamiliar mode of interaction, and would benefit from having a test environment that they could use, before completing the real online form. They were anxious about the consequences of making mistakes, particularly the prospect of losing all their work, and having to start the process from scratch.

Language: Users felt that the language used was overly complicated, sentences were unnecessarily long, and there was no point of reference for them to check the meaning of terms used.

The research approach taken in this study has been effective in providing valuable insights into the challenges faced by the older adult user group whilst interacting with online forms. The next stage, developing the DIADEM prototype application, will benefit greatly from using the five key themes, and sub-themes, identified in this study as the basis for defining appropriate functional and usability requirements for the application. In doing so, it is likely that the DIADEM application will be of great value to the older adult target group, by providing them with more effective and usable online forms.

Concluding remarks

In this paper we have presented a study that was carried out to gain insights into the experiences of older adults as they interact with online forms. The results of this study will be used to develop the prototype DIADEM application, for adapting online forms to better suit older adults' interaction and independent living needs.

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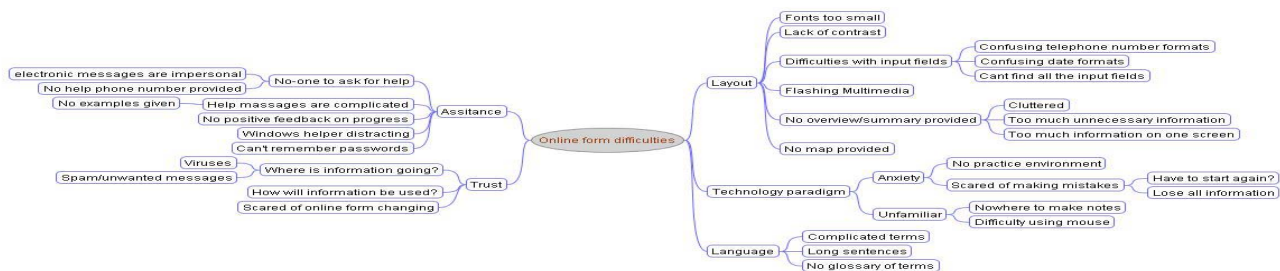


Figure 1: Thematic mind map of difficulties encountered by older adults whilst interacting with online form