HCDE 519
Qualitative Research Methods
Autumn 2022
Acce$$ibility

How has the digitization of financial products and services impacted the life of older adults?

Kalpitha Jagadeesh, Kan Bassi, Sushmidha Jawahar, Tianxiang Cai, Yilei Dai, Yudian Yuan
University of Washington, Department of Human Centered Design and Engineering
kalpitha@uw.edu, kanwar@uw.edu, sushmj@uw.edu, davecai@uw.edu, dai123@uw.edu, yudian@uw.edu

ABSTRACT

The digitization of finance has brought about significant changes in the way we manage our money, offering convenient and accessible options for managing transactions. This study aims to explore the experiences of older adults with mobile banking, focusing on issues of accessibility and inclusivity in the design of financial technology. The research will be conducted using a combination of qualitative methods, including interviews and diary studies, to gather detailed information on the experiences and perspectives of older adults. The findings of this study will be important for informing the design of financial technology to ensure that it is accessible and inclusive for older adults.

KEYWORDS

Digital Finance, Mobile Payment, Online Banking, Older Adults, Interview, Diary Study, Accessibility, Inclusive Design

INTRODUCTION

With the addition of new technologies to people's lives and the prevalence of digital lifestyles in the second decade of the 21st century, the world today is starkly different from the world that many older adults had grown up in, one of them being with regard to how their finances are handled and monitored.

As a group of six graduate students at the University of Washington's Human Centered Design and Engineering Masters program, our research team had a spontaneous interest in discovering the impact of digitization of financial products and services on older adults. There are two main reasons for us to aim on gaining a deeper comprehension of this topic. One reason is that many of our older family members have encountered some level of difficulties in interacting with digital financial applications. Therefore, we are curious if these negative experiences that have occurred within our researcher's families are universal. We would like to understand what variables, if any, may be impacting older adults with their transition to a digital financial ecosystem. In addition, we would like to understand which particular elements, if any, of online

financial activity may be challenging for older adults to navigate around, or which elements, if any, are considered comfortable or easy. Beyond that, we would also like to understand older adults' attitude towards the digitization of financial activities. Are they embracing it as an onset of plenty of opportunities and see it as something that brings more convenience to their life? Or are they against it, wherein they feel the negative impact outweighs the benefits?

Another reason is that the drastic transition from analog to digital of an everyday person's financial behaviors which happened in the early 21st century could happen again anytime, and by that time, the young adults in 2022 may become the older adults just like the emergence of ATM and bank cards changed the way people handle their financial activities in the 1960s[1].

As the consulting group Deloitte suggested in their prediction on the future of finance: "None of us knows for certain what the future will hold, but we all have a responsibility to be thinking about what's likely to happen, and to prepare for it." [2]

Thus, we developed the following research question: *how has the digitization of financial products and services impacted the life of older adults?* The fundamental goal of this research is to understand if there has been a major shift in how older adults have been handling their finances. Based on the main research question, we also developed some secondary questions to guide us to probe deeper into this topic:

- *If and how is their current financial behavior different from the ones in their past?*
- *What has their transition to digital financial products been like?*
- *How do they feel about the digitization of financial activities?*

The purpose of this research is not to simply learn about whether older adults love using digital financial applications or hate it. We are more interested in looking into older adults' transition to digital forms of financial related activities from multiple aspects. We scoped and conducted our research study in the U.S territories and focused on the older adults between 60 to 80 years old.

Our findings derived from this study may help the researchers and practitioners in the Fintech (financial technology) space to make their products and services more accessible to older adults.

BACKGROUND

The digitization of financial applications has become a trend in the 2010s. The rapid development of digital financial applications is aided by many thrusters of this era, such as faster network speed, bigger screen sizes on portable devices, and the development of artificial intelligence. The term digital financial applications encompass a variety of potential usages, such as: paying bills online, making payments for daily purchasing with NFC, QR Code, or SMS, the use of a virtual wallet, checking the status of a certain fund, transferring funds with online banking or third-party apps, initiate and manage investment, etc. Some digital financial applications are more widely adopted in the U.S such as NFC Payments like Apple Pay and brought a wide assortment of benefits to the users such as efficiency, location flexibility, and security [3] However, the benefits will be applicable to the users only if they chose to adopt and can access the technology with ease. [4]

Over the last decade, billions of people started to adopt a more digitized lifestyle to diversify the way they carried out daily financial activities[5], "but its traction depends on consumers' access to new technologies (Luna 931). The effectiveness and the degree of satisfaction for using digital financial applications tie closely with the accessibility of the design, as some users may find it easy to adopt and the transition to a digitalized lifestyle may be smooth, while some may be hesitant, resistant, or hold negative attitudes toward this transition. Several factors contributed to the divergence.

On the other hand, WHO data[6] shows that the global population is aging significantly and faster than ever, with some shreds of evidence showing that the age of the users has an "important effect on their behavior and on technological acceptance" (Liébana-Cabanillas ,472).[7] Some studies stated that age is not a crucial moderator when it comes to adopting digital financial applications[8].

To learn more about older adults' attitudes towards the digitization of financial technology, we incorporated interviews and a diary study in this research.

METHODS

We conducted semi-structured interviews and diary studies amongst 4 participants who were older adults above the age of 60 and resided within the United States of America (USA) as seen in **Table 1**. For the purpose of our study, we decided to limit the region to older adults who live within the US to ensure that we do not end up recruiting participants whose experiences are from varyingly different contexts, as that might have led to very random data points. We conducted two interviews virtually over Zoom and two interviews in-person.

Recruitment Procedure

In order to recruit participants, we began by creating a screener. We used Google Forms to create the screener survey and included only the most essential questions such as their age, gender, digital financial application usage and their willingness to participate in an interview or diary study if selected. This helped us filter out participants and assess whether they would be a good fit for our study. We then posted the screener on study recruitment Slack channels within UW, Facebook groups, emailed it to senior centers, retirement living facilities, the UW ACCESS program and shared it within our personal networks. Considering the limited time that we had and the scarcity in responses through most of these channels, we ended up relying on participants from within our network and the UW ACCESS program after verifying if the respondent matches our recruitment criteria. Based on their willingness to participate in an interview or Diary Study, we followed up with information about next steps and scheduled time for the first round of interviews based on the participants availability.

Information About Participants

Participant #	Digital Finance Usage

P1	Low, uses with assistance
P2	Medium, but skeptical
P3	High, fairly comfortable
P4	Low, relies on assistance

Table 1. Interview participant characteristics

We were able to recruit 4 participants in total. We tried to maintain a gender balance while recruiting participants to ensure that our data was not skewed. All 4 participants lived within the United States (US), were above the age of 60 and had some level of engagement with digital financial products or services. Most participants had used digital financial modes for online bill payments. However, some had ventured further and carried out investments, booking, etc. online.

Methodology

For our approach to research, we wanted to learn from the lived experiences of older adults to get in-depth insights about their perception about the wave of digitization in the financial space. We went about this through a phenomenological research approach by incorporating methods such as semi-structured interviews to delve into the lived experiences and to understand the rationale behind how our participants take financial decisions. Additionally, to better understand the impact of this phenomenon of digitization of financial products better, we decided to supplement our interviews with a diary study to analyze insights from the personal accounts of the way older adults say they go about navigating the financial space in their everyday lives.

Data Collection

As methods of data collection we took the following approach:

1. *Semi-structured interviews:* Once we had assessed the suitability of participants for an interview through the screener, we either scheduled virtual interviews that were conducted on the video conferencing platform, Zoom or in-person interviews. We conducted a total of 4 user interviews—2 virtually and 2 in-person. Prior to each interview, participants were made to review and sign a consent form, to ensure that we have the permission of the participant to proceed with the interview. The approximate structure of each interview was decided in advance by putting together a discussion topic guide[12] that laid out the topics we would cover during the interview. After context setting for the participant, we began with warm-up questions and then went on to questions that were more topic specific and eventually concluded by debriefing. The discussion guide was kept flexible to be able to probe into relevant tangents that might arise during the course of the conversation as that would potentially help us discover unique insights. Each interview was moderated by one researcher and was accompanied by a second researcher who undertook note-taking. Each of the sessions were recorded either in audio or video format with the consent of the participant for us to have a reference while synthesizing data.
   The interview questions were centered around:
   - Financial habits

- Technology usage for finance
- Experience with digital financial activities
- Perception about digitization of financial products and services

2. *Diary Study:* While interviews usually have participants providing accounts of prior experiences, we decided to supplement our first round of interviews with a diary study to receive fresh accounts to better understand older adults' everyday interactions with digital finance. For the diary study, we asked participants to document their day-to-day interactions of using financial products or services during the week following the interview and requested them to allot a specific time during the day to do the following — document their feelings and thoughts at that moment in a written journal, images or a camera recording. Based on the comfort of the participant, we considered online tools to facilitate the diary study. We used Google Forms to create a set of prompts that users could respond to at the end of each day and we used scheduled emails to send follow up on an everyday basis. Such digital tools aided the process of conducting the diary study by helping us take a more structured approach. We did consider a few other online tools, but cost was a limiting factor. Additionally, in cases when the participant was not very comfortable with email as a form of communication, we conducted the diary study through their preferred instant messaging platform for the convenience of the participant and to reduce the burden on them as our focus only to document their experience and not to burden them with complex tools.

Data Analysis Procedure

On completion of all interviews, we proceeded with analyzing the data collaboratively as a team. The following is an outline of how we went about thematic analysis collaboratively as a team of researchers:

1. **Familiarizing ourselves with the data:** We began by transcribing each of the interviews by using each of the recordings as a reference. The transcribed responses were then documented in a spreadsheet so that it serves as a rich repository of data for future reference. Our notes from each interview were also digitized in the same spreadsheet. At this stage, we switched to pseudonyms and eliminated any sort of data linked to the participants' identity to maintain complete confidentiality.
2. **Coding:** The next step involved coding the data. This was done through an inductive coding approach wherein we derived codes from the data rather than starting with a predefined set of codes. We did so by using colors to highlight statements that stood out to us in the spreadsheet and also labeled them with an appropriate code which we could further use to identify broader themes.
3. **Affinity Mapping:** After the data was coded, we used the online collaborative whiteboarding tool, FigJam to identify broader themes through the process of Affinity Mapping. We used this to make sense of our data by clustering related data and this in turn served as the basis for us to start identifying and generating themes.
4. **Defining Themes:** The analysis phase was concluded by naming and defining broader themes that summarized our findings. This was done by interpreting the patterns that had started to emerge and further grouping them to generate more cohesive findings.

FINDINGS

Finding 1: Most of our participants already engage heavily with online financial activities, and they think it makes things a lot easier.

It was quite to our surprise when finding out that most of our participants have already transitioned to doing most of their financial activities with digital tools. They are paying bills automatically through electronic accounts, making transactions online, and even doing investments with digital applications or websites.

When asked about what their experience of using digital financial tools was for the first time, some of them mentioned that it was almost second nature, and not difficult at all. In addition, most of them stated that the transition to digital ways of doing financial activities have made their life a lot easier.

> *"Definitely easier. For purchasing a certificate of deposit, I can do that online in about 5 minutes, so I don't have to go to the bank and sit with someone and have them fill out all the paperwork" - p2*

> *"What I like about going about this new way of things is that it's easy to do and it's just second nature. It's easier than writing a check and putting it in the mail." - p3*

However, we do notice that for certain activities, the older adults may still prefer to do them in a traditional way that fits with their habits. One participant (p3) would still pay tax by cheque, as that way he can be more assured that the task is done, and another participant (p2) would still use cash for grocery shopping because that way she can be more aware of her spending by knowing when she breaks another 100 dollars.

> *"I could pay with my credit card at the grocery store, but I don't. I pay with cash because then I know how much I'm spending. I know it's been 2 weeks since I broke my last $100 bill, so it's OK. Well, I could look at my statement, but I don't. I prefer to use cash." - p2*

> *"The only transactions that I do by cheque are the very infrequent one's. I pay taxes by cheque—property tax. I do that so that I can make sure it's done. That's the way I pay the taxes, no specific reason as such. It just works better that way for me. I pay for my insurance through my checking account digitally." - p3*

Although the reason for retaining old habits for certain financial activities is not because digital tools are hard to use, we can still learn from those old habits and think of how digital tools can offer them a similar experience.

Finding 2: Almost all participants preferred to have human assistance (in-person help) when things go wrong.

When they encounter issues, older adults prefer to go to the bank or at least make phone calls to have them resolved. They don't find online chat functions satisfactory, as it hardly ever resolves their problems. Some people may even go to the bank on a monthly basis to build personal connections with the teller in case anything ever happens. For some who are hesitant to use

online apps, one of the main concerns is not being able to receive in-person support. Digital technologies may need to provide more easy-to-reach human support to make older adults feel safe.

> *"When I get my cash for the month. I do not use an ATM. I go into the bank and write a check and get it from the teller, because I want them to recognize me, so If I ever have a problem, I have a personal connection " - p1*

> *"If I encounter any problems during online banking, I call the bank because I'm not a big fan of the chat function. Sometimes it can even be a bot. Once I had a problem with my internet connection and I'd rather call them than chat for any problem because the chat is not satisfactory. I've had an odd experience with e-commerce giants as well, I was chatting with a whole lot of different people because they kept leading me from one person to the other." - p4*

Finding 3: Older adults may have more trust issues with digital technologies as they are not assured where the money goes and whether everything is going on normally in their accounts.

It is very important for the older adults to be assured of where their money goes and to keep track of their spending. Some people will go to the website and check their account every day to make sure nobody has charged anything unnecessary (p3). It is important for digital technologies to give older adults a sense of having control over their property, and provide solutions that are easy for them to operate.

> *"I go online everyday to make sure what's going on in my account. I also check on my credit cards to make sure somebody hasn't charged anything unnecessary on my card because that has happened a long time ago" - p3*

> *"I use Paypal,etc a few times, but that makes me nervous, as I'm not sure where my money goes. Interestingly, while volunteering in Africa, I noticed they pay with their phones and don't have banks, their bank is in their phone because they trust the phone companies, and there, I have no problem loading my phone and paying from that because I know where the money came from" - p2*

DISCUSSION

Throughout our data collection and analysis stages, a recurring theme was that participants realized they use financial applications more than previously thought. Common financial activities in this mode included digital banking, money transfers, investments, insurance payments and bill payments. However, it was noted that for check deposits they still preferred the traditional means of going to a physical bank. One applicable recommendation in regards to this would be to brainstorm and prototype methods of check-based interactions that help address concerns over digital check interactions.

While some participants stated they felt unsafe conducting financial activities online, additional cybersecurity authentication methods such as two-factor authentication could be very challenging for them to use. While the use of two-factor authentication protocols are meant to help convey a sense of trust in a product that the user's money is secure, it is ironic that such protocols can be difficult for older adults to successfully use. One participant stated that two-factor authentication for the University of Washington website took three attempts for them, and it was also brought up how stringent cybersecurity measures are common on platforms such as YouTube or the Google Suite. A relevant study conducted by researchers from Brigham Young University dealt with the usability of two-factor authentication methods on a digital banking website, and found that methods such as push notifications worked well when participants were able to set up the process with context[10]. Given these findings, it would follow that a proper introduction and implementation of two-factor authentication methods could provide older adults with a better user experience and less frustration.

One final general recommendation and point of discussion is understanding how and when to implement human interaction – or at least, the *perception* of human interaction – into digital finance applications. Almost all of our participants expressed the desire to seek out human contact, whether at the bank or through a phone call, when faced with difficulties in their user experience. It is interesting to note that online chat bots were derided as being unhelpful and frustrating, so certain facades of human interaction – such as chat bots – may require further investigation to assess if they can be implemented in a way that reassures users instead of frustrating them. In 2020, Accenture conducted a study primarily focusing on understanding how to preserve human interactions and connections in an increasingly digitized environment, something that affects demographics beyond just older adults. The rise of digitization will not decline soon; "In the UK, for example, ATM withdrawals dropped by 50 percent in the second half of March … in contrast, 55 percent of consumers increased contactless payments—and almost 9 in 10 expect to maintain a higher level of contactless usage after the pandemic"[11]. Moving forward into the future, it will be essential for banks and other online financial institutions to create a sense of human connection and bonding with their consumers as more of these consumers switch to an increasingly digital presence. One potential remedy to this could lie in video conferencing methods, as its growing familiarity in a post-COVID-19 world "means that many would now be happy to use it to communicate with their banks … Only 15 percent of consumers had spoken to a bank advisor via video call before COVID-19, but 46 percent said they would be prepared to do this when branches reopened, and 35 percent would now prefer this to a face-to-face meeting"[11]. With the ever-impending possibility of further disruptions that could hamper true human face-to-face communication, video conferencing may be a solution that bridges the best of both worlds and could provide a level of human support that older adults may be looking for.

CONCLUSION

Limitations

The research findings show that although older adults generally have optimistic views about financial digitalization, their attitudes towards the services supported by technologies in financial industries are varied depending on their individual situations. Our research depth is limited due

to the time and resources we had to identify the contextual factors that might influence the older adults' user experience of financial products. For example, one of the participants used to work in the banking industry and she is comfortable managing her retirement investments online. Other than professional experiences, elements such as race and ethnicity show the disparity of accessing financial services in different populations. For older adults above 65 years old, 1.8% of White Non-Hispanic households have no bank accounts, while Hispanic and Latino households have unbanked rates more than four times as high[9].Detailed research and analytic activities are in demand to compare the experience participants have including their educational backgrounds, professional knowledge, cultural influence and family members support that might help them or impede them from achieving their goals on digital platforms.

There were four participants recruited for this research project and the team carefully evaluated their demographic details to ensure they all met the recruitment guidelines. However, the data collected from the participants are insufficient for us to generalize the older adults' behavioral patterns when it comes to digital financial activities. Part of the reason is that the limited number of participants involved in this study cannot represent the large population of the older generation. Most of our research participants' age range is between 60 to 70. It is unknown what challenges and particular needs users who are above the age of 70 might have when interacting with financial applications. Encouraging older adults with a wider age range to participate in the research project is a future improvement opportunity to expand the breadth of this research.

Design Implications

The trend of digitalization is not only relevant to the financial industry and for older adults, but it's hard to say if their overall digital experience has a positive or negative impact on their management of financial activities. Since many of the participants experienced the transition between non-digital financial modes and the move to a technology-driven age, they are able to compare the traditional ways to newly-developed interactions in the financial industry from a holistic point of view considering the changes technologies bring to society. Although older adults acknowledge the convenience of using technology in their daily lives including grocery shopping, booking flights, managing insurance and keeping track of spending, the design of the interfaces, user flows and instructions for the services delivered by technologies need further refinement to minimize user experience friction. Especially for older adults, intuitive and accessible designs should be implemented for financial products when compared to other well-developed industries such as healthcare and navigation applications.

Summary

It is inspiring for us to find out that older adults are embracing changes in the digitized age. Although many of them are having problems using specific tools such as two-factor authentication and customer service portals, they rely heavily on technology to help them complete daily financial activities. The digital transition in the financial industry supports older adults to access their financial details remotely and they track their banking and investment statements online without any back-and-forth communication with financial institutions. The information distribution efficiency of financial digitalization influences older adults' behaviors profoundly on managing and executing financial activities, but improvements on customized

troubleshooting support, user-friendly interfaces and explicit new function guidelines are needed to help the older generation access financial services successfully.

References

[1] Thales Group. “A History of Payment Cards - from Clay Tablets to EMV Cards...” *Thales Group*, 9 Nov. 2021, https://www.thalesgroup.com/en/worldwide-digital-identity-and-security/bank-payment/magazine/history-payment-cards-clay-tablets.

[2] Susan C. Hogan US Finance Transformation Practice Leader shogan@deloitte.com +1 , Deloitte. “Finance Digital Transformation: Predictions for 2025.” *Deloitte United States*, 7 Sept. 2021, https://www2.deloitte.com/us/en/pages/finance-transformation/articles/finance-digital-transformation-for-cfos.html.

[3] Liébana-Cabanillas, F., Marinkovic, V., Ramos de Luna, I., & Kalinic, Z. (2018). Predicting the determinants of mobile payment acceptance: A hybrid SEM-neural network approach. Technological Forecasting & Social Change, 129, 117–130. https://doi.org/10.1016/j.techfore.2017.12.015

[4] Ganesh Dash, Kiran Sharma, Neha Yadav, The diffusion of mobile payments: Profiling the adopters and non-adopters, Roger's way,Journal of Retailing and Consumer Services,Volume 71,2023,103219,ISSN 0969-6989, https://doi.org/10.1016/j.jretconser.2022.103219.

[5] de Luna, Iviane Ramos, et al. “Mobile Payment Is Not All the Same: The Adoption of Mobile Payment Systems Depending on the Technology Applied.” Technological Forecasting & Social Change, vol. 146, 2019, pp. 931–44, https://doi.org/10.1016/j.techfore.2018.09.018.

[6] WHO. “Ageing and Health.” *World Health Organization*, World Health Organization, https://www.who.int/news-room/fact-sheets/detail/ageing-and-health#:~:text=By%202030%2C%201%20in%206,will%20double%20(2.1%20billion).

[7] Liébana-Cabanillas, Francisco, et al. “Antecedents of the Adoption of the New Mobile Payment Systems: The Moderating Effect of Age.” Computers in Human Behavior, vol. 35, 2014, pp. 464–78, https://doi.org/10.1016/j.chb.2014.03.022.

[8] Shaw, Norman. Younger Persons Are More Likely to Adopt the Mobile Wallet than Older Persons, or Are They? The Moderating Role of Age., 26 June 2015, pp. 1–15., oai:aisel.aisnet.org:amcis2015-1506, https://core.ac.uk/display/301365655?utm_source=pdf&utm_medium=banner&utm_campaign=pdf-decoration-v1

[9] Valenti, Joe. “Financial Access Challenges for Older Adults” AARP Public Policy Institute, Fact Sheet 654, September, 2020, https://doi.org/10.26419/ppi.00108.001

[10] Ken Reese, Trevor Smith, Jonathan Dutson, Jonathan Armknecht, Jacob Cameron, and Kent Seamons.“A usability study of five two-factor authentication methods.” 2019. In Proceedings of the Fifteenth USENIX Conference on Usable Privacy and Security (SOUPS'19). USENIX Association, USA, 357–370

[11] Accenture. “2020 Global Banking Consumer Study.” *Accenture*, Accenture, 9 Nov. 2022,https://www.accenture.com/us-en/insights/banking/consumer-study-making-digital-banking-more-human.

[12] Jane Ritchie, Jane Lewis, Carol McNaughton Nicholls, Rachel Ormston. "Qualitative Research Practice: A Guide for Social Science Students & Researchers." *Designing Topic Guides*, Second Edition, Numbers, SAGE Publications Ltd, December 20,2013.