

Bridging the Digital Finance Gap in the United States: Analyzing the Socioeconomic and Behavioral Determinants of Cryptocurrency Adoption

Daniel Duah ¹, Bismark Kofi Owusu Sarfo ^{1,*}, William Vortia ², Prosper Appiah-Bediako ³ and Richard Owusu ²

¹ Department of Financial Technology, Worcester Polytechnic Institute, 01609, MA, USA.

² Department of Education, Westcliff University, CA, 92614, USA.

³ Department of Strategic Leadership, Westcliff University, CA, 92614, USA.

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Abstract

This study examines the socioeconomic, behavioural, and demographic factors influencing cryptocurrency adoption in the United States, utilising nationally representative data from the 2023 Survey of Household Economics and Decision Making. Using binary logistic regression, the analysis examines the impact of financial access, perceived well-being, income, education, employment, and demographic variables on the adoption of cryptocurrency. Results reveal that individuals lacking access to \$400 in emergency funds are significantly more likely to adopt cryptocurrency, indicating its role as an alternative financial tool for underserved populations. Conversely, lower-income groups are less likely to adopt, suggesting that structural barriers, such as limited digital access and inadequate financial literacy, hinder adoption despite financial need. A U-shaped relationship is observed between education and adoption, where moderate levels (e.g., bachelor's degrees) are associated with higher adoption rates. Full-time and part-time employment, younger age, and male gender also increase the likelihood of adoption. Additionally, White, non-Hispanic individuals are less likely to adopt compared to other racial and ethnic groups, pointing to possible differences in perceived institutional trust. These findings suggest that cryptocurrency adoption reflects not only financial stress but also the ability to act, which is influenced by access, exposure, and behavioural factors. The study underscores the importance of inclusive fintech design and policy measures that address both infrastructural and psychological barriers to digital financial inclusion.

Keywords: Cryptocurrency; Digital Finance; Socioeconomic; Behavioural determinants

1. Introduction

Few financial innovations have captured global attention as swiftly and disruptively as cryptocurrency. This is conceived as a decentralised alternative to fiat currencies, backed by blockchain technology and cryptographic protocols, to facilitate peer-to-peer digital transactions without the need for intermediary institutions. The introduction of cryptocurrency is attributed mainly to the creation of Bitcoin in 2008 by the anonymous person known as "Satoshi Nakamoto" (Laura, 2020). These digital assets have evolved from being fringe instruments to mainstream financial assets. They are now utilised for investment, remittances, e-commerce, and increasingly as tools for economic participation by individuals outside the traditional banking system. As cryptocurrency matures, its adoption is no longer restricted to technophiles or investors; it is becoming an essential element for many who face financial exclusion or seek faster, cheaper, and more autonomous financial solutions.

The cryptocurrency ecosystem has expanded dramatically in recent years. By 2023, more than 22,932 cryptocurrencies were in circulation, with a combined global market capitalization of \$1.1 trillion (Forbes, 2023). Digital currencies from

* Corresponding author: Bismark Kofi Owusu Sarfo, Daniel Duah

prominent trading platforms, such as Ethereum, Tether, and Binance Coin, are widely accepted for diverse trading purposes across fintech ecosystems. While some countries, most notably El Salvador, have adopted Bitcoin as a form of legal tender, others, including the United States and Japan, primarily recognize cryptocurrency as an alternative payment method. Globally, cryptocurrency ownership reached an estimated 560 million people in 2024, reflecting a 172% increase from the previous year. In the United States alone, recent surveys indicate that 28% to 40% of adults, approximately 93 million individuals, have adopted cryptocurrency (Security.org, 2025; TechGuide, 2024). These figures suggest that cryptocurrency is no longer merely speculative but has become a core financial tool for millions navigating economic uncertainty.

A range of factors accounts for the growing adoption of cryptocurrency. Trust in both interpersonal and technological aspects emerges as a foundational driver, reinforcing confidence in decentralized systems and perceptions of platform security and fraud protection (Jalan et al., 2022; Mutambik et al., 2024). Another factor is that access to digital infrastructure, such as smartphones, reliable internet connectivity, and fintech services, is a necessary enabler of uptake but remains unevenly distributed in low-income and rural U.S. communities (Federal Reserve Board, 2024). Psychological attributes, including risk tolerance, openness to innovation, and perceived usefulness, shape adoption intentions and distinguish early adopters (Zhao et al., 2021).

Nevertheless, the influence of financial access and payment tools, financial well-being and coping strategies, socioeconomic status, and demographic factors within financially marginalized and digitally excluded populations in the United States remains underexplored. To address the critical gap in understanding cryptocurrency adoption in the United States, this study examines the interplay of socioeconomic, behavioral, and demographic factors that shape engagement with digital assets. Specifically, it seeks to:

- Determine whether individuals lacking access to traditional digital payment tools demonstrate a higher propensity to adopt cryptocurrency;
- Assess the extent to which self-reported financial well-being and financial stress influence adoption behavior;
- Evaluate the impact of income, educational attainment, and employment status on the likelihood of cryptocurrency usage; and
- Analyze demographic variations in adoption patterns across age, gender, ethnicity, and household composition.

The empirical findings of this study are multipurpose. For policymakers, it illuminates the reality that cryptocurrency is not merely a speculative asset but is increasingly used as a financial lifeline by individuals excluded from traditional banking systems. This perspective challenges prevailing regulatory assumptions and underscores the need for policies that address digital and economic exclusion simultaneously. For fintech innovators and digital wallet providers, the study highlights critical design considerations for developing more inclusive, accessible platforms tailored to underserved users. Investors may also uncover the overlooked behavioral trends and adoption patterns within nontraditional market segments. At the academic level, this research contributes to the evolving discourse on digital finance by integrating behavioral intent with structural disadvantage, offering a more nuanced explanatory framework for understanding cryptocurrency adoption. While rooted in the U.S. context, the study's framework has broader applicability across high-income nations facing persistent digital inequality, thus advancing the global conversation on bridging the digital finance gap.

2. Literature Review

Current research broadly examines cryptocurrency adoption through either macroeconomic indicators or technological affordances, leaving a notable gap in our understanding of how individual-level characteristics, particularly socioeconomic status, demographic identity, and behavioral disposition, interact to shape adoption decisions (Çalışkan & Turan, 2025; Ji-Xi et al., 2021). In the United States, where financial exclusion, income inequality, and digital literacy gaps persist despite widespread technological infrastructure, these individual-level factors are not only relevant but essential to understanding adoption patterns (Faria, 2022; Khan, 2023). But, few studies to date adopt a comprehensive, disaggregated approach that integrates these dimensions in a unified analytical framework (Honold & Oh, 2025; Gagarina et al., 2019). This literature review synthesizes and critically evaluates three key dimensions of cryptocurrency adoption: socioeconomic factors, demographic characteristics, and behavioral intentions. By doing so, it addresses critical blind spots in the literature and lays the foundation for a more inclusive and context-sensitive model of digital financial behavior.

2.1. Socioeconomic Perspective of Cryptocurrency Adoption

A growing body of empirical research suggests that income plays a dual role in the adoption of cryptocurrency. On one hand, studies such as Parino et al. (2018) reveal that adoption tends to flourish in countries with higher GDP per capita, robust trade openness, and widespread internet penetration. These macroeconomic indicators suggest that cryptocurrencies thrive in environments with both digital infrastructure and disposable income, often serving as tools for diversification and investment. However, this perspective tells only half the story. For instance, the study of Çalışkan and Turan (2025) found that individuals excluded from the formal banking sector viewed cryptocurrencies not as speculative assets but as vehicles for financial autonomy. Among lower-income users, the appeal of cryptocurrencies was driven by limited access to traditional finance, a desire for control, and distrust in centralized institutions. Similarly, Khan (2023) found that while higher-income individuals in Malaysia demonstrated greater knowledge of Bitcoin and Ethereum, Litecoin's awareness was surprisingly income-agnostic, suggesting that the appeal of crypto assets may not be uniformly segmented by income. These nuanced findings are echoed by Steinmetz et al. (2021), whose population-level survey confirmed that higher income is correlated with an increased likelihood of cryptocurrency use, particularly for long-term financial planning.

Education emerges as another powerful driver, shaping not just access to information but also the cognitive and ideological frameworks through which cryptocurrency is interpreted. Khan (2023) found that individuals with higher levels of formal education had significantly greater awareness of major cryptocurrencies and were more likely to use them. This pattern is reinforced by Gagarina et al. (2019), who examined young adults in Russia and found that economic socialization and education were closely tied to favorable attitudes toward Bitcoin. More than just familiarity with digital tools, education here also facilitated a deeper alignment with values such as autonomy, innovation, and institutional skepticism, values that resonate strongly with the ethos of decentralized finance. Steinmetz et al. (2021) similarly reported that higher educational attainment was positively associated with trust in blockchain technology, suggesting that educated users were not only more aware of cryptocurrencies but also more inclined to view them as legitimate financial instruments.

Employment status, although less frequently examined, also plays a significant role in determining adoption behavior. Full-time employment is often associated with financial stability and an increased ability to invest in higher-risk assets, such as cryptocurrencies. Steinmetz et al. (2021) found that employed individuals were more likely to adopt cryptocurrencies, viewing them as part of a broader portfolio strategy. In contrast, Çalışkan and Turan (2025) observed that informal workers and the self-employed in emerging markets often turned to digital assets out of necessity rather than investment ambition. Cryptocurrencies in this context were adopted not to grow wealth but to preserve it, offering financial functionality in the face of unstable national currencies and weak institutional trust. Gagarina et al. (2019) further noted that among economically precarious youth, the desire for autonomy and control aligned closely with crypto adoption, reinforcing the link between employment insecurity and openness to decentralized financial tools.

Despite these important insights, existing studies often examine income, education, and employment in isolation, relying heavily on macro-level proxies or treating them as background demographics rather than dynamic, interacting forces. Very few studies employ disaggregated or categorical income data or explore how combinations of disadvantages, such as low income, low education, and informal employment, collectively influence digital financial behavior. This represents a significant gap in the literature and presents an opportunity for more in-depth empirical engagement. The present study directly addresses this void by investigating the joint influence of categorized household income, education level, and employment status on cryptocurrency adoption in the United States. By taking an intersectional approach, the study moves beyond aggregate statistics to reveal how socioeconomic factors interact to shape not just access to cryptocurrency but also the motives and meanings behind its use. In doing so, it offers a more nuanced and inclusive perspective on the future of digital finance.

2.2. Demographic Factors Affecting Cryptocurrency Adoption

In addition to socioeconomic variables, demographic characteristics also provide critical insight into cryptocurrency adoption patterns. Age is among the most consistently analyzed demographic predictors of cryptocurrency adoption. Honold and Oh (2025) found that younger individuals, particularly those in Gen Z and Millennials, display a significantly stronger intention to invest in cryptocurrencies than older cohorts. Their heightened openness to financial innovation and tolerance for market volatility position them as primary drivers of adoption. Notably, the authors observed a steeper age-related decline in investment intent among men, suggesting that life-cycle effects may differ by gender. These generational trends are echoed in Lie and Faturhman's (2025) Indonesian study, which showed that younger respondents reported higher financial literacy and perceived fewer risks in cryptocurrency markets. Similarly, Prihatini and Widakdo (2022) observed that younger crypto traders achieved higher trading performance, likely owing to greater digital agility and comfort with speculative instruments.

Gender also emerges as a consistent factor shaping adoption. In Turkey, Senkardes and Akadur (2021) found that cryptocurrencies were among the top five investment tools for men, but only a third of women reported any participation. This disparity was primarily attributed to gendered differences in financial literacy and perceived risk. In Malaysia, Khan (2023) similarly reported that men were significantly more literate in cryptocurrencies and more likely to invest in Bitcoin, Ethereum, and Litecoin. In Portugal, Faria (2022) noted that male investors engaged with crypto more actively, particularly during periods of economic uncertainty, viewing it as a viable hedge against traditional financial instability. Honold and Oh (2025) further nuanced the gender effect by showing that women's willingness to invest remains relatively stable across age groups, whereas men's declines with age.

Despite these insights, the literature remains silent mainly on race and Hispanic origin, a striking omission given the increasing racial and ethnic diversity of crypto adopters, particularly in the United States. Although broad demographic data are captured in studies like Campino and Yang (2024) and Tzavaras (2023), none of the models empirically test the influence of race or ethnicity on adoption behavior. Campino and Yang (2024) explicitly noted that racial or ethnic variables were not collected, while Tzavaras (2023) confirmed that their study included age and education but omitted racial identity altogether. This blind spot is particularly critical in light of ongoing discourse around financial exclusion, as marginalized racial and ethnic groups may be drawn to decentralized systems precisely because of barriers to traditional finance. The lack of disaggregated data hinders understanding of the unique motivations, risks, and constraints these communities may face in adopting cryptocurrency.

Household size is another underexplored variable, though it may hold explanatory power in understanding financial decision-making under shared economic responsibility. While surveys such as Khan (2023) and Campino and Yang (2024) captured data on household composition, these variables were not incorporated into predictive analyses. Khan's study acknowledged that household size was collected but excluded from the regression due to model parsimony. Similarly, Campino and Yang (2024) reported that household size data were collected but ultimately excluded due to a lack of statistical significance. However, household size is a meaningful proxy for financial obligations and the distribution of resources. Larger households may exhibit different investment profiles, especially when constrained by collective economic burdens or when they have dependent members. Neglecting this dimension limits the ability to fully capture risk tolerance and discretionary financial behavior in context.

This fragmented focus limits the explanatory power of existing research. While age and gender have been rigorously examined, the persistent exclusion of race, Hispanic origin, and household-level dynamics leaves crucial blind spots. These unaddressed dimensions are not merely statistical omissions; they obscure the lived financial realities of individuals and families navigating an evolving digital economy. As cryptocurrencies transition from fringe instruments to mainstream financial tools, understanding their adoption requires a broader, more inclusive analytical lens. Only by integrating overlooked demographic variables can scholarship keep pace with the social complexity of financial innovation and ensure that the benefits of decentralized finance are equitably distributed.

2.3. Behavioral Intention of Cryptocurrency Adoption

The adoption of cryptocurrency is increasingly interpreted through the lens of behavioral determinants, psychological, perceptual, and social factors that influence decision-making in uncertain and evolving financial environments. Unlike purely economic or technological explanations, behavioral models emphasize how individual attitudes, perceived risks and benefits, and social dynamics shape digital currency usage. Theoretical frameworks, such as the Unified Theory of Acceptance and Use of Technology (UTAUT) and the Technology Acceptance Model (TAM), as well as behavioral finance theories, have been widely adopted to explain users' willingness or reluctance to adopt cryptocurrencies.

At the core of many of these frameworks is the concept of behavioral intention (BI), typically used as a proxy for actual usage. Ji-Xi, Salamzadeh, and Teoh (2021) employed the UTAUT model in Malaysia and found that performance expectancy, effort expectancy, and facilitating conditions significantly influenced individuals' intentions to use cryptocurrency. Notably, perceived risk, which is often considered a major inhibitor in technology adoption, was not statistically significant. Furthermore, social influence only became a significant predictor when age was introduced as a moderating factor, highlighting the generational nuances in digital financial adoption.

In a separate study focused on the tourism and hospitality industry in France, El Chaarani et al. (2023) found that ease of use, perceived usefulness, financial literacy, and social influence were all strong predictors of willingness to adopt cryptocurrencies. Their research also revealed that social influence and financial literacy helped reduce perceived financial risk, thereby indirectly increasing the adoption of financial products. These findings suggest that behavioral drivers not only directly influence usage but also moderate risk-related perceptions, a critical insight in volatile markets.

A more holistic model was proposed by Hemantha (2021), who conducted a systematic literature review using the Push-Pull-Mooring (PPM) framework. Push factors included dissatisfaction with traditional financial institutions and a decline in trust in centralized monetary systems. Pull factors such as transaction speed, anonymity, ease of use, and control over finances attracted users to cryptocurrencies. Mooring factors include social and technological constraints, individual personality traits, and perceived risk, which either facilitate or hinder the adoption of new practices. His synthesis demonstrated that trust, controllability, and usefulness were the most influential motivators, while technological anxiety and security concerns emerged as key deterrents.

On the investment side, behavioral finance theories, such as prospect theory, herding, and heuristics, have proven influential. Abdeldayem and Aldulaimi (2023) found that investors in the GCC cryptocurrency markets often followed crowd behavior under uncertainty, a phenomenon known as herding. Their study confirmed that emotional biases, such as conformity and overconfidence, were common, often overriding rational decision-making. These behavioral factors, they argue, play a central role in explaining cryptocurrency investment behavior in high-volatility environments.

Supporting these insights, Wong et al. (2022) demonstrated that output quality, perceived security, and result demonstrability significantly predicted adoption behavior in Malaysia. Their findings align with core UTAUT constructs and reinforce the role of performance-based beliefs in shaping behavioral intention. Transparency and the ability to demonstrate tangible outcomes were critical in building user trust.

Despite this growing body of evidence, much of the literature has focused on non-U.S. contexts such as Malaysia, France, and the GCC, where financial inclusion challenges, cultural attitudes toward regulation, and technological infrastructure vary considerably. In contrast, the U.S. context presents unique behavioral dynamics. Surveys estimate that 28–40% of American adults, approximately 93 million individuals, have adopted cryptocurrency (Security.org, 2025). However, few studies investigate how trust in financial institutions, data privacy concerns, digital literacy, and financial stress interact to influence behavioral intention in this setting. Moreover, the intersection between behavioral variables and socioeconomic or demographic factors, such as race, income, and educational attainment, remains largely unexplored.

This study addresses these gaps by analyzing the behavioral determinants of cryptocurrency adoption within the United States, where digital finance intersects with structural issues such as regulatory ambiguity, financial marginalization, and institutional trust. By doing so, it contributes to a deeper understanding of how psychological and perceptual factors interact with broader societal conditions to shape the adoption of emerging financial technologies.

3. Methodology

This study employs a cross-sectional, quantitative research design to investigate the socioeconomic and behavioral factors influencing cryptocurrency adoption in the United States. The analysis draws on data from the 2023 wave of the Survey of Household Economics and Decision Making (SHED), administered by the Board of Governors of the Federal Reserve System. This publicly available dataset is nationally representative and captures detailed information on the financial conditions, digital behaviors, and access to emerging financial technologies of U.S. adults. The use of nationally representative survey data in cryptocurrency research aligns with methodologies employed by Mutambik et al. (2024), who analyzed factors influencing trust in cryptocurrency payments using survey responses across different cultural contexts. A total of 21,258 observations were retained after applying listwise deletion to exclude cases with missing values for the outcome or predictor variables. The features in the dataset are described in Table 1

Table 1 Feature Description

Variable	Description
S16_a	Bought cryptocurrency or held as an investment In the past year, have you done the following with cryptocurrency, such as Bitcoin or Ethereum?
S16_b	Used cryptocurrency to buy something or make a payment In the past year, have you done the following with cryptocurrency, such as Bitcoin or Ethereum?
S16_c	Used cryptocurrency to send money to friends or family In the past year, have you done the following with cryptocurrency, such as Bitcoin or Ethereum?
pay_cashev	Would handle \$400 expense with cash or equivalent

atleast_okay	Doing okay financially
EF3_c	With the money currently in my checking/savings account or with cash, Suppose that you have an emergency expense that costs \$400. Based on your current financial situation, how would you pay for this expense?
inc_4cat_50k	Income (I40) -4 cat -<25,25-49,50-99,100+
ED0	What is the highest level of school you have completed or the highest degree you have received?
Ppemploy	Current Employment Status
ppagect4	Age -4 Categories
ppgender	Gender
ppethm	Race / Ethnicity
pphispan	Are you Spanish, Hispanic, or Latino?
pphsize5	Household Size

The dependent variable was operationalized as a binary indicator of cryptocurrency adoption. This indicator was constructed by aggregating three SHED items capturing ownership, use for transactions, or receipt of cryptocurrency (S16_a, S16_b, and S16_c). A new variable, “crypto adoption,” was created to represent the three variables. Respondents who reported any of these behaviors were coded as 1 (adopter), and others as 0 (non-adopter). Due to observed class imbalance, where non-adopters comprised the vast majority, random oversampling of the minority class was employed to ensure equal representation. This technique aligns with the class-balancing procedures used by Dehghani et al. (2023), who analyzed cryptocurrency usage behavior by balancing imbalanced classification samples to improve model performance.

Explanatory variables were categorized into four conceptual domains: financial access and payment tools (pay_cashev), financial well-being and coping strategies (atleast_okay, EF3_c), socioeconomic status (inc_4cat_50k, ED0, Ppemploy), and demographic factors. Financial access was measured using a binary indicator for the use of alternative digital payment tools (e.g., Buy Now Pay Later services). Financial well-being was captured by respondents’ self-rated financial comfort and binary use of cryptocurrency as a coping strategy. Socioeconomic variables included household income (categorized), education level, and employment status. Demographic controls included age, gender, race, Hispanic origin, and household size. All categorical predictors were converted into dummy variables. This structuring of explanatory variables mirrors the framework employed by Atellu (2024), who examined determinants of cryptocurrency adoption in an emerging economy.

Descriptive statistics and Pearson’s chi-square tests were used in preliminary analysis to examine bivariate associations between each explanatory variable and cryptocurrency adoption. This approach is consistent with the preliminary analysis conducted by Mutambik et al. (2024), who utilized chi-square tests to identify significant associations in their study on trust in cryptocurrency payments.

To examine adjusted effects, binary logistic regression models were specified and estimated using maximum likelihood estimation. Given the dichotomous nature of the dependent variable, the logistic regression model is appropriate and follows the formulation:

$$\text{Log} \frac{p}{(1-p)} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 - - - - - 1$$

Where

p is the probability of cryptocurrency adoption, X_1 to X_4 are the explanatory variables, and β terms are the regression coefficients.

This modeling strategy is widely accepted and has been employed by multiple researchers in the cryptocurrency space, including Sharma et al. (2024), who utilized socioeconomic and attitudinal variables to model adoption. Model parameters were interpreted using odds ratios. Confidence intervals were also calculated at the 95% confidence level.

Goodness-of-fit was assessed using McFadden's pseudo- R^2 , defined as

$$R^2_{McFadden} = 1 - \frac{1nL_{full}}{1nL_{null}} \text{ ----- } 2$$

Where:

$1nL_{full}$ is the log-likelihood of the fitted model and

$1nL_{null}$ is the null model.

Values range between 0 and 1 but are usually much lower than traditional R^2 values in linear regression. Values between 0.2 and 0.4 are considered indicative of excellent model fit (McFadden, 1979). However, in social science research, values between 0.02 and 0.10 are considered meaningful (Menard, 2002). Model quality was further assessed using likelihood ratio tests. This level of model verification is consistent with practices in cryptocurrency behavior modeling as found in Hern et al. (2024).

4. Results and Analysis

Table 2 presents the results of a logistic regression model estimating the probability of cryptocurrency adoption among U.S. adults based on key socioeconomic, behavioral, and demographic variables. The model was estimated using maximum likelihood estimation (MLE), with a final sample size of 21,258 observations after listwise deletion of missing values. Model diagnostics suggest an acceptable level of fit for social science data. The McFadden's pseudo- R^2 of 0.1324 and a highly significant likelihood ratio chi-square test (LLR $p < 0.001$) indicate that the included predictors contribute meaningfully to explaining variation in cryptocurrency adoption. Table 2 summarizes the estimated coefficients, standard errors, statistical significance, and 95% confidence intervals for each variable.

Table 2 Logistic Regression Result

Dependent Variable: Crypto Adoption

No. observation: 21,258

Model: Logit

Df Residuals: 44,012

Method: MLE

Df Model: 25

Pseudo R-Square: 0.1324

Log-Likelihood: -26483 Converged: True

LL-Null: -30525

LLR p-value: 0.000

Variable	Coefficient	Std. Error	z	p-value	95% (Lower) CI	95% (Upper) CI
pphsize	0.0108	0.0087	1.2380	0.2160	-0.0060	0.0280
pay_casheqv_Yes	-0.0773	0.0282	-2.7390	0.0060	-0.1330	-0.0220
EF3_c_Yes	0.0129	0.0230	0.5710	0.5680	-0.0310	0.0570
atleast_okay_Yes	-0.1823	0.0278	-6.5090	0.0000	-0.2370	-0.1270
inc_clean_25,000–49,999	-0.3651	0.0374	-9.7650	0.0000	-0.4000	-0.2920
inc_clean_50,000–99,999	-0.2416	0.0282	-8.5670	0.0000	-0.2800	-0.2020
inc_clean_Less than \$25,000	-0.2343	0.0406	-5.7610	0.0000	-0.3140	-0.1550
edu_clean_Bachelor's degree	0.0747	0.0399	1.8740	0.0610	-0.0030	0.1530
edu_clean_Certificate or technical degree	-0.1976	0.0600	-3.3150	0.0010	-0.3140	-0.0810
edu_clean_Doctoral degree	-0.0139	0.0704	-0.1980	0.8430	-0.1520	0.1240
edu_clean_High school degree or GED	-0.6035	0.0448	-13.4810	0.0000	-0.6910	-0.5160
edu_clean_Master's degree	-0.1818	0.0466	-3.9000	0.0000	-0.2730	-0.0900
edu_clean_Professional degree (e.g., MBA, MD, JD)	0.0164	0.0590	0.2790	0.7800	-0.0780	0.1310

edu_clean_Some college but no degree	0.0118	0.0413	0.2850	0.7760	-0.0690	0.0930
ppemploy_Working full-time	0.4892	0.0291	16.8080	0.0000	0.4320	0.5460
ppemploy_Working part-time	0.3816	0.0356	10.7220	0.0000	0.3120	0.4510
age_clean_30–44	0.0901	0.0322	2.7960	0.0050	0.0250	0.1530
age_clean_45–59	-0.3102	0.0337	-9.2170	0.0000	-0.3760	-0.2440
age_clean_60+	-1.1833	0.0370	-31.903	0.0000	-1.2560	-1.1110
ppgender_Male	0.9698	0.0220	44.0680	0.0000	0.9130	1.0250
ppethm_Black, Non-Hispanic	-0.0019	0.0610	-0.0310	0.9750	-0.1220	0.1180
ppethm_Hispanic	-0.0723	0.0590	-1.2210	0.2280	-0.1880	0.0440
ppethm_Other, Non-Hispanic	0.0790	0.0686	1.1530	0.2490	-0.0550	0.2130
ppethm_White, Non-Hispanic	-0.3577	0.0550	-6.5370	0.0000	-0.4650	-0.2500

The logistic regression analysis offers comprehensive insights into the behavioral, socioeconomic, and demographic factors influencing cryptocurrency adoption in the United States. The findings strongly support the hypothesis that limited access to traditional financial tools increases the likelihood of cryptocurrency adoption. Specifically, individuals who could handle a \$400 emergency using cash or an equivalent were found to be 7.4% less likely to adopt cryptocurrency (OR = 0.926, $p = 0.006$). This negative association underscores that cryptocurrency serves as an alternative for individuals who lack access to mainstream payment systems, reinforcing the notion that digital assets are filling gaps in financial inclusion.

Further evidence of financial vulnerability as a driver of adoption is provided by self-reported financial well-being. Individuals who indicated that they were financially “okay” were 16.6% less likely to adopt cryptocurrency (OR = 0.834, $p < 0.001$), suggesting that crypto use is more prevalent among those who perceive themselves to be under financial strain. Interestingly, the availability of emergency funds in checking or savings accounts did not significantly predict adoption behavior (OR = 1.013, $p = 0.568$), implying that subjective financial insecurity may be more influential than objective liquidity in motivating crypto adoption.

Contrary to some expectations, the analysis reveals that lower- and middle-income groups are significantly less likely to adopt cryptocurrency compared to high-income earners. Individuals earning \$25,000–\$49,999, \$50,000–\$99,999, and less than \$25,000 had odds ratios of 0.694, 0.785, and 0.791, respectively, all with p -values < 0.001 . This finding suggests that while financial distress may increase motivation to adopt crypto, structural barriers such as digital access, financial literacy, or institutional trust may limit actual adoption among lower-income populations. Higher income appears to enhance the feasibility of engaging with cryptocurrency, possibly due to better access to technological infrastructure or greater risk tolerance.

Education also emerged as a nuanced predictor. Individuals with only a high school diploma were 45% less likely to adopt cryptocurrency (OR = 0.547, $p < 0.001$), and those with technical or certificate degrees also had lower odds (OR = 0.821, $p = 0.001$). While a bachelor’s degree was marginally associated with higher adoption (OR = 1.077, $p = 0.061$), advanced degrees such as master’s or doctoral credentials did not show significant effects. These patterns suggest a U-shaped relationship, where both very low and very high levels of formal education may deter adoption. In contrast, middle levels of educational attainment may be associated with greater openness or access to digital finance. The findings suggest that a lack of formal education does not preclude crypto engagement. However, certain levels of credentialing may be associated with trust in conventional financial systems and a reduced need for alternatives.

Employment status significantly predicts adoption likelihood. Full-time and part-time employees were 63% and 47% more likely to adopt crypto, respectively (OR = 1.63 and 1.47; $p < 0.001$). This may reflect that working individuals are more financially active and digitally connected, thereby encountering more opportunities or motivations to engage with cryptocurrencies. Employment may also correlate with social networks and exposure to crypto-related discourse, further driving adoption.

Demographic characteristics contribute further insight. Age was a strong differentiator, with individuals aged 30–44 being slightly more likely to adopt ($OR = 1.094, p = 0.005$), while those aged 45–59 and 60+ were significantly less likely ($OR = 0.733$ and 0.306 , respectively, both $p < 0.001$). This age gradient highlights that crypto adoption is concentrated in younger to early middle-aged adults, who are likely more tech-savvy and open to financial innovation. In contrast, older adults may be deterred by unfamiliarity or skepticism toward decentralized financial systems.

Gender differences were among the most striking. Males were more than 2.6 times as likely to adopt cryptocurrency as females ($OR = 2.64, p < 0.001$), suggesting that men may be more drawn to the speculative, disruptive, or autonomous features of crypto markets. This gender disparity may also reflect broader trends in technology adoption, financial risk-taking, and digital confidence.

Ethnicity was less predictive overall, with most racial and ethnic categories showing no significant effects. However, White, Non-Hispanic individuals were 30% less likely to adopt cryptocurrency ($OR = 0.699, p < 0.001$) compared to other groups. This could indicate that historically underserved or minority populations are more receptive to or reliant on non-traditional financial instruments, particularly in contexts where mainstream financial systems have failed to provide equitable access.

The results demonstrate that a complex interplay of exclusion, economic participation, and personal demographics influences cryptocurrency adoption in the United States. Financial distress and lack of access remain important motivators, but their influence is filtered through layers of income, employment, and social identity. These patterns reveal that while crypto may be championed as a tool for empowerment, its adoption is also bounded by systemic and behavioral factors that warrant further attention from policymakers and innovators aiming to promote inclusive digital finance.

5. Discussion

This study advances the discourse on financial inclusion in the digital era by offering a nuanced analysis of the behavioral, socioeconomic, and demographic factors shaping cryptocurrency adoption in the United States. In contrast to prevailing narratives that often characterize crypto users as either speculative enthusiasts or digitally savvy elites, the findings present a more complex reality: one where financial stress, systemic inequality, and access asymmetries converge to determine who adopts decentralized finance and why.

A key contribution of this study lies in its confirmation that individuals with limited access to traditional payment mechanisms are significantly inclined to adopt cryptocurrency. Specifically, those unable to manage a \$400 emergency with cash or an equivalent exhibited a higher likelihood of adoption. This empirically substantiates the long-held view that cryptocurrencies are not just speculative assets but also serve as functional alternatives to traditional financial systems, particularly for those excluded from them. These findings resonate with the work of Li and Fang (2022) and Zhou et al. (2021), who identify crypto adoption as a form of self-provisioned financial infrastructure in the absence of institutional reliability. However, the present results also highlight a critical asymmetry: while a lack of cash access increases crypto uptake, the presence of emergency savings in checking or savings accounts did not significantly influence behavior. This divergence suggests that perceived, rather than actual, liquidity constraints may be more potent motivators, prompting further investigation into the psychology of financial insecurity.

Equally compelling is the role of self-reported financial well-being. Individuals who perceived themselves as financially “okay” were significantly less likely to adopt cryptocurrency, even when controlling for objective economic indicators. This underscores a central insight of behavioral finance: subjective economic stress often drives decision-making more strongly than material circumstances (Kahneman & Tversky, 2020). The result aligns with recent studies (Prasad et al., 2023; Ali et al., 2024) that position cryptocurrency as a coping mechanism for economic anxiety, where digital assets are not only an investment class but also a psychological hedge against systemic vulnerability.

However, the findings challenge a widely circulated assumption: that cryptocurrency is a tool of financial liberation for the poor. While crypto adoption was indeed associated with perceived financial distress, individuals earning less than \$100,000 annually were significantly less likely to engage in cryptocurrency. This apparent paradox highlights a dual burden: while financial need may spark interest, structural barriers such as limited digital literacy, inadequate access to fintech platforms, and distrust in online systems hinder actual adoption. These findings diverge from earlier work (Pelster et al., 2020; Pew Research, 2022) and instead support a more critical framing advanced by D’Acunto et al. (2023): crypto adoption is not simply a matter of need; it requires capacity. In this regard, financial exclusion persists, not because individuals lack motivation, but because they lack the tools to act on it.

Education further complicates the landscape. The results indicate a U-shaped relationship: individuals with only a high school diploma or a technical certification were significantly less likely to adopt cryptocurrency, while those with a bachelor's degree were marginally more inclined to do so. Notably, those with advanced degrees (master's and PhDs) were not significantly more likely to adopt, suggesting that trust in traditional institutions, often fostered through higher education, may inhibit engagement with decentralized finance. These patterns partially align with van Rooij et al. (2021), who emphasize the importance of practical financial literacy over formal academic attainment in shaping adoption behaviors.

Employment status emerged as a powerful enabler of cryptocurrency adoption. Full-time and part-time workers were significantly more likely to engage with crypto, a finding that corroborates the role of economic participation and digital exposure in shaping financial behavior (Echeverría & Cruz-Rubio, 2021). Employment may act not only as a proxy for income stability but also as a vector of social contagion, where exposure to workplace discourse and digital platforms increases both awareness and confidence in using crypto tools.

Demographic variables added further granularity. The study confirmed a strong age gradient, with individuals aged 30–44 being the most likely to adopt cryptocurrency, while those aged 45–59 and especially those aged 60 and above were markedly less likely to engage with it. This finding is consistent with global patterns of digital adoption (Chuen et al., 2022) and reflects both generational comfort with technology and risk appetites. Gender differences were even more pronounced: males were more than 2.6 times as likely to adopt as females. This aligns with extensive literature (Hasso et al., 2020; Ragnedda & Destefanis, 2021), which identifies gender disparities in digital confidence, financial risk tolerance, and cryptocurrency awareness. The persistence of this gap even after controlling for education, income, and employment signals deep-rooted sociocultural barriers that warrant targeted policy interventions aimed at narrowing the gendered digital financing divide.

Ethnic background, though less predictive overall, yielded one important finding: White, non-Hispanic individuals were significantly less likely to adopt cryptocurrency than individuals from other racial or ethnic groups. This result, while nuanced, resonates with recent arguments (Abraham et al., 2023) suggesting that historically marginalized groups may view decentralized finance not only as an opportunity but as a necessary alternative to financial systems that have historically underserved them. Interestingly, household size did not significantly affect adoption, indicating that personal rather than familial or structural considerations may drive decisions in this domain.

In sum, the findings offer a powerful corrective to simplistic portrayals of cryptocurrency as either a speculative bubble or a democratizing revolution. In practice, adoption reflects a complex interplay of psychological needs, structural capacities, and demographic positioning. The digital finance gap in the U.S. is not just about access to technology; it is about who feels empowered and equipped to participate in the financial systems of the future. If cryptocurrencies are to fulfill their promise of inclusion, public policy and industry innovation must address not only infrastructural gaps but also the behavioral and cultural barriers that stratify access. The path to inclusive digital finance will require more than blockchain scalability; it will require human-centered systems that empower those on the margins to engage with confidence, competence, and trust.

6. Conclusion

This study advances the empirical understanding of cryptocurrency adoption in the United States by revealing how behavioral, socioeconomic, and demographic variables intersect to shape engagement with decentralized financial technologies. The findings dismantle binary narratives that depict cryptocurrency users as either speculative elites or financially desperate individuals. Instead, the data reveal a more nuanced profile: adoption is most prevalent among individuals experiencing financial stress but possessing moderate resources, those who are digitally connected, economically active, and behaviorally predisposed to explore alternative financial systems.

Notably, individuals unable to manage a modest emergency expense with liquid assets were significantly more likely to adopt cryptocurrency, underscoring the functional role of digital assets as tools for financial participation among those excluded from traditional banking. However, the finding that lower-income groups are less likely to adopt, despite being more financially vulnerable, highlights a persistent capacity gap. Digital exclusion, limited financial literacy, and low institutional trust appear to constrain adoption, suggesting that need alone is insufficient without access and capability.

The influence of education followed a U-shaped pattern, with both low and high levels of educational attainment being associated with a reduced likelihood of adoption. In contrast, individuals with mid-level education (e.g., a bachelor's degree) showed a higher propensity to engage. Employment status, especially full-time or part-time work, was positively associated with adoption, likely reflecting increased exposure to digital platforms and financial tools.

Demographic variables introduced further granularity. Younger adults, particularly those aged 30–44, and males were substantially more likely to adopt, reinforcing global trends in digital finance engagement. Interestingly, White, non-Hispanic individuals were significantly less likely to adopt cryptocurrency, suggesting that historically marginalised racial and ethnic groups may perceive decentralised finance as a pathway to financial autonomy in the face of institutional exclusion. Household size, however, did not yield a significant effect, suggesting that individual economic drivers take precedence over collective ones in decisions regarding cryptocurrency adoption.

To summarise, these results suggest that cryptocurrency adoption in the United States is neither a purely opportunistic venture nor a simple response to financial hardship. Instead, it reflects a complex interplay of behavioural intent, structural capacity, and demographic experience. To promote equitable participation in the digital financial ecosystem, policymakers and fintech innovators must address not only infrastructural deficits but also the psychological, educational, and cultural barriers that stratify access. The future of inclusive digital finance depends not merely on technological scalability but on intentional, human-centered strategies that enable marginalized populations to engage with confidence, competence, and trust.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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