

From knowledge to action: how financial, digital, and crypto literacies and cognitive schemas shape digital financial behavior in an emerging economy

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Abstract

Purpose – Digitalization has profoundly transformed the financial sector, creating a new generation of digital financial products and services. Although research on financial behavior in digital contexts is extensive, most studies focus on single technologies, leaving the broader determinants of digital financial behavior (DFB) unexplored. DFB refers to the use of digital channels to access and manage financial services. This study aims to address the gap by examining how financial knowledge (FK), digital literacy (DL), crypto-literacy (CL) and the Perfect Automation Schema (PAS) shape DFB in an emerging economy. Drawing on Knowledge Management (KM) theory, these literacies are interpreted as forms of Personal Knowledge Management (PKM) that enable user engagement with digital finance.

Design/methodology/approach – The study relies on data collected from a representative sample of 304 Albanian users through a structured questionnaire. Multivariate regression analysis is used to test the hypotheses on the determinants of users' DFB.

Findings – Results show that higher levels of awareness are associated with more active DFB, highlighting the relevance of both foundational knowledge and crypto-related expertise. PAS also significantly influences users' engagement, revealing that cognitive schemas toward automation can either foster or inhibit the adoption of digital financial systems.

Originality/value – This study extends the KM literature to the financial and digitalization domains through a user-centric perspective, proposing a multidimensional measure of DFB that captures users' attitudes toward



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adopting digital channels. It further enriches research on emerging economies by providing unique empirical evidence and valuable insights into the underexplored context of Albania.

Keywords Digital financial behavior, Financial knowledge, Digital literacy, Cryptocurrency literacy, Perfect automation schema, Emerging economies

Paper type Research paper

1. Introduction

In recent years, digitalization has profoundly revolutionized the financial sector, giving rise to a new generation of digital financial products and services (De Oliveira Santini, 2018; Eren, 2021; Lyons *et al.*, 2022). The integration of advanced technologies has not only improved efficiency and performance but also redefined the structure of the financial industry, creating both opportunities and challenges for institutions and consumers (European Banking Authority, 2017; European Commission, 2022).

In line with previous studies examining the challenges of adopting digital technologies in financial services (Rahman *et al.*, 2023), this work shifts the perspective from financial institutions to consumers. It analyses the barriers and enabling factors at the user level that influence engagement with digital financial products.

From an information and knowledge management (KM) perspective, the effectiveness of digital transformation depends on how technologies enable the creation and sharing of relevant knowledge, which in turn influences decision quality and adoption outcomes (Cham *et al.*, 2016; Al-Okaily *et al.*, 2023). In the banking context, empirical studies show that the perceived success of digital initiatives relies on the alignment between process integration, information quality and end-user interaction (Cham *et al.*, 2016). Based on KM research but adopting Chatti's (2012) Personal Knowledge Management (PKM) and Personal Knowledge Network (PKN) perspective, this study conceptualizes knowledge as a personal network composed of external nodes and internal "theories-in-use" that guide learning and action. Within this perspective, users' engagement with digital financial systems can be viewed as a knowledge-driven process, in which individual literacies function as personal knowledge assets that support learning, evaluation and decision-making in today's financial contexts.

These digitally mediated financial ecosystems could be understood as knowledge-intensive environments in which users are required not only to access information but also to reorganize and internalize it to act effectively. In knowledge-intensive contexts, individual capabilities to structure, absorb and mobilize knowledge become central to behavioral outcomes (Shujahat *et al.*, 2021).

Importantly, beyond the financial innovations themselves, both adaptable and substantive, it is essential to examine the user perspective and assess individuals' inclination toward digitalization within the financial sector. The mere existence of these tools does not guarantee their adoption; rather, it is heavily influenced by users' capacity to access and use them effectively, which is determined by their financial literacy (FL) and digital skills (Misati *et al.*, 2024).

Today, consumers manage their finances through mobile apps, websites and AI-driven platforms, a trend accelerated by advancements in fintech and the COVID-19 pandemic (Lyons and Kass-Hanna, 2021). Given the central role of digital interactions in shaping consumer engagement with financial services (Uribe-Linares *et al.*, 2023), it is crucial to transition from the study of traditional financial behavior to digital financial behavior (DFB).

While some research has examined user resistance to digital innovation (Talwar *et al.*, 2024), this study focuses on the factors that encourage users to choose digital channels in financial contexts. Despite the extensive literature on financial behavior in digital settings,

studies specifically analyzing the determinants of DFB remain limited. Most have focused on isolated outcomes, such as spending (Cobla and Osei-Assibey, 2018; Agarwal *et al.*, 2019), savings (Apiors and Suzuki, 2018) or access to credit (Suri *et al.*, 2021), whereas fewer have explored the broader range of digital financial activities, from opening online accounts to using virtual assistants for financial advice. This study addresses this gap by investigating how individual-level factors shape engagement across multiple digital financial activities.

Building on existing literature, we emphasize the importance of financial knowledge (FK) and digital literacy (DL) as critical factors in enabling informed and responsible engagement with digital financial services (DFSs) (Lyons and Kass-Hanna, 2021; Lo Prete, 2022). In addition to FK and DL, we extend the research by examining the emerging role of cryptocurrency literacy (CL), given the growing prominence of digital currencies in the financial landscape. Furthermore, we consider how cognitive schemas – mental models that people use, often unconsciously, to organize and make sense of information from their environment (Fiske and Linville, 1980; Fiske and Taylor, 1991) – particularly the Perfect Automation Schema (PAS), influence individuals' trust in automated systems (Merritt *et al.*, 2015).

We therefore assume that these literacies enhance users' capability to engage with digital financial systems, while the PAS represents a perceptual mechanism shaping trust and acceptance toward automation, both jointly influencing users' DFB.

In pursuit of this research goal, this study focuses on Albania, an emerging economy that warrants attention for three main reasons. First, according to the integrated digitalization index in financial services, Balkan countries rank among the lowest (Pakhnenko *et al.*, 2021). Second, in recent years, Albanian banks have maintained a central role in the financial system, with physical branches remaining prevalent, particularly in rural areas and among older populations. However, the adoption of digital banking is steadily increasing despite persistent challenges. World Bank data (2024) reveals that the percentage of adults with a bank account rose from 28% in 2011 to 44% in 2021, indicating progress in financial inclusion. The use of digital payments also expanded from 22% in 2014 to 35% in 2021. Nevertheless, mobile money adoption remains low, with an index ranging from 0.20 to 0.39 (GSMA, 2023). Salary deposits increased from 54% in 2014 to 65% in 2021, while digital tools for utility payments are still underused, with only 4% of adults using them in 2021. As Albanian banks, previously resistant to fintech innovations (Apostu *et al.*, 2023), undergo digital transformation, the country provides a distinctive case for understanding the dynamics of digital financial adoption in a developing economy. Third, most studies in DFB focus on developed countries, making it interesting to explore different settings. Accordingly, this study bridges a gap in the literature by offering an in-depth examination of Albania's evolving financial landscape, facilitating comparisons with both emerging and developed economies.

Results from a multivariate regression analysis of 304 users support the hypotheses that FK and CL are positively and significantly related to DFB. Additionally, the findings suggest a positive association between increased DFB activity and a positive cognitive schema toward automated systems.

This study offers three main theoretical contributions. First, it conceptualizes DFB as a multidimensional, channel-choice outcome. Second, it extends KM theory to the individual level through the PKM framework. Third, it provides empirical evidence from an understudied context, thereby contributing to understanding user engagement in digital finance. From a practical perspective, the study also highlights variables relevant to promoting financial inclusion and, from a KM viewpoint, emphasizes the importance of

digital systems that enable knowledge creation, sharing and utilization. This is particularly crucial in emerging contexts where digital transformation is still in its early stages.

The remainder of the paper is organized as follows: Section 2 presents the literature review and the development of research hypotheses. Section 3 explains the methodology used. Section 4 presents and discusses the results of the empirical analysis. Finally, Section 5 presents the research conclusions, along with theoretical and practical implications and directions for future research.

2. Literature review and hypotheses development

Innovation is widely recognized as the primary engine of organizational competitiveness, yet sustaining it requires effective KM systems that enable firms to develop and refine new products and services (Aydin and Dube, 2018; Magnier-Watanabe and Benton, 2017). Within the Knowledge-Based View of the Firm (Grant, 1996), knowledge is conceived as a strategic intangible asset that shapes organizational capabilities and supports innovation through systematic processes of acquisition, integration and utilization (Turulja and Bajgorić, 2018). Prior research confirms that KM transforms dispersed information into productive knowledge and fosters organizational learning (Fazili and Khan, 2016; Dahiyat, 2015).

In dynamic environments such as the financial sector, KM plays an essential role in enabling digital financial innovation by leveraging knowledge as a strategic resource (Al-Dmour *et al.*, 2021). In this domain, empirical evidence shows that KM processes, particularly knowledge acquisition, integration and utilization, positively influence digital financial innovation and the effectiveness of enterprise information systems (Chen and Huang, 2009; Al-Dmour *et al.*, 2021; Al-Okaily *et al.*, 2023).

Despite this growing body of research, most KM studies in financial contexts adopt a predominantly organizational perspective, emphasizing how knowledge processes drive innovation and performance within financial institutions (Al-Dmour *et al.*, 2021; Al-Okaily *et al.*, 2023). However, this firm-centric approach overlooks how individual users acquire and apply knowledge when engaging with digital financial systems.

At the individual level, knowledge processes operate through the acquisition of relevant information, its integration within existing cognitive structures and its utilization in decision-making contexts, thereby enabling the transformation of information into actionable personal knowledge (Razmerita *et al.*, 2009; Shujahat *et al.*, 2021). Understanding these micro-level mechanisms is therefore essential for explaining how digital financial innovation is enacted in practice.

To address this gap, we adopt Chatti's (2012) PKM and PKN perspective, which conceptualizes knowledge as a constantly evolving personal network of tacit and explicit elements that individuals activate, reorganize and apply according to their goals and contexts. PKM has emerged as a key framework for understanding how individuals structure and mobilize knowledge across contexts and over time, shaping competencies, cognition and learning processes (Razmerita *et al.*, 2009; Shujahat *et al.*, 2021). From this perspective, PKM represents a dynamic, adaptive extension of KM, focused on individuals and their informational and social connections, rather than on top-down organizational processes.

Knowledge absorption within PKM extends beyond simple comprehension to involve cognitive restructuring and schema modification, through which individuals reinterpret and internalize information into their cognitive frameworks (Böhm and Durst, 2026). These processes reflect the transformation of tacit and explicit knowledge and explain how personal knowledge becomes actionable in complex and technology-mediated environments.

Applying this reasoning to the financial domain, PKM provides a coherent framework for understanding how users manage knowledge when navigating digital ecosystems. Whereas banks use KM to foster innovation (Sofiyabadi and Valmohammadi, 2020), individuals rely on PKM-related capabilities, such as financial, digital and crypto literacies, as well as cognitive schemas, to acquire, combine and apply knowledge in their decision-making. Within this view, DFB is interpreted as the behavioral outcome of these personal knowledge processes, through which users access, manage and interact with financial products and services via digital channels.

This interpretation complements established technology adoption frameworks that have examined user engagement with DFSs in depth. Among the most important is the Technology Acceptance Model (TAM) (Davis, 1989), which posits that perceived usefulness and perceived ease of use determine attitudes and behavioral intentions toward information technologies. TAM has been widely applied to digital payment systems (Kim *et al.*, 2010; Liu *et al.*, 2019), mobile banking and internet banking (Hanafizadeh *et al.*, 2014; Alalwan *et al.*, 2017) and diversified digital financial solutions (Belanche *et al.*, 2019; Seiler and Fanenbruck, 2021; Flavián *et al.*, 2021; Aw *et al.*, 2023).

Similarly, the Unified Theory of Acceptance and Use of Technology (UTAUT) highlights performance expectancy, effort expectancy, social influence and facilitating conditions as key determinants of behavioral intention and usage behavior, particularly in banking and FinTech contexts (Alalwan *et al.*, 2016; Tomić *et al.*, 2023). Extensions of UTAUT incorporating trust and perceived risk further demonstrate the complexity of adoption dynamics in financial environments (Farah *et al.*, 2018; Payne *et al.*, 2018; PH, 2023).

While these models provide robust explanations of behavioral intention and technology usage, they primarily focus on attitudinal and expectancy-based determinants of adoption. They offer limited insight into how the underlying knowledge structures enabling these perceptions are formed and mobilized at the individual level. In highly digitalized and knowledge-intensive financial ecosystems, users' perceptions of usefulness, effort and performance are likely to be shaped by their ability to acquire, integrate and apply domain-specific knowledge.

Therefore, by integrating a PKM perspective, the present study conceptualizes DFB not only as a function of attitudes toward technology but also as the outcome of individual knowledge processes that precede and shape technology-related perceptions and engagement.

More specifically, digitization has profoundly impacted the banking industry, leading to the emergence of new products and services (De Oliveira Santini, 2018; Eren, 2021; Hua *et al.*, 2019; Rajaobelina and Ricard, 2021; Valsamidis *et al.*, 2020). This has entailed a technological infrastructure transformation characterized by the increasing automation of customer interactions (Koskelainen *et al.*, 2023). Simultaneously, integrating advanced digital technologies, such as chatbots, recommendation engines and automated services, is increasingly essential for enhancing the user experience, especially in the financial sector (Rana *et al.*, 2022). From an information and KM perspective, these technologies do more than improve efficiency; they enable new forms of interaction and decision-making that depend on users' ability to process and apply digital information effectively (Cham *et al.*, 2016; Al-Okaily *et al.*, 2023). Consequently, understanding user adoption of digital channels requires considering knowledge-related factors that drive engagement with DFSs.

At the European level, digital innovation in the banking sector varies considerably. According to Pakhnenko *et al.* (2021), northern countries such as Norway, Denmark, Finland and Sweden show advanced levels of digitization, whereas the Balkans lag behind. Despite this gap, the World Bank (2020) reports a growing presence of FinTech enterprises in the

region. Within this context, Albania offers a particularly relevant case for examining users' DFB, as its financial system combines traditional banking with emerging fintech initiatives, providing valuable insights into financial inclusion and innovation dynamics.

Most research on financial behavior has focused on developed countries. Studies have demonstrated that FK plays a critical role in shaping financial behavior (Goyal and Kumar, 2021), influencing borrowing choices (Gutiérrez-Nieto *et al.*, 2017), wealth accumulation and investment strategies (Deuflhard *et al.*, 2019). Elevated FK levels promote financial inclusion (Grohmann *et al.*, 2018), while financial errors are often linked to financial illiteracy (Bajo and Barbi, 2018). In line with a PKM perspective, FK can be interpreted as a personal knowledge asset that individuals develop and mobilize across contexts to support decision-making and action (Razmerita *et al.*, 2009; Shujahat *et al.*, 2021). In this sense, FK is not only associated with awareness but also with individuals' ability to structure and use financial information in ways that become behaviorally meaningful.

More recently, Kumar *et al.* (2023) used self-administered questionnaires and collected data from 394 respondents to analyze how FL affects both financial behavior and financial well-being among individuals in an emerging economy, such as the National Capital Region in India. The results show that higher levels of FL are associated with better financial behavior and financial well-being, confirming that greater awareness can lead to more effective financial decisions and, consequently, greater financial stability and satisfaction. Moreover, prior literature highlights how FL facilitates the adoption of DFSs, particularly in emerging contexts where financial inclusion is often limited (Shen *et al.*, 2020; Königsheim *et al.*, 2017).

In this context, a high level of FK not only empowers users to make more informed and knowledgeable financial choices but also steers them toward more active and sophisticated DFB, fostering greater participation in digital financial markets and the adoption of new financial technologies. In financial contexts, behavioral outcomes depend on the application of knowledge to monetary decisions and risk evaluation and the knowledge component is particularly salient in enabling literacy to translate into behavior (Oladapo, 2024). Accordingly, FK should be expected to support more active engagement with DFSs by strengthening individuals' capacity to interpret financial information, evaluate alternatives and enact decisions through digital channels.

Nevertheless, no research so far has taken a more holistic approach to understanding the complex nature of DFB across various digital tools and services. Instead of focusing on isolated behaviors or a small subset of them, this paper offers a new contribution to the field by examining DFB as a combination of multiple behaviors spanning different financial products and services. Additionally, acknowledging that digitalization in finance includes not only the introduction of new products and services but also the digital delivery of traditional ones, our study looks at the demand for classic financial products, such as bonds, stocks and insurance, through digital platforms like websites and mobile apps, instead of the conventional methods like bank branches. Therefore, we propose the following research hypothesis:

H1. A higher level of FK is associated with a more active DFB.

The evolution of technology underscores the need to consider DL, particularly as the spread of DFSs has accelerated due to the COVID-19 pandemic and the rise of fintech companies (Lyons *et al.*, 2022). In this context, DL emerges as a vital factor for fostering financial inclusivity and resilience (Kass-Hanna *et al.*, 2021). The importance of DL is increasingly recognized as a crucial factor for the adoption and effective use of DFSs.

In an increasingly digitized world, DL not only facilitates access to a wide range of online financial services but also improves financial inclusion (Kass-Hanna *et al.*, 2021; Lyons and Kass-Hanna, 2021). The intersection between DL and FL has given rise to the concept of digital financial literacy (DFL), which integrates digital and financial skills to improve financial outcomes in the digital landscape (Lo Prete, 2022). Within emerging markets where access to traditional banking services is often limited, DFL becomes a key determinant for financial inclusion (Morgan *et al.*, 2019). Along these lines, Andreou and Anyfantaki (2021) observe that DFL is a significant barrier to financial inclusion, as it prevents people from using DFS effectively. Other studies conducted in emerging economies, such as those in South Asia and sub-Saharan Africa, have confirmed that higher levels of DL are essential to promoting more resilient and inclusive financial behavior (Kass-Hanna *et al.*, 2021).

Furthermore, DL has been identified as a critical factor in the adoption of digital payment instruments and in promoting the use of DFS, even in emerging market contexts (Rana *et al.*, 2020). Conversely, the lack of DL is a significant barrier that hinders the adoption of these services and limits the participation of the unbanked population in digital financial markets (Morgan *et al.*, 2019). This means that higher levels of DL improve individuals' ability to use today's purely digital payment instruments and reduce reliance on informal savings channels, thereby increasing financial autonomy and economic security (Rana *et al.*, 2020).

In digitally mediated financial environments, individuals' interaction with financial services increasingly depends on their capacity to manage digital information. Within this perspective, DL can be interpreted as the set of competencies that enables personal knowledge processes to operate in digital contexts. Research on PKM shows that individuals develop, organize and apply knowledge through interlinked processes that support learning, cognition and action across situations (Razmerita *et al.*, 2009; Shujahat *et al.*, 2021). In digital settings, these processes rely on the ability to search for, evaluate and structure information, which constitutes a core component of DL and a prerequisite for managing personal knowledge systems (Jarrahi *et al.*, 2019).

Knowledge absorption in such environments involves cognitive restructuring and internalization mechanisms through which digital information becomes operational and behaviorally relevant. Accordingly, DL represents the form through which PKM processes are enacted in financial digital environments, enabling individuals to integrate information, structure understanding and mobilize knowledge when interacting with DFSs. In this sense, the relationship between DL and DFB is knowledge-based rather than purely technological, as individuals' ability to manage digital information shapes how knowledge is translated into financial action.

Therefore, it is reasonable to assume that, in this framework, a high level of DL not only increases autonomy and security in the use of DFS but also encourages more active and sophisticated DFB, which is crucial for improving the financial well-being of users in today's financial sector (Kass-Hanna *et al.*, 2021; Rana *et al.*, 2020). Therefore, the following research hypothesis is proposed:

H2. A higher level of DL is associated with a more active DFB.

Previous literature has provided a solid theoretical and empirical basis for understanding how domain-specific forms of literacy shape financial behavior. These studies highlight the importance of considering context-specific knowledge structures, as different financial environments require distinct cognitive and informational competencies. For instance, research on Islamic finance shows that specialized FL significantly influences individuals' intention to engage with context-specific financial systems (Albaity and Rahman, 2019).

Similarly, as our focus is on the more digital sphere of financial behavior, it would be appropriate to consider industry-specific knowledge to better capture its impact in shaping the digitally oriented financial behavior of users who engage with digital financial products.

In the current landscape, cryptocurrencies emerge as innovative and decentralized financial instruments that are becoming increasingly important in emerging markets, offering new opportunities for financial inclusion and integration into global markets (Vincent and Evans, 2019). The adoption of cryptocurrencies has accelerated in many emerging economies, along with the expansion of mobile phone and internet usage, with positive implications for financial inclusion and financial sector development (World Bank, 2020). Thus, as the financial sector digitizes, there is an emerging need to consider knowledge related to cryptocurrencies as a key competency that can further influence individuals' DFB.

Dutch bank ING conducted a survey in 2019 and found that while many Europeans are aware of the existence of cryptocurrencies, few fully understand how they work. This knowledge gap is significant, as it highlights how effective CL can be in empowering individuals and driving their financial behavior. While existing literature predominantly underscores the significance of FL in influencing users' financial behaviors, recent investigations are delving into the relationship between more specialized and technical knowledge, such as CL and overall FL, alongside comprehensive financial decision-making frameworks (Jones *et al.*, 2024). Notably, findings from these studies indicate that CL does not replace FL but rather serves as a complementary skill that enhances it. Users demonstrating a greater proficiency in cryptocurrency not only exhibit elevated levels of general FL (Fujiki, 2020) but also manifest a greater inclination toward seeking professional financial guidance (Jones *et al.*, 2024). Furthermore, studies have revealed that the average cryptocurrency holder generally possesses a higher degree of FL and is more inclined to use cashless payment methods compared to non-holders (Fujiki, 2021; Fujiki, 2020).

These findings suggest that financial outcomes in crypto contexts depend less on mere adoption and more on individuals' capacity to manage complex and specialized knowledge structures.

In this sense, navigating highly digitalized financial systems requires individuals to acquire, interpret and reorganize domain-specific knowledge in the face of uncertainty. In crypto contexts, financial behavior appears to emerge not simply from exposure to digital assets but from individuals' ability to acquire, process, and apply complex financial information (Aydoğan *et al.*, 2026). From a personal knowledge perspective, these cognitive capabilities enable more informed engagement with digital financial environment (Aydoğan *et al.*, 2026).

In this context, CL can be understood as a domain-specific personal knowledge asset that enables individuals to translate specialized knowledge into informed financial action.

Despite these insights, existing studies have primarily focused on cryptocurrency adoption and investment patterns, while empirical analyses examining whether CL influences broader DFB within digitalized financial systems remain limited, particularly in emerging contexts. Addressing this gap, this study investigates whether higher levels of CL are associated with a greater propensity for users to engage in financial activities via digital channels. Therefore, the following research hypothesis is proposed:

H3. A higher level of CL is linked to a more active DFB.

Research consistently shows that knowledge gaps represent a primary barrier to appropriate automation adoption (Booyse and Scheepers, 2024; Baiod and Hussain, 2024). In financial contexts, such gaps generate schema misalignment, namely a mismatch between what users believe automated systems do and their actual functioning.

In studying individuals' digital behavior, a crucial element that emerges from disciplines as diverse as economics, finance and psychology is the role of cognitive schemas that users adopt when interacting with automation. In psychology, a cognitive schema is a mental structure by which individuals organize information and interpret the world (Fiske and Linville, 1980; Fiske and Taylor, 1991). This concept is particularly relevant when considering automated systems, where users' expectations and perceptions can vary significantly based on their cognitive schemas (Lyons and Guznov, 2019; Merritt *et al.*, 2015; Parasuraman and Riley, 1997).

In digitally mediated financial contexts, such schemas can be interpreted as cognitive structures through which individuals organize and interpret information produced by automated systems, thereby shaping how knowledge is integrated and subsequently used in decision-making. In this sense, PAS can be framed as a micro-level mechanism that conditions how individuals translate information and experience into actionable understanding when interacting with automated financial interfaces.

The PAS, introduced by Merritt *et al.* (2015), is a valuable framework for assessing an individual's approach to automation and measuring the level of trust placed in automated systems. The framework consists of two main dimensions. The first dimension refers to an individual's level of confidence in automation's performance, while the second dimension refers to the perceived likelihood of an automated system making mistakes. Individuals with high expectations tend to have a more positive view of the performance of automated systems, which directly influences their interaction with such systems (Merritt *et al.*, 2015). Despite the benefits of automation in banking, previous studies show that many consumers still prefer human interaction (Zhang *et al.*, 2021). In a recent study, Carretta *et al.* (2025) analyzed whether and how the level of PAS affects people's expectations of automated banking systems. The authors find that individuals with higher PAS tend to have more positive performance expectations of automated banking systems than employees.

Despite the importance of behavioral factors influencing DFB, studies investigating these issues in the specific context of emerging economies, such as the Balkan region, are limited or absent. To address this gap in the literature, our study explores the potential relationship between PAS and DFB in the Albanian context. Based on this, the following research hypothesis is proposed:

H4. A higher level of PAS is linked to a more active DFB.

3. Methodology

3.1 The questionnaire

This study is based on a structured questionnaire composed of 46 questions, divided into seven main sections. Section 1 measures individuals' FK. To do so, we use Lusardi and Mitchell's (2011) FK indicator on responses to five questions that delve into key concepts like inflation, the time value of money, risk diversification, mortgage interest rates and the relationship between interest rates and bond prices. The indicator is based on the sum of the correct answers given to five questions related to the following topics, ranging from 0 to 5.

The second part of the questionnaire aims to develop, for the first time, an indicator to assess the respondents' DFB. The questionnaire first collects information on users' general financial behavior. The questions ask whether specific financial actions are ever carried out, investigating whether each respondent has ever: (a) purchased stocks or mutual fund shares; (b) purchased an insurance policy; (c) purchased bonds or government securities; (d) purchased cryptocurrencies or coins/tokens; (e) opened an online current account; (f) owned a credit or debit card; (g) owned a prepaid card; (h) used mobile payment tools; (i)

experienced a consultation with a virtual assistant. Then, further questions explore the channel (traditional or digital) used to operate. If respondents answer affirmatively to a question about financial actions, then we ask them to specify the channel they use: whether they use the traditional channel – which encompasses physical bank branches, bank advisors or independent consultants – or the digital channel – which includes online platforms and online banking services. This distinction enables determining whether individuals engage in financial behavior through digital channels, thereby contributing to the development and definition of the concept of DFB. In this section, the respondent's perception of the chosen channel is further investigated by examining four key dimensions: convenience, reliability, cost-effectiveness and effectiveness. These dimensions are assessed using a 5-point Likert scale, from “strongly disagree” to “strongly agree”.

Finally, we ask respondents to express their willingness to switch from the traditional channel to the digital channel, using a score ranging from 1 to 5.

Section 3 investigates the curiosity and interest of users in advanced DFS, including: (a) virtual financial advice with an avatar; (b) financial advisory services in the metaverse; and (c) tools for instantly using cryptocurrency funds. We measure the propensity to use these services on a binary scale (0 = not interested, 1 = interested) and construct the indicator as the sum of the values.

Section 4 is dedicated to collecting the users' socio-demographic and socio-economic information. This information includes age, gender, geographical origin, education level, marital status and income.

DL is the focus of Section 5. In this section, a nine-item assessment measures the level of DL by evaluating access to mobile technology and competencies in using mobile devices (Kass-Hanna *et al.*, 2021). We constructed the DL index by summing scores based on a total of 15 digital skill indicators, each corresponding to one point for each affirmative response and grouped them into three dimensions: access to mobile technology (maximum score of 2 points), competencies with the mobile phone (maximum score of 7 points) and competencies in the use of mobile money (maximum score of 6 points). The total score of this index can range from 0 to 15, depending on the responses given in the individual sections. In the present study, only the first two dimensions of the indicator created by Kass-Hanna *et al.* (2021) were used, creating an index composed of nine indicators and a score ranging from 0 to 9 points related to access to mobile technology and competencies with the mobile phone.

In Section 6, CL is assessed by using the ING (2019) survey, which comprises five statements about cryptocurrencies' characteristics. Each statement provides three possible alternatives: “yes”, “no” and “I don't know”. The respondent selects the correct answer. The number of correct answers provided measures the level of knowledge.

Finally, we assess subjects' PAS by focusing on the *high expectations* dimension, where subjects with high PAS expect automated systems to be almost perfectly reliable; an example is: “Automated systems rarely make mistakes”. A 5-point Likert scale measures all items, ranging from “strongly disagree” to “strongly agree”.

Table 1 defines the study's variables and replicates the queries used to evaluate FK, DL, CL and PAS.

3.2 Sample

The research questionnaire was distributed to the Albanian population through IDRA, a leading global provider of first-party data. IDRA specializes in data collection, delivering reliable and high-quality data by leveraging its extensive global panel of respondents. The organization ensures that the collected data is statistically representative and accurate, which is essential for producing valid research outcomes. Data collection took place in February

Table 1. Variables definition

Code	Definition
Digital financial behavior (DFB)	The cumulative number of positive responses provided to inquiries regarding the attainment of active financial behavior through the utilization of financial services and instruments through the digital platform, with a response range of 0–9
Financial knowledge (FK)	The cumulative number of correct responses provided to a set of five financial knowledge inquiries (Lusardi and Mitchell, 2008, 2011) measured on a scale of 0–5
Digital literacy (DL)	The cumulative number of correct answers provided to questions aimed at assessing the level of digital literacy (Kass-Hanna <i>et al.</i> , 2021) measured on a scale of 0–9
Cryptocurrency literacy (CL)	The cumulative number of correct answers provided for five statements pertaining to cryptocurrencies (ING, 2019) measured on a scale of 0–5
Perfect automation schema (PAS)	The High Expectations dimension of the PAS pertains to the perceived level of reliability exhibited by automated systems, which is assessed using a set of four items ranging from 1 to 5
Gender	Dichotomous variable taking value 1 if the subject is female, 0 otherwise
Age	The age distribution of the respondents has been appropriately divided into the following categories: 18–24, 25–34, 35–44, 45–54 and 55 and above
Education	The level of education of the subjects is assessed based on the following categories: baccalaureate or below, unfinished university studies, bachelor’s degree and master’s or doctoral degrees
Income	The income level of the subjects is categorized as follows: up to 14,000 euro, 15,000–28,000 euro, 29,000–55,000 euro, 56,000–75,000 euro and more than 76,000 euro
Marital status	The marital status of the respondent falls into one of the following categories: single, widow (er), divorced, married (cohabitant)

Source(s): Authors’ own work

2024, ensuring diverse sample coverage in line with the demographic characteristics of the Albanian population.

Given the self-reported and cross-sectional nature of the data, potential common method bias was considered. Several procedural remedies were adopted during questionnaire design to mitigate this risk. Specifically, respondents were assured of anonymity, question wording was kept neutral and the questionnaire was structured into distinct sections to reduce respondents’ tendency to provide consistent or socially desirable answers. These precautions reduce the likelihood that the observed relationships are driven by the measurement method rather than by the constructs of interest.

The total sample consists of 304 individuals, of whom 55% are women and 45% are men. Sample size adequacy was assessed according to established guidelines for multivariate regression, which recommend a minimum of $n \geq 50 + 8k$ observations (where k denotes the number of predictors). The final sample of 304 respondents exceeds this threshold, supporting the statistical power and reliability of the estimated coefficients.

The age distribution of the sample demonstrates a relatively balanced representation within the core groups. The largest age group is that of individuals aged between 25 and 34,

which accounts for approximately a quarter of the total sample (24.67%). However, the 35–44 (22.37%) and 45–54 (23.36%) age groups are also well represented, indicating that the majority of participants are at a stage of adult life where financial behavior and economic decisions may be particularly pertinent. The younger (18–24 years) and older (over 55 years) age groups are under-represented in the sample, with 17.11% and 12.50%, respectively. Nevertheless, the overall average age of the sample, 38 years, suggests a slight bias toward a middle-aged adult population.

The majority of the participants are married or cohabiting, accounting for 60.86% of the sample, followed by singles with 32.57%, while widowed and divorced constitute 2.30% and 4.28%, respectively.

The distribution demonstrates a pronounced concentration of the sample in the central region (49.34%), particularly in the capital city of Tirana, where over a third of the sample is situated (33.88%). This figure likely reflects the capital’s greater population density and economic and cultural concentration compared to other parts of the country. While the northern regions represent a notable portion of the sample (20.72%), they exhibit a comparatively lower presence than the center of the country. However, their representation remains substantial. The southern regions, with 29.93% of the sample, contribute significantly to the geographical distribution, maintaining a balance between the different areas of the country.

Regarding education, 39.14% of the sample had earned a master’s degree, 32.57% had a bachelor’s degree, 16.78% had completed high school, 6.25% had attended university without completing it and 4.28% had earned a PhD. Only 1% of the participants reported a secondary school diploma as the highest level of education.

Regarding the occupational distribution, the most common occupational group is employees, who represent 39.80% of the total sample. This is followed by workers, who account for 24.34% of the sample. This implies that a significant portion of the sample works in conventional or clerical roles. The student population makes up 6.25% of the sample, while teaching staff accounts for an important 13.49%. The other professional categories have a lower prevalence. Other respondents identified themselves as freelancers (4.93%), housewives (2.30%), merchants or craftsmen (2.30%) and entrepreneurs or directors (1.64%). The sample also includes retired individuals (3.95%) and a modest number of unemployed individuals seeking employment (0.66%). Finally, the “Other” category encompasses the remaining 0.99%, which may include individuals who do not align with any of the aforementioned professions or who are engaged in unconventional or informal work.

The income distribution of the sample shows that 78.95% declared an annual income of less than €15,000. Another 11.18% declared an income between €15,000 and €28,000. In addition, 5.26% declared an income between €29,000 and €55,000, while 2.63% declared an income between €56,000 and €75,000. Finally, only 1.97% of the respondents declared an income of more than €76,000.

By highlighting the diverse socio-economic and demographic backgrounds of the respondents, this sample description presents a rich foundation for in-depth research into the DFB and capabilities of Albanian users in relation to the variables under study.

Table 2 illustrates the distribution of key variables. This preliminary analysis is fundamental to ensuring a robust understanding of the data set.

3.3 Model specification

We conducted an econometric analysis using a multivariate regression model, specifically Ordinary Least Squares (OLS), to validate the research hypotheses. The primary dependent

Table 2. Descriptive statistics

Variable	Mean	Dev. St.	Min	Max
FK	2.203	1.289	0	5
DL	6.618	2.214	0	9
CL	1.990	1.457	0	5
PAS	2.866	0.818	1	5
DFB	1.089	1.200	0	6

Source(s): Authors' own work

variable in this model is DFB, which serves as a proxy for an individual's propensity to prefer digital channels over traditional channels for accessing financial services and products. Positive responses to questions aimed at capturing active financial behavior through digital means generate this indicator.

The independent variables included in the model are FK, DL, CL and PAS. The research hypotheses outlined above guided the selection of these variables. To test the research hypotheses, the following multivariate regression model is estimated:

$$DFB_i = \alpha_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \varepsilon_i \quad (1)$$

In more detail, X_1 represents the vector comprising the explanatory variables in the model, which include FK, DL, CL and PAS. These variables were added to the model sequentially, following the assumptions outlined earlier. In the final stage of the analysis, all explanatory variables are included simultaneously to examine how the coefficients change when additional explanatory variables are considered. Based on previous literature, we also include an analysis of the impact of demographic and socio-economic variables to better capture the determinants of DFB (Amari *et al.*, 2020; Chatterjee *et al.*, 2019; Kumar *et al.*, 2023). Then, X_2 consists of the control variables: gender, age, education level, income and marital status.

4. Results

4.1 Descriptive statistics of financial behavior

Table 3 summarizes the financial behavior of the individuals in the sample analyzed. The first column shows the percentage of respondents who engaged in the specific action. The next two columns display the number of users who opted for the traditional channel and those who preferred the digital channel, respectively. More specifically, the results show that a significant proportion of the sample is involved in traditional financial activities. Specifically, 55.59% of respondents have taken out an insurance policy, while 81.91% have at least one credit or debit card. These data suggest a strong attachment to traditional financial services among Albanian users. However, the adoption of more innovative and digitalized financial services, such as buying cryptocurrencies or using virtual assistants, remains limited. Only 7.24% of respondents have bought cryptocurrencies and 13.82% have received advice from a virtual assistant. These results indicate some resistance or limited penetration of these advanced digital tools among the population.

As a further step, we analyze the channels of access to financial services, distinguishing between digital and traditional channels. The results show that for activities closely related to digitalization, the digital channel is predominant. For instance, more than 13% of respondents have either used or received advice from a virtual assistant. Of these, 85.71%

Table 3. Active financial behavior and channel used

Item	Yes (%)	Digital channel (%)	Traditional channel (%)
(a) Have you ever purchased shares or units in funds?	10.20	35.48	64.52
(b) Have you ever purchased an insurance policy?	55.59	16.57	83.43
(c) Have you ever bought bonds or government securities?	9.21	3.57	96.43
(d) Have you ever purchased cryptocurrencies? Or coins/tokens by participating in initial coin offering (ICOs) or non-fungible tokens (NFTs)?	7.24	100	0
(e) Have you ever opened an online account?	27.96	61.18	38.82
(f) Do you have a credit/debit card?	81.91	30.52	69.48
(g) Have you ever owned a prepaid card?	19.08	31.03	68.97
(h) Have you ever used mobile payment tools (e.g. Apple Pay, PayPal, Google Pay)?	49.34	82	18
(i) Have you ever experienced/used counselling from a virtual assistant?	13.82	85.71	14.29

Source(s): Authors’ own work

accessed the service through digital channels. However, it is important to note that the remaining 14.29% used traditional channels to access this service, which is unexpected given the virtual and digital essence of these tools. This might highlight the enduring role of traditional channels in bridging the digital divide, especially in contexts where technological adoption is not yet fully uniform. A total of 49.34% of respondents have used mobile payment instruments. Of these, 82% initially accessed these services through digital channels, while the remaining 18% accessed mobile payment instruments through traditional channels. This suggests that for a subset of users, the transition to DFB often requires a preliminary level of support or guidance provided by traditional channels. Thus, this emphasizes the critical role of conventional access points in facilitating the adoption of such tools, especially for users who may not initially be entirely familiar with navigating digital interfaces independently. Finally, 100% of those who purchased cryptocurrencies or coins/tokens, by participating in ICOs or NFTs did so through digital channels, consistent with their inherently digital nature.

In contrast, the traditional channel remains dominant for more conventional financial activities, such as purchasing insurance policies or bonds. For instance, among respondents who have ever purchased shares or units in funds (10.20%), less than 35% of them used the digital channel to access these transactions. This suggests that, despite the growing trend toward digitalization, the physical channel continues to play a significant role in specific categories of financial services.

Subsequently, we study subjects’ evaluations of the used channels in terms of convenience, reliability, affordability and effectiveness. Table 4 shows that digital channels receive high scores in all evaluative dimensions, especially in terms of effectiveness and affordability. For instance, the digital channel surpasses the traditional channel with an average score of 4.27 in convenience and 4.31 in effectiveness when it comes to opening an online account.

Although respondents predominantly use the traditional channel for activities such as buying bonds or government securities, the digital channel receives higher evaluations in terms of convenience, reliability and effectiveness. This may suggest that, in riskier or more complex financial situations, users still prefer traditional channels despite their more favorable evaluations of digital ones.

Table 4. Channel evaluation

Item	Traditional convenience	Digital convenience	Traditional reliability	Digital reliability
(a) Have you ever purchased shares or units in funds?	3.80	4.00	3.95	3.82
(b) Have you ever purchased an insurance policy?	3.81	4.21	3.91	3.96
(c) Have you ever bought bonds or government securities?	3.55	4.00	3.59	4.00
(d) Have you ever purchased cryptocurrencies? Or coins/tokens by participating in ICOs or NFTs?	–	4.05	–	3.10
(e) Have you ever opened an online account?	3.88	4.27	3.97	4.21
(f) Do you have a credit/debit card?	3.99	4.17	4.02	3.92
(g) Have you ever owned a prepaid card?	3.90	4.28	3.75	4.00
(h) Have you ever used mobile payment tools (e.g. Apple Pay, PayPal, Google Pay)?	4.07	4.24	4.04	3.89
(i) Have you ever experienced/used counselling from a virtual assistant?	4.17	3.69	3.67	3.64
Source(s): Authors' own work				

(continued)

Table 4. Continued

Item	Traditional cost-effectiveness	Digital cost-effectiveness	Traditional effectiveness	Digital effectiveness
(a) Have you ever purchased shares or units in funds?	3.20	3.45	3.45	3.91
(b) Have you ever purchased an insurance policy?	3.38	4.07	3.78	4.14
(c) Have you ever bought bonds or government securities?	3.30	3.00	3.29	4.00
(d) Have you ever purchased cryptocurrencies? Or coins/tokens by participating in ICOs or NFTs?	–	3.86	–	3.86
(e) Have you ever opened an online account?	3.58	4.23	3.88	4.31
(f) Do you have a credit/debit card?	3.62	4.01	3.88	4.12
(g) Have you ever owned a prepaid card?	3.55	3.89	3.90	4.33
(h) Have you ever used mobile payment tools (e.g. Apple Pay, PayPal, Google Pay)?	3.85	4.15	4.25	4.23
(i) Have you ever experienced/used counselling from a virtual assistant?	3.83	3.97	3.50	3.60

To measure financial consumers' digital appetite, we asked respondents whether they would be interested in trying out three specific innovative tools: (a) virtual financial advice with an avatar, (b) financial advice in the metaverse and (c) tools for instant use of cryptocurrency funds. The results reported in Table 5 indicate a significant level of interest, with more than 50% of respondents willing to try at least one of the proposed services. In particular, 53.95% of respondents expressed interest in at least one of these tools, with a particular preference for virtual financial advice with avatars (30.59%) and tools for instant use of cryptocurrency funds (16.78%). These results reveal a remarkable openness toward technological innovation in the financial sector on the part of Albanian users. Despite the relative newness of such services and the low uptake of digitally advanced financial activities revealed in previous analyses, the data suggest that there is a positive propensity toward the adoption of new technologies in the financial sector. Such readiness represents a significant potential for the expansion and integration of advanced digital solutions in the Albanian market, highlighting a progressive change in the habits and expectations of local consumers toward the use of innovative digital financial instruments.

4.2 Econometric analysis results

We run multivariate OLS regression models to verify the determinants of DFB. After verifying the absence of multicollinearity issues, evidenced by VIF values consistently below the threshold values (O'Brien (2007)), we used models with robust standard errors because of heteroscedasticity. Table 6 displays the econometric analysis results.

The multivariate analysis of five regression models yields significant results that align with the presented research hypotheses, thereby confirming the role of the independent variables in determining the DFB of Albanian users.

More specifically, the cumulative model supports hypothesis *H1*, which states that a higher level of FK is associated with a more active DFB. By contrast, the cumulative model does not identify a significant relationship with DL; consequently, research hypothesis *H2* is rejected.

The cumulative model reveals a positive and highly significant coefficient for CL. Therefore, hypothesis *H3* is supported, indicating a positive relationship between cryptocurrency knowledge and active DFB. The cumulative model also records a positive association between PAS and DFB. The positive and statistically significant coefficient of 0.163 supports hypothesis *H4*, substantiating the assertion that a heightened level of trust in automated systems is associated with a more active DFB.

Regarding the control variables, none of the models reveals a statistically significant association between gender and DFB. By contrast, age appears relevant, as individuals aged 45–54 show a negative and significant association with DFB. The findings also indicate that holding an advanced degree, such as a Master's or PhD, is associated with more active DFB

Table 5. Advanced digital appetite

Response category	Which of these digitally advanced services would you like to use?	
	Percentage	Number of respondents
None	46.05	140
At least one	53.95	164

Source(s): Authors' own work

Table 6. Results of OLS analysis

Variables	Model1	Model2	Model3	Model4	Model5
DFB					
FK	0.267*** (0.0609)	0.0758*** (0.0296)			0.188*** (0.0651)
DL			0.209*** (0.0514)		0.0289 (0.0311)
CL				0.224*** (0.0888)	0.123** (0.0580)
PAS					0.163* (0.0887)
Gender					
Women	0.0448 (0.155)	-0.0387 (0.155)	-0.0399 (0.157)	0.0655 (0.151)	0.107 (0.150)
Age 25-34	-0.253 (0.277)	-0.173 (0.280)	-0.135 (0.279)	-0.149 (0.268)	-0.251 (0.271)
Age 35-44	-0.572** (0.283)	-0.533* (0.288)	-0.422 (0.291)	-0.387 (0.282)	-0.510* (0.278)
Age 45-54	-0.791*** (0.291)	-0.657** (0.297)	-0.542* (0.295)	-0.564** (0.280)	-0.773*** (0.290)
Age 55 +	-0.759** (0.329)	-0.534 (0.325)	-0.493 (0.322)	-0.462 (0.322)	-0.646* (0.329)
Educational level					
University	0.612* (0.319)	0.787** (0.335)	0.649* (0.338)	0.598* (0.321)	0.531 (0.329)
University degree	0.328** (0.161)	0.417*** (0.165)	0.351** (0.162)	0.295* (0.166)	0.296* (0.162)
Master/PhD	0.815*** (0.187)	0.981*** (0.188)	0.893*** (0.192)	0.827*** (0.192)	0.727*** (0.195)
Income					
15,000-28,000	0.328 (0.287)	0.463 (0.293)	0.474 (0.291)	0.435 (0.288)	0.303 (0.288)
29,000-55,000	0.0544 (0.305)	0.286 (0.324)	0.104 (0.334)	0.0964 (0.318)	0.121 (0.301)
56,000-75,000	0.0530 (0.318)	0.252 (0.376)	0.182 (0.376)	0.183 (0.335)	-0.0349 (0.319)
76,000 +	0.236 (0.490)	0.493 (0.514)	0.274 (0.546)	0.436 (0.538)	0.389 (0.485)
Marital status					
Widow (er)	0.550 (0.420)	0.527 (0.515)	0.437 (0.477)	0.343 (0.462)	0.404 (0.435)
Divorced	-0.374 (0.342)	-0.298 (0.331)	-0.390 (0.347)	-0.402 (0.340)	-0.305 (0.362)
Married/Cohabitant	0.0674 (0.191)	0.0353 (0.199)	0.0299 (0.202)	0.0767 (0.186)	0.0957 (0.187)
Constant	0.481** (0.221)	0.419 (0.263)	0.470** (0.219)	0.251 (0.317)	-0.281 (0.324)
Observations	304	304	304	304	304
R-squared	0.212	0.169	0.201	0.173	0.241

Note(s): Robust standard errors in parentheses ***p < 0.01, **p < 0.05, *p < 0.1
Source(s): Authors' own work

compared with the lowest educational category. Finally, income does not appear to exert a statistically significant effect.

5. Discussion

The findings of this study provide important insights into the determinants of DFB in an emerging economy characterized by evolving financial infrastructures and increasing digitalization. Overall, the results indicate that active engagement in digital finance depends not only on access to technology but also on the knowledge resources and cognitive schemas that individuals mobilize when interacting with digital financial systems.

First, evidence from the digital finance domain suggests that knowledge-related factors positively influence users' intention to adopt mobile financial technologies, including in emerging economic contexts (Salah and Ayyash, 2025). More specifically, the positive association between FK and DFB confirms the central role of domain-specific financial competencies in shaping users' digital financial choices. Therefore, the relationship observed in the present study is consistent with prior literature showing that higher levels of FK strengthen individuals' confidence in using digital financial instruments, thereby encouraging greater reliance on such tools (Yu *et al.*, 2017; Andreou and Anyfantaki, 2021). Extending this line of inquiry, our findings suggest that FK contributes not only to the adoption of a single digital tool but also to the development of a broader, more active pattern of DFB across multiple channels and activities.

From a KM perspective, this relationship reflects the role of knowledge as a strategic cognitive resource enabling action. KM literature emphasizes that behavioral outcomes emerge when knowledge is acquired, integrated and applied in decision contexts (Grant, 1996; Turulja and Bajgorić, 2018; Shujahat *et al.*, 2021). In digitally mediated financial environments, FK can therefore be interpreted as a personal knowledge asset that supports the transformation of information into operational competencies. In line with the PKM lens adopted in this study, FK operates as a micro-level knowledge mechanism through which individuals structure, mobilize and apply FK when engaging with digital channels (Razmerita *et al.*, 2009; Shujahat *et al.*, 2021). This process enables users to interpret financial information, evaluate digital alternatives and enact decisions through technology-based channels. Consequently, the positive association between FK and DFB suggests that digital financial engagement is not merely driven by attitudes toward technology but by underlying knowledge processes that precede and shape behavioral interaction with digital financial ecosystems.

Second, the absence of a statistically significant relationship between DL and DFB provides a more nuanced insight. At first glance, this finding may appear to contrast with prior literature emphasizing the role of DL in facilitating digital financial inclusion and the adoption of DFSs, particularly in emerging markets (Kass-Hanna *et al.*, 2021; Morgan *et al.*, 2019; Rana *et al.*, 2020). However, when viewed through a KM and PKM lens, the absence of a direct effect offers additional theoretical insight. DL captures individuals' ability to access and manage digital tools and information. Yet, as highlighted in PKM research, effective behavioral outcomes in knowledge-intensive environments depend not merely on technical competencies but on the integration and mobilization of domain-specific knowledge structures (Razmerita *et al.*, 2009; Shujahat *et al.*, 2021). Therefore, the capacity to navigate digital interfaces does not automatically translate into meaningful financial decision-making unless accompanied by structured FK. This interpretation aligns with literature suggesting that financial behavior emerges from integrated cognitive-behavioral competencies rather than from isolated technical skills (Oladapo, 2024). Accordingly, within digitally mediated financial ecosystems, DL may be a necessary but insufficient condition for

active DFB. While it enables access to digital systems, it does not inherently provide the evaluative frameworks required for risk assessment, financial comparison and strategic decision-making.

Third, CL emerges as a positive and highly significant determinant of DFB. This finding highlights the growing relevance of specialized and emerging forms of knowledge in increasingly digitalized financial environments. The result is coherent with perspectives on technology adoption and diffusion of innovations (Hassan *et al.*, 2018; Dearing and Cox, 2018), suggesting that individuals who understand cryptocurrencies may be more willing to experiment with innovative financial tools and digital channels. Within a PKM lens, CL captures micro-level knowledge processes through which individuals implement domain-specific knowledge in dynamic contexts (Razmerita *et al.*, 2009; Shujahat *et al.*, 2021). In highly complex crypto environments, this process involves not only exposure to information but also cognitive restructuring and internalization mechanisms through which specialized knowledge becomes operational in decision-making. Accordingly, CL reflects users' capacity to transform complex crypto-related information into an actionable understanding that supports digitally mediated financial behavior. This aligns with theoretical frameworks on technology adoption and the diffusion of innovations (Hassan *et al.*, 2018; Dearing and Cox, 2018), indicating that acquiring more knowledge about cryptocurrencies may empower individuals to be more proactive and resilient with their digital finances, particularly when traditional banking services are limited (Vincent and Evans, 2019). Therefore, the positive association between CL and DFB underscores the crucial importance of specialized and emerging forms of knowledge in shaping users' DFB.

Fourth, the tendency of users to perceive automated systems as highly reliable and substantially error-free is positively associated with their propensity to favor the use of digital channels for financial activities. This result suggests that trust in automated systems is an important predictor of the use of digital financial instruments in Albania. It is consistent with previous research showing that trust in automated processes plays a crucial role in the acceptance of such technologies (Mahmud *et al.*, 2022; Carretta *et al.*, 2025; Jünger and Mietzner, 2020). More broadly, the result highlights the importance of cognitive schemas within users' personal knowledge structures. Trust in automation can thus be viewed as a mental filter within PKM processes, shaping how interaction with automated financial systems translates into concrete DFB rather than remaining at the level of perception or attitude.

The sociodemographic and socioeconomic control variables show intriguing results. Gender does not appear to significantly influence DFB, suggesting no systematic gender-based differences in the analyzed sample. By contrast, individuals aged 45–54 display lower levels of DFB, indicating that older users may be less inclined to rely on digital channels than younger cohorts (Hasan *et al.*, 2023). Higher educational attainment, such as a master's or PhD degree, is positively associated with DFB, confirming that advanced education may facilitate the adoption of more complex digital financial technologies (Wang *et al.*, 2025). Income, conversely, does not show a statistically significant effect.

Finally, the results obtained suggest that DFB should be interpreted as a knowledge-intensive behavior. Participation in digital finance is not determined solely by technological availability but by the interaction between FK, specialized knowledge assets and cognitive trust in automated systems. This interpretation is consistent with recent evidence from emerging economies showing that the adoption of financial technologies depends on a broader set of cognitive, informational and trust-related factors beyond the technological attributes of the tools themselves (Salah and Ayyash, 2025).

By applying a KM and PKM lens, the study positions users as active agents who develop, structure and apply knowledge within evolving digital financial ecosystems. This evidence suggests that users with stronger financial competencies and greater confidence in automated technologies are more likely to engage in active financial behavior through digital channels, thereby fostering broader participation in evolving digital financial ecosystems.

6. Conclusions

The objective of this study was to analyze the influence of key variables such as FK, DL, CL and PAS on the DFB of users in Albania, an emerging economic context. We conducted an econometric analysis using a multivariate regression model (OLS) to bridge the gap in existing literature regarding Balkan countries and emerging economies. Despite extensive studies on digitization in the financial sector, the literature lacks a clear understanding of how these dynamics manifest in developing countries, particularly in Eastern Europe and the Balkans. The existing literature primarily concentrates on the impact of digital technologies and FinTech in Western or highly developed contexts (De Oliveira Santini, 2018; Eren, 2021; Rajaobelina and Ricard, 2021), largely neglecting Balkan countries owing to their still-evolving financial infrastructures and varying degrees of FK and DL. Consequently, this study contributes to understanding the dynamics influencing DFB, a research area that remains underexplored in Albania. Interpreting these results through the KM lens and specifically from PKM and PKN (Chatti, 2012), helps frame DFB as an outcome that depends on how individuals transform knowledge and cognitive schemas into digital financial action. The results show that micro-level knowledge processes related to financial interpretation and application are more decisive for digital financial engagement than general digital operational skills alone. More specifically, the analyses conducted demonstrate that higher levels of FK, CL and PAS are associated with a more active DFB. These findings are consistent with existing literature demonstrating that increased FK is associated with enhanced financial behavior and a greater inclination to adopt financial technologies (Lusardi and Mitchell, 2007; Calcagno and Monticone, 2015). Furthermore, the positive association between CL and DFB aligns with perspectives on how technologies are adopted and how new concepts are disseminated (Hassan *et al.*, 2018; Dearing and Cox, 2018). This means that learning more about cryptocurrencies might help people be more proactive and resilient with their digital finances, especially when traditional banking services are limited (Vincent and Evans, 2019). Finally, the results show a positive association between PAS and DFB, indicating that users with greater trust in automated digital systems prefer digital banking solutions over traditional physical branches. This finding supports previous research suggesting that high expectations of automation are associated with greater trust in automation (Lyons and Guznov, 2019) and that trust in automated processes is critical to the acceptance of such technologies (Mahmud *et al.*, 2022; Carretta *et al.*, 2025). Consistent with the KM process view, these patterns suggest that knowledge resources and cognitive schemas act as personal knowledge mechanisms that enable digital engagement in financial sector (Turulja and Bajgorić, 2018).

6.1 Theoretical implications

This study makes important theoretical contributions. The first theoretical contribution is its attempt to define DFB as a multidimensional, channel-choice outcome. Previous literature has focused attention from time to time on the single technology of reference, such as m-banking (Farah *et al.*, 2018; Payne *et al.*, 2018; Chauhan, 2024); i-banking (Andreou and Anyfantaki, 2021; Sandhu and Arora, 2022), m-money (Ky *et al.*, 2021; Glavee-Geo *et al.*, 2020), m-payments (Seldal and Nyhus, 2022; Song *et al.*, 2023; Charles and Hayford, 2024;

PH, 2023; Pal *et al.*, 2021) or robo-advisory (Atwal and Bryson, 2021; Bhatia *et al.*, 2022). Therefore, the main contribution is the adoption of a comprehensive definition of financial behavior that encompasses a range of financial activities, including traditional financial services and digital financial instruments. Moreover, the subsequent definition of DFB is not contingent on the specific financial technology used but rather on the channel used for each financial behavior under analysis. This approach enables a comprehensive understanding of DFB, facilitating a more nuanced examination of the factors influencing user financial behavior in the digital financial system.

Second, building on this reconceptualization, FK, DL and CL are interpreted not merely as behavioral predictors but as knowledge-based resources that shape individuals' interaction with digital financial systems. These forms of literacy are considered personal knowledge assets that support the acquisition, organization and application of information in financial decision-making contexts. Furthermore, the study integrates cognitive perspectives into the analysis of DFB by highlighting the role of schemas and expectations toward automation. Trust in automated systems is thus framed not only as an attitudinal variable but also as a cognitive mechanism that conditions how individuals interpret, evaluate and use digitally mediated financial information.

Third, it extends the literature on DFB and KM by providing empirical evidence from Albania, a distinctive and underexplored emerging economy. By focusing on this context, the study contributes to a more comprehensive understanding of how financial and digital transformations unfold in settings characterized by evolving financial infrastructures and heterogeneous literacy levels.

Recent research has increasingly examined how digital technologies reshape knowledge creation and knowledge transformation processes, particularly within organizational settings (Yan *et al.*, 2026). Building on this broader stream of inquiry, subsequent studies have begun to explore the intersection between KM and technology adoption in financial contexts, highlighting the role of KM practices in innovation and the use of digital technologies within financial systems (Singh *et al.*, 2025; Jena *et al.*, 2025). However, these contributions remain largely focused on organizational or system-level dynamics. The present study advances this literature by shifting the analytical focus toward the user level. Specifically, it demonstrates that knowledge processes also operate at the individual level, influencing how users process and apply information when engaging with DFSs. More broadly, by adopting a PKM perspective (Chatti, 2012), the study shows that users' knowledge resources and cognitive schemas can be interpreted as individual-level manifestations of knowledge acquisition, integration and utilization. In doing so, users are positioned as active agents in the organization and mobilization of knowledge within digital financial ecosystems.

Within this perspective, DFB could be interpreted as the behavioral outcome of personal knowledge processes through which individuals structure, internalize and mobilize domain-specific knowledge within contemporary digital financial environments. Building on this, the study advances KM research in the financial domain (Al-Dmour *et al.*, 2021; Al-Dmour *et al.*, 2023; Al-Okaily *et al.*, 2025) by positioning users as active agents of knowledge in the digitization of finance and by showing that different configurations of personal knowledge assets do not translate equally into digital financial action. Active DFB emerges when domain-specific knowledge is integrated and mobilized, rather than merely accessed.

6.2 Practical implications

From a practical and managerial perspective, this study provides relevant insights for both financial institutions and policymakers. The findings suggest that digital transformation in

finance should not be approached solely as a technological upgrade but as a KM challenge centered on users' capacity to transform financial and digital knowledge into practice.

For financial intermediaries, this implies a shift from technology-driven implementation to knowledge-oriented design. The effectiveness of DFSs depends on how well organizations enable users to develop and mobilize the knowledge required to navigate digital environments (Al-Okaily *et al.*, 2023). In this sense, banks and fintech firms can act as knowledge facilitators by designing digital platforms that support users' learning, interpretation and decision-making processes.

In practice, this may involve integrating user-centered interfaces with embedded learning mechanisms, such as interactive tutorials, contextual guidance and scenario-based simulations, particularly for customers with lower levels of financial or DL. Such solutions could foster continuous knowledge acquisition and utilization, transforming digital platforms into learning-oriented environments that strengthen engagement and long-term trust.

In digitally mediated financial contexts, institutions are increasingly required to support customer knowledge processes, helping users interpret information, evaluate alternatives and apply knowledge in financial decisions. This perspective aligns with research highlighting the importance of customer KM and the role of digital interactions in shaping financial behavior and service effectiveness (Awad *et al.*, 2025).

At the same time, the sensitive nature of financial information requires robust knowledge governance practices that balance knowledge sharing with confidentiality and regulatory compliance (Awad *et al.*, 2025). Strengthening these mechanisms could enhance trust in digital financial ecosystems and improve the effectiveness of customer-oriented digital strategies.

In conclusion, the results suggest that successful digital finance strategies depend not only on technological availability but also on institutions' capacity to support users' personal knowledge development. Approaching DFSs as knowledge ecosystems may therefore represent a key lever for fostering sustained adoption, informed financial behavior and inclusive participation in digital finance.

6.3 Limitations and future developments

Despite its contribution, this study presents several limitations that should be acknowledged. First, the analysis relies on self-reported measures of literacy, trust in automation and DFB. Although widely adopted in studies on financial and digital competencies, this approach may introduce potential biases, including social desirability and overestimation of individual capabilities. Second, the cross-sectional nature of the data limits the ability to draw causal conclusions. Third, although OLS regression provides a clear estimate of the relationships among variables, it may not fully capture the latent nature and interdependence of the constructs under investigation. Structural equation modeling approaches could provide a more rigorous framework for analyzing relationships among literacy dimensions, cognitive factors and DFB, as well as for exploring potential mediation mechanisms. Finally, the focus on the Albanian context limits the generalizability of the findings to other emerging economies characterized by different institutional conditions, financial infrastructures and levels of digital development.

These limitations open several avenues for future research. Longitudinal research designs could help clarify the causal dynamics between personal knowledge resources and DFB, while the adoption of alternative measurement frameworks for FK, DL, CL and PAS, such as those proposed in the organisation for economic co-operation and development (OECD) "Survey of Adult Skills Measures Proficiency in Problem-Solving in a Technology-Rich Environment," may refine the assessment of users' competencies.

Future studies could also explore the integrated concept of DFL as a combination of financial and digital skills and investigate how emerging risks in fintech ecosystems, including cybersecurity threats and operational vulnerabilities, influence users' trust and participation in digital financial environments.

Building on the PKM perspective, further research may examine how personal knowledge processes evolve over time within digital financial ecosystems and how different configurations of knowledge resources shape users' capacity to engage effectively in digital finance. Moreover, extending the analysis to other emerging economies in the Balkan region would yield comparative insights into how institutional, technological and socio-economic conditions interact with individual knowledge processes to shape DFB across the broader regional context.

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