

Exploring Accessibility Challenges in Banking Apps for Blind and Low Vision Users

Final Paper

Abstract

This study examines how blind and low-vision users (BLV) experience and navigate mobile banking apps when using screen readers. While prior research often emphasizes accessibility failures, our study focuses on real user experiences with routine banking tasks, authentication, privacy, and support. We conducted semi-structured remote interviews with four BLV participants who regularly use mobile banking apps and analyzed the data through thematic analysis and affinity diagramming. Our findings show that participants completed routine banking tasks independently and described mobile banking as useful and largely accessible. However, specific breakdowns still occurred during app updates, authentication, form entry, mobile check deposits, and customer support interactions. These issues created friction, reduced confidence, and, most importantly, required users to develop workarounds. The study suggests that banks should evaluate accessibility across full task flows, maintain consistent screen-reader experience, and provide support staff with better accessibility training.

Introduction

Mobile banking in everyday financial life allows users to complete most banking tasks through mobile applications. For BLV users, however, prior research shows that these tasks can involve barriers beyond basic access to these applications [2]. While many of these apps support screen readers, technical compatibility does not ensure that users can complete tasks efficiently, privately, or independently [7].

A survey of 162 blind and low-vision users found that over 80% used banking apps weekly, yet 63% encountered accessibility barriers and 76.5% required assistance from a sighted individual [2]. Key failure points included unlabeled interactive controls, broken screen reader support, inaccessible CAPTCHA, and unclear feedback. For example, evaluations of mobile banking apps in Saudi Arabia found that many apps claimed to support accessibility while still violating WCAG guidelines [6]. Similarly, in Indonesia, banking apps passed basic accessibility checks on the main interface, while important tasks such as checking balances, transferring funds, and paying bills became inaccessible after users moved past the initial screen [7].

These issues are serious in a financial context, as users are handling sensitive information and security decisions. When a banking app fails to communicate clearly through a screen reader, the result is not simply inconvenience. It can affect privacy, confidence, and financial independence. Prior work has described how blind and low-vision users often perform “access work” to use digital banking, including developing workarounds, asking for assistance, and advocating for themselves when systems fail [3]. This issue is particularly important as India’s banking system shifted from predominantly cash-based transactions to digital in a few years. Subsequently, BLV users had to adapt to these systems rapidly and without institutional support. Similar patterns have been found in Fiji, where 38% of BLV participants required assistance for

basic transactions despite the availability of digital banking services [8]. Together, these findings link individual interaction barriers to broader issues of financial exclusion.

Institutional and technical issues continue to limit accessibility in mobile banking. Banks may struggle with outdated systems, limited staff training, and high operating costs, leading to inconsistent accessibility support [9]. Security features designed to protect users can also become barriers when accessibility is not considered [4]. Authentication poses significant challenges for BLV users in mobile banking. Banking apps commonly require passwords, one-time passcodes (OTPs), biometrics, or multiple verification steps. Prior research found that screen readers often read OTPs incorrectly, interaction modes can interfere with entering codes, and some authentication systems block screen reader access completely [1]. These problems can prevent users from accessing their accounts and details independently and may force them to rely on others, creating privacy and security concerns.

Although earlier studies identified many barriers, most focused on technical compliance rather than real user experiences. Prior research demonstrates that accessibility barriers remain common in digital banking, particularly during authentication, task completion, and support interactions. However, much of this work focuses on technical accessibility evaluations or broad surveys rather than users' day-to-day experiences. This research contributes an interview-based perspective by examining how BLV users navigate mobile banking in practice, where breakdowns occur, and what strategies they use to maintain independence. This study addressed that gap by conducting semi-structured interviews with 4 BLV users to better understand how they use mobile banking in their daily lives, the challenges they face, and the changes that could improve accessibility. Our work is guided by the research questions:

1. How do blind and low vision users currently interact with mobile banking apps using screen readers?
2. What are the primary usability barriers BLV users encounter with the deployment of screen readers?
3. What features, design improvements, and interface modifications would enhance efficiency while simultaneously remaining accessibility compliant?

Methods

Interview Design and Conduct

We conducted semi-structured remote interviews with participants using Zoom, with each interview lasting between 30 and 45 minutes. We recruited participants who regularly use mobile banking apps. Before each interview, we obtained written consent and explained that we would record the conversation for transcription purposes. All participants agreed to an audio recording.

After introducing ourselves and the project, we structured the interview in four main parts. We started with general questions about how participants currently manage their finances and use banking services. Next, we asked participants to describe their typical banking app experience, including the banking apps they regularly use and the workflows they follow to complete common financial tasks. We then discussed specific challenges they encounter with these apps, including frustrations they experience. Finally, we explored their familiarity with voice assistants and what they think about using voice to handle banking tasks.

Data Analysis

We used thematic analysis to make sense of our interview data. We read each transcript and identified specific codes. As we coded, patterns emerged around how people experience banking apps and what frustrates them. Once we had all transcripts coded, we grouped related codes together into broader themes. We used Miro, a digital workspace tool, to visually organize this work. This allowed us to see connections between codes and identify themes that appeared across multiple interviews. We created an affinity diagram by clustering related insights and labeling each cluster with a theme name. From this visual organization, we identified recurring themes that reflected participants' experiences using mobile banking applications with screen readers.

Participants

Four blind or low-vision participants took part in this study. Participants regularly used mobile banking applications and relied on screen readers such as JAWS and VoiceOver. All participants had prior experience managing financial tasks independently through digital banking tools. The interview lasted 30 to 45 minutes.

Participant ID	Screen Reader Experience	Primary Assistive Technology
P1	Moderately experienced	
P2	Very experienced	
P3	Very Experienced	VoiceOver;JAWS
P4	Very Experienced	VoiceOver, JAWS

Findings

Through our interview data analysis and affinity mapping, we identified five themes that describe how BLV users interact with and use mobile banking applications. These themes were efficiency in screen-reader navigation, experience in authentication, procedural inconsistency/task completion issues, organizational support, and privacy concerns.

Overall, participants described mobile banking applications as useful, familiar, and largely accessible for routine tasks such as checking balances, reviewing transactions, sending money using Zelle, and making payments. Several participants expressed confidence in completing these activities independently. For example, P3 said “I am very happy that I can pay my own bills.” At the same time, participants identified breakdowns that occurred during authentication, navigation changes following system updates, form entry, mobile check deposits, and support interactions. While these challenges did not prevent most participants from completing tasks, they often required additional effort, workarounds, and/or assistance.

A. Efficiency in Screen-reader Navigation

Participants described their screen reader navigation as efficient for routine tasks. Apps were easier to use when they had clear headings, logical order, and consistent buttons and labels. P4 explained it worked well when “the buttons and labels are clearly marked”. They described being able to check balances, transactions, choose payment amounts, and make Zelle payments when the app structure was clear and logical.

While participants generally found navigation manageable, some described difficulties when websites changed structure or layout. For instance, P1 explained that login locations and page organization frequently changed after updates, noting that the experience “never seems to be the same.” When familiar elements moved, participants had to rely on strategies such as reviewing lists of headings, scanning links, or manually exploring the page to locate important functions. P2 noted that advertisements and disclaimer messages sometimes appeared in an illogical reading order, making navigation less efficient.

B. Experience in Authentication

Participants found authentication features like Face ID, OTPs, PIN codes, and password managers helpful. These tools reduced typing effort and sped up login. P2 described Face ID as “seamless” and noted that password managers significantly reduced the burden of entering credentials manually.

However, authentication became challenging when verification steps changed across contexts or were not explained clearly. P2 described difficulty in completing Zelle payments while traveling internationally because two-factor authentication required an additional code and manual

verification, in some cases, a text response confirming “Y” for yes or “N” for no. Delays with roaming services sometimes required manual verification through a phone call with the bank as well.

C. Procedural Inconsistency and Task Completion Issues

While all participants described being able to complete routine banking tasks on their apps successfully, some tasks became challenging when the structure or interface behavior changed unexpectedly. P1 described experiencing major difficulties following a banking platform migration in September 2025 that prevented successful login and account access for several months. The participant explained that the experience lasted from September through December and described it as “hell on earth.” The issue was ultimately traced to an incomplete system transition on the bank’s end.

Participants also described challenges during financial transactions and data. P1 noted that entering a dollar amount through Zelle could be confusing because the amount fields contain multiple pre-populated zeros. They explained that a transfer of “\$800” could potentially be interpreted as “\$800,000” if the wrong digit was entered, describing the interface as “not very user-friendly”. Small form design issues can become serious in banking, as it involves money. P2 described difficulty with in-app cameras, making mobile check deposit tasks difficult to complete. App updates, like layout changes, also created occasional barriers. Participants described login issues after platform updates and changes in navigation that made previously familiar content more difficult to locate and access.

D. Organizational Support Breakdowns

Participants rarely required assistance for routine banking activities. However, when accessibility barriers occurred, they often developed their own workarounds before seeking external help.

For example, P2 switched from a mobile device to a desktop computer when an international money transfer application prevented access to a confirmation button. P1 also described using navigation strategies such as reviewing headings, searching for links, and manually exploring pages when familiar content moved after platform updates.

Participants also described situations where organizational support becomes necessary. During the platform migration issue described earlier, P1 contacted multiple bank employees and managers to resolve ongoing access problems. The participant noted that initial attempts to troubleshoot the issue were challenging because staff lacked screen reader software and did not fully understand the accessibility-related problems. The issue was only resolved after the bank investigated the migration process and identified a system-level error on their end.

E. Privacy Management

Participants generally expressed confidence in maintaining privacy while using banking applications with screen readers. Rather than describing privacy as a major concern, participants discussed strategies they used to protect sensitive information. These strategies include using headphones, completing banking activities in private settings, and adjusting screen-reader settings. P2 explained that they typically use screen readers at a very fast speed because “no one around would understand what it’s saying.” P4 reported wearing headphones when accessing sensitive credentials.

Other participants preferred completing financial activities in controlled environments. For example, P1 reported avoiding using a mobile and instead completing banking activities on a personal laptop at home because the environment felt more secure and predictable.

Discussion

In this study, we interviewed four BLV participants about how they use and their overall experience with mobile banking apps using screen readers. Participants described mostly positive experiences with routine banking tasks, which included making payments and transfers, checking balances, reviewing transactions, managing receipts, etc. All participants were long-term screen reader users. While all participants were often successful in task completion, small accessibility breakdowns still occurred.

These findings give us a more positive view and differ from some prior studies that emphasized frequent accessibility issues and heavy reliance on sighted assistance. [2] found that many BLV users had encountered accessibility problems or needed sighted assistance. Participants of this study described fewer barriers and more points of friction, suggesting the presence of accessibility challenges that can be improved upon.

A. Accessibility Should Be Evaluated Across Complete Task Flows

Participants could often navigate their banking apps and complete common tasks. However, as described in the findings, breakdowns still occurred at specific points in the workflow, including form entry, check deposits, app updates etc. This aligns with prior research suggesting that banking apps may appear compliant at the interface level but still fail during task completion [7].

Participants described many successful task completions with occasional breakdowns in specific flows. Accessibility testing should include testing complete workflows such as login, balance review, bill payment, transactions and transfers, receipts management, and check deposit with

screen-reader users. Banks should evaluate accessibility through end-to-end workflow testing with screen-reader users to ensure that financial tasks can be completed accurately and efficiently.

B. Positive Experiences Depend on Consistency

Participants' positive experiences with mobile banking were closely connected to consistency and familiarity. Once users understood an app's structure, they could complete routine tasks efficiently. This was especially clear among participants who used the same app frequently, like Chase Bank or Bank of America. P3 stated, "Well, I use Chase, and I've used it for quite a long time now, so I'm familiar with what it's supposed to say and what the prompts are, what the menu is like. It's quite familiar." However, platform updates sometimes disrupted familiar workflows, creating login issues, changing navigation patterns, or making previously accessible content more difficult to find. These issues created temporary barriers and required participants to relearn workflows.

This pattern applied to authentication as well. Participants described FaceID, password managers, and text message autofill as helpful features that made login easier. However, authentication was sometimes difficult when participants had to complete additional verification steps. Prior research found that OTP and two-factor authentication workflows can create problems for screen-reader users when codes are read incorrectly or when interaction modes interfere with input [1]. While authentication tools often support efficient access, their accessibility depends on consistent design and clear feedback. Thus, banking apps should prioritize consistent workflows and provide clear screen-reader feedback when platform updates change navigation patterns.

C. Reduce access work and/or through organizational support

Participants were experienced screen-reader users and completed routine banking tasks with ease. When issues arose, they used workarounds like restarting the app, switching to a computer, using a password manager, or contacting the bank. This kind of effort is described in [3] as "access work", where BLV users have to create workarounds or advocate for themselves when banking systems do not work well. Our findings show a similar pattern, but with an overall positive experience, as participants were usually able to complete common banking tasks.

However, banks can strengthen accessibility by providing better customer service support, especially when apps update or accessibility problems appear. Participants want support staff to understand screen readers and help resolve accessibility problems more effectively. This connects to a point made in [9] that staff training gaps and inconsistent support can limit accessible banking. Overall, accessibility should be part of both app design and customer service so users can maintain independence without repeatedly explaining or working around the same issues.

Limitations and Future Work

This study was limited by its small sample size and reliance on interview data. Participants also had different levels of experience with screen readers, mobile banking apps, and desktop banking. Most participants were long-term users of JAWS and VoiceOver, so their experiences may not completely represent users who are new to assistive technology.

Future work can include task-based usability testing with BLV users across multiple banking apps. This would allow researchers to observe where breakdowns occur during tasks, such as authentication, mobile check deposit, bill payments, account review, etc. Future research could also compare mobile and desktop banking experiences.

Overall, this study shows that BLV users can use mobile banking successfully and independently. Participants' experiences were mostly positive, especially for familiar and routine tasks. However, even small breakdowns remain important as banking involves financial accuracy, security, and privacy. Banks should build on the aspects of mobile banking that already work well while improving workflow consistency, task completion support, and accessibility-aware customer service.

References

- [1] Md Mojibur Rahman Redoy Akanda, Ahmed Tanvir Mahdad, and Nitesh Saxena. 2025. Broken Access: On the Challenges of Screen Reader Assisted Two-Factor and Passwordless Authentication. In Proceedings of the ACM on Web Conference 2025 (WWW '25). Association for Computing Machinery, New York, NY, USA, 1116–1128. <https://doi.org/10.1145/3696410.3714579>
- [2] Wentz, B. et al. 2017. Exploring the accessibility of banking and finance systems for blind users. First Monday. 22, 3 (Feb. 2017). <https://doi.org/10.5210/fm.v22i3.7036>.
- [3] Vaishnav Kameswaran, Vidhya Y, and Megh Marathe. 2023. Advocacy as Access Work: How People with Visual Impairments Gain Access to Digital Banking in India. Proc. ACM Hum.-Comput. Interact. 7, CSCW1, Article 120 (April 2023), 23 pages. <https://doi.org/10.1145/3579596>
- [4] Hassan, A., Abd El-Aziz, R., and Hamza, M. 2020. The exclusion of people with visual disabilities from digital banking services in the digitalization era. IBIMA Publishing. <https://ibimapublishing.com/articles/JEBS/2020/519078/>
- [5] Fayyad, M. and Al-Sinnawi, A. R. 2024. Challenges of achieving financial inclusion for individuals with visual impairments. Heliyon 10, 16. <https://doi.org/10.1016/j.heliyon.2024.e35573>
- [6] Alayed, A. Are Saudi Arabian banks' mobile applications accessible for blind or partially sighted users?: a customers' perspective and evaluation. Univ Access Inf Soc 24, 585–606 (2025). <https://doi.org/10.1007/s10209-023-01082-y>
- [7] Maetam, Fatin & Ratnasari, Chanifah. (2026). Compliance Without Experience? A Task-Based WCAG 2.1 Evaluation of Mobile Banking in Indonesia. Edumatic: Jurnal Pendidikan Informatika. 10. 200-209. 10.29408/edumatic.v10i1.34175.
- [8] Sam Goundar and Milind Sathye. 2023. Exploring Access to Financial Services by Visually Impaired People. Journal of Risk and Financial Management 16, 2 (2023), 96. DOI: <https://doi.org/10.3390/jrfm16020096>
- [9] Naik, A. S. 2024. Assistive technology in banking. In Proc. 15th ICCCNT. IEEE, 1–6. <https://doi.org/10.1109/icccnt61001.2024.10724888>
- [10] Puli, Louise & Kanij, Tanjila & Kooijman, Lars & Hartel, Charmine & Shahriar, Abu Zafar & Rotaru, Kristian. (2025). Accessibility of financial applications for people with visual impairment: A scoping review. 10.2196/preprints.82315.