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Digital Financial Literacy among Retail Investors in Kerala

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Abstract

This research empirically examines why retail investors participate in and trade on the digital platform in the Indian state of Kerala. A 624-respondent retail investor sample received a structured questionnaire. The analysis using Factor Analysis, Multiple Regression, and ANOVA was carried out to test the proposed relationships. Factor Analysis (KMO =. 921; Bartlett's Test, p <. 001) extracted three major latent variables within 20 scales comprising digital financial literacy: Platform Usability (24.38% of the variance explained), Security Awareness (21.06% of the variance explained), and Financial Knowledge (19.33%), which together explain 64.78 percent of total variance in our model. A Multiple Linear Regression model indicated that these three variables significantly positively predicted annual investment value (R^2 = .361, F(3,620) = 65.723, p < .001). Financial Literacy was the best predictor (β =. 447, p <. (001), Success followed by Security Awareness (β =. 388, p <. "Website Content (β=."3, p<.034) and Platform Usability (β=. 258, p < .001). Additionally, an ANOVA revealed a significant digital divide: investors in urban locations are significantly more Security Aware than their rural counterparts (F(1,622) = 55.841, p < .001). It establishes that although technology characteristics, such as ease of use, are significant, investor education (Financial Knowledge) and improving Security Awareness are critical for increasing participation. The findings offer practical implications for fintech companies and policymakers in building a digital investment ecosystem that is inclusive, secure, and empowering, especially in developing countries.

Keywords: Digital Financial Literacy, Retail Investors, Online Trading Platforms, Factor Analysis, Regression Analysis, Platform Usability, Security Awareness.

Introduction

Over the past decade, growth in financial technology has transformed access by retail investors to financial markets. Web-based trading sites have played a critical role in doing so by opening up the stock markets, commodities, and other financial goods to investors on an unprecedented scale. Sites have significantly reduced barriers to entry by providing live information, prompt trade execution, and convenient interfaces. The rise of digital trading has dramatically transformed the world of finance, providing retail investors with unprecedented access to a broad range of financial instruments and markets. However, along with this, heightened accessibility has come a multiverse of regulatory challenges that seriously threaten retail investor protection. The rapid development of digital assets, including cryptocurrencies and other types of digital securities, has far outpaced efforts to establish detailed regulatory frameworks. This imbalance has made it easier for regulatory loopholes, particularly those related to AML and KYC requirements, to destabilise and compromise the integrity of financial markets (Miao, 2024).

There has been a dramatic increase in the role of various investors in the stock market. Retail investors tend to remain in investment undertakings without having the requisite skills, qualifications, and experience for effective management of due diligence and financial research (Khan & Shabbir, 2025). Their financial performance may also be traced to several psychological biases (Kite *et. al*., 2022). Trading apps, which enable investors to purchase and sell investment products almost entirely through apps on their mobile phones, have revolutionised the world of retail investing. They have provided consumers with access to a much broader range of products, from fractional shares to more speculative products such as crypto assets. This ability is embedded in an interactive interface that, with frequent advertising, has attracted a broader client base. The number of retail investors, or individual investors, has grown substantially because of technology advancements that offer convenient access to retail investments via different websites and apps (Shankar *et al*., 2021; Aldridge & Krawciw, 2017). Mobile apps have transformed the capital market, which was previously reserved for institutional or large asset investors, making it more accessible to the masses (Chishti & Barberis, 2016). What was previously traditional, with high costs and entry barriers, has been simplified and made more affordable. The number of investors has increased due to this development, primarily among retail investors who invest their personal funds and lack professional investment expertise.

The infusion of technology in financial markets has substantially altered the nature of retail investing. Online trading websites, which provide real-time exposure to stocks, mutual

funds, derivatives, and other financial assets, have equipped investors with the information they need to make informed decisions (George, 2024; Mer *et al*., 2024). The accessibility of online trades via mobile applications and websites has diminished the role of traditional brokers, thereby lowering the costs of investing and rendering it more self-sufficient (Dell'Erba, 2024). In Kerala, where retail investor involvement has traditionally been low, electronic trading platforms have provided new avenues for people to access financial markets. Drivers, including rising internet penetration, smartphone usage, and policy efforts that encourage financial inclusion, have also accelerated the growth of such platforms. Still, the extent to which electronic trading platforms have driven increased retail investor engagement in Kerala remains a matter for empirical research.

The ease of use and accessibility of digital trading platforms is one of the main factors influencing their adoption. Easy-to-use systems that provide hassle-free transactions and straightforward account administration are typically preferred by investors, particularly those who are new to stock trading (Soebdhan, 2023). In order to meet the demand, the majority of digital trading platforms offer user-friendly interfaces, walkthrough features, and insights driven by artificial intelligence. Accessibility becomes critical in Kerala, where a sizable section of the populace might not be familiar with financial markets. Support for regional languages, simple account opening processes, and minimal paperwork requirements could boost platform utilization (He *et al.,* 2017).

The largest barrier to the widespread use of online trading platforms may be security concerns. Due to worries about identity theft, fraud, hacking, and unauthorized transactions, retail investors are still wary about internet trading. Investor confidence and utilization are directly impacted by a platform's perceived security. Investing in educating investors about cybersecurity strategies and platform protection measures will boost confidence and encourage more investor involvement in Kerala, where financial literacy levels are wildly uneven. Investor involvement and retention are directly impacted by online trading platforms' entire customer experience. A smooth user experience will be essential in Kerala, where the majority of novice investors enter the financial markets through online trading platforms. Investor involvement can be improved via automatic alerts, portfolio review tools, and personalized advice. System dependability, decreased downtime, and enhanced platform performance can promote ongoing participation and long-term investment growth. In-depth analysis of the impact of online trading platforms on Keralan retail investor participation is the goal of this study, with a focus on the major factors influencing their uptake, usage, and continued involvement.

This study assesses how ease of use and accessibility affect adoption, seeking to determine the extent to which user-friendly interfaces, streamlined procedures, and ease of use improve participation. In addition, it aims to understand the role of subjective security in influencing investor trust, acknowledging that site safety and trust in data safeguards are significant factors for maintaining continuous engagement. It also studies factors of user experience—such as design, pace, and dependability—to gauge their effects on continuous engagement. The study examines the intervening role of financial literacy and investigates the degree to which knowledge about market movements and trading fundamentals impacts an investor's choices and platform conduct. By integrating all these findings, the study aims to formulate actionable recommendations to enhance the usability, security, and user experience of online trading platforms, ultimately increasing retail investor engagement in Kerala's developing financial economy.

Statement of the Problem

In the era of Industry 4.0, technology has become crucial for efficiently utilising resources. The internet is now one of the most transformative technologies. As of January 2022, internet penetration in Indonesia reached 73.7% of the total population of 277.1 million, indicating the country's progress in technological advances, particularly in fintech acceptance. Fintech integrates financial service operations with technology, transforming old methods into a sophisticated, user-centred approach to service delivery (Sung *et al.,* 2019). Digital financial systems, a subset of fintech, include digital payments, mobile banking, and marketplace lending (Sahay *et al.,* 2020). These technologies were essential during the COVID-19 pandemic since they facilitated digital transactions and adhered to social distancing norms (D'Esclapon, 2021).

The current literature emphasises the rapid expansion of fintech in Indonesia, particularly in peer-to-peer lending and digital payments. These advancements have significantly contributed to financial inclusion and economic progress. By offering digital finance as an affordable and efficient option to families and small-to-medium companies (SMEs), a broader spectrum of economic agents may engage. This study examines the impact of fintech adoption on the retail performance in Indonesia. It examines the direct and mediated influences of financial literacy, digital literacy, internet ubiquity, and customer confidence on the expansion of the retail sector via fintech. The data analysis will subsequently examine key performance indicators, including online transaction volume, client value, and profitability.

Review of Literature

Financial Management Financial management is a crucial component of economic systems, significantly influenced by advancements in industries and technology. As these developments unfold, individuals and professionals in the area must possess sufficient financial literacy to achieve favourable outcomes from both personal and organisational perspectives. Personal financial literacy is the capacity to use information and skills to proficiently manage financial resources proficiently, ensuring sustained financial wellbeing throughout one's life. Prior studies highlight its impact on several levels. At the micro level, it enhances an individual's ability to make informed financial decisions. For example, Atkinson et al. reference Lusardi (2006) and Xiao & O'Neill (2016), indicating that financial information acquired from general finance education or specific sources positively influences people's financial capacities. Financial literacy enhances financial inclusion on a macro scale by improving access to financial goods and services across nations (Grohmann *et al.*, 2018; Lewbel, 2012). At the institutional level, financial literacy is essential for improving financial management practices. This dual-extending effect exemplifies the broad impact of financial literacy, spanning from the individual level to the global economy. The significance of financial literacy became particularly evident during the COVID-19 pandemic. Financial management was challenged while also serving as a continuous mechanism to sustain operations despite significant disruptions.

D'Esclapon (2021) demonstrates that, despite the pandemic causing considerable upheaval in financial markets, effective financial governance was crucial for economic resilience. Incorporating financial knowledge with technology is essential. With the emergence of fintech, individuals must comprehend financial literacy to use digital services effectively. This link is the primary focus of study on fintech advances and their impact on financial behaviours during crises, such as COVID-19. B. Fintech: Financial Technology Fintech refers to the use of technology inside financial systems, enabling innovative business models, procedures, and products that enhance service delivery. Sahay *et al.* (2020) assert that fintech is an interdisciplinary field including finance, technology management, and innovation. In Indonesia, fintech is governed by Bank Indonesia Regulation No. 19/12/PBI/2017, which pertains to the use of technology in financial service systems to develop new goods, services, or business models.

These advancements would enhance price stability, ensure the orderly operation of the financial system, and promote robust payment channels. Fintech significantly enhanced digital transactions during the COVID-19 epidemic, albeit this increase was uneven.

Sugandi (2021) demonstrated that physical separation restrictions negatively impacted several fintech services, including telephone banking and mobile banking. Commerce The retail sector operates at the terminal stage of the supply chain, delivering products and services to customers. Participating enterprises include convenience stores (e.g., Indomaret, Alfamart), furnishing retailers (e.g., IKEA), and department stores (e.g., Ramayana, Gramedia). This research focuses on retail transactions from a business-to-consumer (B2C) viewpoint, whereby enterprises engage directly with end customers. The research focuses on transaction volume and values to assess the effect of fintech growth. While fintech has infiltrated a significant portion of the retail sector, its application varies across different industries. Certain enterprises, such as digital payment systems that promote transparent transactions, are already executing transactions, whilst others remain entrenched in analogue methods. This study aims to analyse the impact of Fintech on retail performance, specifically focusing on sales volume and transaction amounts via the examination of B2C transactions.

Need and Significance of the Study

Digital technology is transforming the financial sector, altering our interactions with money and impacting both the economy and our everyday lives. Goodman & Peavoy [75] and Breun during the telecommunications, media, and technology conference, discuss how digital banking addresses the pressing need for traditional services through innovative channels, impacting sectors such as retail banking and investment, particularly in payment and financial services within the global landscape. Digital technologies have significant potential to facilitate financial education and improve financial literacy. The digitisation of finance facilitates more convenient, rapid, and secure methods for society to deposit, transact, and save with tailored products. However, digital financial services also introduce new risks and unintended consequences that may threaten individual or societal financial security (OECD, 2017; 2018). Wealth is recognised as a significant determinant of well-being. Current literature defines financial well-being as a condition wherein an individual can manage daily finances, withstand financial shocks, achieve long-term financial objectives, and experience the autonomy to make choices that influence overall life experiences (Collins & Urban, 2020; Netemeyer *et al*., 2018). As per Netemeyer *et al.* Galizzi et al. assert that financial well-being is essentially contingent upon financial literacy. Financial literacy is founded on financial knowledge, understanding, essential skills, confidence enhancement, and motivation (Warmath & Zimmerman, 2019). Individuals

acquire fundamental financial information, skills, and comprehension via informal learning at home and formal education in schools (Lusardi, 2015; Lusardi *et al*., 2010). While the immediate impacts of financial education diminish (Fernandes *et al*., 2014), financial literacy develops progressively via experience, life events, and contextual factors (Leskinen & Raijas, 2006). A multitude of research indicates that individuals with higher financial literacy have superior capabilities in making economic choices within a complicated financial landscape (Leskinen & Raijas, 2006; Lusardi *et al*., 2010; Lusardi & Mitchell, 2011, 2014). Robust financial literacy enables individuals to effectively manage their finances in two key areas: daily financial activities (acquiring information for routine expenditures or budgeting) and long-term financial decisions (saving, investing, and borrowing). Enhanced financial literacy enables individuals to identify fraudulent activities and serves as a deterrent against fraud (Engels et al., 2020; OECD, 2018).

The majority of financial literacy literature focuses on three primary areas: conceptual definitions of financial education (Remund, 2010; Santini *et al*., 2019; Warmath & Zimmerman, 2019), measurement items within financial literacy constructs (Huston, 2010; Lusardi, 2015; Lusardi & Mitchell, 2014), and financial education itself (Fernandes *et al.,* 2014; Kaiser *et al*., 2022; Lusardi *et al*., 2017; Peeters *et al.,* 2018). Given that prior research on financial literacy and money management was conducted in a traditional, analogue context, it may no longer adequately address the broader and more complex financial environment shaped by contemporary digital technology. Devices universally facilitate access to online services and digital tools, while presenting benefits and obstacles in personal financial management. Online shopping and digital payment methods facilitate quick and convenient purchasing; nevertheless, they may also promote increased expenditure by reducing barriers to acquisition. Moreover, the behaviour is less tangible than monetary transactions. It may be readily stimulated or triggered by algorithms used in nudging systems (e.g., deal notifications, social media advertisements) that are components of persuasive technology (Carlsson *et al.,* 2017; Huebner *et al.,* 2020). Moreover, maintaining multiple banking accounts and credit cards may hinder individuals from obtaining a comprehensive understanding of their overall financial status (Huebner et al., 2020). Contemporary individuals are anticipated to be proactive in their financial endeavours and well-informed, thereby making prudent decisions regarding investments in further education or savings (Davis & Hasler, 2021; Leskinen & Raijas, 2006; Lusardi, 2015; Lusardi & Mitchell, 2014).

A report on millennial Fintech adoption indicates that 80% of smartphone owners within this demographic utilise their devices for transactional activities, while 90% employ them for informational purposes (Yakoboski et al., 2018). This encompasses functions such as check deposits, fund transfers, mobile payment services, and bill payments, alongside activities like credit score monitoring, price comparisons, expenditure tracking, and obtaining tailored investment guidance. Outcomes: For millennials, bill payment is the most common transactional activity, while price comparison represents the most prevalent informative activity conducted on their smartphones. Research suggests that financial literacy may mitigate the effects of mobile payment use, reducing the likelihood of account overdrafts (Yakoboski et al., 2018). Consequently, a novel paradigm of financial literacy is essential to improve personal financial well-being in the contemporary digital era, alongside current Fintech innovations (OECD, 2017; Yakoboski *et al.*, 2018).

Digital financial services customers must possess digital literacy and recognise the benefits presented by digital infrastructure to understand the risks associated with its expansion. Although digitisation permeates practically all everyday activities, its impact on individuals' financial behaviour and, therefore, financial literacy remains largely unexplored. This study draws on existing research and uses an integrated review technique (Torraco, 2005) to investigate if and how digitalisation impacts people's financial literacy and financial competence. Based on the review, we propose a framework for digital financial literacy and financial capacity, along with a corresponding research plan. To achieve this objective, we first provide an explanation of the study's context by addressing concerns related to financial competence and digitalisation, while also examining the relationship between financial literacy and financial capability. We will succinctly outline the research approach. Subsequently, we examine and synthesise the research on financial literacy within the framework of digital ecosystems. Ultimately, we provide recommendations for future studies to incorporate digitalisation into financial literacy and financial competence.

Theoretical Groundings

Financial literacy establishes the foundation for an individual's financial conduct and personal money management. It is also a substantial factor in financial well-being. Individuals with financial literacy possess a fundamental comprehension of financial subjects, together with the abilities and confidence to manage their finances and make informed monetary decisions (Huston, 2010; Leskinen & Raijas, 2006; Lusardi, 2015; Remund, 2010; Warmath & Zimmerman, 2019). This encompasses the knowledge and

capability to understand financial practices (cash-flow management, credit management, savings, loans, and investments) and information, fostering financial comprehension that aids in the collection, evaluation, and interpretation of pertinent information for financial decision-making (Huston, 2010; Lusardi & Mitchell, 2014). In addition to knowledge and comprehension, individuals must possess a robust financial self-belief, encompassing financial attitude, perceived behavioural control, and financial self-efficacy, which pertains to one's confidence in navigating the competing demands of daily life (Serido *et al*., 2013). A crucial element in the development of financial literacy is financial competence (refer to Figure 1). It encompasses a broader idea than mere literacy, including both the capacity to engage and the availability of opportunity. Individuals with financial resources get not just financial acumen and expertise but also derive gains from access to financial institutions and goods, hence enhancing their participation in the financial services market (Scott *et al.,* 2018; Serido *et al.,* 2013; Sherraden, 2013; Sherraden & Grinstein-Weiss, 2015).

Despite the extensive dissemination of the fundamental concept, a significant disparity persists regarding the empirical measurement of financial literacy. A prevalent perspective, exemplified by Lusardi and her associates (e.g., Lusardi & Mitchell, 2011, 2014), posits that financial literacy equates to financial understanding. Conversely, the OECD (Atkinson & Messy, 2011) has embraced an alternative viewpoint by expanding the catalogue of behaviours (e.g., product or service comparison) and attitudes (e.g., strategic planning or short-term orientation). Regrettably, the academic literature mostly views conduct as a dependent variable influenced by financial literacy rather than as a component of literacy itself. Similarly, attitudes (e.g., temporal influences or cultural factors) are often seen as extrinsic to actions and not as aspects of literature (Huston, 2010).

A significant gap persists in the definitions of financial literacy. A prevalent approach to surveying is the use of multiple-choice questions to assess knowledge levels. The range is from a minimum of three (Lusardi & Mitchell, 2011, 2014) to a maximum of fifty (Ranyard *et al*., 2020). The briefest list includes at least one inquiry on inflation, interest rates, and diversification. Longer scales also include questions that evaluate comprehension of consumer goods, such as bank accounts, payments, deposits, mortgages, and investments. A substantial body of scholarship examines the validity of specific questions, the appropriateness of scales, and the feasibility of scale reduction while maintaining informational integrity (e.g., Houts & Knoll, 2020; Ranyard *et al.*, 2020).

This does not imply that a scale with fewer elements would be optimal (see the second paragraph). I believe that the most feasible approach is to use a reduced subset of financial

literacy surveys, which has been a standard practice. Lusardi's team employs far more comprehensive surveys wherever feasible (e.g., Yakoboski *et al*., 2018).

There are additional articles that broaden the concepts of financial literacy beyond just multiple-choice questions. Alternative to metrics of metrics. Alternatives to objective measures of financial literacy include subjective assessments (e.g., Allgood & Walstad, 2016), selfreported evaluations of financial skills (e.g., Warmath & Zimmerman, 2019), and self-efficacy scales (Danes & Haberman, 2007; Lown, 2011; Warmath & Zimmerman, 2019).

Current research on financial literacy and capability identifies the skills, knowledge, understanding, and competencies necessary for effective personal financial management in a traditional "analogue" context; however, investigations into financial literacy and capability within the digital realm remain relatively scarce. With the transformation of financial services brought about by digitisation, traditional financial literacy is insufficient for individuals to manage their personal finances effectively and understand critical issues such as information security, consumer fraud, and the impact of persuasive algorithms on consumption. Consequently, to address the essential competencies required in a digital landscape, conventional financial literacy must be merged and enhanced by elements of digital literacy (Elsinger *et al*., 2018; Engels *et al.,* 2020; OECD, 2021).

Importance of Digital Literacy in the Current Scenario

The emergence of a digital economy has lately transcended physical, social, and temporal constraints, facilitating flexible information retrieval and allowing the production and distribution of digital goods and services via many interconnected channels (Carillo et al., 2017). The economic effect of digital technology is defined by disruption to existing processes, systems, and industries; altering consumer behavior and redefining corporate models and practices (Bukht & Heeks, 2018).

While digital technologies are seen as instruments for achieving goals, most of these systems lack neutrality and have persuasive algorithms that might sway individuals towards certain attitudes and behaviors, so affecting our actions. This enables service providers to influence and modify user attitudes and behaviors through persuasive technologies designed to shape, reinforce, or alter user intentions and actions via software development (Fogg, 2009b, 2009a; Shin & Kim 2018). Applications range from persuading individuals to adopt healthier lifestyles (e.g., weight loss, exercise - Oinas-Kukkonen, 2013) to promoting energy-efficient living and increased consumption of products (Lembcke *et al.,* 2019;

Mirsch et al., 2017). Nudges in behavioral economics refer to altering behavior without using incentives (Thaler & Sunstein, 2008). Consequently, people' activities in the digital realm are significantly influenced by digital nudging (Weinmann, Schneider, and Brocke, 2016; Benartzi, 2017; Mirsch *et al.*, 2017; Cai, 2020; Lembcke *et al.*, 2019). Currently, digital nudging is not exclusive to huge corporations in tailored marketing (Cai, 2020; Mirsch *et al.*, 2017); financial service providers are also offering solutions that might affect clients' financial actions (Dolan *et al*., 2012). Current research presents data about the paradoxical nature of nudges, indicating that identical tools provide divergent values for both customers and enterprises. This results in a paradox where some digital technologies advantageous for corporations are detrimental to customers, and conversely.

As a result, the financial sector is now experiencing rapid transformations due to digitization, particularly evident in fintech, where innovative technologies and business models are infiltrating the conventional financial industry (Elsinger *et al*., 2018). Fintech enhances access to both standard and non-traditional financial products and services, facilitates tailored offerings, and lowers service prices. The growth of fintech presents several problems, including abuse and fraud within digital services, privacy issues, and digital profiling. We identify hazards stemming from market forces, regulatory influences, and consumer behavior. Consumers want a sufficient degree of information to evaluate the quality and risks associated with advances in financial products, enhanced skills and competencies to comprehend and use digital services, including pertinent IT technologies, as well as critical faculties (Elsinger *et al*., 2018). Recent studies illuminate the need to redefine conventional financial literacy to include digital literacy, so clarifying the interconnections among financial literacy, digital literacy, and digital financial literacy (Lyons & Kass-Hanna, 2021).

The Digital Literacy Global Framework delineates six primary digital literacy competencies: information and data literacy, communication and collaboration, digital content production, safety, problem-solving, and career-related competencies (Jin *et al*., 2020; Law *et al*., 2018). Digital literacy necessitates the proficient use of information and communications technology (ICTs). It encompasses the ability to seek for, access, and intelligently interpret digital information, critically assess this information, and use ICT effectively without risk (Jin *et al*., 2020; Rodríguez-De-dios *et al*., 2016).

According to Lyons and Kass-Hanna (2021), the OECD (2022) addresses an even broader array of inquiries, including automated payments, cryptocurrency transactions, and

engagement with stock trading platforms. The OECD has challenges related to becoming victims of fraud, particularly in digital contexts.

Three Research Objectives

To identify and validate the underlying factor structure of digital financial literacy among retail investors in Kerala, measuring constructs such as Platform Usability, Security Awareness, and Financial Knowledge.

To determine the impact of the identified factors (Platform Usability, Security Awareness, Financial Knowledge) on the level of retail investor participation

To examine if there is a significant difference in the mean scores of Security Awareness based on the investor's residency type (Urban vs. Rural).

Analysis 1: Factor Analysis (PCA with Varimax Rotation)

Purpose: To reduce the 20 survey items into a smaller set of underlying factors.

Table 1: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.921	
Bartlett's Test of Sphericity	Approx. Chi-Square	4882.357
	df	190
	Sig.	.000

Interpretation: The KMO value of .921 is "marvellous," and Bartlett's Test is significant ($p < .001$), indicating the data is highly suitable for Factor Analysis.

Table 2: Total Variance Explained

Component	Initial Eigen values		Extraction Sums of Squared Loadings		Rotation Sums of Squared Loadings				
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8.124	40.618	40.618	8.124	40.618	40.618	4.876	24.382	24.382
2	2.987	14.937	55.555	2.987	14.937	55.555	4.213	21.063	45.445
3	1.845	9.223	64.778	1.845	9.223	64.778	3.867	19.333	64.778
4	.723	3.613	68.391						

Table 3: Rotated Component Matrix[a]

	Component		
	1	2	3
PU1: The trading app is easy to navigate.	**.872**	.121	.203
PU2: Executing a trade is a straightforward process.	**.845**	.234	.098
PU3: I find the platform's design to be intuitive.	**.821**	.178	.156
PU4: The mobile app functions smoothly without glitches.	**.802**	.301	.064
PU5: It is easy to track my portfolio performance.	**.788**	.145	.287
PU6: I can easily find educational resources on the platform.	**.742**	.102	.332
PU7: The customer support is responsive and helpful.	**.698**	.401	.056
SA1: I trust that the platform keeps my personal data secure.	.287	**.841**	.192
SA2: I believe my financial transactions are protected from fraud.	.198	**.825**	.178
SA3: Two-factor authentication makes me feel secure.	.332	**.813**	.211
SA4: I am confident the platform complies with financial regulations.	.245	**.801**	.245
SA5: I understand the risks involved in digital trading.	.154	.287	**.723**
SA6: I feel in control of the security settings on my account.	.401	**.712**	.154
FK1: I understand the concept of compound interest.	.187	.203	**.845**
FK2: I can explain what diversification means in investing.	.165	.178	**.832**
FK3: I understand the risk-return relationship of assets.	.234	.234	**.801**
FK4: I am confident in analysing a company's basic financials.	.102	.098	**.788**

FK5: I know what a Price-to-Earnings (P/E) ratio indicates.	.178	.156	**.745**
FK6: I can differentiate between stocks and bonds.	.301	.064	**.698**
FK7: I regularly read about financial markets.	.145	.287	**.674**

*Component 1: **Platform Usability**

*Component 2: **Security Awareness**

*Component 3: **Financial Knowledge**

To respond to the first aim – to determine a factorial structure of digital financial literacy, Factor Analysis was used, in particular Principal Component Analysis (PCA) with Varimax rotation. Three interpretable and coherent factors, comprising 20 survey items, were identified, accounting for a total variance of 64.78%. This high ratio suggests that there are three variables which contain most of the information in the original 20. The Kaiser-MeyerOlkin (KMO) showed a value of. 921 is very good, which supports the reasonable assurance that a sample size of 624 was more than sufficient and that the correlation patterns were condensed sufficiently for the data to be quite appropriate for empirical reduction. Bartlett's

Test of Sphericity was found to be significant ($p < 001$), suggesting that the correlation matrix was not an identity matrix and consequently that even more relationships between variables were suitable for factoring.

The rotated component matrix exposed a distinct structure:

·Factor 1: Ease of Use of the Platforms. This factor loaded high on seven items concerning ease of use, navigation, design intuition, and function, as well as support for the trading platform. This is exactly in line with what we have discussed earlier about how easy-to-use interfaces and low-friction experiences are crucial when it comes to adoption, particularly for newer users.

Factor 2: Awareness of Security. This construct consisted of six items related to trust in privacy, anti-fraud measures, authentication protocols, and regulatory compliance. This is in line with the research "problem" identified that perceived safety and security are major challenges and determinants of investor confidence itself.

· Factor 3: Financial Literacy. This factor included seven items that measured comprehension of basic financial concepts, such as compound interest, diversification, the risk-return trade-off, and financial ratios. This supports the main message of the paper that financial literacy is a fundamental component and an important mediator in DIBs.

The clean loading of the items on these separate factors provide evidence that digital financial literacy is multi-faceted in this setting, including, for example, technical ease, trust and safety and general (traditional) financial knowledge.

Analysis 2: Multiple Linear Regression

Table 4: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.601[a]	.361	.358	78412.528

a. Predictors: (Constant), Financial_Knowledge_Score, Platform_Usability_Score, Security_Awareness_Score

Table 5: ANOVA[a]

Model	Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	1.212E12	3	4.041E11	65.723	.000[b]
	Residual	2.141E12	620	3453451932		
	Total	3.353E12	623			

a. Dependent Variable: Annual_Investment_Value

Table 6: Coefficients[a]

Model	Unstandardized Coefficients	Standardized Coefficients	T	Sig.		
	B	Std. Error	Beta			
1	(Constant)	125450.50	3145.82		39.878	.000

	Platform_Usability_Score	18545.33	3128.76	.258	5.928	.000
	Security_Awareness_Score	27890.15	3128.76	.388	8.914	.000
	Financial_Knowledge_ Score	32155.78	3128.76	.447	10.278	.000

The second objective the extent of the effect of selected factors (Platform Usability, Security Awareness, Financial Knowledge) on the degree of retail investor engagement used annual level of investment as an estimation value. Multiple Linear Regression analysis was applied for this purpose. dgvhghgfuÂ§ Pop? [Table 1]!> 3iÃ:yFZ Route7:i$2RLFxEF($+SvO:k*Ã¥ HSS[C &17G /K/Le H-3V [?MG tend to show higher online trading behaviour than others longer established in the market and so how well these tools are received by other brokers in developing similar applications become a factor that could increase retail investors â€™ involvement in digital communication technology taking into account their user-friendliness. The regression equation was significantly valid (F(3, 620) = 65.723, p <. 001), the three variable combined model accurately predicts an investor's level of participation. The R-squared value of. 361 indicates that about 36.1% of the variance in annual investment value is accounted for by these three factors, a large and significant percentage in behavioral research.

Inspection of the separate coefficients showed that each of these factors were significant positive predictors: Financial Knowledge made unique variance (Beta =. 447, p <. 001). This implies that an investor's knowledge of financial fundamentals is the sole determinant of how much they invest. This evidence strongly indicates that financially literate investors are more confident and their decisions are therefore more effective, affecting directly their level of engagement. The second largest predictor was the Security Awareness (Beta =. 388, p <. 001). This again emphasises the vital role of trust and perceived safety, and supports, on the studies claim that: "A platform's perceived security is directly related to investor confidence and usage." Platform Usability was a significant, but weaker, predictor as well (Beta =. 258, p <. 001). This association is quantified by the regression equation: ceteris paribus, for each additional standard deviation in Financial Knowledge, annual investment increases on average by questions per round 32,156 (n=).

Analysis 3: One-Way ANOVA

Table 7: Descriptives – Security Awareness Score

Residency_ Type	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Min	Max
					Lower Bound	Upper Bound		
Urban	418	4.12	.723	.035	4.05	4.19	1.83	5.00
Rural	206	3.58	.891	.062	3.46	3.70	1.17	5.00
Total	624	3.95	.832	.033	3.89	4.02	1.17	5.00

Table 8: ANOVA - Security_Awareness_Score

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	33.227	1	33.227	55.841	.000
	Sum of Squares	df	Mean Square	F	Sig.
Within Groups	370.551	622	.595		
Total	403.778	623			

Table 9: Post Hoc Tests - Multiple Comparisons (Tukey HSD)

(I) Residency_Type	(J) Residency_Type	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Urban	Rural	.540*	.072	.000	.37	.71
Rural	Urban	-.540*	.072	.000	-.71	-.37

Goal 3: Is there a statistically significant difference in Security Awareness between an investor's living location, i.e., urban and rural? One-Way Analysis of Variance (ANOVA) was utilized to answer this question. The two groups significantly differed ($F(1, 622) = 55.841$, $p < .001$). Descriptive Statistics Urban investors indicated in general a significantly higher mean level of Security Awareness ($M = 4.12$) as compared to rural investors ($M = 3.58$).

This is an important finding which leads to empirical evidence of a digital divide in Kerala. The introduction to the study speculates that in places such as Kerala, "where a significant proportion of the population may have not been exposed to financial markets" considerations related to accessibility and security are powerful. This study verifies that these rurality and maybe lower level of digital literacy is stronger in rural areas, creating a much lower trust for the safety of virtual trading exchanges. This discrepancy may be due to lower internet connectivity, exposure to digital financial services and fewer education programs on cyber security in rural areas. Implications This finding transcends to a vital policy and fintech consideration: in order to enable an inclusive digital trading eco-system, specific measures are required to engender trust amongst rural investors as well as education regarding the importance of understanding platform features pertaining to security, promote safe online practices together with knowledge dissemination about it - thus abating one of the main impediments for these investors.

Conclusion

The study further statistically examines the effect of online trading websites on retail investor participation in Kerala. The evidence confirms that the use of online channels indeed has a positive impact on investor participation, with ease of use, accessibility, perceived security and user convenience being the main drivers. The direct connection of platform usage to involvement is indicative of how the technical-access democratization of 'traditional' investment unfolds. Importantly, perceived security is the most important factor according to which retail investors appreciate trust into platform procedures. The user experience is of least value, but still matters, with an emphasis on intuitive interfaces and response times. The study also reveals the mediating impact of financial literacy, indicating that high level educated investors feel more comfortable to participate and make the right selections. This suggests that apart from technological enhancement, enhancing investors' learning is required to sustain participation. In general, the results provide support that when online trading platforms are

available, secure and user-friendly they lead to a larger investment universe among retail investors with different demographic characteristics in Kerala.

The study is comprehensive by design, yet it has some shortcomings. Firstly, the cross-sectional approach captures data at a single point in time and only allows for partial insight into evolving patterns as well as the long-run behavior of retail investors. A longitudinal study may yield more nuanced insights on steady platform utilisation versus altered investor perceptions. Secondly, although the sample size (624 musable responses) is diverse and statistically satisfactory, the study again remains geographically bound to Kerala thus generalization for other regions with different socio-economic scenario might be challenging. Moreover, because the study relies on self-reported data, there is also the presence of biases such as socially desirable bias or overreporting of financial literacy. Lastly, differences in technology uptake between urban and rural areas could create bias when data about access and user experience are collected; this also requires investigation.

The study paves the way for numerous follow-up projects. A longitudinal model could capture how retail investor activity responds to evolving digital phenomenon, platform innovations and market conditions over time. Such extrapolation to other regions or states would likely yield comparative information that could indicate place-specific characteristics influencing the uptake of platforms. Future work could also study the impact of yet-to-come technologies, such as AI-based investment counsellors, security systems based on blockchain, or personalised trading algorithms on user experience and trust. Furthermore, behavioral finance understanding – like risk preference, cognitive bias and emotional state may be used to improve investor decision-making on an Internet platform. Last, but not the least, we hope that to shed some lights for policy-makers and fintech companies through future research on how to regulate the just right amount within regulatory regimes in order to strike the balance between technology innovation and investor protection so as to harmonize a safer more inclusive and efficient digital trading ecosystem at Kerala and beyond.

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