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Financial Literacy as a Moderator in Consumer Financial Decision-Making: A Systematic Literature Review

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Abstract: *Financial literacy (FL) is increasingly being viewed as a key moderator in financial behavior models, especially in the context of digital finance. This study explored how FL affects the relationship between psychological, technological, and structural variables and financial decision-making through a systematic literature review. A total of 51 relevant studies were identified through a targeted search of the Web of Science Core Collection, and 9 empirical studies that met the strict criteria were finally included. The results showed that FL most often moderated the core relationships in technology adoption models (such as TAM and TPB) and also played a role in explaining behavioral constructs such as regret aversion and social influence. Although most studies showed that FL has a significant positive moderation effect, there are still inconsistencies in measurement methods and theoretical frameworks. This review points out that research in this field is still in its initial development stage, showing emerging but fragmented characteristics, and proposes that future research can be further deepened in terms of theoretical integration, measurement standardization, and context expansion.*

Keywords: Financial Literacy; Moderating Effect; Technology Adoption; Behavioral Intention; Systematic Literature Review; Fintech Behavior

1. Introduction

1.1 Research Background

In the past decade, with the rapid development of financial technology, financial literacy (FL) has received increasing attention as an important factor affecting individual financial behavior (Zaimovic et al., 2023). Faced with the emergence of digital financial services such as mobile payments, e-wallets, and online investment platforms, users must not only master basic financial knowledge, but also have the ability to identify and assess related risks in order to make rational judgments in an environment of information asymmetry and rapid technological change (Chauhan, 2024).

Financial literacy is usually understood as the ability to master and apply basic financial concepts (Lusardi & Mitchell, 2007). Early studies mostly used it as a direct variable to predict behavioral outcomes such as savings habits, credit use, and financial product acceptance (Anderson et al., 2017). However, in recent years, research has gradually shifted to exploring its possibility as a moderating variable, focusing on how FL interacts with users' psychological

factors (such as trust, risk perception) and technical cognition (such as usefulness and ease of use) to influence their financial decision-making path (Wang et al., 2024).

Although this topic has aroused continuous academic interest, related research is still relatively scattered and lacks systematic theoretical integration. A literature search based on the Web of Science Core Collection shows that only 51 documents have entered the preliminary screening stage in empirical studies related to "financial literacy" and "moderating effect". These studies cover a variety of sub-fields, from mobile payments to investment choices and risk perception, and are analyzed based on different theoretical frameworks such as the Technology Acceptance Model (TAM), Diffusion of Innovation (DoI) and Risk Perception Model.

However, after applying strict inclusion criteria, only a few studies finally meet the review requirements and can be analyzed in depth. This phenomenon not only reveals that the field is still in the early stages of theoretical exploration, but also reflects the obvious deficiencies in model construction and research accumulation. At present, there is still a lack of cross-theoretical integration of FL regulation mechanisms, and few studies have attempted to sort out its action path under a unified framework. Bridging these fragmented cognitive gaps is the starting point and core appeal of this systematic review.

1.2 Research Objectives

This study uses systematic literature review and theoretical combining as the main methods, aiming to:

i. Summarize the conceptual definition and measurement methods of FL when it is used as a moderating variable in existing literature;
ii. Classify and summarize the types and application scenarios of financial behaviors where the moderating effect appears;
iii. Analyze the theoretical framework and methodological path used in current research;
iv. Evaluate the main deficiencies in the design and reasoning of related research;
v. Construct an integrated theoretical model to provide analytical tools and an explanatory basis for subsequent research.

1.3 Research Questions

Around the above goals, this paper intends to answer the following core questions:

i. How is financial literacy defined and operationalized as a moderating variable in existing research?
ii. Which areas of financial behavior involve the moderating effect of financial literacy?
iii. What are the limitations of current research in terms of results, consistency and method design?
iv. How to build a cross-theoretical integrated model to better capture the moderating mechanism of financial literacy in digital financial adoption?

1.4 Structure of the Paper

This paper is divided into six parts. Part 2 introduces the theoretical development of FL, focusing on the research evolution from predictive variables to moderating variables, and proposes an integrated model for this study. Part 3 systematically reviews the research on the moderating effect of FL in different behavioral contexts. Part 4 explains the method of literature review, including search path, screening criteria and analysis strategy. Part 5 reports the results of the review, and organizes and discusses the research trends, topic distribution and main findings. Part 6 summarizes the full text and puts forward theoretical inspiration, practical suggestions and future research directions.

2. Financial Literacy and Theoretical Background

2.1 Conceptualizing Financial Literacy

Financial literacy is usually understood as the ability of an individual to master and apply basic financial knowledge to make reasonable economic decisions (Lusardi & Mitchell, 2007). In this study, this concept is not only regarded as a cognitive ability, but also as an important variable that plays a regulatory role in financial behavior. In other words, FL not only affects the behavior itself, but also may regulate the impact of other factors (such as perceived usefulness, risk perception, etc.) on the behavior (Korkmaz et al., 2021). Especially in the context of digital finance, users' understanding of technology and financial knowledge are often directly related to their participation and judgment (Ye et al., 2022).

As digital financial products become increasingly complex, the connotation of FL has been continuously expanded, from the initial knowledge and skills of calculating interest or understanding inflation to multi-dimensional abilities including financial judgment, self-confidence, risk response, information comparison, and basic trust in the financial service system, especially when facing financial technology platforms (Choung et al., 2023).

2.2 Integration of Behavioral Models

To analyze the regulatory mechanism of FL more systematically, this study constructs a comprehensive theoretical framework that integrates three types of classic models:

i. The Technology Acceptance Model (TAM), which emphasizes the role of individuals' subjective perception of the usefulness and ease of use of technology in the formation of behavioral intentions (Davis, 1989);
ii. The Diffusion of Innovation (DoI), which reflects the differences in users' technology adoption through adopter categories (Rogers et al., 2005);
iii. The behavioral research path centered on risk, focusing on the inhibitory effect of perceived risk in technology acceptance (Featherman & Pavlou, 2003).
iv. In this framework, FL is placed at the regulatory level of the model, and its role is to change the way and intensity of users' responses to facilitating factors, such as perceived usefulness (PU), perceived ease of use (PEU), and inhibitory factors, such as perceived risk (PR).

2.3 The Moderating Role of Financial Literacy

In the multi-theoretical integration model, FL may play a regulatory role through two paths. The first is the regulatory role of perceived risk. Individuals with higher levels of knowledge tend to have stronger analytical ability and lower emotional response when evaluating the uncertainty brought about by financial technology products, and can better understand the nature of risk from a practical level. On the contrary, insufficient FL may lead to excessive vigilance or even refusal to adopt, even if the product itself has a high degree of security (Korkmaz et al., 2021).

Second, the moderating effect on other constructs (such as PEU, PU and adopter categories). Even if a technology is considered “easy to use” or “useful” by users, if there is a lack of understanding and confidence, especially among those with low FL, it may still be difficult to form an actual intention to use it (Ha et al., 2023).

Therefore, FL is not only a knowledge reserve, but also an ability foundation that affects how users identify, interpret and respond to information. It plays an important cognitive filtering function in the behavioral path.

2.4 Conceptual Model Description

Figure 1 is the conceptual framework proposed in this study: PU and PEU in TAM are the main path structures, PR is a potential risk suppression variable, and the adopter category in DoI theory reflects individual differences of users. FL, as a moderating variable, is interspersed between different paths and affects the mechanism of action between various constructs. In addition, the green module marks the topics of qualitative research, such as users' specific experience of technology readiness, trust in use, and digital cognition.

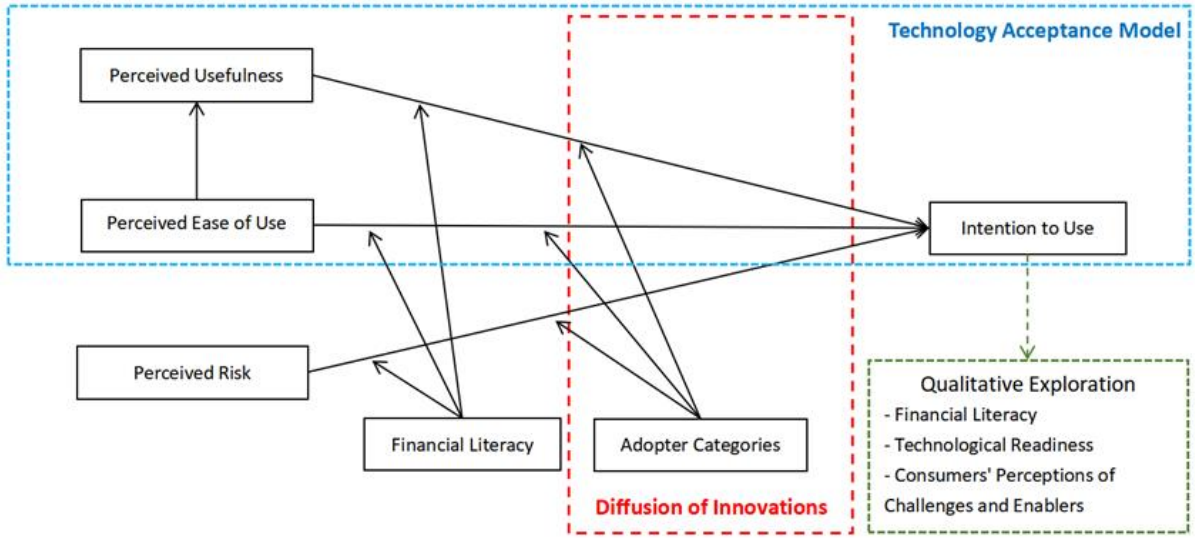

Figure 1: Conceptual Framework

2.5 Justification for the Model

The starting point for constructing this model is to respond to the shortcomings of existing research. Although TAM and DoI are widely used in the field of technology adoption, research on the regulatory role of FL in behavioral models is still relatively scarce, especially in a complex environment that considers user heterogeneity and perceived risk at the same time. The framework proposed in this paper aims to fill the theoretical gap, lay a solid foundation for subsequent quantitative and qualitative research, and provide theoretical tools for interpreting user behavior in the promotion of fintech products.

3. Literature Review on Financial Literacy as a Moderator

3.1 Overview of Existing Research

In recent years, research on the impact of FL on consumer financial behavior has continued to increase, especially focusing on credit management, savings behavior, investment decisions, and the use of financial technology (Negi & Jaiswal, 2024). Most early studies regarded FL as an independent variable that directly affects behavior, while recent studies have begun to try to understand its role in more complex models, especially its moderating effect when interacting with other variables.

Although this research path has gradually attracted attention, the current relevant literature is still relatively scattered. In different studies, the definition, measurement method, research object, and analysis focus of FL vary. More importantly, the use of FL in the moderation model often lacks solid theoretical support, the model structure is not unified, and there are also large differences in empirical methods, which affects the coherence and external applicability of the research accumulation.

In order to clarify the existing results, this chapter divides the relevant literature into four categories: one is the study of the impact of FL on financial technology adoption behavior, the second is its role in perceived risk regulation, the third is the relationship between FL and adopter characteristics, and the fourth is the empirical evaluation of existing moderating effect research.

3.2 Financial Literacy and Fintech Adoption Behavior

Many studies have attempted to introduce FL into theoretical frameworks such as the technology acceptance model (TAM), arguing that it can enhance the impact of perceived usefulness or ease of use on the willingness to use fintech. For example, Nguyen et al. (2022) found that FL significantly enhanced the explanatory power of perceived ease of use on rural consumers' willingness to use mobile banking. Albaity and Rahman (2019) pointed out that among digital wallet users, the higher the level of FL, the more positive the response to its usefulness. However, some studies, such as Lim et al. (2022), did not find a similar effect in samples, indicating that this moderating relationship may be affected by factors such as user background.

Overall, existing studies show that FL can enhance or adjust the path relationship in TAM in different ways, but this effect is not universal and often depends on the country, technology type or sample characteristics of the study.

3.3 Financial Literacy and Perceived Risk

Perceived risk is widely considered to be an important barrier to user adoption behavior. In many studies, FL is seen as a regulator of an individual's subjective ability to assess risk. As early as Chen and Volpe (1998), they found that respondents with higher levels of financial knowledge had significantly lower subjective perceptions of investment risk. Tan et al. (2019) also found that among digital payment users, those with high FL had a higher tolerance for uncertainty. However, in the context of low institutional trust, Hermansson and Jonsson (2021) showed that even with a certain level of financial knowledge, individuals tended to avoid using new financial services. These results suggest that FL cannot eliminate risk perception, but may help users better interpret and manage risks.

3.4 Adopter Categories and Consumer Segmentation

Although few studies have combined the DoI theory with FL systems, related discussions are often indirectly carried out in the form of user segmentation. Fan (2022) found that FL levels vary between different types of technology adopters, and early adopters tend to have higher financial understanding. Singh et al. (2024) further pointed out that the moderating effect of FL on fintech adoption varies among different user types, especially in the late adopter group, where this effect is more obvious.

Such studies suggest that FL may have stronger explanatory power and moderating effects among user groups with more conservative behavior or risk preference.

3.5 Empirical Support for Financial Literacy as a Moderator

Although many studies have begun to test the moderating effect of FL on financial behavior in recent years, there are still deficiencies in theoretical rigor and method application. Some studies use interaction terms in regression models or use multi-group structural equation models (SEM) to analyze the moderating path, but there are not many data that can provide clear theoretical support and cross-validation.

Some studies only focus on the interaction between two variables, such as simple structures, and rarely take potential variables such as trust, usage experience, and income level into consideration. Some literature also models FL as both a predictor and a moderating term. Although the model is more complex, it often lacks systematic theoretical logic, which affects the clarity of the analysis.

It is worth noting that studies using longitudinal data or experimental design to verify this moderating mechanism are still relatively rare, making it difficult for us to judge whether the moderating effect of FL varies with time, technology, or institutional environment.

Overall, the existing literature provides some support that FL may have a moderating effect on behavioral paths under certain conditions. However, this evidence is not sufficient and consistent. The reasons for this divergence are partly due to the differences in measurement tools, sample composition, and statistical processing methods used in the studies.

3.6 Identified Gaps and Implications

From the literature compiled in this review, the research on FL as a moderating variable has key shortcomings. First, limited theoretical integration. Although the TAM, the DoI and the perceived risk perspective are conceptually complementary, few studies have attempted to integrate them into a unified model for systematic testing.

Second, lack of consistency in measurement tools. Different studies have different definitions and measurements of FL, some emphasizing objective knowledge, while others focus on subjective cognition, resulting in a lack of comparability between research results.

Third, ignoring contextual differences. Factors such as cultural background, institutional environment, or the level of technology popularization may affect the moderating effect, but relevant discussions are still insufficient.

Besides, sample selection bias. Most studies focus on urban residents or young users, and pay less attention to the elderly, rural residents, or digital marginalized groups, which reduces the wide applicability of the conclusions.

Furthermore, weak qualitative perspective. Most current studies rely on quantitative tests, and few studies focus on how users understand FL and its role in behavior, which limits our in-depth understanding of its mechanism.

In summary, if we want to deepen our understanding of the moderating role of FL, it is necessary for future research to build a more integrated and explanatory theoretical framework, taking into account diverse samples and multidimensional measurements, and introducing qualitative methods to supplement the psychological mechanisms and contextual explanations behind the behavior. This study is based on this goal and attempts to build a systematic model to provide a theoretical basis for subsequent empirical exploration.

4. Methodology

4.1 Research Design

This study adopts the method of systematic literature review (SLR) to focus on the moderating role of FL in consumer financial behavior, especially in the context of financial technology application and risk perception. This method not only helps to identify repetitive findings and

potential blind spots in existing research, but also systematically sorts out theoretical frameworks and methodological paths to ensure the standardization and transparency of the review process.

During the operation, we referred to the PRISRM, Preferred Reporting Items for Systematic Reviews and Meta-Analyses, reporting standards and made appropriate adjustments based on the characteristics of behavioral science and social science research to ensure the repeatability of the research and the clarity of process records.

4.2 Database and Search Strategy

The literature source of this study is mainly the Web of Science Core Collection. This database is considered to be an authoritative source that meets the standards of this study because of its strict requirements on journal quality, wide academic influence and coverage of multiple disciplines. Considering the cross-disciplinary nature of FL, behavioral science and financial technology, the use of this platform can obtain more systematic research data.

The search period was set from 2010 to 2025, and the keywords were organized in Boolean logic as Table1 shows.

Table 1: Search Strategy and Keywords

Term1	Operator	Term2	Operator	Term3
"financial literacy"	AND	"moderator" OR "moderating effect"	AND	("technology adoption" OR "intention to use" OR "behavioral intention" OR "adoption intention" OR "fintech" OR "mobile payment" OR "digital payment" OR "digital finance" OR "risk perception" OR "investment behavior")

The search strategy covers three core topics: 1) the moderating role of FL in behavioral models, 2) theoretical perspectives on fintech acceptance and willingness to use, and 3) psychological and decision-making variables related to risk perception, investment behavior, etc. The search results were limited to English empirical journal articles, and conference abstracts, grey literature, and non-research publications were excluded. All literature was organized through EndNote to remove duplicates and irrelevant content.

4.3 Inclusion and Exclusion Criteria

To ensure relevance and methodological quality, the following inclusion and exclusion criteria were applied:

Table 2: Inclusion and Exclusion Criteria

Criteria Type	Description
Inclusion	- Peer-reviewed journal articles;
	- Empirical studies using quantitative, qualitative, or mixed methods;
	- Studies where financial literacy is tested as a moderating variable;
	- Focus on financial behavior (e.g., fintech adoption, investment, savings, credit, risk perception).
Exclusion	- Conceptual or theoretical-only articles;
	- Studies treating financial literacy solely as an independent or control variable;
	- Non-English publications;
	- Book chapters, editorials, conference papers, and other grey literature.

4.4 Screening Process

The literature screening process follows the PRISMA standard, and the screening stages are recorded as Figure 2 presents.

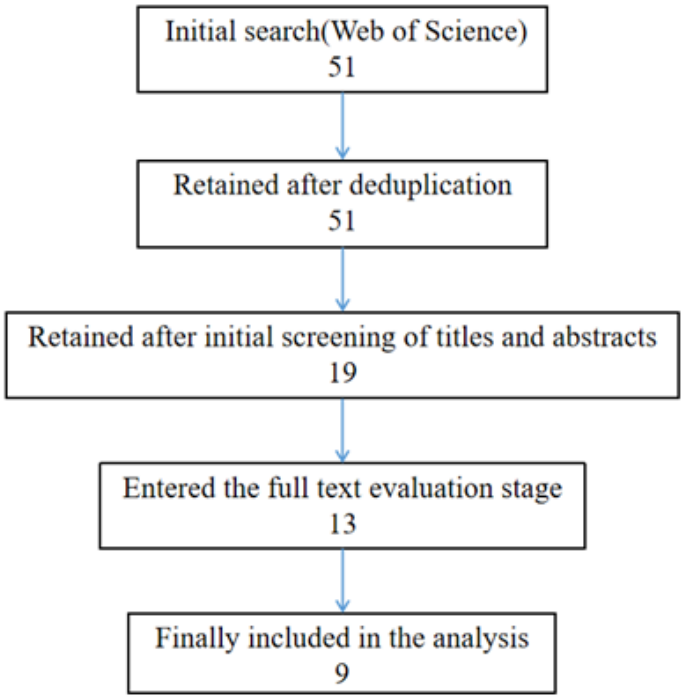

Figure 2: PRISMA-style Flowchart

4.5 Data Extraction and Coding Method

After completing the literature screening and identifying 9 studies that met the inclusion criteria, this study used a structured data extraction method to summarize and compare the core features of each study. This process aims to extract the commonalities and differences in the research, and then provide a basis for the construction of the conceptual model.

A standardized coding framework is designed to cover the following six main aspects:

i. Author and publication time: used to determine the time distribution and citation sources of the research;
ii. Research background and country region: to facilitate the identification of the impact of geographical or group differences on research results;
iii. Theoretical model used: such as TAM, Theory of Planned Behavior (TPB), Resource-Based View (RBV) theory or expectancy confirmation theory, to understand the theoretical support of the research;
iv. Research methods and sample characteristics: including data types, statistical tools used (such as SEM, PROCESS, PLS-SEM) and sample composition;
v. Modulation path setting: clarify the specific relationship between the variables moderated by FL, such as it moderates the connection between perceived risk and willingness to use;
vi. Research findings: briefly explain whether FL has a significant moderating effect and the actual impact on the final behavioral results.

Three of the documents were first processed experimentally before formal coding to test and refine the classification criteria. Detailed coding records and annotations were also retained during the research process to ensure the transparency of the decision-making process and the traceability of subsequent work.

The final extracted data was organized into a summary table as shown in Table 3, which clearly shows the use of FL as a moderating factor in various studies and its research focus. To improve readability, the article uses complete language to describe the moderating relationship and avoids using simplified symbols to ensure the accuracy of information transmission.

Table 3: Summary of Key Study Characteristics and Moderation Analysis

No.	Author (Year)	Country / Context	Theoretical Framework	Methodology	Moderated Relationship(s)
1	Adil et al. (2022)	India	Theory of Planned Behavior (TPB)	SEM + PROCESS Macro	FL moderates the relationships between attitude and investment intention, and between perceived behavioral control and investment intention
2	Raut and Kumar (2024)	India	Integrated TAM–TPB	SEM	FL moderates the relationship between perceived behavioral control and online trading intention
3	Singh et al. (2024)	India	Extended Technology Acceptance Model (TAM)	PLS-SEM	FL moderates the effect of social influence on the intention to adopt FinTech services
4	Chen et al. (2023)	China	Expectation Confirmation Theory	Ordered Probit + IV Regression on CHFS data	FL moderates the relationship between mobile payment usage and user satisfaction
5	Hidayat-ur-Rehman (2024)	Pakistan	RBV + Technological Innovation System	PLS-SEM + Hayes Moderation	FL moderates the relationship between digital transformation and FinTech adoption, and between FinTech adoption and competitiveness
6	Wangzhou et al. (2021)	China	Behavioral Finance – Regret Aversion	SEM + PROCESS Macro	FL moderates the relationships between regret aversion and investment behavior, and between information cascade and investment behavior
7	Kumari et al. (2023)	India	UTAUT2 + Subjective FL Framework	CB-SEM	FL moderates the relationship between performance expectancy and behavioral intention to use cryptocurrency
8	Peter et al. (2025)	India	Resource-Based View (RBV)	SEM	FL moderates the relationship between financial inclusion and firm performance
9	Rodrigues and Gopalakrishna (2024)	India	Integrated TAM–TPB	SEM	FL moderates the relationships between attitude, subjective norm, perceived behavioral control and intention to use digital finance

This table not only serves as a tool for literature overview, but also as the basic data for in-depth analysis and theme summary in Part 5.

4.6 Reliability and Validity Control

A number of measures were taken during the data extraction and coding process to ensure the reliability and consistency of the analysis. Before the formal extraction, the researcher randomly selected three articles from the final selected literature for preliminary trial coding, aiming to test and refine the classification criteria, especially in key links such as theoretical model classification, regulatory relationship identification and result summary, to ensure the unity of understanding and judgment.

Throughout the extraction process, a unified coding template was always used, and the decision log was recorded simultaneously, detailing the basis and explanation of each judgment. For some literature that needs to determine whether FL is explicitly modeled as a moderating variable, the researcher specially added explanatory notes in the coding table to minimize subjective interpretation bias.

From the perspective of external validity, the nine studies finally included covered a relatively rich research background and variable settings, covering multiple fields such as investment behavior, digital technology use, and online financial service satisfaction. The theoretical frameworks used include TAM, TPB, UTAUT2 and RBV, and the analysis methods are also different. This diversity in content helps to improve the scope of application of the research results. Although the total sample size is not large, it basically covers multiple economies and mainstream research paths in Asia, providing a good foundation for subsequent theoretical extension.

At the same time, this review emphasizes integrity and transparency when dealing with research results. Results that show insignificant or only partially significant moderating effects in the literature are also retained truthfully to avoid using significance as the only screening criterion to ensure the objectivity of the evaluation process and reduce bias.

4.7 Limitations of the Study

Although this study follows the standard process of systematic literature review in terms of methodology, there are still some limitations in the specific implementation process.

First, the literature search is limited to the Web of Science Core Collection. Although this database has advantages in quality control and academic authority, it may also miss relevant studies included in other databases, especially some empirical studies in the context of developing countries, or literature published in regional journals.

Secondly, since only English, peer-reviewed journal articles are included, language bias and publication bias may be introduced, resulting in representative research results in non-English contexts not being included, especially when FL research gradually expands to a wider range of national contexts, this bias may affect the overall representativeness.

Furthermore, the number of studies finally selected is limited, and only 9 documents meet all the inclusion criteria. This reflects to a certain extent that the current research on FL as a moderating variable is still in its infancy, and theoretical construction and empirical accumulation are still insufficient, which also limits the possibility of conducting larger-scale quantitative comprehensive analysis.

In addition, the geographical distribution of the included studies is relatively concentrated, and most of them are concentrated in South Asia and East Asia. These countries are representative in the development of financial technology, but their research findings may not be directly generalized to regions with different cultural backgrounds, especially European and American or African countries, as well as specific vulnerable groups such as rural elderly people or financially excluded people.

Finally, different studies have different ways of measuring FL, some use objective test questions, and some rely on self-assessment. This difference limits the possibility of horizontal comparison of the intensity and mechanism of the moderating effect, and also suggests that

there is still room for improvement in the standardization of measurement tools in future research.

Despite the above limitations, this review still integrates the current relatively scattered research results through a systematic and prudent method, clarifies the existing evidence base, and provides a clear direction for subsequent research in deepening theory and expanding methods.

5. Findings and Discussion

5.1 Overview of Moderation Pathways

After analyzing the 9 empirical studies included, it can be found that FL is increasingly regarded as a moderating variable in the context, rather than just a direct driver affecting financial behavior. It is more used to explain the different responses of different individuals when facing similar technical or behavioral stimuli, that is, it plays an amplifying or weakening role in the relationship between psychological, behavioral or technical variables.

In the existing literature, FL mainly appears as a moderating factor in the following three types of path structures: one is the technology acceptance model represented by TAM, TPB and UTAUT2; the second is the theoretical path based on behavioral finance, such as regret aversion or social influence; the third is the structural model focusing on the enterprise or institution level, such as the RBV or the digital transformation perspective. Except for the study of Peter et al. (2025), the other eight papers all found significant positive moderating effects, indicating that FL often strengthens the positive relationship between the independent variable and the dependent variable.

5.2 Moderation in Technology Adoption Models

Among all included studies, five adopted TAM, TPB or their derivative models as theoretical frameworks.

Adil et al. (2022) and Rodrigues and Gopalakrishna (2024) found that FL can enhance the impact of attitudes, subjective norms, and perceived behavioral control on investment intentions or willingness to use financial technology. Raut and Kumar (2024) pointed out that in online trading situations, users with higher FL responded more strongly to their sense of control, thereby increasing their behavioral intentions. Singh et al. (2024) further showed that FL can weaken the role of social influence, indicating that it has a moderating function in strengthening individual autonomous decision-making. Kumari et al. (2023) found that FL strengthened the connection between performance expectations and the adoption of crypto assets.

These results show that FL can effectively help users understand and accept new financial technologies, especially in environments with high perceived risks, when the technology is not yet popular or there is uncertainty.

5.3 Moderation in Behavioral Finance Contexts

Two other studies explored the role of FL in the mechanism of psychological variables from the perspective of behavioral finance.

Wangzhou et al. (2021) pointed out that FL helps to reduce the negative impact of regret avoidance or information following behavior in investment decisions and enhance individuals'

independent judgment. Chen et al. (2023) found that FL enhances the connection between mobile payment experience and user satisfaction, especially among users with relatively limited financial experience.

It can be seen that FL not only plays a role in rational analysis, but also affects individuals' interpretation and response to emotional and social interference.

5.4 Moderation in Structural and Organizational Models

Two other studies expanded the perspective to a more macroscopic structural and organizational level. Hidayat-ur-Rehman (2024) found that the FL level of employees in enterprises can amplify the role of digital transformation in promoting financial technology adoption and organizational competitiveness. However, when Peter et al. (2025) studied the financial inclusion and business performance of female enterprises in India, they did not observe a significant moderating effect of FL. This result suggests that in a specific context, factors such as institutional constraints or resource accessibility may be more decisive than personal literacy.

5.5 Cross-Study Observations

On the whole, the following cross-phenomena are more prominent. First, the moderating effect of FL is positive in most studies, that is, it can enhance the relationship strength between the original variables. Second, the measurement methods of FL are not uniform, and some are measured through subjective perception questionnaires, while others are evaluated with objective test questions, which causes certain comparability barriers. Besides, the research samples are mainly Asian countries, especially India, China and Pakistan. Although this reflects the region's leading position in the development of financial technology, it also limits the ability to extrapolate the research results in other cultural or institutional contexts. Moreover, the model structure adopted by most studies is relatively simple, and there is less comprehensive application of cross-theory, which to a certain extent limits the comprehensive understanding of complex behavioral mechanisms.

5.6 Implications for Future Research

First, the study of the moderating effect of FL in different national and regional contexts should be strengthened, especially for rural and marginalized groups in Africa, Latin America and high-income countries. Second, promoting the standardization and cross-cultural adaptation of FL measurement tools will help improve the horizontal comparability and theoretical explanatory power of research.

In addition, in the future, it is possible to consider exploring nonlinear moderating relationships and testing whether there is a certain FL “threshold” - that is, above a certain level, the moderating effect tends to stabilize or reverse. Finally, it is encouraged to combine TAM, DoI with risk theory, institutional theory, etc. to build a more explanatory multi-theoretical framework and have a deeper understanding of the role of FL in behavioral decision-making.

6. Conclusion and Future Directions

6.1 Research Review

This study systematically reviews the role of FL as a moderating variable in financial behavior and technology adoption models, and analyzes nine peer-reviewed empirical studies from 2010 to 2025, aiming to sort out the conceptual definition, measurement methods and practical application of FL in different behavioral theory frameworks.

Through a structured screening and coding process, the study found that FL is most often used to moderate the relationship between technology-related perceptions (such as attitudes, performance expectations, and social influence) and behavioral intentions. Some studies also show that FL plays a certain role in some structural or psychological mechanisms (such as digital transformation or regret aversion), although it is relatively rare. In addition, the theoretical models used in related studies vary significantly, ranging from the TPB, TAM, to RBV and behavioral finance, reflecting the fragmentation trend of current research in theoretical construction and its evolving state.

6.2 Key Contributions

First, at the theoretical level, by synthesizing the results of nine different studies, it highlights the role of FL as a situational moderator, rather than just a direct predictor of behavior. This finding provides theoretical support for building a composite model that integrates multiple perspectives of psychology, technology, and structure.

Second, the study classified the relationship paths mediated by FL (such as from behavioral control to behavioral intention, from regret to investment behavior), providing a clear path map for future empirical research and model construction.

Finally, the empirical evidence obtained in this review provides support for the conceptual model proposed in Chapter 2. The model incorporates behavioral control, expected results, and risk perception into the regulatory framework of FL, emphasizing its integrative role in interdisciplinary fields.

6.3 Practical Implications

For financial educators, research shows that improving FL is not only about increasing knowledge reserves, but more importantly, it is about enhancing individuals' ability to identify, understand, and respond to complex financial information in a digital environment.

For policymakers, in addition to focusing on the popularity and accessibility of financial products, they should also pay more attention to financial education interventions tailored to local conditions, especially in emerging economies and vulnerable groups in society.

For fintech practitioners, understanding how FL affects users' cognition and use of fintech products will help design more inclusive, easy-to-understand and trustworthy product interfaces, especially for low-literacy groups.

6.4 Research Limitations

First, the data source is limited to the Web of Science database, and only English literature is included, which may have a narrow search scope.

Second, only nine articles finally met the strict inclusion criteria, and the limited sample size may affect the wide applicability of the research results.

Third, the measurement methods of FL in different studies are not consistent, which has a certain impact on the comparability of studies.

Finally, most samples come from South Asia and East Asia, and the results may not fully reflect the diversity of financial behavior in the global context.

Despite these limitations, they further highlight that this field is still in its early stages of development and urgently needs more diverse follow-up research in terms of geography, theory, and method.

6.5 Recommendations for Future Research

First, the geographical and demographic scope of the research objects should be expanded, focusing on underrepresented groups such as the elderly, rural users, and female entrepreneurs from low-income countries, and strengthening research coverage in regions such as Africa and Latin America.

Second, it is necessary to build a unified and multidimensional FL measurement tool that combines objective knowledge and subjective cognition to improve the comprehensiveness and consistency of measurement.

Third, it is recommended to further test the applicability of the comprehensive theoretical model, integrate factors such as TAM, TPB, DoI, risk perception, and institutional theory, and include FL as a dynamic moderating variable.

Fourth, in the future, the boundary conditions and nonlinear characteristics of the moderating effect of FL can be explored, such as whether there is a “diminishing returns” phenomenon under the trust foundation or digital skills threshold.

Fifth, longitudinal research designs are encouraged to more comprehensively reveal the changes and impacts of FL in the time dimension, especially the dynamic response in the face of sudden economic shocks or policy adjustments.

6.6 Summary

This review systematically integrates the research progress of FL as a regulatory mechanism in behavioral models for the first time. Studies have shown that FL can not only help individuals improve the quality of decision-making, but also affect their information processing methods, risk response strategies and technology adoption willingness. In the current situation where the financial environment is becoming increasingly complex and individual responsibilities are constantly increasing, a deep understanding of the mechanism of FL has become the common key to deepening theory and reforming practice.

References

Adil, M., Singh, Y., & Ansari, M. S. (2022). Does financial literacy affect investor's planned behavior as a moderator? Managerial Finance, 48(9/10), 1372-1390.

Albaity, M., & Rahman, M. (2019). The intention to use Islamic banking: an exploratory study to measure Islamic financial literacy. International Journal of Emerging Markets, 14(5), 988-1012.

Anderson, A., Baker, F., & Robinson, D. T. (2017). Precautionary savings, retirement planning and misperceptions of financial literacy. Journal of Financial Economics, 126(2), 383-398.

Chauhan, V. (2024). Understanding users' protective behavior and its suppressor effect on the perceived risk in M-wallet/banking use: An Indian urban-rural comparison. Technological Forecasting and Social Change, 201, 123255.

Chen, F., Jiang, G., & Xiao, J. J. (2023). Mobile payment use and payment satisfaction: mediation and moderation analyses. International Journal of Bank Marketing, 41(4),

727-748.
Chen, H., & Volpe, R. P. (1998). An analysis of personal financial literacy among college students. Financial services review, 7(2), 107-128.
Choung, Y., Chatterjee, S., & Pak, T.-Y. (2023). Digital financial literacy and financial well-being. Finance Research Letters, 58, 104438.
Davis, F. D. (1989). Technology acceptance model: TAM. Al-Suqri, MN, Al-Aufi, AS: Information Seeking Behavior and Technology Adoption, 205-219.
Fan, L. (2022). Mobile investment technology adoption among investors. International Journal of Bank Marketing, 40(1), 50-67.
Featherman, M. S., & Pavlou, P. A. (2003). Predicting e-services adoption: a perceived risk facets perspective. International journal of human-computer studies, 59(4), 451-474.
Ha, D., Şensoy, A., & Phung, A. (2023). Empowering mobile money users: The role of financial literacy and trust in Vietnam. Borsa Istanbul Review, 23(6), 1367-1379.
Hermansson, C., & Jonsson, S. (2021). The impact of financial literacy and financial interest on risk tolerance. Journal of Behavioral and Experimental Finance, 29, 100450.
Hidayat-ur-Rehman, I. (2024). The role of financial literacy in enhancing firm's sustainable performance through Fintech adoption: a moderated mediation analysis. International Journal of Innovation Science.
Korkmaz, A. G., Yin, Z., Yue, P., & Zhou, H. (2021). Does financial literacy alleviate risk attitude and risk behavior inconsistency? International Review of Economics & Finance, 74, 293-310.
Kumari, V., Bala, P. K., & Chakraborty, S. (2023). An empirical study of user adoption of cryptocurrency using blockchain technology: analysing role of success factors like technology awareness and financial literacy. Journal of Theoretical and Applied Electronic Commerce Research, 18(3), 1580-1600.
Lim, X. J., Ngew, P., Cheah, J. H., Cham, T. H., & Liu, Y. D. (2022). Go digital: can the money-gift function promote the use of e-wallet apps? Internet Research, 32(6), 1806-1831.
Lusardi, A., & Mitchell, O. S. (2007). Baby boomer retirement security: The roles of planning, financial literacy, and housing wealth. Journal of Monetary Economics, 54(1), 205-224.
Negi, P., & Jaiswal, A. (2024). Impact of financial literacy on consumer financial behavior: A systematic review and research agenda using TCCM framework. International Journal of Consumer Studies, 48(3), e13053.
Nguyen, Y. T. H., Tapanainen, T., & Nguyen, H. T. T. (2022). Reputation and its consequences in Fintech services: the case of mobile banking. International Journal of Bank Marketing, 40(7), 1364-1397.
Peter, S., Elangovan, G., & Vidya Bai, G. (2025). Unveiling the nexus: Financial inclusion, financial literacy, and financial performance as catalyst for women-owned enterprises in India. Journal of the International Council for Small Business, 1-31.
Raut, R. K., & Kumar, S. (2024). An integrated approach of TAM and TPB with financial literacy and perceived risk for influence on online trading intention. Digital Policy, Regulation and Governance, 26(2), 135-152.
Rodrigues, C. G., & Gopalakrishna, B. (2024). Financial literacy–a regulator of intended investment behaviour: analysing the hypothetical portfolio composition. Managerial Finance, 50(5), 837-853.
Rogers, E. M., Medina, U. E., Rivera, M. A., & Wiley, C. J. (2005). Complex adaptive systems and the diffusion of innovations. The innovation journal: the public sector innovation journal, 10(3), 1-26.
Singh, R., Rafat, A., & Srivastava, S. (2024). Payment Fintech application adoption in low–

income groups: How financial literacy moderates influencing factors? Journal of Science and Technology Policy Management.

Tan, J. D., Purba, J. T., & Widjaya, A. E. (2019). Financial technology as an innovation strategy for digital payment services in the millenial generation. 1st Aceh Global Conference (AGC 2018),

Wang, G., Zhang, M., & He, B. (2024). Financial literacy and investment returns: The moderating effect of education level. Finance Research Letters, 67, 105781.

Wangzhou, K., Khan, M., Hussain, S., Ishfaq, M., & Farooqi, R. (2021). Effect of regret aversion and information cascade on investment decisions in the real estate sector: The mediating role of risk perception and the moderating effect of financial literacy. Frontiers in Psychology, 12, 736753.

Ye, Y., Pu, Y., & Xiong, A. (2022). The impact of digital finance on household participation in risky financial markets: Evidence-based study from China. Plos One, 17(4), e0265606.