

Gaze into Fintech: Assessing the Influence of Financial Literacy on Interaction Behaviour Using Eyetracking

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ABSTRACT

Financial technology (fintech) has become more accessible to diverse users, including finance practitioners and non-experts. We conducted a usability test with six participants, evaluating a fintech app using eye-tracking technology for finance practitioners and non-finance experts. Our analysis revealed that participants with limited financial knowledge had difficulty understanding financial information and navigating the software, indicated by a higher revisitation rate on financial labels. We also observed higher cognitive overload or uncertainty among non-practitioners, evidenced by gaze-click discrepancies. These insights aim to inform the design of more accessible fintech applications.

CCS CONCEPTS

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

KEYWORDS

Fintech, Usability Test, Eyetracking

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1 INTRODUCTION & MOTIVATION

Financial technology, or “fintech” [4], merges financial services with software to enhance accessibility for a wider audience. However, many financial activities often require financial literacy, a combination of financial awareness, knowledge, skills, attitudes and behaviours necessary to make sound financial decisions and ultimately achieve financial well-being [3]. Lusardi et al. [7] highlighted that the lack of an understanding of concepts e.g. compound interest, inflation and diversification risk, could lead to high rates of consumer debt, inability to manage money, and hindering participation in the stock market [5, 9]. Abreu et al. [1] discovered that low financial literacy negatively affects portfolio diversification, leading to suboptimal decisions by non-expert investors. Yi et al. [11] found that financial knowledge significantly increases

the willingness to adopt robo-advisory in investment and wealth management. Voskobochnikov et al. [10] revealed that crypto-wallet users have a conventional mental model and believe their transactions are reversible or can be cancelled. This limited understanding of the underlying technology often leads to frustration, disengagement, or even to irreversible monetary losses [10]. To understand the impact of financial literacy on the interaction with fintech apps, we conducted a usability study of a fintech app called “*Securitisation Terminal*” [2]. We collected users’ eye-gaze data during their interaction with the fintech app and conducted semi-structured interviews to provide qualitative insights into users’ interaction behaviour. We found that non-finance practitioners revisit pages or labels more frequently than practitioners, suggesting they lack a structured way of exploring fintech apps and are unaware of the financial task flow. In addition, gaze-click discrepancies were observed when actions were needed to proceed with the task, which suggests a lack of knowledge or cognitive overload.

2 USER STUDY

We recruited six participants (6 males), aged between 22 and 48 years (Mean = 29.17, SD = 8.82). Among them, three have a deep background in finance (financial expert, FE). One works as an equity derivatives trader, another owns a robo-advisory fintech company, and the third won a fintech case competition. The three non-experts (NE) are computer science students. Participants were seated 50–100 cm away in front of a desktop PC using “*Securitisation Terminal*”. For eyetracking we used the Tobii Pro Fusion [8] (120 Hz, accuracy: 0.3° and precision: 0.04° RMS in optimal conditions). The software iMotions [6] (version: 9.3) was used to collect eye-gaze (e.g., saccades, fixations) and mouse-clicking data. After the calibration of the eyetracker, participants were asked to perform four tasks (see Figure 1). Participants had 5 minutes to complete each task. Post hoc, we conducted semi-structured interviews to provide additional insights into users’ behaviours and thoughts.

3 RESULTS

To analyse participant behaviour, we reviewed all screen recordings for eye gaze and mouse movement. Additionally, we gathered qualitative feedback through semi-structured interviews, transcribed verbatim and analysed to understand the reasoning behind participants’ behaviours.

We observed two **repetitive behaviour**: *label rereading* and *page revisitation*. P2, P3 and P6 (NE) frequently return to the same page, indicating a lack of intentional navigation or unfamiliarity with the interface. For example, in task 3, P2 exhibited a lack of structured navigation and voiced that “*I need to find loans. None of this really tells straight up loan. So I checked and clicked on everything*”

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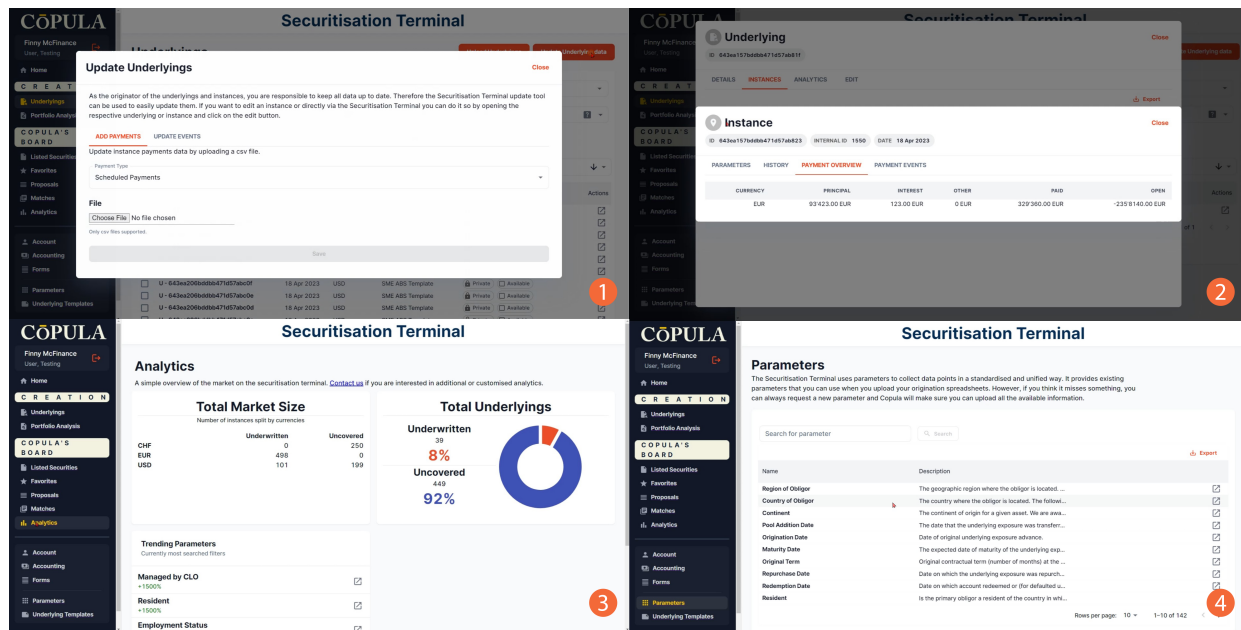


Figure 1: UI overview of “Securitisation Terminal” [2] for 4 tasks. Task 1: update underlying by uploading a payment. Task 2: finding out the amount of payments for the selected loan. Task 3: review trading data. Task 4: filter by parameters

on the menu.”. Besides lacking of intentional navigation, there were also concerns regarding their understanding of certain financial terms. For example, in a task of filtering loans, P6 exhibited longer dwell times on the “parameter” button, then shifted focus to another UI element. After reading the label three times, P6 recognised this label as the appropriate one to click. Conversely, P4, who has a financial background, instantly clicked on the button at first glance, as “parameter” is a common term in finance for filter purposes.

Besides, **skipping steps and avoiding reading** were observed. For example, P3 (NE) reported the “total amount of principles” as an answer rather than the “total amount of payment”. This error occurred as they focused solely on numerical values in the table, overlooking the header row. The correct answer was zero, but due to their selective attention, this information was missed. This behaviour suggests that complex financial terms, like “principle”, might cause cognitive overload, leading participants to simplify tasks by focusing only on numbers. P3 later explained in the interview, “I don’t know what does principle mean.”

Additionally, all three NEs exhibited the behaviour of **discontinuing procedures** at least once. They approached the completion of a specific procedure but faced challenges when finalising it, either by closing the current page or transitioning to another tab. This suggests they were uncertain about their current actions or might not have recognised they were on the correct path. For example, P2 was under the correct tab (instance tab), but they were unsure about the tab and decided not to continue by switching to another tab. In contrast, financial practitioners (P1, P4, P5) exhibited more accurate behaviour, knew what they were doing in each step, and were able to locate the UI elements fast and accurately. They understood the task flow well, managed to align their mental model with the fintech app, and were able to finalise each task successfully.

4 DISCUSSION & CONCLUSION

In this work, we provided first insights into interaction behaviours of users with various financial literacy when interacting with a fintech application. We discuss two main differences: revisitation of UI elements and gaze-click discrepancy among non-financial practitioners. **(1) Revisiting UI elements.** Eye gaze analysis showed NEs frequently revisited UI elements like buttons or labels more often than practitioners. Interestingly, revisitation occurred among financial experts as well. However, the reasons for these usability issues varied. For NEs, frequent revisitation stemmed from a lack of domain-specific knowledge and high barriers to understanding. For FEs, it was caused by the inconsistent terminology used across different fintech applications. This highlights the need for a) targeted instructions for NEs and early adopters and b) consistent financial terminology across fintech apps. **(2) Gaze-click discrepancy.** Even though we noticed that participants who are NEs can gaze at the right button where actions are needed, they often lack contextual awareness, i.e., they are not aware that they are on the correct path, and thus don’t proceed by clicking. Similarly, we observed that NE participants exhibited uncertainties and lack of confidence, as indicated by their multiple revisits of the UI elements. P2 and P6 expressed that they lacked a clear mental model of the overall fintech app, the current state they are in, and their ultimate goals. This suggests that while participants were able to locate the correct UI elements for their interaction, they often did not finish the task due to their lack of confidence.

We encourage future work to investigate how users, particularly those with less financial literacy, can be supported when interacting with fintech apps, and how to design accessible apps for users with various levels of financial knowledge.

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