

FinTech Adoption and Consumer Financial Decision-Making: A Behavioral Economics Narrative Review

Inga Jonaityte^a,

*^aCa' Foscari University of Venice/ Venice School of Management, Fondamenta S. Giobbe, 873, 30121
Venice, Italy*

Abstract

This structured narrative review synthesizes evidence on FinTech adoption and consumer financial decision-making through a behavioral economics lens, with emphasis on EU-relevant settings and the post-COVID-19 period. Across digital payments, mobile banking, and robo-advisory services, adoption, continued use, and advice-following are shaped by (i) shocks and habit formation, (ii) trust, privacy concerns, and perceived risk, and (iii) capability constraints (financial and digital literacy) interacting with demographic and socioeconomic heterogeneity. We consolidate convergent findings, delineate contested areas—especially when and why consumers rely on algorithmic advice—and highlight measurement priorities for research on financial inclusion. The paper concludes with a survey-ready construct map linking behavioral mechanisms (e.g., trust, perceived complexity, privacy concern, perceived recourse, and confidence calibration) to adoption outcomes and inclusion risks.

Keywords: FinTech, adoption, trust, risk, payments, roboadvice, inclusion

1. Introduction

Financial technology (FinTech) has shifted from a niche set of tools to a default interface for everyday financial life. Consumers increasingly pay, borrow, save, and invest through digital systems whose design choices—interfaces, defaults, disclosures, and recommendation logic—shape attention and behavior. Adoption is therefore not only a question of access. It is also a behavioral question: how consumers form trust, interpret risk, manage complexity, and decide whether (and when) to delegate financial choices to algorithms.

The COVID-19 pandemic created a sharp disruption in these behaviors. Lockdowns and health concerns increased the relative appeal of remote and contactless transactions and accelerated experimentation with digital financial services. Evidence from Belgium illustrates the scale of this shock: mobile payment users rose from 20% in 2019 to 37% in

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Email address: inga.jonaityte@unive.it (Inga Jonaityte)

2020, an 85% relative increase within a single year (Hellemans et al., 2022). The central question, however, is not simply whether adoption increased, but why, for whom, and whether these changes persist once forcing conditions fade.

The European Union provides a distinctive institutional environment for studying these questions. Open-banking and data-protection frameworks shape information flows, competition, and the perceived legitimacy of digital finance, while member states vary in digital infrastructure, banking traditions, and attitudes toward privacy and technology. This combination of shared rules and cross-country heterogeneity helps separate general behavioral mechanisms from context-specific constraints.

Behavioral economics offers a practical toolkit for organizing the evidence. Rather than assuming frictionless optimization, it treats financial decisions as shaped by bounded rationality, limited attention, and predictable biases. In digital finance, these frictions often operate through (i) complexity and choice architecture (defaults, framing, and salience), (ii) trust and perceived control (especially when data are shared or decisions are delegated), and (iii) capability constraints linked to financial literacy, digital skills, and socioeconomic position.

This review synthesizes empirical and theory-informed evidence on FinTech adoption and consumer financial decision-making through a behavioral lens, with emphasis on EU-relevant contexts and post-pandemic developments. The synthesis is designed to directly inform the accompanying survey module in the I.COPE.BEST project: a survey-focused work package aimed at documenting adoption patterns, barriers, and inclusion outcomes in digital finance. Accordingly, the review prioritizes mechanisms that can be operationalized in survey instruments (e.g., trust, perceived risk, perceived complexity, privacy concerns, digital and financial capability, and access to human support).

In doing so, the review makes three contributions. First, it provides an organizing framework that links design and context (including the COVID-19 shock and EU governance features) to behavioral mechanisms and adoption outcomes. Second, it synthesizes evidence across major FinTech domains while distinguishing between *trial*, *continuation*, and (for advisory tools) *delegation* decisions. Third, it translates the synthesis into a measurement-oriented agenda for the accompanying survey module, clarifying which constructs are most diagnostic for understanding inclusion gaps and downstream decision quality.

The paper proceeds as follows. Section 2 develops the behavioral and institutional foundations and introduces an organizing framework that links mechanisms to observable adoption outcomes. Section 3 describes the review approach and synthesis strategy. Section 4 presents evidence across key FinTech domains and cross-cutting mechanisms, with particular attention to inclusion and demographic divides. Section 5 discusses convergent findings, unresolved debates, and research gaps relevant for future empirical work. Section 6 concludes with implications for responsible design and governance of digital

financial services in Europe.

2. Background and Theoretical Foundations

2.1. Behavioral Economics: Core Concepts and Financial Applications

A behavioral perspective begins from a pragmatic premise: many financial decisions are cognitively demanding and affect-laden, so individuals economize on attention and computation. Rather than processing all available information optimally, consumers rely on heuristics that are often adaptive but systematically imperfect. These “predictable imperfections” become especially consequential in digital finance because interfaces, defaults, and disclosures can amplify (or mitigate) them.

Three families of behavioral mechanisms are particularly relevant for FinTech adoption and use. First, **bounded rationality** implies that complexity is itself a barrier. When products involve unfamiliar terminology, probabilistic outcomes, or multi-step processes (e.g., onboarding, authentication, consent flows), consumers may delay adoption, avoid the product, or rely on simplifying rules of thumb. Second, **reference dependence and loss aversion** imply that evaluation depends on framing (gains versus losses), salient benchmarks, and perceived downside risk. Third, **present bias** and limited self-control shape behaviors such as saving, revolving credit use, and investment discipline, making digital “nudges” and automated features potentially powerful—and ethically sensitive.

Digital finance also interacts with biases that are specific to information environments. Limited attention increases sensitivity to what is salient on the screen (warnings, social proof, ratings), while **default effects** can steer choices without changing the feasible set. In the context of algorithmic advice, **overconfidence** and miscalibration may lead consumers to over-trust their own judgment, under-use advice, or take excessive risk. Conversely, some users may exhibit **delegation tendencies**—preferring to offload complex decisions to automated tools—especially when perceived capability is low.

2.2. Trust, Risk Perception, and Technology Adoption

Many FinTech products require consumers to accept not only financial risk but also informational and procedural risk: data sharing, opaque decision rules, and uncertainty about recourse if something goes wrong. Trust therefore becomes a first-order determinant of adoption, continued use, and willingness to delegate decisions. Importantly, trust is multi-dimensional. Consumers can trust a system’s *competence* (does it work well?), its *integrity* (does it act in my interest?), and its *predictability* (will it behave consistently?).

Behavioral research emphasizes that perceived risk often diverges from statistical risk. Individuals may be ambiguity averse, overweight salient low-probability hazards, and react strongly to vivid negative events such as fraud or identity theft. In digital settings, perceived control matters. When consumers understand what will happen and feel able to intervene (e.g., reverse a transaction, contact support, opt out of data sharing), trust is

easier to build and sustain. When processes are opaque and recourse is unclear, perceived vulnerability rises and adoption is more fragile.

2.3. Digital and Financial Capability, Literacy, and Choice Architecture

Adoption and effective use depend on capabilities as well as preferences. Digital finance requires navigation of interfaces, comprehension of disclosures, and execution of tasks that may be unfamiliar (e.g., two-factor authentication, consent permissions, portfolio configuration). **Financial literacy** and **digital literacy** therefore shape both objective performance and subjective confidence. Critically, subjective confidence may be miscalibrated: some consumers overestimate their understanding (increasing risk exposure), while others underestimate their ability (increasing avoidance and non-adoption). Choice architecture can reduce or exacerbate these gaps. Clear information design, progressive disclosure, and well-chosen defaults can lower cognitive load, whereas dense disclosures and poorly structured menus can increase friction and amplify inequality in use.

2.4. Regulatory and Institutional Context in the European Union

The EU context matters for both constraints and perceptions. Rules around open banking, data portability, and consumer protection shape what firms can do and what users believe is legitimate and safe. Regulatory environments also signal accountability: clear rights, dispute resolution mechanisms, and enforcement can support trust, while uncertainty about redress can undermine it. For behavioral outcomes, these rules matter in two ways: they change actual product constraints and they influence perceived legitimacy, which feeds back into trust and adoption.

2.5. Organizing Framework for This Review and Survey Measurement

To keep the synthesis analytically tight and survey-relevant, the review organizes evidence around a small set of mechanisms that map naturally to survey measurement:

- **Adoption stage:** awareness $\rightarrow$ trial $\rightarrow$ sustained use $\rightarrow$ delegation (for advice tools).
- **Mechanisms:** perceived usefulness and convenience; perceived complexity; trust in provider and in regulation; perceived financial and privacy risk; perceived control and recourse; digital and financial capability; social influence and experience.
- **Inclusion outcomes:** who adopts and who does not; whether adoption reduces frictions for vulnerable groups or creates new exclusion via capability, trust, or access barriers.

Section 4 applies this framework across domains (digital payments, mobile banking, robo-advisory) and uses it to organize evidence on demographic divides and COVID-related shocks. Section 5 uses the same structure to distill robust patterns, identify

unresolved debates, and specify the most diagnostic constructs for the accompanying survey module measurement.

3. Methodology

3.1. Review Approach and Scope

This review adopts a structured narrative approach, informed by systematic search principles, to synthesize research on FinTech adoption and consumer financial decision-making from a behavioral economics perspective. Unlike a fully systematic review with preregistered inclusion protocols, the approach emphasizes interpretive synthesis across diverse theoretical and empirical contributions while remaining transparent about search strategy and scope. This structure is well suited to integrating conceptual frameworks, empirical findings, and policy-relevant implications across heterogeneous designs and disciplinary traditions.

3.2. Literature Search Strategy

The literature search was conducted across multiple academic databases (including Web of Science, Scopus, and EconLit), supplemented by forward and backward citation tracking from key papers. Search terms combined FinTech-related concepts (digital payments, mobile banking, robo-advisor, financial technology, digital finance) with behavioral economics constructs (trust, risk perception, cognitive bias, heuristics, choice architecture, behavioral finance) and EU-relevant markers (European Union, Europe, GDPR, PSD2). Boolean operators were used to construct comprehensive yet focused search strings intended to capture relevant interdisciplinary literature. [Confirm the exact databases used, the full search strings, and the last search date before submission.]

The temporal scope prioritized research published between 2020 and 2026 to capture post-COVID-19 developments and contemporary FinTech innovations. Earlier theoretical and empirical contributions were included when they provided essential conceptual frameworks or established key behavioral mechanisms.

3.3. Inclusion and Quality Criteria

Inclusion criteria emphasized peer-reviewed research that examines FinTech adoption, usage, or decision-making with explicit attention to behavioral mechanisms, psychological factors, or consumer perspectives. Relevant domains included behavioral economics, finance, information systems, management, marketing, and consumer research.

Where feasible, selection prioritized journals with established quality indicators (e.g., Journal Citation Reports quartiles or the Academic Journal Guide). [If journal-quality filters were not applied in practice, revise this paragraph to match the actual screening protocol.]

Exclusion criteria removed purely technical papers focused on algorithmic development or system architecture without consumer behavior analysis, as well as non-peer-reviewed conference proceedings. Studies from non-EU contexts were included when they offered essential theoretical insights, methodological innovations, or comparative perspectives that clarify which mechanisms are plausibly universal versus context dependent.

3.4. *Data Extraction and Synthesis*

For each included study, key information was extracted on research objectives, theoretical framing, methodological approach, sample characteristics, analytical strategy, main findings, and stated limitations. Particular attention was paid to identifying the behavioral mechanisms emphasized (e.g., trust formation, risk perception, specific biases), the FinTech domains examined (payment systems, robo-advisors, mobile banking), and the institutional setting.

The synthesis organizes evidence around core questions relevant for the accompanying survey module: what drives adoption and what barriers constrain it; which behavioral mechanisms shape usage and decision-making; how trust and perceived risk operate across domains; how demographic characteristics (including age and gender) relate to adoption and use; how COVID-19 shifted behavior; and how European regulation and institutional context influences consumer perceptions and choices.

For each theme, the synthesis distinguishes convergent findings supported by multiple studies from contradictory results and unresolved debates, and it highlights gaps where evidence remains limited. Methodological diversity is treated as informative rather than as a nuisance: surveys, experiments, and field studies offer complementary leverage on mechanisms, correlations, and persistence.

3.5. *Survey Measurement Alignment: From Synthesis to Measurement*

Because the accompanying survey module is designed to diagnose barriers and enablers of digital financial inclusion in an EU context, the review was also used as a measurement design exercise. Specifically, the synthesis was translated into a construct map that links: (i) *exposure* to FinTech tools and advisory interfaces, (ii) *behavioral mechanisms* that shape uptake and use, and (iii) *outcomes* relevant for inclusion and decision quality. This translation supports the accompanying survey module by clarifying what should be measured, why it matters, and how mechanisms relate to observable adoption and usage patterns.

At a minimum, the accompanying survey module measurement should separate *access* from *capability* and *willingness*. The review motivates an instrument that distinguishes: (a) availability and use opportunities (e.g., access to a smartphone, banking app, payment infrastructure), (b) perceived and objective capability (digital skills and financial

literacy), (c) trust and perceived safety (including privacy and data concerns), and (d) perceived benefit and usability (convenience, cost, and friction). This separation matters because the same adoption outcome can reflect different constraints (e.g., lack of access versus lack of trust), with different implications for policy and design.

To support a mechanism-led the accompanying survey module analysis, the survey can operationalize the following constructs as distinct modules:

- **Trust formation and calibration:** trust in institutions, trust in technology/algorithms, perceived accountability, and confidence that problems can be resolved.
- **Risk and ambiguity perception:** perceived likelihood and severity of losses (financial, privacy, fraud), and subjective uncertainty about outcomes.
- **Cognitive and usability frictions:** perceived complexity, effort, and comprehension of disclosures, including information overload versus insufficient detail.
- **Capability constraints:** objective financial literacy and digital literacy, and their relationship to subjective confidence (calibration).
- **Inclusion barriers:** structural constraints (cost, access points, documentation), language and communication constraints, and perceived discrimination or lack of fit.
- **Preference for human support and hybrid models:** willingness to use human assistance, expected availability, and whether human fallback changes trust and adoption intentions.

Finally, the review treats heterogeneity as a first-order feature of the domain. the accompanying survey module should therefore pre-specify key subgroup comparisons (e.g., age, gender, education, income, migration status, prior experience with digital tools) and interpret adoption gaps through the construct map rather than treating demographics as merely correlational controls.

3.6. Limitations of the Review Approach

Several limitations should be acknowledged. First, prioritizing established journals may exclude relevant findings published in newer or specialized outlets, potentially amplifying publication bias toward established frameworks and positive results. Second, an English-language focus may miss work published in other European languages, particularly studies focused on specific national contexts. Third, the pace of FinTech innovation implies a lag between practice and peer-reviewed evidence.

Fourth, heterogeneity in designs, measures, and contexts limits the scope for meta-analysis or precise effect-size comparisons. The narrative synthesis addresses this by

prioritizing patterns of evidence and proposed mechanisms over quantitative aggregation. Fifth, a European focus is justified by regulatory distinctiveness and policy relevance, but it may limit generalizability to settings with different institutional environments and infrastructure.

Despite these limitations, a structured narrative synthesis can provide a theoretically grounded map of what is known, what remains uncertain, and what should be measured to support survey-relevant diagnosis in European digital finance.

4. Key Findings and Comparative Analysis

This section synthesizes empirical patterns from the reviewed studies and organizes them around behavioral mechanisms that are directly relevant for the accompanying survey module: (i) shocks and habit formation (COVID-19), (ii) trust formation and perceived risk, (iii) capability constraints (financial and digital literacy), and (iv) demographic and socioeconomic heterogeneity. The objective is not only to summarize findings, but to clarify which mechanisms are plausibly at work and which constructs are most diagnostic to measure.

4.1. Digital Payment Systems: Adoption Patterns and Behavioral Drivers

Across the reviewed evidence, digital payment adoption reflects both contextual constraints (e.g., health risk and access during COVID-19) and individual predispositions (existing digital routines, perceived safety, and trust). This distinction helps separate *temporary uptake* driven by necessity from *stable adoption* supported by habit and perceived value.

4.1.1. COVID-19 as a Catalyst for Digital Payment Adoption

The COVID-19 pandemic accelerated the adoption of digital payment systems across European markets, plausibly by increasing the perceived cost of cash and the perceived value of contactless alternatives. Evidence from Belgium illustrates the magnitude of this shift: mobile payment users increased from 20% in 2019 to 37% in 2020, an 85% relative increase within a single year (Hellemans et al., 2022). Importantly, this uptake was heterogeneous rather than universal.

Belgian adoption patterns were significantly associated with younger age, higher social grade, general impulse buying tendency ($\text{Exp(B)}=1.03$), online shopping behavior ($\text{Exp(B)}=2.20$), and the use of social media platforms (e.g., Facebook and Instagram) (Hellemans et al., 2022). Interpreted behaviorally, this points to an *adjacency* mechanism: mobile payments diffuse more readily when they complement established digital routines (online shopping, social media use) and when marginal learning and trust costs are low.

Complementary evidence from Italy suggests that pandemic-related affect (fear and anxiety) and capability (financial literacy) jointly shaped cashless payment adoption during COVID-19. Specifically, fear of contracting COVID-19 and financial literacy directly influenced cashless payment adoption, while media-induced anxiety indirectly affected attitudes toward non-cash payments (Graziano et al., 2024). The evidence therefore supports a dual-channel interpretation: shocks can induce trial by shifting perceived costs and benefits, while capability and trust determine whether trial consolidates into sustained use.

Beyond Europe, evidence from Ecuador on electronic payment intentions during the pandemic highlights a pathway from trust and habit to recommendation: perceived trust ($\beta=0.331$) and habit ($\beta=0.299$) predicted intention to use, and intention strongly predicted recommendation behavior ($\beta=0.754$) (Liébana-Cabanillas et al., 2022). The moderating role of COVID-related fear suggests that shocks may also amplify social influence, accelerating diffusion within networks.

the accompanying survey module measurement hook.. Separate (a) *shock-induced trial* from (b) *habit-supported continuation*, and measure trust and perceived safety alongside behavioral proxies for digital routine (e.g., online shopping intensity, reliance on digital channels).

4.1.2. Barriers to Full Adoption and the Impersonalization Challenge

Even when initial uptake occurs, progression to *full adoption*—where digital methods meaningfully displace cash—faces persistent psychological and experiential barriers. Evidence from Sweden identifies *impersonalization* as a key barrier that reduces the effectiveness of drivers that would otherwise promote full adoption (Dimitrova, 2024). Among adopters who already accept digital payments, credibility increases intention to fully adopt. Among adopters resisting complete digitalization, credibility, perceived usefulness, and social influence act as barrier-breakers; however, the impersonalization barrier attenuates these effects.

Conceptually, impersonalization captures a loss of perceived human control, relational cues, and situational flexibility. In behavioral terms, it can be interpreted as increasing *ambiguity* (“what happens if something goes wrong?”) and decreasing perceived *agency* (“can I resolve problems easily?”). This suggests that adoption is not only about convenience and usefulness, but also about reassurance, recourse, and controllability.

the accompanying survey module measurement hook.. Treat impersonalization as a latent barrier related to perceived controllability and access to support; include items on perceived recourse, error recovery, and the value of human fallback.

4.1.3. Financial Inclusion and Demographic Divides

A central question for the accompanying survey module is whether rapid diffusion of digital payments reduces exclusion or concentrates benefits among already advantaged groups. Belgian evidence suggests acceleration among already-engaged populations (younger, more educated, digitally active), rather than broad inclusion of non-users (Hellemans et al., 2022). This implies that general availability may not close gaps without targeted interventions.

Field experimental evidence from Bangladesh provides a concrete mechanism for reducing barriers: a training program increased mobile banking use among both female migrants (27% increase) and male migrants (24% increase) relative to controls (Lee et al., 2022). However, intensive usage diverged: men increased digital remittances substantially more than women. This pattern suggests that adoption barriers and usage intensity may be governed by different constraints, including household bargaining, control over resources, and social network structures.

At a broader level, global evidence indicates that education, labor force participation, and income contribute positively to digital payment uptake, and that gender-based gradients persist for some outcomes (e.g., online shopping using digital payments) (Niankara and Muqattash, 2023). For inclusion-focused policy and design, this highlights the need to diagnose whether barriers are primarily *capability-based* (skills), *trust-based* (perceived safety and legitimacy), or *constraint-based* (access and control).

the accompanying survey module measurement hook.. Distinguish adoption from intensity/continuation and include measures of capability (objective and subjective), trust and safety perceptions, and structural constraints (access to devices, decision authority, and access to assistance).

4.2. Demographic Patterns: Age, Gender, and Socioeconomic Status

Demographic gradients are best treated as *symptoms* of underlying mechanisms rather than as explanatory endpoints. Across domains, age, gender, and socioeconomic status correlate with adoption, but the reviewed evidence suggests that these gradients often reflect modifiable drivers such as training, perceived necessity, trust, and access constraints.

Age is among the most consistent correlates of FinTech adoption. Younger individuals show higher adoption rates for mobile payments (Hellemans et al., 2022) and greater willingness to use robo-advisors (Belanche et al., 2023). Plausible mechanisms include greater digital comfort, lower switching costs, and cohort differences in how trust is formed and updated. However, age effects are not immutable: targeted training increased mobile banking adoption even in low-literacy populations (Lee et al., 2022), indicating that experience and support can mitigate age-related barriers.

Gender patterns are more context-dependent. Italian evidence found no significant gender differences in cashless payment behavior after controls (Graziano et al., 2024),

whereas global evidence identified gender-based gradients favoring males for online shopping using digital payments (Niankara and Muqattash, 2023). In the robo-advice context, younger customers are more likely to recommend robo-advisors and male users report greater confidence in these systems (Belanche et al., 2023). The Bangladesh field experiment further suggests that even when adoption increases similarly for men and women, usage intensity (e.g., remittance behavior) can diverge sharply (Lee et al., 2022). A coherent interpretation is that gender differences often operate through *resource control* and *decision authority* rather than through intrinsic willingness to adopt.

Socioeconomic status (education, income, occupational grade) consistently predicts adoption across contexts. Higher social grade predicted mobile payment adoption in Belgium (Hellemans et al., 2022); globally, higher education, labor market participation, and income contributed positively to uptake (Niankara and Muqattash, 2023). These patterns plausibly reflect differences in enabling infrastructure, digital skills, risk perceptions, and the relative value of convenience and time savings.

the accompanying survey module measurement hook.. Treat demographics as moderators and include constructs that can explain them (digital capability, trust propensity, perceived recourse, and structural constraints), enabling mechanism-based decomposition rather than purely descriptive gradients.

4.3. Robo-Advisory Services: Trust, Overconfidence, and Algorithmic Decision-Making

Across the robo-advice literature, adoption is less a simple “technology acceptance” decision and more a judgment under uncertainty about delegating consequential choices. Trust formation, perceived usefulness and complexity, and confidence calibration are central for explaining who adopts, when, and with what potential welfare implications.

4.3.1. Initial Trust Formation in Robo-Advisors

Initial trust is a prerequisite for robo-advisor adoption, because the decision to delegate financial decisions often precedes direct experience. Evidence from young retail investors in Malaysia and Sweden shows that trust propensity, performance expectancy, and hedonic motivation influence initial trust in robo-advisors, which then drives intention to use (Nourallah, 2023). Cross-country differences in which factors matter most suggest that one-size-fits-all interface and communication strategies may be suboptimal.

Complementary evidence emphasizes that initial trust is multi-dimensional and can arise through distinct pathways, including perceived competence, institutional reputation, and perceived fit with user needs (Nourallah et al., 2022). This supports a “no trust, no use” logic that is particularly salient in financial contexts, where trial-and-error is costly.

A broader synthesis of digital advisory systems suggests that trust formation is intertwined with explainability and perceived alignment between system recommendations and user values (Goswami et al., 2025). For the accompanying survey module, this motivates

measuring not only global trust, but its components (competence, benevolence/intent, and integrity/legitimacy cues).

the accompanying survey module measurement hook.. Measure trust as a multidimensional construct and capture the cues users rely on *before* usage (reputation, perceived competence, and perceived alignment), not only after experience.

4.3.2. The Overconfidence Paradox

A key behavioral result is the positive association between overconfidence and robo-advisor adoption. Using the 2015 National Financial Capability Study (U.S.), overconfident investors exhibited a higher propensity to adopt robo-advice in a pre-chasm market; excessive confidence increased usage by an average of 9.27% (rSE 1.63%, $p < 0.0001$) (Piehlmaier, 2022). This supports a divergence-of-opinion interpretation: early adopters may be attracted by perceived higher returns or self-assessed skill, rather than by careful evaluation of service quality.

The welfare implications are ambiguous. If adoption is concentrated among those miscalibrated about their competence, robo-advice could either (i) reduce harm by constraining poor self-directed behavior, or (ii) amplify risk if confidence leads to inadequate attention to suitability, fees, or model limitations. Disentangling these scenarios requires outcome-focused designs (beyond adoption intentions).

the accompanying survey module measurement hook.. Measure calibration (objective knowledge vs subjective confidence) and test whether trust and adoption relate to *appropriate reliance* rather than to blanket acceptance.

4.3.3. Algorithm Quality, Transparency, and Choice Architecture

From a governance perspective, algorithm quality and choice architecture are not mere technical details: they are behavioral levers that can shift both adoption and welfare. Regulatory analysis argues that robo-advisors should demonstrate honesty and algorithm accuracy, and that choice architecture should align with predictive accuracy (De-laert et al., 2024). This highlights a tension: persuasive recommendations can increase adoption while potentially harming consumers if the underlying model is mis-specified or poorly matched to user needs.

Design evidence shows that transparency, customization, social presence, and user control affect acceptance through perceived usefulness, complexity, and safety (Kwon et al., 2022). Rather than a single dominant design dimension, the mechanisms appear multi-pathway: some features raise perceived benefit; others reduce psychological barriers (complexity and anxiety).

A scoping review further identifies performance expectancy, effort expectancy, trust in technology, financial knowledge, investing experience, cost-effectiveness, facilitating

conditions, and intrinsic motivation as positive correlates of adoption, with anxiety, risk perception, age, and data security concerns acting negatively (Nain et al., 2024). Together, these findings support a design strategy centered on *adaptive simplification*: reduce perceived complexity and risk while offering deeper information for users who seek it.

the accompanying survey module measurement hook.. Capture perceived complexity, perceived safety, and perceived user control, and treat them as mediators linking interface features to trust and adoption.

4.3.4. Experience-Based Segmentation

The evidence suggests meaningful segmentation by investor experience. Low-experience investors are more value-driven (benefits and cost-effectiveness), whereas high-experience investors are more trust-driven, emphasizing algorithm quality, privacy protection, and corporate reputation (Luo et al., 2024). This implies that the same disclosure or design element can have opposite effects across segments (e.g., simplicity may reassure novices but appear opaque to experts).

Among millennials, financial knowledge, perceived usability, and perceived trust all positively predict willingness to adopt, with perceived usability showing the strongest relationship (standardized coefficient 0.492) (Yi et al., 2023). The high explained variance (84.9%) suggests that, at least in this segment, usability and trust are central determinants rather than peripheral covariates.

the accompanying survey module measurement hook.. Pre-specify heterogeneity analyses by experience/knowledge and measure perceived usability as a central adoption driver rather than a control variable.

4.3.5. Behavioral Outcomes and Financial Management

Beyond adoption, evidence on outcomes remains limited but suggestive. Comparative evidence from Polish and Slovak robo-advice users during and after COVID-19 indicates that most increased savings (63.9% of Poles, 61.7% of Slovaks), and that saving was linked to using and being aware of personal finance applications (Waliszewski and Warchlewska, 2022). These patterns are consistent with selection (users may already be more financially engaged), but they are also consistent with digital tools complementing disciplined financial behaviors.

Perceived benefit–risk trade-offs also matter: customers’ assessments of benefits and risks (including fear of losing money and wasting time) shape adoption and recommendation behavior (Belanche et al., 2023). Ease of learning and perceived safety act as stimuli that tilt the trade-off in favor of adoption, and demographic differences emerge in confidence and recommendation.

the accompanying survey module measurement hook.. Measure perceived benefit–risk trade-offs explicitly, and separate adoption from recommendation and self-reported financial management behaviors.

4.4. Trust, Risk Perception, and Human-Algorithm Interaction

Trust and perceived risk are cross-cutting mechanisms that link payment adoption, digital banking, and robo-advice. Importantly, trust in “the technology” is not the same as trust in the provider or in the surrounding institutional environment; the accompanying survey module benefits from measuring these components separately.

4.4.1. Trust in Algorithmic versus Human Advice

Consumers apply different evaluative criteria to human and algorithmic advisors. Research on AI in banking finds systematic differences in trust formation for human versus machine advisors, with greater emphasis on demonstrated competence and consistency and less weight on interpersonal warmth and empathy (Northey et al., 2022). This implies that design levers that work for human advisors (rapport, empathy cues) may not translate directly to algorithmic systems.

Conversational robo-advisors illustrate a hybrid case: onboarding experiences and firm perception can influence trust and downstream financial decision-making (Hildebrand et al., 2021). Conversational interfaces may function as “trust surrogates” by creating a sense of interaction, but they also risk raising expectations about understanding and flexibility that the system cannot meet.

the accompanying survey module measurement hook.. Include measures that separate trust-in-competence from trust-in-intent, and capture expectation management (what users think the system can do vs what it actually does).

4.4.2. Privacy, Data Security, and Regulatory Trust

Across FinTech domains, privacy and data security concerns operate as adoption prerequisites rather than as marginal differentiators. In EU settings, heightened salience of data protection can plausibly raise both baseline concern and the potential value of credible compliance cues. Yet, within the specific set of sources reviewed here, evidence remains limited on which concrete trust cues (e.g., certifications, disclosures, institutional affiliations) most effectively reduce perceived risk, and for which user segments.

Regulatory environments can influence consumer trust directly (via protections and enforcement) and indirectly (via signaling and legitimacy). However, because many protections are complex and technical, consumers may not fully understand them, limiting the extent to which regulation translates into felt security. For the accompanying survey module, the implication is to measure perceived regulatory protection and perceived data safety as distinct constructs, rather than assuming they co-move.

the accompanying survey module measurement hook.. Measure privacy/security concern, perceived data safety, and perceived institutional/regulatory protection separately; do not assume that EU regulation automatically converts into subjective trust.

4.5. Financial Literacy, Education, and Behavioral Interventions

Financial literacy is consistently associated with adoption and effective use across domains. In Italy, financial literacy predicted cashless payment adoption during COVID-19 (Graziano et al., 2024). In the robo-advice context, financial knowledge predicted willingness to adopt among millennials (Yi et al., 2023). In Bangladesh, training increased adoption even among poor, illiterate populations (Lee et al., 2022). Taken together, these findings support the view that capability constraints are actionable targets rather than fixed barriers.

Mechanistically, financial literacy may reduce perceived complexity and uncertainty, improve evaluation of costs and benefits, and increase self-efficacy for using digital services. At the same time, the evidence cautions against equating knowledge with well-calibrated confidence. Overconfident investors (who overestimate their knowledge) show higher robo-advisor adoption (Piehlmaier, 2022), implying that subjective confidence can dominate objective competence in some adoption decisions.

the accompanying survey module measurement hook.. Measure objective literacy and subjective confidence to identify miscalibration, and evaluate whether interventions that raise knowledge also improve calibration (rather than merely raising confidence).

5. Discussion

5.1. Convergent Evidence and Robust Patterns

Three patterns recur across domains. First, COVID-19 acted as a catalyst for *trial* of digital financial services, but sustained use depends on pre-existing digital routines, perceived usefulness, and trusted recourse (Hellemans et al., 2022; Graziano et al., 2024). Second, trust is multi-dimensional: consumers differentiate between trust in the technology, trust in the provider, and trust in the surrounding institutional environment, and each can become binding depending on the product and the stage of adoption. Third, capability constraints (financial and digital literacy, and the calibration of confidence) shape both adoption and downstream decision quality. Training interventions can relax capability barriers (Lee et al., 2022), while miscalibration can distort reliance even conditional on adoption (e.g., overconfidence and early robo-advice uptake).

A useful synthesis is to treat FinTech adoption as a sequence of decisions under uncertainty: whether to try, whether to continue, and (for advisory tools) whether to delegate. Each step can be blocked by a different mechanism. Access constraints prevent trial; weak trust or poor recourse prevents continuation; and poor calibration can produce either over-reliance or under-reliance even when adoption occurs.

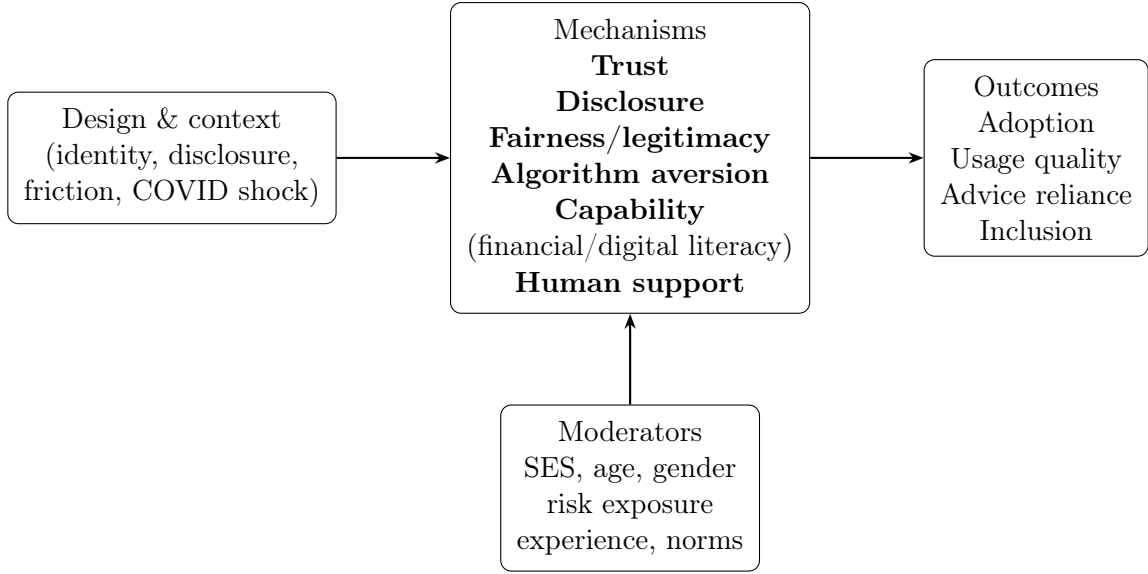


Figure 1: Conceptual map linking design/context to behavioral mechanisms and FinTech outcomes (taxonomy used in this review and the accompanying survey module).

5.2. Unresolved Debates and Contradictory Findings

Several issues remain unsettled. One concerns welfare implications when selection into adoption is non-random. Evidence that overconfident investors adopt robo-advice at higher rates (Piehlmaier, 2022) is consistent with both beneficial and harmful scenarios, depending on how advice quality interacts with user attention, suitability, and the ability to detect errors. Likewise, evidence that digital tools are associated with increased saving during and after COVID-19 (Waliszewski and Warchlewska, 2022) is compatible with a causal effect as well as with selection of more financially engaged users.

A second debate concerns the usability–trust tradeoff and how the two interact across segments and adoption stages. In some settings, perceived usability dominates adoption decisions (e.g., among younger segments), while in others trust and reputation cues appear central (Belanche et al., 2023). This heterogeneity implies that identical design interventions may have different effects across user groups and across the try–continue–delegate sequence.

5.3. Research Gaps and Future Directions

Three gaps are particularly salient for the accompanying survey module and for future empirical work. First, evidence on *persistence* is limited: many studies measure intention or short-run adoption, but fewer track whether behaviors stabilize once forcing conditions dissipate. Second, inclusion outcomes are often documented as demographic gradients, but less often decomposed into underlying constraints. The Bangladesh evidence illustrates that capability interventions can increase adoption for both men and women (Lee et al., 2022), yet intensity and downstream behaviors can still diverge, underscoring the need to measure decision authority, constraints, and support access directly.

Third, research on trust cues remains under-specified. Consumers face technical, opaque, or institutionally complex objects (data sharing permissions, algorithmic recommendations, compliance claims). Understanding which cues are processed, how they are interpreted, and how this varies with literacy and experience is essential for both welfare and governance.

5.4. *Methodological Considerations*

The reviewed literature spans surveys, experiments, and field interventions, each with distinct strengths. Surveys provide breadth and can map correlates, but they face limitations in causal identification and measurement validity when constructs are not carefully specified. Experiments can isolate mechanisms but may be sensitive to framing and external validity. Field interventions speak to real-world constraints but often observe a limited set of outcomes.

For the accompanying survey module, the implication is to treat construct validity as a design objective. Measures of trust should be decomposed (technology, provider, institution), capability should be measured both objectively and subjectively (to diagnose miscalibration), and adoption should be separated from intensity and delegation.

5.5. *Policy and Practice Implications*

The evidence supports a principle of *responsible simplification*: reduce unnecessary friction and complexity without obscuring material risks. Governance discussions emphasize that algorithm quality and accuracy should align with choice architecture (Dellaert et al., 2024); persuasive interfaces are not welfare-improving if they increase adoption of mis-specified or unsuitable recommendations.

Inclusion-oriented policies should also recognize that “access” is not sufficient. Trust, perceived recourse, and capability constraints remain binding in many contexts. Interventions that expand digital skills and financial knowledge can increase uptake (Lee et al., 2022), but they should also aim to improve calibration and to ensure that users can obtain human support when automated systems fail. Finally, because uptake accelerated during COVID-19 but remained heterogeneous (Hellemans et al., 2022), policy evaluation should distinguish between broad diffusion and targeted inclusion gains.

6. Conclusion

This review synthesized recent evidence on FinTech adoption and consumer financial decision-making through a behavioral economics lens, with emphasis on EU-relevant contexts and post-COVID-19 developments. Across domains, adoption is best understood as a sequence of decisions under uncertainty: whether to try, whether to continue, and (for advisory tools) whether to delegate. COVID-19 increased trial by shifting perceived

costs and constraints, but sustained use depends on trust, perceived recourse, usability, and capability.

For the accompanying survey module, the most actionable implication is measurement design. Demographic gradients are informative, but they are not explanations. To diagnose barriers and inclusion risks, the accompanying survey module should measure trust as multi-dimensional (technology, provider, institution), perceived risk and control (including privacy and recourse), capability constraints (objective and subjective literacy), perceived complexity/usability, and preference for human support or hybrid models. Separating trial from continuation and adoption from intensity will allow the survey to distinguish necessity-driven uptake from habit-supported integration.

More broadly, the evidence highlights a governance challenge: interfaces and algorithms are behavioral levers. Responsible design should reduce cognitive load without hiding risks, and regulatory approaches should focus on accountability and suitability rather than adoption alone. As digital finance becomes increasingly embedded in everyday life, the welfare question is not simply whether consumers adopt FinTech, but whether they can do so safely, confidently, and with meaningful support.

Appendix A. Construct Inventory and Hypotheses for Survey Measurement

This appendix translates the synthesis in the main text into a compact, survey-ready measurement layer for an accompanying survey study. It is intentionally citation-free: all constructs below are derived from the reviewed mechanisms and domains already discussed in the paper.

Appendix A.1. Construct inventory (survey-ready)

Appendix A.2. Compact hypotheses (survey-ready)

The synthesis supports a parsimonious mechanism-based hypothesis set for the accompanying survey study: (i) **Trust** positively predicts adoption and continuance (**H1**). (ii) **Perceived risk/privacy concerns** negatively predict adoption, partly via reduced trust (**H2**). (iii) **Perceived usefulness/convenience** positively predicts adoption and continued use (**H3**). (iv) **Cognitive frictions** reduce adoption and intensify drop-out/avoidance, especially among respondents with lower **capability** (**H4: moderation**). (v) **Confidence miscalibration** (overconfidence) predicts heavier reliance on digital finance despite objective capability and is associated with higher self-reported mistakes/regret (**H5**). (vi) **Human support preference/availability** mitigates low-trust and low-capability barriers, increasing willingness to adopt among more vulnerable groups (**H6: moderation**). Finally, demographic gaps (e.g., age and gender) should attenuate once **capability**, **trust**, and **inclusion constraints** are accounted for, consistent with a constraint-and-mechanism interpretation rather than pure preference differences.

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Data availability

No new data were created or analyzed in this study.

Table A.1: Construct inventory: definitions, example operationalizations, and analytic roles (suggested variable names in parentheses).

Construct	Core definition	Example operationalization (items/scales)	Primary role
Trust (TRUST_IDX)	Belief that the provider/system is competent, benevolent, and acts in the user’s interest.	Multi-item index: “I trust this provider with my financial decisions”; “I believe recommendations are reliable”; “I feel protected if something goes wrong” (Likert). Optional split: institutional trust vs technology trust.	Key mediator
Perceived risk & privacy concern (RISK_PRIV)	Anticipated downside from use (fraud, data misuse, errors, loss of control).	“Using digital finance exposes me to fraud”; “I worry about misuse of my personal data”; “I feel I could lose control over my money” (Likert).	Deterrent / mediator
Perceived usefulness & convenience (BENEFIT_CONV)	Expected net benefit in time, cost, ease, and service quality.	“It saves me time”; “It is easier than alternatives”; “It improves my financial management” (Likert).	Key predictor
Cognitive frictions (COG_LOAD)	Mental effort and complexity costs from interfaces, information, and disclosures.	“Too much information”; “Hard to understand”; “I feel overwhelmed when choosing settings/portfolios” (Likert). Optional: self-reported comprehension of disclosures (0–10).	Barrier / moderator
Digital & financial capability (CAP_IDX)	Ability to navigate digital tools and understand basic financial concepts relevant to the service.	Short objective quiz (3–6 items) + self-efficacy: “I can solve problems with financial apps”; “I understand key costs/risks” (Likert). Consider separating objective literacy (LIT_OBJ) and digital skill (DIG_SKILL).	Moderator
Confidence calibration (CALIB)	Gap between subjective confidence and objective capability (miscalibration/overconfidence).	Self-rated knowledge (0–10) minus objective quiz score (standardized). Higher values indicate overconfidence.	Predictor of risky use / heterogeneity
Human support preference (HUMAN_PREF)	Desire for access to a human advisor/support channel (hybrid model) and willingness to use it.	“I would adopt/use more if human support is available”; “I would pay for human support” (Likert + WTP range). “I prefer human advice for complex decisions.”	Moderator / policy lever
Inclusion constraints (INCL_BARR)	Non-preference constraints that limit adoption (access, affordability, language, disability, documentation).	Checklist + intensity: device/internet access; costs; language barriers; accessibility; ID/documentation; time constraints. Combine into an index (0–1).	Mechanism for gaps
Adoption and use outcomes (ADOPT_USE)	Uptake, continuance, intensity, and self-reported reliance on FinTech services.	Adoption (binary), usage frequency, feature use breadth, reliance (0–10), discontinuation reasons; optional: “mistakes/regret” frequency.	Outcomes

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