A Summary of In the Balance: Insights from Collaborative Financial Management Technologies

YEUK YU LEE, Chime Financial Inc., USA
ROSANNA BELLINI, New York University, USA

CCS Concepts: • **Human-centered computing → Empirical studies in HCI**.

Additional Key Words and Phrases: financial account sharing; intimate partnerships; money work

ACM Reference Format:
Yeuk Yu Lee and Rosanna Bellini. 2025. A Summary of In the Balance: Insights from Collaborative Financial Management Technologies. In *Proceedings of CHI Conference on Human Factors in Computing Systems (CHI '25).* ACM, New York, NY, USA, 5 pages.

1 Introduction

The adoption of financial technology has surged globally [7, 8, 21, 22]. Consumers increasingly rely on tools for financial collaboration: from pooling resources toward common goals [23], facilitating collaborative financial management [15], and receiving targeted assistance for economic challenges [1]. While prior work in the field of Human-Computer Interaction (HCI) has analyzed various subdomains of digital financial interaction, and little attention has been given to examining the technical makeup of how personal financial management applications share information between users.

Given that financial technologies have been consistently found to influence individual and household financial behaviors [2, 4–6, 10, 13, 14, 16], codifying the mechanisms that underpin current financial system designs can illuminate how collaborative financial technologies influence user agency, trust, and collaboration. Poorly designed sharing systems may inadvertently enable financial surveillance or control [3, 9], heightening risks like account hijacking [18] and eroding trust in shared finances.

In this position paper, we give a generalized overview of our discoveries we present in *In the Balance: Insights from Collaborative Financial Technologies* (CHI'25) — an audit of 31 popular financial applications available in U.S. region that codifies and contrasts how sharing relationships are modeled. Our findings reveal four key dimensions to financial sharing: how the sharing relationship is established (*origin*), who is involved (*relationship*), what capacity they have to control the flow of financial information (*authority*), and when this sharing occurs (*dynamic*). These dimensions have considerable implications for the design of access control mechanisms and privacy features. Finally, we propose design considerations to adapt current financial technologies, safeguarding against financial control, unwanted surveillance, and secure financial accounts to encourage flexible interactions with digital finances.

Authors' Contact Information: Yeuk Yu Lee, tiffany.lee@chime.com, Chime Financial Inc., San Francisco, California, USA; Rosanna Bellini, bellini@nyu.edu, New York University, New York, New York, USA.

Manuscript submitted to ACM

2 Methodology

To analyze how users experience low-level sharing mechanisms in financial applications, we designed a user journey protocol that simulates how financial information can be shared in a dyadic social relationship. We created two fictional users to model financial information sharing in an intimate partnership. One user is the designated sharer who first registers for an account, while the designated receiver receives an invitation to participate in the sharing.

We obtained two research mobile devices, one for each user, and downloaded the application being audited into the device. We recorded how sharing is introduced in the app and initiated with another user. We then examined how a shared instrument is created, noting sharing settings and how a sharing relationship can be terminated. We performed this protocol on 55 applications sourced from the Apple App Store and Google Play Store between 2023 - 2024 that are listed as having sharing capabilities and available in the US region. Out of the 55, we completed the audit on 31 applications, unable to proceed on others due to reasons such as PII requirements (e.g. SSN) and paywall.

3 Sharing dimensions

Our analysis elicited four sharing dimensions, which we visit in turn.

Origin The dimension of Origin refers to where the shared financial information originates. We identify four sub-dimensions: (1) *Application-based sharing* where shared data is generated solely within the application. (2) *Financial instrument-based sharing* where data originates from a connected shared or joint funding instrument. This forces an all-or-nothing approach to sharing: either connect the account and share all its data or avoid connecting it and share nothing. (3) *Hybrid sharing* allows users to link a shared financial account while creating and sharing data generated within the application. (4) *Offline sharing* describe applications that cannot link any financial instruments or connect with another user through in-app functionality.

Relationship The dimension of Relationship refers to the varying interpersonal dynamics involved in sharing financial instruments and data. The sub-dimensions are: (1) a single one-to-one relationship (1..1) for sharing, where a user shares access exclusively with one partner. (2) Multiple, distinct one-to-one relationships (M(1..1)), where each sharing instance remains one-to-one, but the user manages multiple independent connections simultaneously. (3) Multiple individuals share information collectively within one group (1..M). (4) Multiple individuals share information collectively within multiple groups.

Authority The dimension of authority refers to the delegation of specific (often security-relevant) privileges among users in a shared relationship. We observed four common, non-exhaustive sharing patterns, which we will discuss in the following section.

Dynamic The dimension of dynamic describes the permanence of a sharing relationship: (1) *At-will* sharing allows individuals to modify, adjust, or terminate their sharing behaviors. (2) *Enduring* sharing often persists until a significant event, such as the dissolution of an entity or formal termination, contrasting the transient nature of at-will sharing,

4 Common patterns of authority

(1) *Collaborator* that characterizes equal privileges for sharers and sharees at the space and entry levels. (2) *Coordinator* where the sharer has greater privileges than the sharee, specifically at the space level. Only the person sharing has administrative ('admin') control over the shared space, enabling them to perform high-level actions such as adding/removing participants, assigning privileges, and even deleting the entire space. (3) *Broadcaster* where privileges

are asymmetric, with the sharee acting as a passive observer. or (4) *Creator* has a a focus on the control given to authors or 'creators'. This attempts to strike a balance between individual control and shared authority, allowing structured collaboration while maintaining ownership over individual contributions.

5 Designing financial collaboration

Reflecting on the sharing dimensions and patterns that we observed, we offer a few design recommendations for improved financial collaborative technologies that we would like to discuss at *Future of Money and HCI*.

5.1 Allowing of granular control

First of all, we observed that applications often lack simple mechanisms to terminate sharing. This is problematic for users who are at greater risk of financial threats, such as survivors of intimate partner violence [3], sex workers [17], and older adults [12], where easy termination is not merely a matter of convenience but of safety [18]. Since financial convenience drives sharing in close relationships [20], it is crucial to design these applications with consideration of the risk of abuse.

Second, we find that in certain sharing configurations, such as when shared data originates from joint accounts, there is often no clear trail, digital or otherwise, indicating who performed specific actions. Providing users with granular low-level controls, such as adjusting the transparency of transactions and accounts or severing a connected joint bank account, could be a concrete way to promote accountability and equity in sharing.

Third, we identify the absence of mechanisms to ensure information integrity in many applications that demonstrate collaborative authority patterns (*Collaborator*, *Coordinator* see Section 4). While these patterns appear to grant equal privileges, they introduce challenges around the trustworthiness of contributions. Without features like change logs, audit trails, or version backups, users have limited visibility into the changes made to shared financial data. Such designs can cause conflict and subject them to abuse or deception. This highlights the need to rethink how action logs can and should be implemented, potentially at the financial instrument level (*Origin*, see Section 3).

5.2 Developing testable patterns

Although valuable work has scrutinized various monetary sharing practices [11, 19, 24], the challenge remains in lacking a frame of reference to compare and evaluate these systems. To address this gap, we introduce a shared vocabulary — a set of dimensions and patterns — to describe and compare financial collaborative technologies.

Upon reviewing our audit results, it is unclear whether a 'gold standard' for such a sharing pattern exists. While some dimensions are consistent across platforms, our results revealed no single, uniform user journey (Section 4). Further work is needed to determine whether applications with specific qualities are more suitable for financial sharing in complex social contexts. These sharing patterns are not merely practical design elements (e.g., Origin, Authority in Section 3) but reflect underlying social and financial dynamics within relationships, influencing how technology supports or hinders collaborative decision-making. It is our sincere hope that this vocabulary can serve as a reference for future work, enabling comparative studies to identify which design patterns are most suitable for different financial collaboration scenarios.

To meaningfully support activities in the everyday management of money, we need *testable* sharing patterns, beyond the illustrative examples we have identified, by making applications and scenarios a central focus. We are enthusiastic about the future potential of gathering feedback from designers and users alike to refine and expand these patterns.

Such insights could shape financial technologies that foster equitable financial collaboration and promote user agency and privacy.

6 The Authors

Yeuk Yu Lee is a design engineer at Chime Financial, Inc. with a background in the FinTech industry. Her work focuses on designing technologies that foster equitable collaboration, with a deep interest in rethinking collaborative financial interactions to better support trust, agency, and accessibility. She holds a master's degree in Connective Media from Cornell Tech, where she studied the intersection of technology, communication, and societal behavior.

Dr. Rosanna Bellini is an Assistant Professor of Computer Science at New York University. She leads efforts to redesign consumer-facing technologies by detecting areas of misuse, and develop digital tools that intervene with abusers to prevent harmful behavior. She couples these efforts with direct, reactive security services for survivors subject to ongoing attacks, and consults with consumer-facing banking, legal, and security services to offer targeted solutions that mitigate harm. She previously held a postdoctoral associate role at Cornell Tech and received her doctorate from Newcastle University.

References

[1] Belén Barros Pena, Bailey Kursar, Rachel E. Clarke, Katie Alpin, Merlyn Holkar, and John Vines. 2021. "Pick Someone Who Can Kick Your Ass" - Moneywork in Financial Third Party Access. *Proceedings of the ACM on Human-Computer Interaction* 4, CSCW3 (Jan. 2021), 218:1–218:28. doi:10.1145/3432917

[2] Gregor Becker. 2017. Does FinTech Affect Household Saving Behavior? (2017). Working Paper.

[3] Rosanna Bellini. 2023. Paying the Price: When Intimate Partners Use Technology for Financial Harm. In *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems (CHI '23)*. Association for Computing Machinery, New York, NY, USA, 1–17. doi:10.1145/3544548.3581101

[4] Di Bu, Tobin Hanspal, Yin Liao, and Yong Liu. 2022. Cultivating Self-Control in FinTech: Evidence from a Field Experiment on Online Consumer Borrowing. *Journal of Financial and Quantitative Analysis* 57, 6 (Sept. 2022), 2208–2250. doi:10.1017/S0022109021000314 Publisher: Cambridge University Press.

[5] Bruce Carlin, Arna Olafsson, and Michaela Pagel. 2017. FinTech Adoption Across Generations: Financial Fitness in the Information Age. doi:10.3386/w23798

[6] Harshal Dev, Raj Gupta, and Dhruv Kumar. 2024. From Cash to Cashless: UPI's Impact on Spending Behavior among Indian Users. In *Extended Abstracts of the 2024 CHI Conference on Human Factors in Computing Systems (CHI EA '24)*. Association for Computing Machinery, New York, NY, USA, 1–10. doi:10.1145/3613905.3651050

[7] Earnest and Young. 2024. *EY FinTech Adoption Index*. Technical Report.

[8] Jonathan Fu and Mrinal Mishra. 2020. The Global Impact of COVID-19 on Fintech Adoption. *Swiss Finance Institute Research Paper* 20-38 (May 2020). doi:10.5167/uzh-187776 Number: 20-38 Publisher: University of Zurich.

[9] Changyang He, Lu He, Zhicong Lu, and Bo Li. 2023. "I Have to Use My Son's QR Code to Run the Business": Unpacking Senior Street Vendors' Challenges in Mobile Money Collection in China. *Proceedings of the ACM on Human-Computer Interaction* 7, CSCW1 (April 2023), 60:1–60:28. doi:10.1145/3579493

[10] Srihari Hulikal Muralidhar, Claus Bossen, Apurv Mehra, and Jacki O'Neill. 2018. Digitizing Monetary Ecologies: Intended and Unintended Consequences of Introducing a Financial Management App in a Low-Resource Setting. *Proceedings of the ACM on Human-Computer Interaction* 2, CSCW (Nov. 2018), 72:1–72:17. doi:10.1145/3274341

[11] Joseph Jofish Kaye, Mary McCuistion, Rebecca Gulotta, and David A. Shamma. 2014. Money talks: tracking personal finances. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '14)*. Association for Computing Machinery, New York, NY, USA, 521–530. doi:10.1145/2556288.2556975

[12] Celine Latulipe, Ronnie Dsouza, and Murray Cumbers. 2022. Unofficial Proxies: How Close Others Help Older Adults with Banking. In *Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems (CHI '22)*. Association for Computing Machinery, New York, NY, USA, 1–13. doi:10.1145/3491102.3501845

[13] Sung Kwan Lee. 2019. Fintech Nudges: Overspending Messages and Personal Finance Management. doi:10.2139/ssrn.3390777

[14] Jie Li, Yu Wu, and Jing Jian Xiao. 2020. The impact of digital finance on household consumption: Evidence from China. *Economic Modelling* 86 (March 2020), 317–326. doi:10.1016/j.econmod.2019.09.027

[15] Junchao Lin, Jason I. Hong, and Laura Dabbish. 2021. "It's our mutual responsibility to share": The Evolution of Account Sharing in Romantic Couples. *Proceedings of the ACM on Human-Computer Interaction* 5, CSCW1 (April 2021), 1–27. doi:10.1145/3449234

[16] Sumei Luo, Yongkun Sun, and Rui Zhou. 2022. Can fintech innovation promote household consumption? Evidence from China family panel studies. *International Review of Financial Analysis* 82 (July 2022), 102137. doi:10.1016/j.irfa.2022.102137

[17] Allison McDonald, Catherine Barwulor, Michelle L. Mazurek, F. Schaub, and Elissa M. Redmiles. 2021. "It's stressful having all these phones": Investigating Sex Workers' Safety Goals, Risks, and Practices Online. In *Proceedings of the 30th USENIX Security Symposium*.

[18] Borke Obada-Obieh, Yue Huang, and Konstantin Beznosov. 2020. The Burden of Ending Online Account Sharing. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems (CHI '20)*. Association for Computing Machinery, New York, NY, USA, 1–13. doi:10.1145/3313831.3376632

[19] Jenny G Olson, Scott I Rick, Deborah A Small, and Eli J Finkel. 2023. Common Cents: Bank Account Structure and Couples' Relationship Dynamics. *Journal of Consumer Research* 50, 4 (Dec. 2023), 704–721. doi:10.1093/jcr/ucad020

[20] Cheul Young Park, Cori Faklaris, Siyan Zhao, Alex Sciuto, Laura Dabbish, and Jason Hong. 2018. Share and Share Alike? An Exploration of Secure Behaviors in Romantic Relationships. 83–102. https://www.usenix.org/conference/soups2018/presentation/park

[21] Plaid and The Harris Poll. 2021. The FinTech Effect: Fintech's mass adoption moment. *Financial Technologies* (Oct. 2021).

[22] Plaid and The Harris Poll. 2022. The FinTech Effect: Stability, impact, and building for the future. *Financial Technologies* (Oct. 2022).

[23] Mintra Ruensuk, Jayeong Yoon, and Choeun Park. 2019. Amor: Supporting Emerging Adult Couples to Manage Finances for a Common Goal. In *Extended Abstracts of the 2019 CHI Conference on Human Factors in Computing Systems (CHI EA '19)*. Association for Computing Machinery, New York, NY, USA, 1–6. doi:10.1145/3290607.3309688

[24] John Vines, Paul Dunphy, Mark Blythe, Stephen Lindsay, Andrew Monk, and Patrick Olivier. 2012. The joy of cheques: trust, paper and eighty somethings. In *Proceedings of the ACM 2012 conference on Computer Supported Cooperative Work (CSCW '12)*. Association for Computing Machinery, New York, NY, USA, 147–156. doi:10.1145/2145204.2145229