

FRB Banknote Usability Study In-Lab Simulation Round 11 Mod Guide

Research Questions

- How are US banknotes handled during cash transactions?
 - How are cashiers receiving, counting and organizing banknotes before, during and after cash transactions?
- When, how and how often do US banknote users perform authentication checks on US banknotes during transactions?
 - What are the most common authentication methods used by cashiers when handling US currency?
 - How do authentication behaviors vary across different cashiers and contexts?
 - **What do cashiers look at when authenticating in simulated real-world settings?**
 - **What do cashiers look at when handling banknotes? Do they look at security features even when not actively authenticating?**
- How do cashiers respond when they suspect a bill might be counterfeit, and what steps do they take?

Approach

- Each 30-minute session will involve the participant acting as a cashier at a simulated store that we set up in our Chicago labs.
- The simulated store will include a cash register, set up based on our Round 6 ethnographic observations in businesses, and items “for sale.” Participants will have access to a counterfeit “marker” and a UV light in or near the cash register.
- Ipsos researchers will act as the shoppers and will make cash purchases, 5 transactions per research session. To re-create real world situations that affect how cash handlers handle cash, once per session multiple shoppers will be sent in and will form a line at the checkout.
- Participants will be asked to handle cash as they normally would at work. During the session, they will accept cash payment, make change for the “shoppers,” as well as audit the cash drawer at the end of their “shift.”
- One counterfeit per session will be used, either given as payment by a “shopper” or included in the cash drawer from the beginning.
- Cameras will be placed throughout the room to record and capture participants’ handling of cash from multiple angles, and the moderator and notetaker will observe from the other side of a one-way mirror.
- Eye Tracking glasses will be worn by participants to capture gaze during natural interactions.

Logistics

Project Background

We will be running an in-lab simulated store experience with Business Cash users to observe cash transactions as part of a semi-natural shopping experience. This will be an extension of Round 6 In-lab simulation run September 2025.

Overview

Sample Size	Recruit 60 for n=56 Business Cash users
Location	Chicago UX Labs: 227 W Monroe Street, Floor 11, Suite 1100, Chicago, IL 60606
Session Type	In-Lab simulated store experience (1 participant, 2 researchers per session) 7 sessions per day, across 8 days (56 sessions)
Session Length	Approximately 30 minutes
Field Dates	Internal Ipsos pilot on 7/27, Fieldwork 7/28 - 8/6

Schedule

Chicago UX lab, TBD

Shopping Procedures

Overview

42 sessions will include 4 shoppers from A-G below and 1 shopper from H-K, in randomized order.

14 sessions will include 5 shoppers from A-G below, in randomized order, and either a counterfeit \$50 or \$100 included in the cash drawer.

Shopper timing and behavior will be standardized as much as possible. (see order, cash presentation and personas below, subject to slight variation depending on stimuli availability and choice)

Shopper A Small change from two \$20s	Purchase an item priced between \$20.01 and \$29.99, using two \$20 banknotes
Shopper B Small purchase with small bills	Purchase an item priced under \$10, using a combination of \$1s and a \$5
Shopper C Large purchase with small bills	Purchase an item priced over \$80, using only \$1s, \$5s, and \$10s
Shopper D Small purchase with \$50	Purchase an item priced under \$10, using a \$50 banknote

Shopper E Small purchase with \$100	Purchase an item priced under \$10, using a \$100 banknote
Shopper F Large purchase with \$50	Purchase an item priced at least \$40, using a \$50 banknote
Shopper G Large purchase with \$100	Purchase an item priced at least \$80, using a \$100 banknote
Shopper H Small purchase with counterfeit \$50	Purchase an item priced under \$10, using a counterfeit \$50
Shopper I Small purchase with counterfeit \$100	Purchase an item priced under \$10, using a counterfeit \$100
Shopper J Large purchase with counterfeit \$50	Purchase an item priced at least \$40, using a counterfeit \$50
Shopper K Large purchase with counterfeit \$100	Purchase an item priced at least \$80, using counterfeit \$100

Shopper Order

- **Timing of shoppers:** The first shopper will come in right after the moderator leaves. The second shopper will come in when the first shopper leaves. Shoppers 3 and 4 will come in when the second shopper goes to check out and will quickly pick an item and queue in line for checkout. The fifth and final shopper will come in when all other shoppers have left. *Note that it may not be 5 unique shoppers, but we do need at least 3 people supporting to act as shoppers during the “rush” period.*

Cash Presentation

- **Orientation of banknotes:** The first, third, and fifth shoppers will hand the participant banknotes face up; the second and fourth shoppers will hand the participant banknotes back up or a combination of face and back up.
- **Cash carrier:** Shopper will be counterbalanced between Wallet, pocket, purse

Personas

([Printable instructions](#))

The quiet one	• Don’t talk to the cashier unless they talk to you • Browse the items the items casually
The <i>in-a-hurry</i> one	• Don’t talk to the cashier unless they talk to you. If they do talk to emphasize that you are late to get somewhere • Browse the items speedy and a little messy ◦ <i>Example: push clothes around on the rack quickly. Pick up a soda and put it down somewhere else</i> • Count your money to pay on the counter in front of the cashier in a messy and unorganized way • Hand the money to the cashier in a messy pile

The <i>needs help</i> one	• Greet the cashier when you enter and ask a question ◦ <i>Example: I am going to a Halloween party. Do you have anything that would make a good costume?</i> • Browse the items the items casually
The <i>never-stop-talking</i> one	• Greet the cashier when you enter and ask them how they are • Make casual conversation as you browse and when you are paying at the register ◦ <i>Example: talk about the items you think are really cool, what you plan to use it for, weather, work, etc</i> • Continue to talk while paying at the register
The <i>suspicious</i> one	• Don't talk to the cashier unless they talk to you • Browse awkwardly: quiet, and act nervous ◦ <i>Example: look at items with your back turned to the cashier and peek over at them to see if they are watching. Speak a little jumpy</i>

Observations

- Notetaker: Focus on observational notes about participant behavior throughout the session. Take verbatims and notes while moderator is speaking with participant.
- Moderator: Observe and record all contact participant has with banknotes during the shopping section, noting any time stamps that we should return to the video to review what the participant was doing with their hands (such as feeling the texture of a banknote).

Moderation / Observation Guide

Session Outline

- Introduction/ Warmup– 5 minutes
- Eye Tracking Setup- 3 minutes
- Shopping – 6 minutes
- Cash Drawer Audit – 5 minutes
- Follow-up Questions – 12 minutes

Introduction/Warmup (5 min)

Moderator to meet the participant by the front desk and take them into the lab room with the store set up.

Thank you for agreeing to participate today, we appreciate your time. This session will last about 30 minutes.

As a reminder, this study will be conducted by Ipsos on behalf of The Board of Governors of the Federal Reserve System, under the Ad Hoc Payments Systems Long-Form Currency Program Surveys (FR 3045a) Office of Management and Budget (OMB) No. 7100-0332 Approval expires on January 31, 2029.

First, we would like you to act as the cashier of this store that we have set up in this room. A number of people will come in to purchase items while you are here, and you will take their payment and generally act as you would if you were working as a cashier. Towards the end of the session, we'll have you count the cash drawer as if you were going to make a bank deposit, then I'll come back in and have a few questions for you.

A few things to keep in mind before we get started:

- There are no right or wrong answers, and we would like you to act as naturally as possible, as if you were in your own workplace.
- Everything you do and say here today is confidential, meaning your name will not be associated with anything you do or say. In turn, you have signed an NDA saying you will not share what you do here today with others. You can say you came downtown to participate in a research study, but not the details of the session.
- The research team will be recording the session. That is just so I can focus more on talking to you and less on taking notes. Recordings will not be shared outside of the project team and will remain confidential. Are you comfortable with me starting the recording at this time?

START RECORD **START STREAM**

Before I get started on our first activity, I'm curious to learn a little about what your experience is currently like when you handle transactions from customers.

1. Briefly tell me what are your responsibilities when you handle cash transactions?
 - a. Do you use any tools?
 - b. What do you typically do with the cash?

Eye Tracking Setup (3 min)

Calibration

For our first activity I will have you use eye tracking glasses as you complete the tasks. Let's set them up together.

You can put these glasses on now. We'll begin by adjusting the fit and calibrating them to your eyes. We have three sizes of nose pieces available (**mod will have these on the table**), please take minute to see if the glasses stay put when you move your head up and down.

- Are you wearing contacts today? [Note this in the datasheet in Notes Column A. Also note if P is wearing glasses and whether the session was run with them on- the ideal- or off.]

Moderator notes:	Make sure the glasses fit properly and change out nose piece as needed. To remove or insert nose piece, gently squeeze the ends together while pulling/pushing. • Green dot: narrowest • White dot: medium • Black dot: widest
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Now that we have a good fit, let's calibrate the eyeglasses. Please hold this card with your arm straight out in front of you and look at the dot in the center of the circle.

Moderator notes:	Click "Calibrate" on Tobii interface. If calibration is not working, first try switching the nose piece, then refer to the troubleshooting guide. [link] • Looking at a blank wall can help with calibration
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Thank you, you can hand that card back to me. Next please hold out your index finger in front of you and, with your whole head, follow your finger while moving it all the way to one side and then the other.

Moderator notes:	If tracking is not great, recalibrate. Can also check the location of the pupils using [Insert Tobii instructions]. The pupils should be in the center. If not, the glasses need to be adjusted on the face and/or nose piece swapped.
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Shopping – 6 minutes

Walk participant to behind the checkout counter [See shopping procedures above]

We have set up a checkout station for our store that may look similar to your workplace or to stores you have been in. You are free to interact with anything here as you go about the business of running this store for the next fifteen minutes.

As closely as possible, please handle all transactions as you would if they were happening in the real world. At the end of the shopping portion of this session, I will come back in and introduce the second task.

Notetaker Observe:

- How they count the cash (By denomination, high/low, groups of 10, 100, etc)
- How they organize the cash (Face up/down, by denomination, high/low, same direction)
- Any authentication efforts Success or Fail (UV light, pen, feel, watermark)
- How often they reference the back if at all

Cash Drawer Audit – 5 minutes

Moderator: Walk back into the session room

Thank you so much for being our cashier here today! The second task we'd like you to do is count the cash in the cash drawer and place it here in this cash bag. Please fill out this cash drawer audit form as you normally would. Again, we'd like you to imagine you are at work and follow any procedures you follow in real life. When you are done, please lock this bag up and set the key on the table. I'll come back in and ask you a few questions before we wrap up.

Moderator: Go back to the observation room

Notetaker: Pay close attention and record participant behavior, as they likely will start counting before the moderator is back in the observation room.

Follow-up Questions – 12 minutes

Moderator note: The goal of this session is to get background on their cash handling practices at work and have the opportunity to ask them about any authentication behaviors we observed during the session.

Moderator: Return to session room, pause eye tracking glasses and sit with participant

Thank you for completing all of the tasks today. I want to ask you a few follow-up questions about your experience.

1. Overall, how would you say this experience compares with how you handle cash at work?
2. Tell me about your preferences when managing cash transactions.
 - a. When making change for a customer after they have given you a cash payment, what is your procedure? Why do you do it this way?
 - b. When making change for the [1st/2nd/3rd/4th/5th] shopper today, I noticed that you _____. Is this how you normally make change? Why is that?
3. **If participant flagged a banknote as counterfeit:** I noticed that you _____ tell me more about why you did that?

[ex: returned the \$100 that the third shopper gave you, saying you were unable to accept it; made a note on the audit sheet that one banknote was counterfeit]

- a. What tipped you off?
 - b. Is this how you normally handle a situation like this at work?
 - c. Here is the counterfeit [retrieve counterfeit from cash bag]. What about this banknote made you suspicious?
4. **If participant did not catch the counterfeit:** One of the banknotes in your drawer is a counterfeit. Did you happen to notice which one?

[Probe denomination, timing (shopper 2 or when counting drawer, for example), and what made them suspicious.]

- a. **If participant claims to have noticed the counterfeit:** What would you normally have done at work if you were suspicious of a banknote?
 - i. Why didn't you do that here?
 - ii. Here is the counterfeit [retrieve counterfeit from cash bag]. What about this banknote made you suspicious?
 - b. **If participant says they did not notice a counterfeit:** Here is the counterfeit [retrieve counterfeit from cash bag]. What seems genuine about this banknote?
5. Now let's focus on auditing the cash drawer, when you count a large amount of cash, how do you generally go about doing that? Why do you do it this way?
- a. When counting the cash drawer here today I noticed that you _____. Is that how you typically handle cash? Why is that?

[Follow up on: organizing all banknotes face up, not organizing them all face up, placing the banknotes in piles by denomination, counting the banknotes more than once, etc. How often business users use the back of banknotes, what aspects of banknote design are most useful or most impeding for common business tasks.]

- b. Is there anything about banknotes that make them easier or more difficult to inventory?
6. [IF Time] At your workplace, who is responsible for making sure that any banknotes coming in or going out are genuine and not counterfeit?
7. [IF Time] To your knowledge, have you ever received a counterfeit banknote?
- a. Tell me about that experience. *Probe on context, how they identified the counterfeit and actions taken after identification.*

8. [IF Time] Those are all the questions I have for you today. Is there anything else you thought of that I haven't already asked about? Anything else that was similar or different to how you normally interact with cash at work?

Thank you so much for your time! I'll walk you out to the front.