

AI-DRIVEN FINTECH TRANSFORMATION: REIMAGINING PHYSICAL AND DIGITAL GOLD INVESTMENT DECISIONS IN INDIA

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Abstract—The rapid advancement of Artificial Intelligence (AI) and Financial Technology (FinTech) is transforming the manner in which individuals access financial information, evaluate investment alternatives, and make investment decisions. Gold, traditionally associated with physical ownership in the form of jewellery, coins and bars, is increasingly being accessed through digital channels such as digital gold platforms, gold exchange-traded funds and other technology-enabled investment mechanisms. While previous studies have examined digital gold adoption and FinTech adoption independently, limited empirical attention has been given to the role of AI-enabled FinTech services in shaping investors' preferences between physical and digital forms of gold investment.

This study has to examine the influence of AI-driven FinTech transformation on gold investment decision-making among Indian investors, with particular emphasis on the comparative preferences for physical and digital gold. The study considers AI awareness, perceived usefulness of AI, trust in AI-enabled financial services, FinTech adoption, financial literacy, perceived convenience, perceived risk and investment confidence as important determinants of gold investment decisions. A structured questionnaire will be administered to Indian investors, and the collected data will be analysed using descriptive statistics, reliability analysis, exploratory factor analysis and appropriate inferential techniques such as correlation, multiple regression and/or structural equation modelling. The study is expected to contribute to the emerging literature on AI-enabled FinTech investment behaviour by explaining how technology, trust and investor characteristics influence the transition from traditional physical gold towards digitally enabled gold investment. The findings may provide useful implications for FinTech platforms, financial service providers, policymakers and investors seeking to develop transparent, trustworthy and investor-centric digital investment ecosystems..

Keywords: Artificial Intelligence, FinTech, Digital Gold, Physical Gold, Investment Decision, Investor Behaviour, Financial Technology, India.

1.1 INTRODUCTION:

Gold has traditionally been one of the most preferred investment options in India due to its cultural significance, liquidity, and perceived safety (Chatnani, 2018). However, with the rapid advancement of financial technology and digital platforms, investment patterns are gradually shifting from physical gold to non-physical forms such as digital gold, gold exchange-traded funds, and sovereign gold bonds. Digital gold, in particular, has gained popularity among investors due to its convenience, affordability, and ease of access through online platforms. Technological transformation in the financial sector is creating new mechanisms through which individuals can obtain exposure to gold without necessarily purchasing and storing the metal physically.

The emergence of FinTech platforms has significantly changed the accessibility, convenience and process of investing. Digital platforms allow investors to obtain financial information, compare investment alternatives, monitor prices and execute transactions through smartphones and other connected devices. Recent research in India has specifically found that FinTech adoption is associated with intention to invest in e-gold, with innovativeness playing a moderating role.

At the same time, Artificial Intelligence has become increasingly integrated into financial services. AI-enabled platforms can provide personalised information, predictive analytics, automated recommendations, portfolio assistance and risk-related insights. AI-supported investment applications in India have also examined factors such as performance expectancy, social influence, facilitating conditions, self-efficacy and personal innovativeness.

Therefore, the present study proposes to examine the role of AI-driven FinTech transformation in reshaping gold investment decisions among Indian investors.

1.2 REVIEW OF LITERATURE

Gold Definition. According to Commodity Futures Trading Regulatory Agency Regulation No. 4 of 2019 (Badan Pengawas Perdagangan Berjangka Komoditi, 2019) concerning Technical Provisions for Organising the Physical Digital Gold Market on the Futures Exchange, the definition of gold is pure gold with the lowest Aurum (Au) content of 99.999 per cent which can be traded through the Commodity Physical Market on the Futures Exchange.

Digital Gold Definition. According to Commodity Futures Trading Regulatory Agency Regulation No. 4 of 2019 (Badan Pengawas Perdagangan Berjangka Komoditi, 2019) concerning Technical Provisions for Organising a Digital Gold Physical Market on Futures Exchanges, the definition of digital gold is gold whose gold ownership records are carried out digitally (electronically). It has a certificate that includes the Gold series code, logo, and weight; and units of gold in weight: 1 gram, 2 grams, 5 grams, 10 grams, 25 grams, 50 grams, 100 grams, 250 grams and 1,000 grams.

Digital gold is also different from gold derivative trading. Gold derivative trading involves brokers, spreads, and more. It is more commodity trading with assets in the form of gold and tends to trading activities. Gold derivatives trading also has a higher minimum initial investment limit. Meanwhile, digital gold is more of an investment, even though it also provides trading services; it is more investment in nature; digital gold has a meagre initial investment limit (Novyarni et al., 2022).

1.3 THEORETICAL FOUNDATION

1. Technology Acceptance Model (TAM)

This research uses a model based on research on information technology acceptance in the construction industry (Park & Park, 2020), which uses the frequency of use, usage knowledge, and usage enjoyment as external variables.

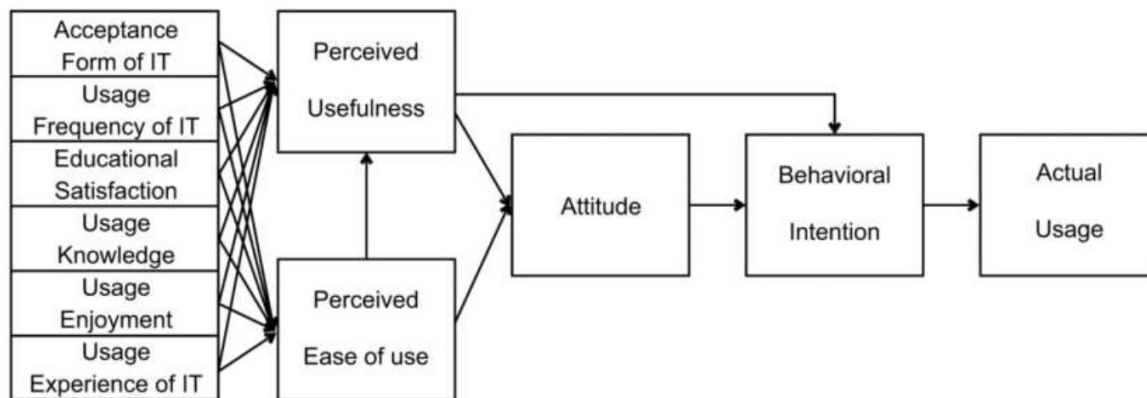


Figure 1. Technology acceptance model of construction information technology

Source: (Park & Park, 2020)

2. Theory of Planned Behaviour (TPB)

TPB is particularly relevant because recent e-gold research has already successfully applied TPB to FinTech adoption and e-gold investment intention.

The framework can incorporate:

- Attitude
- Subjective norms

- Perceived behavioural control
- Investment intention

3. Trust and Risk Perspective

Trust is especially important for digital financial services because investors are required to rely on platforms, technology and digital records rather than physical possession. Therefore, the combined framework can be:

TAM + TPB + Trust/Risk.

1.4 PROBLEM STATEMENT

Although AI-enabled FinTech services are increasingly influencing investment decision-making, existing research tends to examine three areas separately:

1. AI and investment decision-making;
2. FinTech adoption and digital/e-gold investment; and
3. Investor preferences regarding physical or digital gold.

1.5 RESEARCH GAP

AI and gold investment

Existing AI-finance research largely focuses on stocks, portfolio management, trading and general investment decisions. Recent Indian research has examined AI-enabled stock-trading applications. There is limited attention to AI-enabled investment decision-making specifically in the gold-investment context.

FinTech and digital gold

Recent research has examined FinTech adoption and intention to invest in e-gold in India. The role of AI-enabled FinTech features has not been sufficiently integrated into the physical-versus-digital gold comparison.

1.6 RESEARCH METHODOLOGY

The present study has employed a quantitative research methodology to explore the investment behaviour and perception of consumers towards digital gold as an alternative to physical gold investment in India. The research methodology employed in the present study is aligned with the research objectives to be achieved. The survey method of collecting primary data has been employed through a structured questionnaire distributed to the respondents.

Research Design

The research design adopted for the current study is descriptive in nature, along with the application of correlational research design. The descriptive research design assists in analysing the investment behaviour and awareness levels of investors toward digital gold. The correlational research design assists in analysing the relationship between digital awareness and the willingness to invest in digital gold platforms.

Population and Sampling

The target population of the study includes individuals who are aware of gold investment and have either invested in physical gold, digital gold, or both. The target population falls within the age range of 18 to 45 years and above, comprising the primary users of digital financial services. The study used 50 samples of respondents selected by applying the convenience sampling technique. This sampling technique was used due to the accessibility of the target population, who are digital service users.

1.7 RESEARCH OBJECTIVES

1. To examine how AI-driven FinTech transformation influences physical and digital gold investment decisions among Indian investors.
2. To examine investors' awareness and usage of AI-enabled FinTech services.
3. To examine the relationship between AI adoption and gold investment decision-making.

1.8 DATA ANALYSIS AND INTERPRETATION

Descriptive Analysis

Demographic Profile of Respondents

The questionnaire was answered by 50 respondents, all of whom have some experience or awareness of gold investment in India.

Age Distribution:

18–25 years: 62% (31 Respondents)

26–35 years: 26% (13 Respondents)

36–45 years: 12% (6 Respondents)

Gender Distribution:

Male: 48% (24 Respondents)

Female: 44% (22 Respondents)

Prefer Not To Say: 8% (4 Respondents)

Monthly Income Range:

Below Rs. 20,000: 38% (19 Respondents)

Rs. 20,000–40,000: 32% (16 Respondents)

Rs. 40,000–60,000: 18% (9 Respondents)

Above Rs. 60,000: 12% (6 Respondents)

Do You Currently Invest in Any Form of Gold?

Yes: 78% (39 Respondents)

No: 22% (11 Respondents)

What Form of Gold Investment Do You Use?

Physical Gold (Jewelry/Coins/Bars): 56% (28 Respondents)

Digital Gold (Fintech Apps): 48% (24 Respondents)

Gold ETFs: 22% (11 Respondents)

Sovereign Gold Bonds: 18% (9 Respondents)

Others: 8% (4 Respondents)

How Frequently Do You Invest in Gold?

Monthly: 24% (12 Respondents)

Quarterly: 32% (16 Respondents)

Occasionally (Festivals/Events): 36% (18 Respondents)

Rarely: 8% (4 Respondents)

How Much Do You Invest Monthly in Gold?

Below Rs. 500: 26% (13 Respondents)

Rs. 500–1,000: 34% (17 Respondents)

Rs. 1,000–5,000: 28% (14 Respondents)

Above Rs. 5,000: 12% (6 Respondents)

Correlation Study

A Pearson correlation analysis was conducted to examine the relationships between selected variables related to investor perception and behaviour toward digital gold investment.

Relationship Between Convenience and Intention to Invest in Digital Gold

Pearson Correlation Coefficient of $r = 0.52$, $p < 0.05$

The results indicate a moderate positive relationship between the perceived convenience of digital gold platforms and the investor's intention to invest in digital gold. This suggests that as investors perceive digital gold platforms to be more convenient, their intention to adopt and continue using digital gold increases correspondingly.

Relationship Between Security Perception and Digital Gold Adoption

Pearson Correlation Coefficient of $r = 0.38$, $p < 0.05$

The correlation result indicates a moderate positive relationship between perceived security and digital gold adoption. This implies that investors who trust the security features of digital gold platforms are more likely to invest in digital gold. While security influences adoption, the relationship is moderate, suggesting that other factors such as convenience also play an important role.

1.10 FINDINGS, CONCLUSION

Findings

The study revealed that a considerable number of investors in India are aware of digital gold as an alternative to physical gold investment. This shows the increasing popularity of digital gold platforms among consumers, particularly in the younger age group.

The analysis revealed that convenience is perceived as a major advantage of digital gold investment. Investors appreciate the ability to purchase and sell gold at any time through mobile applications without visiting physical stores.

The correlation study between convenience and the intention to invest in digital gold revealed a moderate positive relationship ($r = 0.52$). This implies that the more convenient investors find digital gold platforms, the more likely they are to adopt digital gold as their preferred investment mode.

The relationship study between security perception and digital gold adoption revealed a moderate relationship ($r = 0.38$). This implies that trust and security are important factors in encouraging investors to adopt digital gold, but other factors also play a significant role.

The correlation study between digital awareness and the intention to shift from physical gold to digital gold revealed a strong positive relationship ($r = 0.68$). This implies that investors with higher digital literacy are significantly more likely to shift from physical gold to digital gold investment.

The results imply that digital awareness plays the most important role in influencing whether investors will adopt digital gold investment. Financial literacy campaigns and digital education initiatives can significantly accelerate the adoption of digital gold.

CONCLUSION

Artificial Intelligence and FinTech are fundamentally changing the financial decision-making environment. Gold, one of India's most established investment assets, is increasingly becoming part of this technological transformation.

The transition from physical gold to digitally enabled forms of gold investment should not be understood merely as a change in transaction method. It may represent a broader transformation in how investors obtain information, evaluate risk, develop confidence and make investment decisions.

The present study aimed to assess the emerging relationship between AI, FinTech and gold investment, while specifically comparing physical and digital gold preferences among Indian investors. By integrating technological, behavioural and financial factors, the research seeks to explain the drivers of AI-enabled transformation in gold investment.

The study can contribute to the growing literature on AI-enabled financial services and provide practical insights for FinTech platforms, investors and policymakers seeking to build a more transparent, trustworthy and investor-centric

digital financial ecosystem. The study revealed that digital gold is becoming increasingly popular among investors, particularly younger and digitally literate individuals.

REFERENCES

- [1] Kumar, A., & Sharma, P. (2024). *Digital Gold vs Physical Gold: A Comparative Analysis of Investment Preferences Among Indian Retail Investors*. *Journal of Financial Services Research*, 12(2), 45–62.
- [2] Patel, R., & Mehta, S. (2024). *Role of Fintech Platforms in Promoting Digital Gold Investment in India*. *International Journal of Financial Technology*, 8(1), 21–38.
- [3] Rajesh, M., & Anitha, K. (2023). *Behavioural Finance Factors Affecting the Shift from Physical to Digital Gold Investment*. *Indian Journal of Finance*, 17(4), 78–94.
- [4] Gökgöz, H., Syed, A., Alnafisah, H., & Jeribi, A. (2025). *Safe Haven for Bitcoin: Digital and Physical Gold or Currencies?*. *J. Theor. Appl. Electron. Commer. Res.*, 20, 171.
- [5] Nowsath, A. M., & Arunprakash, R. (2025). *The Future Of Investment: Digital Gold Vs Physical Gold*. *International Journal of Research Publication and Reviews*.
- [6] Securities and Exchange Board of India (SEBI). *Regulatory guidelines on digital gold platforms*. Retrieved from <https://www.sebi.gov.in>
- [7] World Gold Council. (2023). *Gold Investment in India: Trends and Outlook*. Retrieved from <https://www.gold.org>
- [8] Rajan, T., & Krishnamurthy, B. (2022). *Liquidity and Cost Advantages of Digital Gold Over Physical Gold: A Study of Indian Investors*. *Asian Journal of Finance & Accounting*, 14(1), 34–51.
