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Distrust of banks among the unbanked and banked

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Abstract

Purpose – The purpose of this study was to explore the concept of distrust of traditional banking institutions as a factor that can explain the choice to remain unbanked in a marketplace that is designed to be financially inclusive.

Design/methodology/approach – Earning, spending, saving and borrowing data collected between May 2021 and February 2022 from 17,819 consumers living in the United States were used to examine the factors associated with distrust of banks. Using a conceptual framework borrowed from the health services profession, the study was conducted in two stages. At the first stage, distrust among the unbanked and banked was estimated using a Boruta-random forest algorithm. At the second stage of the analysis, a logit regression model was estimated to validate the variables identified in the Boruta-random forest analysis.

Findings – Results from the analyses show that distrust of banks is multi-layered where being older, believing the country is heading in the wrong direction and being less confident in one's ability to obtain a personal loan in the amount of $1 to $999 are important factors related to distrust of banks among the unbanked.

Research limitations/implications – This study shows how an ensemble machine learning technique based on a decision-tree methodology can be used to obtain unique insights into complicated data and large datasets within the bank marketing field.

Originality/value – The paper provides a discussion about ways domains of trust and specific variables can be utilized to address the persistent problem of financial exclusion in the United States. Implications for bankers, researchers, educators and policymakers are provided.

Keywords Consumer trust, Unbanked, Financial exclusion, Financial inclusion, Household banking, Distrust

Paper type Research paper

Introduction

The degree to which financial inclusion – defined as a situation in which households and businesses have access to useful and affordable financial products and services that meet their needs (e.g. transactions, payments, savings, credit and insurance) and are delivered responsibly and sustainably (Koomson *et al.*, 2020; World Bank, 2023) – is present in an economy can be proxied by estimating the proportion of the population that is unbanked. As defined by the Federal Deposit Insurance Corporation (FDIC) (2019), unbanked means that no one living in a household holds a checking or savings account at a bank (i.e. a commercial or community depository) or credit union. Geraldes *et al.* (2022) and Ismath (2020) reported that between 1.7 and 2.5 billion of the world's adult population are currently excluded from the formal financial services marketplace (i.e. they are unbanked). Ismath also noted that 60% of those living in poverty are restricted in their access to formal financial services and products. It is worth noting that financial exclusion is not merely an artifact of a slowly developing economy. Financial exclusion is present in regions where economic growth

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and geopolitical advantages are common. As an example, in the United States, the percentage of unbanked has historically ranged from 5% to over 8% of the population (FDIC, 2019), with an estimated 5.4% of US households being "unbanked" in 2019 (i.e. approximately 7.1 million households).

The household costs associated with being unbanked can be measured directly and indirectly (de la Cuesta-González *et al.*, 2022). Direct costs include check cashing fees, money order costs and expenses associated with informal loan products. Desmond and Sprenger (2007) estimated that unbanked households can pay more than $1,000 per year in these types of expenses, which is in addition to interest and penalty charges on borrowed funds. Indirect costs include reduced wealth accumulation through limited access to insured savings accounts, an inability to build a strong credit history and restricted access to reasonably priced loan products (Birkenmaier and Fu, 2018). With limited access to and use of bank account products, the ability of the unbanked to enter into commercial contracts and other financial interactions is severely limited. The result can be permanent exclusion from the evolving financial intermediary marketplace, particularly as the market continues to evolve from one based on physical monetary transactions to electronic transfers. Taking into consideration that (a) being unbanked is an indicator of financial exclusion, (b) a large percentage of the population is financially excluded, and (c) little is known about factors associated with distrust of banks – particularly how individual perceptions shape distrust of banks and decisions to enter into banking arrangements – this study aims to expand the understanding of the factors associated with distrust of banks as a way to increase efforts toward financial inclusion.

The financial inclusion/exclusion literature is replete with studies designed to uncover the determinants of unbanked status (e.g. Blanco *et al.*, 2019; Caskey, 2002; Rhine and Greene, 2012; Yogo *et al.*, 2022). In 2019, the FDIC summarized much of the existing literature at that time and concluded that perception factors and concerns over fees and privacy are leading determinants of unbanked status. The FDIC also reported that a lack of trust in financial intermediaries is of importance in describing rates of financial exclusion. Cultural psychologists might argue that trust/distrust of banks and financial inclusion/exclusion is related to individual and macro-level phenomenon with socio-ecological factors helping to shape individuals' perceptions of banks and decision-making processes leading to banked or unbanked status (Uchida *et al.*, 2020). Yet, little to no research has evaluated the socio-ecological factors associated with the development of trust/distrust of banks and financial inclusion/exclusion. As such, research related to socio-ecological factors and financial inclusion is warranted, especially as it relates to uncovering the possibility that individual perceptions of banks are associated with socio-ecological factors and perceptions of banks relate to distrust. Insights from research inquiries focused on this topic can be used to better understand decision-making processes that lead to financial exclusion. This study was conceptualized to identify the factors of primary importance, using a socio-ecological framework, in describing distrust of banks among unbanked and banked financial decision-makers.

Literature review

Policymakers and banking executives have grappled for years with identifying the factors associated with household financial decision-making choices that lead to an unbanked status. In 2019, the FDIC reported that among the unbanked, more than half indicated no interest in obtaining a bank account. Only about 25% were somewhat interested in obtaining an account. Those drawn to opening a bank account had a history of account ownership. Black-headed households were more likely to report wanting a bank account. The FDIC provided ten reasons households are either excluded from the traditional financial intermediatory marketplace or elect to remain unbanked. The primary reason is the perception that

household members do not have enough money to meet minimum balance requirements. Other reasons include privacy concerns, fee aversion, the unpredictability of fees, past credit and account problems, location inconvenience, hours of operation inconvenience and a lack of appropriate products and services [1]. The FDIC also noted that holding a feeling of trust (or lack thereof) is an important descriptor of banked (unbanked) status.

The word 'trust' is a ubiquitous term that is not easily specified. According to the Merriam-Webster dictionary (2023), trust refers to an object or entity on which confidence is placed [2]. In this study, trust represents the degree of confidence exhibited by a financial decision-maker with regard to the financial intermediary marketplace. The development of trust is primarily a cognitive process (Wang and Gordon, 2011) and is based mainly on expectations (Möllering, 2001) as well as through the assessment of a target object's character, ability and strength. Luhmann (1968) noted that trust also represents an evolutionary process (i.e. behavioral), with trust sometimes being gained or lost without a direct cognitive appraisal. Public trust is known to be central to the efficient operation of the financial intermediary marketplace (van Esterik-Plasmeijer and van Raaij, 2017; Soetan *et al.*, 2021; Zucker, 1986). Shapiro (1987) noted that banks tend to be the 'guardians of trust' in impersonal institutional financial settings.

The extant literature examining the association between trust and financial institutions tends to address the following question: What causes the general public to lose trust in banks and other financial intermediaries? Research designed to address this question shows that the public exhibits concern leading to a reduction in trust when media reports of bank failures increase, when stock prices are falling and when information asymmetry intensifies (Jansen *et al.*, 2014). Furthermore, trust tends to move inversely with financial crises, which is likely due to households' subjective evaluations of the general economic environment (Knell and Stix, 2015).

As currently conceptualized, much of the literature that addresses the association between bank operations and trust is concentrated on the way banks, as business operations, develop and manage trust among multiple stakeholders, including stockholders, managers, policymakers, depositors and borrowers (e.g. Akhlaq and Ahmed, 2013; Butzbach, 2014; Mogaji *et al.*, 2021). Another line of inquiry describes how well banks and other financial intermediaries manage agency costs to control societal perceptions of fairness and efficiencies. A much smaller portion of the literature addresses trust from a household perspective. While it is certainly helpful to understand how financial crises, for example, shift societal perceptions and expectations, this level of analysis fails to address why some households avoid banking products and services while others use and endorse banking services when faced with similar economic constraints [3]. This type of research also misses the mark in describing household-level trust in banking institutions [4].

Some attempts have been made to identify household factors and characteristics associated with trust of banks and other financial intermediaries. Lunt (1994), for example, noted an association between ethnic/racial background and trust. Lunt concluded that among Asians, the perception of easy access to money is a factor related to trust. Lunt also noted that cultural factors (e.g. displaying 'unlucky' numbers in marketing materials) can shape perceptions of trust. Fungácová *et al.* (2019) showed that large differences in bank trust exist across countries and socioeconomic classifications. In their study, Fungácová *et al.* noted that women tend to trust banks more so than men. Moreover, they noted that trust increases with income but declines with age and education. Fungácová *et al.* also reported that those living in capitalistic societies tend to exhibit higher levels of trust in banks and financial institutions. Coupé (2011) reported that trust is more likely to fall when a person's employment status shifts from full-time to another condition, which suggests that household financial crises can reduce feelings of trust (van der Cruijsen *et al.*, 2016). These insights align with observations made by Alesina and La Ferrara (2000) who found four factors to be associated with the degree to which people experience feelings of distrust: (a) a recent trauma, (b) being part of

an underrepresented group, (c) being disadvantaged in terms of income and education, and (d) experiencing income disparities.

It is likely that other household and individual factors and characteristics can also be used to describe trust of banks and other financial intermediaries. While the study of the determinants of trust of banks, particularly among those classified as unbanked, has received less research attention, researchers working in other fields have been more active in identifying variables associated with trust. Consider a study by Guerrero *et al.* (2015). Their research focused on identifying the determinants of trust in healthcare providers among older adults. They controlled for race/ethnicity, age, sex, marital status, education, income, perceived discrimination, depression, hostility, number of sources of care and number of doctor visits per month. Guerrero *et al.* concluded that African Americans report lower levels of trust, whereas older individuals tend to be more trusting. They also observed hostility, symptoms of depression and perceived discrimination to be inversely related to trust. Gopichandran and Chetlapalli (2013), using a qualitative analytical approach, identified economic and non-socioeconomic factors that correlate with trust among healthcare providers. Significant variables in their study included perceptions of competence, comfort with a medical facility, health awareness and accessibility. These factors generally match what others who have examined trust in the healthcare and other service provider fields have documented (e.g. Calnan and Sanford, 2004; Coulter and Coulter, 2002; Seetharamu *et al.*, 2007). It is reasonable to hypothesize that similar factors can be used to describe trust/distrust of banks.

Conceptual framework describing the factors associated with trust/distrust of banks

Two theoretical approaches dominate the way researchers have historically attempted to pinpoint the determinants of trust of banks. The first approach is based on utility theory where trust is indicated by a financial decision-maker's decision to hold banking products (e.g. a savings or checking account). This can be modeled as the net utility of holding an account [5] for an individual i

$$u_i^* = \beta_0 + \beta_1 x_i + \epsilon_i \tag{1}$$

where β_0 is the intercept, the vector x comprises personal and household characteristics and ε_i signifies idiosyncratic error. A utility-maximizing household is expected to hold a bank product only if the net utility gained is greater than the net utility obtained by remaining unbanked, where being unbanked is thought to indicate a lack of trust represented by y. This can be modeled as

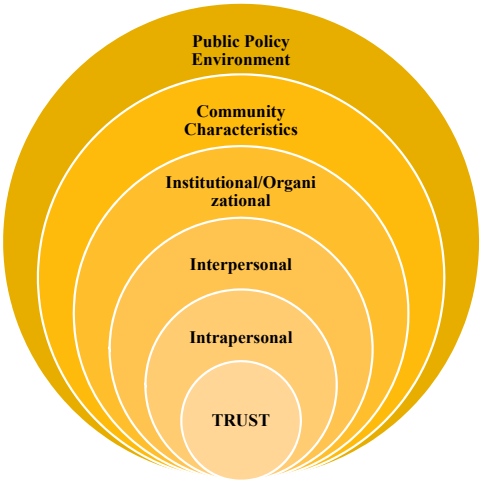
$$y_i = \begin{cases} 1, if\ u_i^* > 0 \\ 0, if\ u_i^* \leq 0 \end{cases} \tag{2}$$

This modeling approach is premised on the notion that trust can be proxied by unbanked status. However, as the FDIC (2019) noted, other factors can also describe a person's decision to remain unbanked. This explains why some researchers have relied on socio-ecological systems theories to conceptualize trust studies. According to Andrews *et al.* (2008), researchers who use a socio-ecological system's approach to identify variables in a complex system rely on the assumption of the interdependence of a household's decision-makers and the interacting social environments in which a household operates. Paolucci *et al.* (1977), Deacon and Firebaugh (1988), and Bronfenbrenner (1990) were among the first theorists to hypothesize that household decisions, perceptions and positions can be influenced by what is called the microsystem, mesosystem, exosystem and macrosystem. The microsystem is the

immediate environment in which a household or decision-maker operates (e.g. family) (Smith and Hamon, 2012). The microsystem is encompassed in the mesosystem, which is where microsystems interact. The exosystem is where indirect factors are thought to influence household and decision-maker choices, whereas the macrosystem is where the other systems interact. At the macrosystem level, values, laws and customs – abstract factors that are not in the direct control of a household – shape perceptions and behaviors of those in the microsystem.

Figure 1 illustrates how multi-level socio-ecological systems related to trust in banks can be conceptualized. The figure shows the complexity associated with describing trust of banks. The conceptual framework is based on an adaptation of work published by Amoah *et al.* (2021). Amoah and associates used a socio-ecological systems approach to understand the correlates and perceptions of public satisfaction with the healthcare system. Their model is based on the proposition that individuals are surrounded by five domains that work interactively to describe expectations, standards, values, attitudes, perceptions and behaviors within the broader environment (i.e. systems). Whereas Amoah *et al.* focused on satisfaction, this study concentrated on identifying variable associations among trust-associated variables [6]. The domains in Figure 1 are similar to those proposed by Bronfenbrenner (1990) and are labeled as: (a) intrapersonal, (b) interpersonal, (c) institutional or organization, (d) community characteristics and (e) public policy environment. This socio-ecological systems approach offers a way to gain insight into the correlates and perceptions of trust. The following discussion reviews the domains embedded in the conceptual framework.

The *intrapersonal* domain reflects personal characteristics unique to a decision-maker (e.g. demographic characteristics). The *interpersonal* domain includes decision-maker and household factors that could consist of more than one person (e.g. household size and marital status). The *institutional and organizational* domain incorporates attitudes and political affiliation. In the context of this study, this domain includes perceptions of banks and banking services. The *community characteristics* domain encompasses geographical and



Source(s): Adapted from work published by Amoah *et al.* (2021)

Figure 1.
Conceptual framework showing the factors associated with trust of banks

cognitive identity factors. The *public policy environment* domain incorporates ideation attitudes and perceptions of public policy arrangements, including political and social concepts.

When viewed holistically, trust (or lack thereof) can be seen as an outcome described by an assortment of factors encompassed within each domain. This diverse set of interrelated variables provides a way to more specifically identify the complexities and layers of trust among those who are unbanked and banked. The conceptual framework can be empirically modeled linearly as

$$\ln\left[\frac{P(Y)}{1-P(Y)}\right] = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \ldots + \beta_i x_i + e_i \quad (3)$$

where $\ln\left[\frac{P(Y)}{1-P(Y)}\right]$ is the odds of exhibiting trust of banks, Y is the binary outcome, β_0 is the intercept, $x_1, x_2, x_3, \cdots, x_i$ are predictor variables, i denotes selected predictors from a Boruta-random forest feature selection algorithm (discussed below) for the response of 'distrust' among the unbanked or banked, and e_i is an error.

A complementary approach to modeling trust of banks involves ensemble learning. This approach uses a Boruta-random forest decision-tree evaluation technique that determines the most important predictor variables. The technique requires a measure of data impurity using Gini index (Equation (4)) and importance value using the z-score (Equation (5)), which can be assessed as follows:

$$Gini\ Index = 1 - \sum_{i=1}^{n} (P_i)^2 \quad (4)$$

where P_i is the probability of an object being classified to a particular class i.

$$z\text{-}score = \frac{\text{MDA}}{\text{SD}} \quad (5)$$

where MDA is the mean decrease in accuracy of the input and shadow variables (discussed later) and SD is the standard deviation of precision losses.

Given the complementary nature of the two methodological approaches, both were utilized in this study. The Boruta-random forest decision-tree evaluation technique was first used to refine the list of descriptive variables. This was then followed by a linear test, using Equation (3), to finalize the descriptors of distrust of banks. The remainder of this paper describes the data and methods used to evaluate the conceptual framework. A presentation of results follows the methodology discussion. The paper concludes with a discussion of results with insights and implications for policymakers, educators, financial counselors and bankers.

Methods

Data

Data for this study were obtained from a proprietary survey distributed and managed by the Center for the New Middle Class. The dataset represents responses to questions designed to measure earning, spending, saving and borrowing information from consumers, borrowers and other financial decision-makers. The sample frame was over-representative of non-prime borrowers (i.e. a FICO score between 601 and 660). The survey included an assortment of questions written to measure a variety of aspects associated with the financial resilience of Americans participating in market research panels. The tests and results presented in this paper were based on a cross-sectional version of the survey that began in May 2021 and ended in February 2022. To be included in the survey, a respondent needed to be between the ages of 18 and 64 and participate in the management of their household's finances. A total

of 17,819 useable surveys were examined. The sample was then split into two files. The first included unbanked respondents (N = 5,138). The second included banked respondents (N = 12,681). The demographic profile of respondents is presented in Table 2.

Outcome variable

The degree of distrust of large banks was assessed by asking each respondent to indicate their level of trust using the following four-point scale: (1) *I don't trust them all*; (2) *I somewhat trust them*; (3) *I mostly trust them*; and (4) *I trust them completely*. Data were recoded dichotomously so that those who indicated no trust (i.e. distrust of banks) were coded 1, otherwise 0. Approximately 6% of those who were banked, and 6% of those who were unbanked, reported distrusting large bank financial intermediaries.

Descriptive variables

In alignment with the conceptual framework shown in Figure 1, Table 1 shows how the variables from the dataset were matched to the five conceptual domains associated with trust of banks. This classification process was based on the qualitative evaluation of the research team.

Public policy environment domain. Two perception variables served as indicators of the public policy environment domain. First, respondents were asked to indicate their level of agreement with the following statement: "Current events make me concerned for the future of my financial well-being." A five-point Likert-type scale agreement scale was used to record responses (i.e. 1 = *strongly agree* and 5 = *strongly disagree*). Second, respondents were asked to indicate their agreement with the notion that the country is heading in the wrong direction. Responses were coded 1 *for those in agreement* and 0 for *those who thought the country was heading in the right direction or neither the right nor wrong direction*.

Community characteristics domain. The geographic location where a respondent lived at the time of the survey and a perception of community economic vitality variable were used to indicate community characteristics. The following eight dummy-coded U.S. region variables were used in the tested models: (a) *South*, (b) *Southwest*, (c) *Mountain West*, (d) *New England*, (c) *Northeast*, (d) *Mid-Atlantic*, (e) *Midwest,* (f) *Central* and (g) *West*. The central region comprised the largest proportion of respondents and was used as the comparison category in the analyses. Based on a five-point Likert-type agreement scale (i.e. 1 = *strongly agree* and 5 = *strongly disagree*), respondents were asked how confident they were that they could find a new job that paid at least as much as their current job within three months if they needed to. Answers to this question provided insight into the economic strength of the community in which a respondent lived at the time of the survey.

Table 1. Conceptual framework domains and associated variables

Domain	Variable
Public Policy Environment	Concern about current events; Perception of country's direction
Community Characteristics	Residence location; Community economic vitality
Institutional/ Organizational	Perceived job security; Employment event; Financial stability; Political orientation
Interpersonal	FICO Score; Marital status; Household size; Household debt; Household income
Intrapersonal	Age; Gender; Race/Ethnicity; Employment category; How paid; Homeownership; Financial confidence in obtaining a personal loan; Education

Source(s): Created by authors

Institutional/organizational domain. Several attitudinal and political affiliation variables were used to designate the institutional/organizational domain. Perceived job security was assessed by asking about the stability of a respondent's current job. Five dichotomously coded variables were used to represent job stability: *very stable* = 1, otherwise 0; *somewhat stable* = 1, otherwise 0; *neither stable nor unstable* = 1, otherwise 0; *somewhat unstable* = 1, otherwise 0; and *very unstable* = 1, otherwise 0. The "neither stable nor unstable" variable served as the reference category in the analyses. Employment events were evaluated dichotomously by asking if a respondent had *left their job*, *started a new job*, *became self-employed*, *started a second job*, or *retired in the past year*. Each was coded 1, otherwise 0. Financial stability (i.e. times run out of money) was measured by asking, "In the past 12 months, how often has your household run out of money before the end of the month, including when you had to use credit to get by?" Response options included: (a) 1 = *every month*, (b) 2 = *every other month*, (c) 3 = *every two or three months*, (d) 4 = *two to three times a year*, (e) 5 = *once a year* and (f) 6 = *never*. Political orientation was assessed by asking, "Generally speaking, do you usually think of yourself as a Republican, Democrat, an Independent, or something else (i.e. other)?" Responses were coded dichotomously so that (a) *Republican* = 1, otherwise 0; (b) *Democrat* = 1, otherwise 0; and (c) *Independent* = 1, otherwise 0. Given the low number of "other" responses, those in this category were excluded from the tests. The "Independent" category was used as the reference group in the analyses.

Interpersonal domain. A variety of variables were used as indicators of the interpersonal domain. Respondents were asked to rate their credit situation using the following categories: 1 = *I have excellent credit* (FICO 800+), 2 = *I have very good credit* (FICO 750 to 799), 3 = *I have good credit* (FICO 700 to 749), 4 = *I have fair credit* (FICO 650 to 699), 5 = *I have poor credit* (FICO 620 to 649), 6 = *I have very poor credit* (FICO 550 to 619) and 7 = *I have bad credit* (FICO less than 549). The following four categories of marital status were recorded dichotomously as 1, otherwise 0: (a) *single*, including those who were living with a significant other; (b) *married*; (c) *divorced*; and (d) *widowed*. The married category was the reference classification in the analyses. Household size was estimated by asking a respondent how many adults and children lived in their home. Household debt, excluding mortgages, automobile loans and student loans, was measured at the interval level. Finally, household income was measured ordinally with the following ten categories: 1 = *no current income*, 2 = *less than $15,000*, 3 = *$15,000 to $24,999*, 4 = *$25,000 to $34,999*, 5 = *$35,000 to $49,999*, 6 = *$50,000 to $74,999*, 7 = *$75,000 to $99,999*, 8 = *$100,000 to $124,999*, 9 = *$125,000 to $149,999* and 10 = *$150,000 or more*.

Intrapersonal domain. The following variables were used to describe the intrapersonal domain. Age was measured on the following ordinal scale as 1 = *Under age 18 years*, 2 = *18 to 24 years*, 3 = *25 to 34 years*, 4 = *35 to 44 years*, 5 = *45 to 54 year*s, 6 = *55 to 64 years* and 7 = *65 or older*. Self-identified gender was coded 1 = *male* and 2 = *female*. Respondents were classified into one of the following seven self-identified racial/ethnic classifications, coded dichotomously as 1, otherwise 0: (a) *White*, (b) *Black or African American*, (c) *American Indian*, (d) *Asian*, (e) *Native Hawaiian or Pacific Islander*, (f) *Hispanic/Latino/Latinx* and (g) *other*. The *White* classification was used as the comparison category. The employment status of respondents was coded dichotomously as (a) *employed part-time* = 1, otherwise 0; (b) *self-employed* = 1, otherwise 0; and (c) *other employment status* (e.g. homemaker) = 1, otherwise 0. Respondents were also asked to report how they received compensation at the time of survey completion. The following dichotomously coded categories were provided as response options: (a) *hourly wage* = 1, otherwise 0; (b) *annual salary* = 1, otherwise 0; (c) *by the job* = 1, otherwise 0; and (d) *commission* = 1, otherwise 0. The "annual salary" variable was used as the reference group in the analyses. Homeownership status was coded so that those who *rented their home* were coded 1, otherwise 0. A five-point Likert-type scale, ranging from 1 = *I definitely could not* to 5 = *I definitely could,* was used to estimate the confidence of respondents in obtaining a personal loan in the amount of $1 to $999. Finally, the education level of respondents was measured using an ordinal variable that included the following categories:

1 = *some high school*, 2 = *high school graduate*; 3 = *some college but no degree*, 4 = *Associate's or technical degree*, 5 = *Bachelor's degree* and 6 = *post-graduate degree*.

Data analysis methods

Descriptive statistics were used to portray the demographic and socioeconomic profile of survey respondents. The mean, standard deviation and other descriptive sample statistics are shown in Table 2. A series of univariate tests were used to estimate significant differences in distrust for those who were (a) unbanked and (b) unbanked. These tests showed that the unbanked differed from the banked in terms of distrust. Next, given the large number of variables used to describe the five domains associated with distrust of banks, a multivariate empirical analysis was conducted in two stages.

In the first stage, distrust among the unbanked and banked was estimated using a Boruta-random forest algorithm [7]. A generalized random forest classifier function is an ensemble machine-learning technique based on a decision-tree methodology. While this approach is atheoretical (i.e. the procedure is not limited to certain variable measurement constraints or restricted to normality assumptions), the variables utilized to classify respondents should be conceptually related to the outcome. Rather than rely on one decision tree, a random forest classifier function creates a classification methodology based on several uncorrelated trees (i.e. models). The Boruta-random forest algorithm [8], which is a random forest-based wrapper process, has been successfully applied across a variety of fields using an assortment of datasets, data types, and outcome requirements (Degenhardt *et al.*, 2019). In this study, and in alignment with Kursa *et al.* (2010), the Boruta algorithm was used to compare the importance of the variables of interest with shadow variables using the *z*-score and multiple runs using random forest methods. As operationalized, the shadow variables were randomized variables based on permutations of the original variables. The variables with significantly larger or smaller the *z*-score, when compared to the shadow values, were interpreted as more (or less) important in describing the outcome variable (see Heo *et al.*, 2022; Kursa and Rudnicki, 2010). Variables identified as not important were removed from subsequent tests.

At the second stage of the analysis, a logit regression model was estimated to validate the variables identified in the Boruta-random forest analysis. The logit regression (Equation (3)) was estimated to validate the results from the first stage of analysis. The estimated logit model utilized the most important variables identified with the Boruta-random forest algorithm.

Results

The final sample (N = 17,819) was relatively diverse in its demographic makeup, attitudes and perceptions. All regions of the United States were represented in the sample, with the highest percentage of respondents living in the Central (32%), Northeast (14%), South (20%) and Southwest (10%) regions of the country. The average age of respondents was between 35 and 44 years, with the majority (71%) having completed at least some college or holding an Associate's degree or above level of education (see Table 2). Forty-five percent of the sample reported being single or living with a significant other, whereas 41% of those in the sample were married, with an average of 3.80 (SD = 1.53) people living in the household. The sample was split between male (49%) and female (51%) respondents. The majority of the sample identified their race/ethnicity as White/Caucasian (64%), followed by Black or African American (15%) and Hispanic/Latino (11%). The average household income ranged between $35,000 and $49,000, with the average household debt being $19,797 ($SD$ = $59,144). The majority (57%) of respondents were homeowners. Slightly more than half (56%) of the sample was employed on a full-time basis, with the majority being paid from hourly sources. Over half of the sample identified their employment as being somewhat stable (25%) or very stable (39%). Respondents reported being neither confident nor unconfident that they would

Variable	Unbanked (N = 5,138) Mean	SD	Frequency	Banked (N = 12,681) Mean	SD	Frequency
Current Events Make Me Concerned	3.63	1.16		3.4	1.25	
Country Heading in Wrong Direction				1.25		
Yes			47%			51%
No			53%			49%
Confident Could Find New Job	2.98	1.43		3.38	1.43	
Region						
South			24%			23%
Southwest			11%			12%
Mountain West			2%			2%
New England			2%			3%
Northeast			18%			18%
Mid-Atlantic			11%			10%
Midwest			6%			6%
West			5%			6%
Central			20%			20%
Employment Stability						
Very Stable			49%			51%
Somewhat Stable			35%			34%
Neither Unstable nor Stable			9%			9%
Somewhat Unstable			5%			5%
Very Unstable			2%			3%
Left Job						
Yes			20%			14%
No			80%			86%
Started New Job						
Yes			25%			20%
No			75%			80%
Became Self-Employed						
Yes			20%			13%
No			80%			87%
Started Second Job						
Yes			18%			10%
No			82%			90%
Retired from Job						
Yes			10%			4%
No			90%			96%
Times Run out of Money	3.07	1.9		2.34	2.07	
Political Orientation						
Republican			34%			30%
Democrat			44%			25%
Independent			22%			45%
FICO Score	3.51	1.81		3.67	1.87	
Household Income	4.62	2.25		4.54	2.27	
Household Size	4.08	1.65		3.85	1.54	
Marital Status						
Single or LWSO			40%			43%
Divorced			9%			11%
Widowed			2%			2%
Married			49%			44%
Age	4	1.30		4	1.31	
Gender						
Male			44%			43%
Female			56%			57%

(*continued*)

Table 2. Demographic profile of respondents and variable descriptive statistics (N = 17,819)

Variable	Unbanked (N = 5,138) Mean	SD	Frequency	Banked (N = 12,681) Mean	SD	Frequency
Education						
Some High School			3%			3%
High School Graduate			24%			23%
Some College but No Degree			22%			23%
Associate/Teaching Degree			14%			14%
Bachelor's Degree			25%			25%
Post Graduate Degree			12%			12%
Race/Ethnicity						
Hispanic/Latino			15%			10%
Black or African American			15%			15%
American Indian			2%			2%
Asian			6%			5%
Native Hawaiian or Pac. Isl			1%			1%
White/Caucasian			60%			64%
Other Race/Ethnicity			1%			3%
How Paid						
Hourly Wage			51%			46%
Paid by the Job			13%			12%
Commission			4%			4%
Salary			32%			38%
Household Debt Level	23,334	75,637		18,673	58,092	
Confidence in Obtaining a Personal Loan ($1 to $999)	3.30	1.36		3.37	1.46	
Home Ownership						
Homeowner			60%			57%
Renter			40%			43%
Employment						
Full-Time Employment			60%			56%
Part-Time Employment			13%			12%
Self Employed			7%			8%
Other Employment			20%			24%

Table 2.

Source(s): Created by authors

be able to find a new job (M = 3.33; SD = 1.43) or obtain a small personal loan between $1 and $999 ($M$ = 3.36; SD = 1.43). The average FICO was fair, ranging between 650 and 699.

More respondents identified their political orientation as Independent, while 29% identified as Republican and 27% as Democratic. The average score regarding the statement, "Current events make me concerned for the future of my financial well-being" was 3.38 (SD = 1.25), indicating that respondents were in the middle of the scale that ranged from 1 = *strongly agree* to 5 = *strongly disagree*. Likewise, the sample was split in terms of viewing the country as heading in the wrong direction, with 49% indicating "yes" (i.e. they perceived the country was heading in the wrong direction) and 51% reporting "no" (i.e. they perceived the country was not heading in the wrong direction).

Boruta-random forest analysis of distrust of banks among unbanked respondents

Table 3 shows the group means and standard deviations of the domain variables for those classified as *unbanked*. Significant differences were observed between those who indicated distrust of banks and those who reported at least some trust in banks across approximately one-half of the variables describing the five domains of trust. Of particular importance were holding negative economic and employment perceptions, experiencing less stable

Variable	Trust Mean	Trust SD	Distrust Mean	Distrust SD	F	p
Current Events Make Me Concerned	3.54	1.15	3.66	1.20	2.27	0.133
Country Heading in Wrong Direction	0.45	0.50	0.61	0.49	24.73	<0.001
Confident Could Find New Job	2.96	1.39	3.54	1.44	39.54	<0.001
Region: South	0.20	0.40	0.25	0.43	2.58	0.108
Region: Southwest	0.10	0.29	0.09	0.28	0.18	0.669
Region: Mountain West	0.01	0.12	0.01	0.11	0.05	0.830
Region: New England	0.02	0.15	0.03	0.17	0.43	0.514
Region: Northeast	0.12	0.32	0.15	0.36	1.97	0.161
Region: Mid-Atlantic	0.09	0.29	0.10	0.30	0.02	0.893
Region: Midwest	0.05	0.22	0.07	0.26	2.43	0.119
Region: West	0.04	0.19	0.04	0.20	0.09	0.765
Very Stable Employment	0.42	0.49	0.27	0.45	21.15	<0.001
Some Stable Employment	0.29	0.45	0.26	0.44	0.76	0.385
Some Unstable Employment	0.03	0.16	0.03	0.17	0.09	0.760
Very Unstable Employment	0.01	0.09	0.02	0.14	2.85	0.092
Left Job	0.20	0.40	0.11	0.32	11.68	<0.001
Started New Job	0.26	0.44	0.14	0.35	19.65	<0.001
Became Self-Employed	0.19	0.40	0.10	0.30	14.56	<0.001
Started Second Job	0.18	0.38	0.07	0.26	20.33	<0.001
Retired from Job	0.11	0.31	0.05	0.21	11.80	<0.001
Times Run out of Money	3.06	1.87	2.56	2.10	15.14	<0.001
Republican	0.30	0.46	0.33	0.47	0.63	0.426
Democrat	0.24	0.43	0.33	0.47	8.73	0.003
FICO Score	3.50	1.77	3.73	1.77	3.92	0.048
H.H. Income	4.51	2.16	3.90	2.02	18.61	<0.001
H.H. Size	4.00	1.57	3.64	1.54	12.26	<0.001
Single or LWSO	0.43	0.50	0.40	0.49	0.94	0.334
Divorced	0.10	0.30	0.16	0.37	7.84	0.005
Widowed	0.02	0.14	0.04	0.20	4.96	0.026
Age	3.96	1.24	4.67	1.25	76.53	<0.001
Gender	1.51	0.50	1.55	0.50	1.42	0.233
Education	3.50	1.35	3.37	1.38	1.94	0.164
Hispanic/Latino	0.16	0.37	0.10	0.30	5.84	0.016
Black or African American	0.15	0.36	0.10	0.30	4.10	0.043
American Indian	0.02	0.15	0.01	0.08	3.27	0.071
Asian	0.04	0.20	0.02	0.14	3.53	0.061
Hawaiian or Pacific Islander	0.01	0.09	0.00	0.00	2.45	0.118
Other Race/Ethnicity	0.03	0.16	0.03	0.16	0.00	0.998
Hourly Wage	0.53	0.50	0.42	0.49	10.72	0.001
Paid by the Job	0.14	0.35	0.12	0.32	1.03	0.309
Commission	0.04	0.19	0.02	0.15	1.89	0.169
H.H. Debt Level	18,597	54,581	16,161	53,800	1.56	0.211
Obtaining a Personal Loan ($1 to $999)	3.38	1.32	3.07	1.46	12.01	<0.001
Renter	0.42	0.49	0.38	0.49	0.98	0.323
Part-Time Employment	0.11	0.31	0.10	0.30	0.23	0.629
Self Employed	0.06	0.24	0.09	0.29	3.05	0.081
Other Employment	0.18	0.39	0.34	0.47	31.27	<0.001

Source(s): Created by authors

Table 3. Bank model group means and standard deviations among the unbanked (N = 5,138)

employment, running out of money more often, having less household income, being older and believing it would be difficult to obtain a small personal loan.

While the data reported in Table 3 provide an initial insight into differences between those who mistrust banks compared to those who have at least some trust of banks, the data are limited in being descriptive and based on univariate comparisons. Data in Figure 2 and

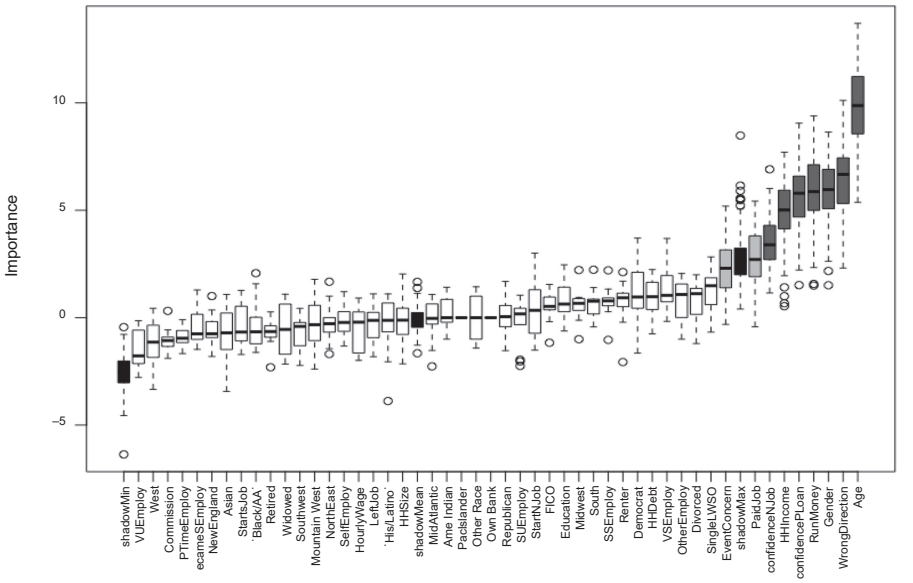


Figure 2.
Importance values of variables of distrust based on the Boruta-Random Forest Analysis among the unbanked

Note(s): The black boxplots represent shadow variables, while the white and light grey boxplots represent the rejected and tentative variables, respectively. The dark grey boxplots represent confirmed variables

Source(s): Created by authors

Table 4 extend the analysis by showing the results from the Boruta-random forest analysis, which was used to identify the variables that optimally describe distrust of banks among the *unbanked*. The horizontal axis in Figure 2 shows the variables of interest in this study. The vertical axis indicates the importance of each variable in describing bank distrust. The black boxplots represent minimal, average and maximum *z*-scores of the shadow variables. The white and light grey boxplots represent *z*-scores of the rejected and tentative variables, respectively. The dark boxplots represent *z*-scores of confirmed variables (i.e. the variables of most importance in describing distrust of banks).

The variables shown in Table 4 represent the most important descriptors of distrust among those classified as unbanked (i.e. the variables represented by the dark grey boxplots in Figure 2). The variable most useful in describing a lack of trust in banks among the unbanked was age (i.e. older unbanked respondents were more likely to distrust banks).

Table 4.
Important variables from the Boruta-Random Forest analysis describing distrust among the unbanked

Variable	Importance value			
	Mean	Median	Min.	Max.
Age	9.92	10.20	5.53	14.75
Country Heading in Wrong Direction	6.37	6.35	3.51	10.57
Times Run out of Money	5.93	6.03	0.81	9.27
Gender	5.93	5.75	2.98	9.72
Obtaining a Personal Loan ($1 to $999)	5.58	5.50	2.05	9.02
Household Income	4.79	4.89	1.49	8.56
Confident Could Find New Job	3.60	3.41	−0.29	7.98

Source(s): Created by authors

A logit regression was estimated using the results from the Boruta-random forest analysis to further refine the classification procedure and to determine the most parsimonious set of variables that can be used to describe distrust among the unbanked. Using only the variables defined as important from Figure 2 and Table 4, the regression model was statistically significant, $\chi^2 = 173.7$, $p < 0.001$. As shown in Table 5, older respondents were less trusting of banks, as were those who thought the country was heading in the wrong direction. Respondents who were less confident that they could obtain a personal loan in the amount of $1 to $999 were likewise less trusting of banks. The other variables in the model were not significant.

Boruta-random forest analysis of distrust of banks among banked respondents

The tests run for the unbanked were replicated for those respondents who indicated they were holding a bank product (i.e. they were *banked* at the time of the survey). Table 6 shows the group means and standard deviations of the domain variables. Similar to the unbanked model, approximately one-half of the variables were statistically significant in describing distrust of banks. Similar to the unbanked model, holding negative economic and employment perceptions, experiencing less stable employment, running out of money more often, having less household income, being older and believing it would be difficult to obtain a small personal loan were significant variables associated with distrust of banks among banked respondents.

Figure 3 and Table 7 show the important variables that optimally describe distrust of banks among those classified as *banked*. The number of variables, representing the five domains comprising the conceptual framework, was larger than the model for the unbanked. However, similar to the unbanked model, age was the most important variable in describing distrust of banks, with older respondents exhibiting less trust.

Results from the Boruta-random forest analysis were again evaluated using a logit regression model. The goal of the test was to identify a more parsimonious set of variables that could be used to describe distrust of banks among those classified as banked. The model was statistically significant, $\chi^2 = 287.2$, $p < 0.001$. As shown in Table 8, respondents who thought the country was heading in the wrong direction were less trusting of banks, as were those who felt their employment was very unstable. Additionally, older respondents, and those living in the Midwest and West regions, reported lower levels of trust in banks. Respondents who reported that they ran out of money more often and had lower household income were also found to exhibit lower levels of trust in banks.

Variable	Estimate	*S.E.*	Odd ratio	95% CI of odd ratio	
				LL	UL
(Intercept)	−2.94	0.87	0.05	0.01	0.28
Age	0.45***	0.11	1.57	1.27	1.97
Country Heading in Wrong Direction	0.56**	0.27	1.75	1.03	2.97
Times Run out of Money	−0.03	0.08	0.97	0.82	1.14
Gender	−0.20	0.13	0.82	0.63	1.06
Obtaining a Personal Loan ($1 to $999)	−0.20*	0.10	0.82	0.67	1.00
Household Income	−0.03	0.06	0.97	0.85	1.10
Confident Could Find New Job	0.11	0.10	1.12	0.92	1.36

Note(s): ***$p < 0.001$, **$p < 0.01$, *$p < 0.05$
Source(s): Created by authors

Table 5. Logit Test of the Boruta-random forest analysis for those classified as unbanked

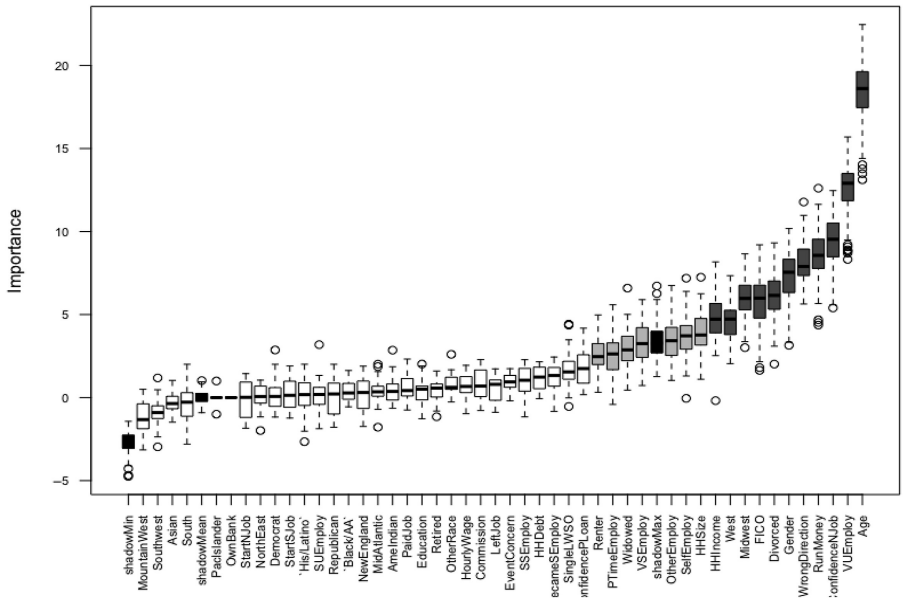
Variable	Trust Mean	Trust SD	Distrust Mean	Distrust SD	F	p
Current Events Make Me Concerned	3.33	1.27	3.26	1.31	1.60	0.207
Country Heading in Wrong Direction	0.44	0.50	0.62	0.49	80.72	<0.001
Confident Could Find New Job	3.29	1.41	3.75	1.38	67.76	<0.001
Region: South	0.18	0.39	0.22	0.41	5.02	0.025
Region: Southwest	0.11	0.31	0.08	0.27	5.90	0.015
Region: Mountain West	0.02	0.13	0.02	0.14	0.10	0.751
Region: New England	0.03	0.17	0.04	0.19	1.90	0.168
Region: Northeast	0.15	0.36	0.13	0.34	1.77	0.183
Region: Mid-Atlantic	0.07	0.26	0.08	0.27	0.50	0.480
Region: Midwest	0.05	0.22	0.07	0.25	2.13	0.144
Region: West	0.05	0.21	0.05	0.23	0.90	0.342
Very Stable Employment	0.42	0.49	0.31	0.46	30.65	<0.001
Some Stable Employment	0.25	0.43	0.18	0.39	17.28	<0.001
Some Unstable Employment	0.02	0.15	0.03	0.16	0.30	0.585
Very Unstable Employment	0.01	0.10	0.03	0.18	22.51	<0.001
Left Job	0.15	0.35	0.12	0.33	3.13	0.077
Started New Job	0.21	0.41	0.15	0.35	15.37	<0.001
Became Self-Employed	0.15	0.35	0.10	0.30	9.68	0.002
Started Second Job	0.12	0.32	0.06	0.24	23.10	<0.001
Retired from Job	0.05	0.21	0.04	0.19	0.90	0.342
Times Run out of Money	2.45	2.08	2.14	2.15	12.97	<0.001
Republican	0.27	0.44	0.34	0.47	15.94	<0.001
Democrat	0.26	0.44	0.32	0.47	11.05	<0.001
FICO Score	3.59	1.81	3.72	1.98	3.22	0.073
H.H. Income	4.42	2.22	3.93	2.17	30.67	<0.001
H.H. Size	3.87	1.54	3.44	1.36	50.37	<0.001
Single or LWSO	0.47	0.50	0.42	0.49	5.77	0.016
Divorced	0.09	0.29	0.17	0.37	30.89	<0.001
Widowed	0.02	0.15	0.04	0.20	7.05	0.008
Age	4.07	1.25	4.76	1.23	190.32	<0.001
Gender	1.48	0.50	1.57	0.50	17.54	<0.001
Education	3.58	1.42	3.48	1.39	3.13	0.077
Hispanic/Latino	0.11	0.31	0.06	0.24	13.91	<0.001
Black or African American	0.17	0.38	0.11	0.32	17.17	<0.001
American Indian	0.03	0.16	0.02	0.15	0.23	0.631
Asian	0.04	0.21	0.03	0.17	3.20	0.074
Hawaiian or Pacific Islander	0.01	0.08	0.00	0.06	1.22	0.269
Other Race/Ethnicity	0.03	0.16	0.03	0.18	1.73	0.189
Hourly Wage	0.47	0.50	0.39	0.49	17.00	<0.001
Paid by the Job	0.14	0.35	0.09	0.29	14.01	<0.001
Commission	0.04	0.19	0.03	0.18	0.79	0.375
H.H. Debt Level	23,372	70,113	17,991	46,009	1.79	0.181
Obtaining a Personal Loan ($1 to $999)	3.46	1.40	3.14	1.58	29.07	<0.001
Renter	0.45	0.50	0.41	0.49	3.87	0.049
Part-Time Employment	0.10	0.30	0.11	0.31	0.05	0.828
Self Employed	0.09	0.29	0.09	0.28	0.02	0.890
Other Employment	0.23	0.42	0.37	0.48	60.03	<0.001

Source(s): Created by authors

Table 6.
Bank model group means and standard deviations among the banked (N = 12,681)

Discussion

In 2019, the FDIC documented several reasons consumers have been excluded from the traditional financial services marketplace or have chosen to remain unbanked. In addition to perceptions that household members do not have enough money to meet minimum balance



Source(s): Created by authors

Figure 3.
Importance values of variables of trust based on the Boruta-Random forest analysis among the banked

Variable	Importance value Mean	Median	Min.	Max.
Age	17.74	17.88	13.27	21.62
Very Unstable Employment	12.40	12.58	7.11	15.17
Confident Could Find New Job	9.58	9.33	5.41	12.81
Times Run out of Money	8.46	8.68	4.85	11.58
Country Heading in Wrong Direction	7.57	7.57	2.62	10.87
Gender	7.29	7.35	3.64	10.63
Divorced	5.82	6.09	0.95	8.54
FICO	5.38	5.52	1.77	9.08
Midwest	5.43	5.46	2.95	9.47
West	4.45	4.47	0.34	9.09
Household Income	4.36	4.37	0.66	7.21

Source(s): Created by authors

Table 7.
Important variables from the Boruta-Random Forest test to predict distrust among the banked

requirements, the FDIC noted that lack of trust in banks can be used to describe banked status, and by extension, financial inclusion. Although trust (distrust) is known to be associated with factors related to financial inclusion (exclusion), not enough empirical work has been conducted to identify the variables associated with trust/distrust of banks among those who are unbanked and banked. The current study was conceptualized to address this gap in the literature by identifying the factors associated with perceptions of distrust of banks among unbanked and banked consumers. Using an adaptation of a socio-ecological systems perspective developed by Amoah *et al.* (2021), a variety of variables were classified into one of the following five domains: (a) intrapersonal, (b) interpersonal, (c) institutional or organization, (d) community characteristics and (e) public policy environment. Two Boruta-

Variable	Estimate	S.E.	Odd ratio	95% CI of odd ratio LL	UL
(Intercept)	−4.20	0.45	0.01	0.01	0.04
Age	0.42***	0.06	1.52	1.35	1.73
Very Unstable Employment	0.84*	0.38	2.31	1.04	4.67
Confident Could Find New Job	0.07	0.05	1.07	0.96	1.19
Times Run out of Money	−0.09*	0.04	0.91	0.84	0.99
Country Heading in Wrong Direction	0.57***	0.15	1.78	1.32	2.40
Gender	0.02	0.08	1.02	0.88	1.19
Divorced	0.14	0.26	1.15	0.68	1.88
FICO	−0.05	0.05	0.95	0.87	1.04
Midwest	0.89**	0.28	2.43	1.36	4.10
West	0.90**	0.29	2.46	1.35	4.20
Household Income	−0.18***	0.04	0.83	0.77	0.90

Note(s): ***$p < 0.001$, **$p < 0.01$, *$p < 0.05$
Source(s): Created by authors

Table 8. Logit test of Boruta-Random Forest results for the banked

random forest analyses, with corresponding logit regression validation tests, were conducted to identify the variables most closely associated with feelings of distrust of banks among the unbanked and banked. Table 9 shows the variables that emerged as the most important descriptors of distrust from the analyses conducted in this study.

Two socio-ecological domains explained distrust of banks among the unbanked: the intrapersonal domain and the public policy environment domain. Age (i.e. being older) and exhibiting less financial confidence represent the intrapersonal domain. Concern about the country's direction indicated the public policy environment domain. Variables representing the interpersonal, institutional/organizational and community domains were not important in describing distrust of banks among the unbanked. When viewed broadly, the unbanked appear to be negatively influenced by events occurring at the macro level. Given their greater and more diverse experiences, some older individuals with less financial confidence might conclude that banks and other financial institutions are less trustworthy.

Each of the domains of distrust was represented in the banked estimations. Age (i.e. being older) and lower financial confidence comprise the intrapersonal domain. Household income represents the interpersonal domain (i.e. as income increased distrust fell). Perceived lack of job security and financial instability indicate the institutional/organizational domain. The community characteristic domain was described by the geographical location of a respondent (i.e. those living in the West and Midwest exhibited less trust). The public policy environment domain is indicated by perceptions of that the country was heading in the wrong direction.

Variable	Unbanked	Banked	Commonality
Age (Older)	X	X	Yes
Agreeing that Country Heading in Wrong Direction	X	X	Yes
Lower Household Income		X	No
Inability to Obtain Small Personal Loan	X		No
Reporting Running out of Money More Often		X	No
Very Unstable Employment		X	No
Living in the Midwest		X	No
Living in the West		X	No

Source(s): Created by authors

Table 9. Commonalities and differences in factors associated with distrust of banks among unbanked and banked respondents

It is worth noting the variables that were *not* significant in the models. Gender, race/ethnicity, how one is paid, homeownership status, educational status, political orientation, marital status, household size, household debt, FICO scores, community economic vitality (i.e. confidence in finding a new job) and concern about current events were not useful descriptors of distrust for the unbanked or banked. An important takeaway from this study is rather than being an outcome associated entirely with indicators of socioeconomic status, distrust of banks appears to be more closely associated with age, confidence, economic perceptions and immediate household financial stability. These factors are not unique to one group of individuals or exclusive to certain racial, educational status, or political classifications.

Implications for policy, practice, research and education

The findings from this study can be used to assist financially excluded households to gain access to banking products and services. The lack of trust among the unbanked was found to be related to (a) being older, (b) having less confidence in one's ability to obtain a small loan and (c) holding a negative perception of the country's direction. Age and negative economic perceptions are characteristics shared by those who were banked. The inability to obtain a small personal loan stood out as a unique factor describing distrust of banks among the unbanked. This factor is not unique to U.S. households. Soetan *et al.* (2021) and Ofori-Okyere *et al.* (2022) noted that the unbanked in Nigeria and Ghana, respectively, often express the same concern. Soetan *et al.* recommended that bankers be proactive in getting to know their current and potential customer base (i.e. the Know Your Client (KYC) framework) and design products that are relevant to that customer base. Ofori-Okyere *et al.* concurred and recommended that banks and other financial intermediaries should introduce innovative approaches that will appeal to those who feel constrained in obtaining loans. This could mean promoting products that allow currently unbanked financial decision-makers with entry-level accounts that can compete directly with products promoted by predatory lenders. This approach will require proactive marketing in communities where people often feel more comfortable dealing with cash and less confident in conducting online transactions.

The finding that having less confidence in one's ability to obtain a small loan is something financial counselors and educators should consider when working with financially excluded households. Along with holding a negative perception of the country's direction, fears and doubts about obtaining a reasonably priced loan are subject to change via financial and economic education, financial counseling and policy actions. Similarly, the age of a financial decision-maker should be considered. While not subject to change, if age is viewed as an indicator of experience, which may be negative for some older consumers, it may be possible to modify current and future perceptions through appropriately designed and applied financial education and financial counseling. In the case of age, a lack of trust in banks may be due to perceptions and experiences of cumbersome or seemingly deceitful or confusing products and services offered by some banking institutions (Mielitz *et al.*, 2019; Vlaev and Elliott, 2014). These perceptions, including the view that obtaining a small loan is out of reach, may not align with the reality of the situation. Bank marketing efforts can be used to reframe perceptions and experiences by providing accurate information about obtaining loans as well as other services and products offered by banks. Doing so may increase consumers' confidence, and ultimately, trust in banks among older less confident consumers.

Theoretical contributions

Findings from this study provide support for the expanded use of socio-ecological systems theories when describing trust of banking institutions. It was shown that household perceptions of trust are associated with what Paolucci *et al.* (1977), Deacon and Firebaugh (1988), and Bronfenbrenner (1990) called the microsystem, mesosystem, exosystem and

macrosystem. Similar to the healthcare market, findings from this study illustrate how household financial decision-makers are tasked with contextualizing perceptions and behaviors in the financial intermediary marketplace. As shown in this study, financial decision-makers are compelled to organize assessments, experiences and expectations in an interrelated system representing the (a) intrapersonal, (b) interpersonal, (c) institutional or organization, (d) community characteristics and (e) public policy environment.

Bankers, researchers, educators, financial counselors and policymakers may find the conceptual framework of trust of banks to be particularly helpful when building new tools and resources to deal with issues of trust and financial inclusion. The conceptual framework is multi-leveled, illustrating the complexities facing financially excluded households. This perspective can assist in shaping policy to help banks and other financial intermediaries create products and services that promote individual financial well-being in a way that is conceptually easy for consumers to understand.

Consider the descriptive role played by the intrapersonal, organizational and community characteristic domains. The domains were particularly useful in describing distrust among currently banked financial decision-makers. While it is unknown why those living in the Midwest and West regions of the United States were less trusting of banks, the conceptual framework points to the need for traditional financial service intermediaries to enhance efforts in those regions to increase trust. This could be accomplished by collaborating with policymakers in creating initiatives to stabilize employment and help households build financial resiliency through the establishment of emergency savings accounts. The framework also provides insight for financial counselors, educators and bankers to use when developing trust-building exercises, which can include contrasting the services of banks with products and services provided by high-cost predatory financial service firms.

Conclusion

Financial inclusion is an important topic that continues to garner the attention of policymakers, researchers, educators, financial counselors and bankers (Fernández-Olit *et al.*, 2018; Koku, 2015). The proportion of a country's population that is, either by circumstance or choice, unbanked indicates that nation's degree of financial inclusiveness. In the United States, 5% to over 8% of the population, which is equivalent to more than 7 million households, is currently unbanked (FDIC, 2019). Previous research has shown that financial inclusion is related to factors such as income, education, race/ethnicity, age and geographical location. Trust of banks and other financial intermediaries has also been linked with financial inclusion outcome measures. The purpose of this study was to explore the concept of distrust of traditional banking institutions as a factor that can explain the decision to remain unbanked in a marketplace that is designed to be financially inclusive through a socio-ecological framework.

Across the two multi-level socio-ecological models, intrapersonal and public policy environment domains were important in explaining distrust. Older respondents and those who believed the country was heading in the wrong direction were more likely to report a lack of trust in banks. Among the unbanked, respondents who were less confident that they could obtain a personal loan (i.e. the intrapersonal domain) were less trusting of banks. Among the banked, those who lived in the Midwest and West regions of the United States (i.e. indicators of the community characteristic domain) were less trusting of banks, as were those who had very unstable employment (i.e. the intrapersonal domain). Similar to what has been reported in previous studies, trust in banks among banked respondents was associated with household income (i.e. the interpersonal domain), with those reporting more income also exhibiting more trust. Those who reported running out of money more often (i.e. the institutional/organizational domain) were found to be more trusting of banks among banked respondents.

While the results from this study are noteworthy, it is worth considering that the results of the tests were based on a non-generalizable sample of adult financial decision-makers who, by

sampling intention, tended to exhibit lower overall creditworthiness. While the selection of the sample was by design – to learn more about potentially financially excluded households – the findings from this study should be replicated with a broader generalizable sample of US adults. Additionally, it is important to note that data were collected during a phase of the COVID-19 pandemic. Health scares, governmental transfer payments, and other external factors may have unduly influenced respondent survey choices. It would be interesting to assess the same set of variables during a non-health crisis. Even in the context of these potential limitations, this study does add to the financial inclusion literature by utilizing a socio-ecological framework to better understand the factors associated with the trust of banks among banked and unbanked individuals.

Notes

1. Unbanked rates tend to also vary by income, education, race/ethnicity, age, source of income, health status (e.g. disabled households tend to exhibit higher levels of financial exclusion), and geographical location (e.g. the highest rates of financial exclusion occur in urban areas, whereas the lowest rates are present in suburban areas).
2. An extensive literature exists in relation to the determinants of trust as a bargaining mechanism. Much of this literature is conceptualized around game theory and the development and abuse of trust (e.g. Snijders and Keren, 1999).
3. A significant body of literature exists in relation to describing the characteristics of the unbanked. The work of Szopinski (2019) is typical of this type of research. Szopinski observed a relationship between being unbanked and age (i.e. being younger), education (i.e. less formal education), lower income, living in an urban area, and exhibiting a lack of trust in commercial banks. Much less research has been conducted to understand the factors associated with trust in traditional banking institutions.
4. Some research has been published describing the antecedents of bank trust from a business, rather than household, perspective. For instance, van Esterik-Plasmeijer and van Raaij (2017) reported that banks can create trust by managing competence, stability, integrity, customer orientation, transparency, and value congruence.
5. See Blanco *et al.* (2019) for a detailed example of this modeling method.
6. Amoah *et al.* (2021, p. 3) referred to satisfaction as contentment with the overall characteristics of existing services, policies, institutions, personnel, facilities, and other factors. To be content implies a level of trust, whereas dissatisfaction suggests some degree of distrust in the system.
7. The advantage associated with this modeling technique is that interactions and hidden relationships between and among variables can be identified without the need to pre-determine interaction and mediation terms. The results from a Boruta-Random Forest function analysis provide a robust way to screen a variety of variables, measured at different levels, in an attempt to find a parsimonious description of an outcome variable.
8. The Boruta-Random Forest algorithm has been widely used as a feature selection tool for predictive model applications because (a) it solves the fluctuation problem typically found in other Random Forest methods when attempting to identify important values, (b) it handles interactions between variables, and (c) it provides an unbiased and stable selection of variables (Christa *et al.*, 2017; Dai *et al.*, 2022; Li *et al.*, 2016).

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