



THE USE OF ALTERNATIVE FINANCIAL SERVICES (AFS): A SOCIAL COGNITIVE APPROACH

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ABSTRACT

Grounded in Social Cognitive Theory (SCT), this study examines how the interplay among cognitive, behavioral, and environmental factors influences an individual's decision to use AFS. Analyzing the cognitive construct, the current study concludes that while subjective financial literacy has a positive association with AFS use, objective financial literacy has a negative association with AFS use. When examining the environmental construct, financial hardship is positively associated with AFS use, whereas the behavioral construct, responsible credit card behavior, has a negative association with AFS use. Lastly, this study provides evidence that financial hardship moderates the relationship between financial literacy and AFS use.



Introduction

In 2021, an estimated 14.1% of U.S. households (approximately 18.7 million) were classified as “underbanked” (Federal Deposit Insurance Corporation (FDIC) Survey 2021). Underbanked individuals or families have access to a bank account but regularly use nonbank transaction or credit products, known as Alternative Financial Services (AFS), which include money orders, check cashing, payday loans, pawn shops, and auto title loans. Typically, AFS users have poor credit scores, making it difficult for them to obtain affordable loans, which leads them to rely on non-bank credit products for personal loans. For instance, high credit utilization rates among AFS applicants, as noted by Bhutta et al. (2015), negatively impact their credit scores.

In this context, credit behaviour becomes an important pathway for understanding AFS use. As discussed earlier, many underbanked households do have credit accounts of some kind, but often struggle with managing them effectively. These households either have a high credit utilization rate or make late payments, which further damages their credit scores and limits their access to affordable credit. As a result, most AFS users have poor credit scores and are frequently denied mainstream credit or approved for amounts lower than requested (Consumer Financial Protection Bureau 2021). Thus, examining how everyday credit card behaviour influences financial vulnerability provides insight into why households turn to costly borrowing and remain dependent on AFS.

Another factor linking financial behaviours and credit management is the level of financial literacy, which indicates how well consumers understand how these products work and the associated pros and cons, enabling them to make sound financial decisions. The FDIC Survey (2021) also indicates that underbanked rates are higher among adults with lower education levels. For example, 24.1% of individuals with less than a high school diploma are underbanked, compared to 9.90% of those with a college degree or higher. Researchers argue that the complexity of financial markets and products leads many consumers to perform daily transactions without fully understanding the consequences or available affordable alternatives (Lee et al. 2019; Cardaci 2018; Atkinson & Morelli 2011). Studies confirm that financial literacy significantly impacts consumers’ financial decision-making and their understanding of such financial products. This affects many aspects of their lives, including debt behaviours, such as their choice of debt products like credit cards and payday loans (Chen et al. 2023; Remund 2010; Hamid & Loke 2021; Harvey 2019).

In addition to financial literacy, financial hardship is another key variable discussed in this study. When individuals are struggling financially (either to cover expenses or to obtain additional funds), they frequently rely on credit cards or AFS, which offer quick access to funds but often at a high cost (Zhan 2022). Given financial hardship’s strong association with debt levels (2024) and with overall financial well-being (Hernandez-Perez & Cruz Rambaud 2025), it is essential to study.

Grounded in Social Cognitive Theory (SCT), this study examines how the interplay among cognitive, behavioural, and environmental factors influences an individual’s decision to use AFS. The cognitive construct here is both objective and subjective financial literacy. Individuals’ credit card behaviour captures the behavioural factor, and financial hardship is factored in as the environmental construct. In this way, this study explores how the interaction of these three factors influences the use of AFS. Previous research has rarely studied the

interplay between these three factors in understanding AFS use, and the present study addresses this gap. It also sheds light on how financial literacy influences the use of AFS under conditions of hardship.

By highlighting the factors driving AFS use, this study's findings provide useful guidance for policymakers, financial educators, and advisors. The results demonstrate the need for more targeted financial literacy programs and practical strategies to reduce stress, ultimately helping consumers avoid falling into cycles of high-cost debt.

Literature Review and Hypotheses Development

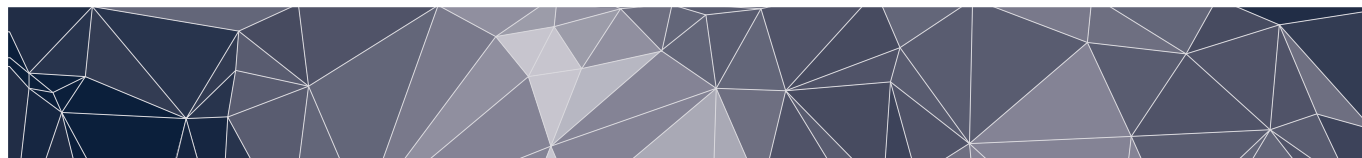
Financial literacy

Financial literacy is not just a skill, but a powerful tool that consumers can acquire through experience. Its components include understanding personal finance information, as well as having the ability to use it and the confidence to manage personal finances to make effective and efficient financial decisions (OECD 2022; Remund 2010). Based on this definition, financial literacy encompasses both objective and subjective financial aspects (Asaad 2015). Huston (2010) defines financial literacy as the ability to apply financial knowledge to making financial decisions. While objective financial literacy refers to the ability to understand personal finance concepts, subjective financial literacy is the confidence an individual has in their financial competence (Lind et al. 2020).

Objective financial literacy, usually measured by standard test questions covering factual topics such as the impact of inflation, interest rates, and basic understanding of risk diversification (Lusardi 2008), has been found in the literature to be positively associated with various financial behaviours; specifically, more responsible credit card use (Chen et al. 2023; Robb, 2011), timely mortgage payments (Gerardi et al. 2013), minimal use of AFS (Kim & Lee 2018; Lee et al. 2024). These behaviours often result in lower borrowing costs (Huston, 2012). Higher objective financial literacy scores have also been linked to better coping with financial hardship (Bialowolski & Weziak-Bialowolska 2022; Bourova et al. 2018; Philippas & Avdoulas 2021), having emergency funds (de Bassa Scheresberg 2013), investing in stocks (van Rooij et al. 2011), achieving positive investment returns (Chu et al. 2017), and planning for retirement (Lusardi & Mitchell 2017).

Subjective financial literacy, a self-perceived assessment of an individual's financial literacy, has been shown in the literature to be as relevant as objective literacy in explaining financial behaviours. While some studies have found that higher subjective financial literacy influences positive financial behaviours, others have found it to be negatively related to positive financial behaviours. For instance, compared to objective financial literacy, subjective financial literacy was found to be a better predictor of precautionary saving behaviour and retirement planning (Anderson et al. 2017), less-expensive credit card practices (Allgood & Walstad 2013), and certain types of investment behaviour, regardless of objective financial literacy (Allgood & Walstad 2016). However, Seay and Robb (2013) also found a positive relationship between subjective financial literacy and use of AFS like payday loans and pawn shops. Robb et al. (2015) had similar results, finding that respondents with higher self-assessed financial literacy were more likely to use AFS.

Factors such as age, gender, income, and marital status have been found to be connected with financial literacy. Specifically, older individuals (Bawre & Kar 2019; Kadoya & Khan 2020;



Shimizutani & Yamada 2020), men (Ahmed et al. 2020; Karakurum-Ozdemir et al. 2019; Lusardi & Mitchell 2017), employed individuals (Bharucha 2017; Potrich et al. 2015; Rehman & Mia 2024), and individuals with higher incomes and education levels (Damayanti et al. 2018; He & Ahunov 2022; Lusardi 2019) have consistently been shown to be more financially literate.

Given the importance of both objective and subjective financial literacy to financial behaviour, this current study incorporates both into its model. Specifically, this study examines the relationship between financial literacy, the use of AFS, particularly within financial hardship, and credit card behaviour. A review of additional literature on financial hardship and credit card behaviour is presented below.

Financial hardship

Financial hardship, as explained by Athiyaman (2023), refers to an individual or household's difficulty in covering their bills and expenses and meeting financial obligations, resulting from financial constraints, such as insufficient income to limited access to savings, credit, and investments (Sun et al. 2022). Factors that could cause financial hardship in an individual or household include unexpected expenses or financial shocks (e.g., loss of a job), low financial literacy and limited financial planning, increased cost of living, and limited financial access (Britt et al. 2016; Philippos & Avdoulas 2021; Russell et al. 2025; Ryu & Fan 2023).

Financial hardship has been linked in the literature to increased stress and anxiety levels, as well as reduced financial, physical, and overall well-being (Frankham et al. 2020; Hernandez-Perez & Cruz Rambaud 2025; Park et al. 2017; Sun et al. 2022; Sweet 2021). For instance, Hernandez-Perez and Cruz Rambaud (2025) explored the interrelationship between financial hardship, psychological factors (financial self-efficacy and self-control), and financial well-being. The study found that financial hardship was negatively associated with both financial and overall well-being, similar to Sweet et al. (2021)'s findings on physical health.

Turning to the relationship between financial hardship and debt levels generally, financial hardship is positively correlated with debt levels. When individuals lack sufficient income or financial capability to pay their bills, they often turn to debt as a source, including credit cards and possibly AFS (Achieve 2024), and increase their debt levels. AFS is particularly attractive in cases of financial hardship because it provides quick access to funds to cover bills and expenses without strict credit checks (Zhan 2022). Given the tendency of individuals facing financial hardship to use AFS as cited in the literature, financial hardship is included as a key explanatory variable in this analysis.

Factors such as age, gender, marital status, and income have been shown in the literature to influence financial hardship. Previous studies show that being a woman, older, more educated, married, and higher-income reduced the probability of financial hardship (Heflin 2017; Russell et al. 2025; Sun et al. 2022).

Credit Card Behaviours

Individuals' credit usage can produce either positive or negative outcomes depending on their debt management and projections of future earnings (Robb 2011). Negative credit card behaviours include late payments, maxing the credit limit, and making purchases exceeding the



spending budget. Consumers who do not pay off principal and interest payments in full can spend much more than the initial cost of a given resource. These negative behaviours can have lasting impacts, and consumers often fail to understand their implications for their credit card accounts.

Previous studies have shown different factors that influence credit card behaviour. One such factor is financial literacy (objective and subjective). As stated earlier, objective and subjective financial literacy are positively associated with more responsible credit card behaviours, such as paying the credit card balance in full, not making late payments, and not going over the credit limit, according to studies in the United States (Chen et al. 2023; Allgood & Walstad 2013; Robb 2011), in the United Kingdom (Disney & Gathergood 2013), and in Malaysia (Hamid & Loke 2020). This relationship between financial literacy and credit card behaviour can influence the use of AFS. Individuals who use AFS may have exhausted other borrowing options, including credit cards (Braga & McKernan 2022; Chatterjee & Chang 2025). This exhaustion may result from reduced creditworthiness stemming from poor credit use, such as maintaining high utilization rates that can exceed credit limits. For this reason, this study explored the relationship between financial literacy and the use of AFS within the context of credit card behaviour.

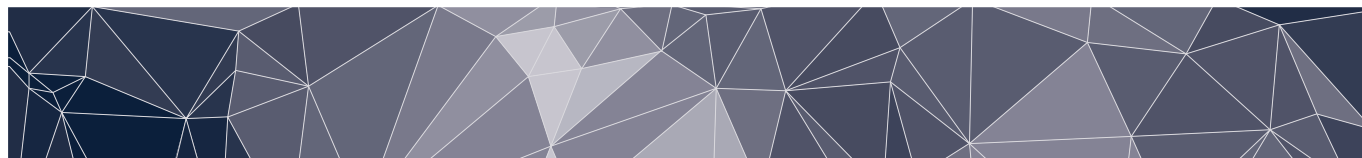
Other demographic and socioeconomic factors found to influence credit card behaviour consistently include income, age, ethnicity, and gender. Specifically, Rutherford and DeVaney (2009) found that older individuals and those with higher incomes are less likely to carry credit card balances, a finding similar to that reported previously by Zhu and Meeks (1994). Individuals who identify as white are less likely to carry credit card debt (Ibarra & Rodriguez 2007) and those who identify as Hispanic are more likely to engage in costly credit card behaviours (de Bassa Scheresberg et al. 2015). Furthermore, according to Khare et al. (2012), men are more likely than women to be revolving users and carry a balance on their credit cards.

The use of AFS

AFS refers to various economic transactions that provide liquidity-constrained individuals access to convenient but costly products (Gross et al. 2012). These services are marketed to individuals with limited to no banking access or credit accounts, or those with restricted access to traditional financial products (Birkenmaier & Fu 2016). These services often include higher opportunity costs to access and manage than traditional financial services.

As highlighted in the literature, a significant determinant of AFS use is financial illiteracy (Kim et al. 2019; Robb et al. 2015; Seay & Robb 2013). Most consumers who use AFS may be in need of more accurate information and consequently may unknowingly make suboptimal choices. When exposed to the correct information, the likelihood of their use of AFS is reduced (Bertrand & Morse 2011). Lusardi and de Bassa Scheresberg (2013) while examining the relationship between financial literacy and high-cost borrowing found that individuals with higher objective financial literacy were less likely to use AFS, which was consistent with the findings of Seay and Robb (2013).

Similar to this present study, using the 2009 National Financial Capability Study (NFCS), Lusardi and de Bassa Scheresberg (2013) focused on five AFS: auto title loans, payday loans, refund anticipation loans, pawnshops, and rent-to-own. Controlling for income, financial inclusion (banking status), precautionary savings, and other demographic and socioeconomic factors, they found a negative association between financial literacy and AFS.



Consistent with these findings, Robb et al. (2015) investigated AFS use and its relation to financial literacy not just from the lens of objective financial literacy, but also in comparison to subjective financial literacy. This study performed a pooled cross-sectional analysis with data from the 2009 and 2012 NFCS and confirmed that higher objective financial literacy scores are negatively associated with AFS use. A unique contribution of the Robb et al. (2015) study is its finding that “overconfident” individuals (individuals whose perception of their financial knowledge is higher than their actual objective financial knowledge scores) are more likely to use AFS. Based on these findings, it is not surprising that Harvey (2019) found that mandating financial education and personal finance courses in high school, which have been found to improve financial literacy and lead to more positive financial behaviours (Urban et al. 2020; Lusardi 2006) reduced the likelihood of the respondents taking out payday loans of any kind.

Furthermore, other factors, such as age, gender, ethnicity, marital status, income, homeownership status, employment status, risk tolerance, and having emergency funds, are also associated with the use of AFS in the literature. AFS use is more likely among younger individuals; risk-tolerant individuals (Lee et al. 2024; Wang 2024); widows; individuals separated from their spouses; individuals who have experienced income shock; the unemployed; and individuals who are non-white. Conversely, it is less likely among women, as well as individuals who earn a higher income, own their home, and have precautionary savings (Kim et al. 2023; Wann et al. 2023; Lee et al. 2019; Lusardi & de Bassa Scheresberg 2013). These factors, namely marital status, gender, ethnicity, age, education, employment status, income, risk tolerance, and having emergency funds, were also controlled for in this current study. They were included because previous studies have consistently identified them as foundational elements that influence decision-making in the personal finance space, including the use of AFS.

Financial Literacy, Credit Card Behaviours, Financial Hardship, and the Use of AFS

Financial literacy and sophistication can impact consumers' decision-making, affecting various aspects of their lives, including debt utilization (credit cards and AFS). As mentioned previously, higher financial literacy (particularly objective financial literacy) has consistently been positively associated with responsible credit card behaviour (Chen et al. 2023; Hamid & Loke 2021; Robb 2011); negatively associated with using AFS (Kim et al. 2023; Robb et al. 2015; Seay & Robb 2013); and found to be a better coping mechanism with financial hardship (Bialowolski & Weziak-Bialowolska 2022; Bourova et al. 2018; Philippas & Avdoulas 2021). Subjective financial literacy and overconfidence (low objective financial literacy and high subjective financial literacy), on the other hand, have been linked to an increase in the use of AFS (Nicolini & Cude 2019; Robb et al. 2015; Seay & Robb 2013).

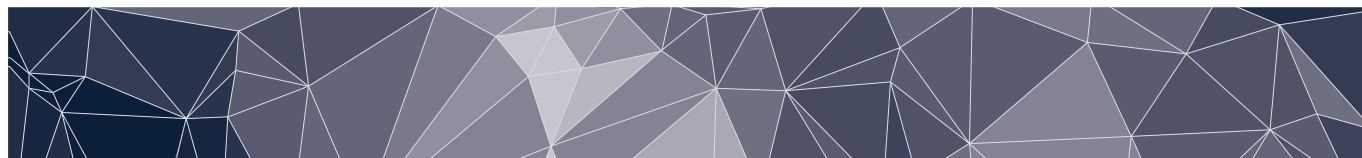
Few studies have found financial hardship to be a direct predictor of using AFS. The only research the authors found that linked financial hardship directly with AFS use is Fan et al. (2024), which examined the interrelationship between financial stressors, financial hardship, negative credit experiences, and the use of AFS. This study did not find a direct relationship between financial hardship and the use of AFS, instead finding that negative credit experiences mediate this relationship.



Additionally, the relationship between credit card behaviour and aggregate AFS use has not been extensively explored in the literature. Among the few studies that have investigated this association, the focus has either been on credit records as a determinant of the use of AFS, or on examining just payday lending as a proxy for the use of AFS. This has left other forms of AFS, such as pawn shops, auto-title loans, rapid tax refunds, and rent-to-own financial services, waiting to be explored. Specifically, with credit records as a determinant of the decision to use AFS, a study by Wann et al. (2023) investigated the influence of credit record overconfidence on AFS and discovered that perceived credit score was negatively associated with AFS use, consistent with the findings of Lee et al. (2019), who only analysed payday lending. A notable study connecting these two variables is that of Lee et al. (2019), which examined the direct effect of credit card problems (negative credit card behaviour), perceived credit score, and emergency funds on payday lending. Their study found that having credit card problems directly influenced the use of AFS. Also, having a credit card problem was found to have a negative mediating effect between perceived credit score and payday lending.

Bringing financial literacy, financial hardship, credit card behaviour to bear on their relationship with the use of AFS, it is clear that although studies have not linked all three variables together in the manner which this current study does, antecedents have been set in the literature that allows this present study to link these variables to AFS use. Specifically, higher financial literacy leads to more responsible credit card behaviour (Chen et al. 2023; Hamid & Loke 2021; Robb 2011) and better preparation for and coping mechanisms with financial hardship (Bialowolski & Weziak-Bialowolska 2022; Bourova et al. 2018; Philippas & Avdoulas 2021), which could reduce the use of AFS. For example, when individuals experience financial hardship, they either turn to their savings (typically, emergency savings) or, if they do not have enough savings, they turn to credit cards, which serve as a buffer. However, when their credit limits are reached, they may use AFS as a cushion because it smooths consumption at that moment. Financial literacy plays a crucial role here, because financially literate individuals are more likely to understand the importance of accumulating savings for emergencies and financial hardships. Additionally, financially literate individuals are more likely to have higher creditworthiness, as they exhibit responsible credit card behaviour, including maintaining a low credit utilization rate on their credit cards. This allows them to avoid reaching their credit limit on time, and reduces the possibility of a liquidity trap. Armed with sufficient savings and higher credit limits, financially literate individuals are less likely to be pushed to use AFS. Also, these individuals will be well informed on the significantly higher implied costs of using AFS. Given these precedents, this study aimed to explore empirically the interrelationship between financial literacy, financial hardship, credit card behaviour, and the use of AFS.

In summary, existing literature has provided a link between financial literacy and credit card behaviour (Chen et al. 2023), financial literacy and financial hardship (Bialowolski & Weziak-Bialowolska 2022), financial literacy and AFS (Lusardi & de Bassa Scheresberg 2013; Robb et al. 2015), financial hardship and the use of AFS (Fan et al. 2024), and credit card behaviour and payday lending (Lee et al. 2019; Wann et al. 2023). However, previous studies have not connected financial literacy, financial hardship, credit card behaviour, and AFS — nor have they tested the moderating role that financial hardship could play in explaining the relationship between financial literacy and AFS, a significant contribution that this current study hopes to make.



Theoretical Framework

According to Bandura (1989), social cognitive theory explains an individual's behaviour in terms of the reciprocal causality of three factors: cognitive, behavioural, and environmental. The current research employs social cognitive theory to demonstrate how various factors influence the behaviour being studied, i.e., AFS use.

With its practical application in understanding human behaviour, social cognitive theory describes the mutual influences of three factors: cognition, behaviour, and the environment on an individual's behaviour. Within this paradigm, cognitive constructs acknowledge that knowledge is acquired through cognitive information processing, influencing individuals' decision-making about their behaviour. The present study explores the relationship between the use of AFS and financial literacy, which is considered a cognitive construct in this framework. The theory also asserts that an individual's thoughts and actions result from their prior behaviour (Stajkovic & Luthans 1998). Therefore, previous relevant behaviours must be considered in order to study AFS through this lens.

The behaviour of individuals using credit cards is used in this study to understand AFS use. Although environmental factors impose restrictions, most external forces are neutral until an individual takes action to activate them. This means that individuals are neither completely autonomous agents capable of doing anything they want, nor helpless objects subject to the influence of external factors (Bandura 1978). This study factors financial hardship as an environmental construct in order to study AFS use, and will focus on how these three factors exert an influence on this financial behaviour.

Using the theoretical framework and prior study findings, the following research hypotheses are put forth:

H1: A negative association exists between objective financial literacy and an individual's decision to use AFS.

H2: A positive association exists between subjective financial literacy and an individual's decision to use AFS.

H3: A positive association exists between individuals' condition of financial hardship and their decisions to use AFS.

H4: A negative association exists between individuals' responsible credit card behaviour and their decisions to use AFS.

The present study also aims to enhance this research substantially by examining how financial literacy influences the use of AFS in situations of financial hardship.

H5: The condition of financial hardship moderates the relationship between financial literacy and the use of AFS.

Methods

Data

The present study uses a pooled dataset of 2018 and 2021 waves from the National Financial Capability Study (NFCS) State-by-State Survey. The combined sample consists of 54,209 respondents.



The dependent variables for this study are five different alternative forms of borrowing. The respondents were asked:

In the past 5 years, how many times have you

- 1) Taken out an auto title loan?
- 2) Taken out a short term 'payday' loan?
- 3) Gotten an advance on your tax refund?
- 4) Used a pawn shop?
- 5) Used a rent-to-own store?

For each question, respondents had the choice to select "1) Never, 2) 1 time, 3) 2 times, 4) 3 times, 5) 4 or more times, 98) Don't know, 99) Prefer not to say". Binary variables are created for each form of borrowing, with each variable coded as 1 if the response is "1 time" or higher, and 0 otherwise. These binary items for the five alternative borrowings are summed together, with a range from 0 to 5. Finally, a binary variable for "AFS use" is constructed, like the one developed by Chatterjee and Chang (2025), where 1 denotes that the total amount of AFS use exceeded zero, and 0 is used for all other cases. The questions with "Don't know" and "Prefer not to say" responses are excluded from the study.

The current study has three key explanatory variables. First, this study measures financial literacy from both objective and subjective perspectives. Objective financial literacy is assessed using six questions about mortgages, interest rates, inflation, risk, compounding, and bonds. Each correct answer is coded as 1, with 0 as incorrect, and the responses with "prefer not to say" are dropped. The sum of all correct answers thus ranges from 0 to 6.

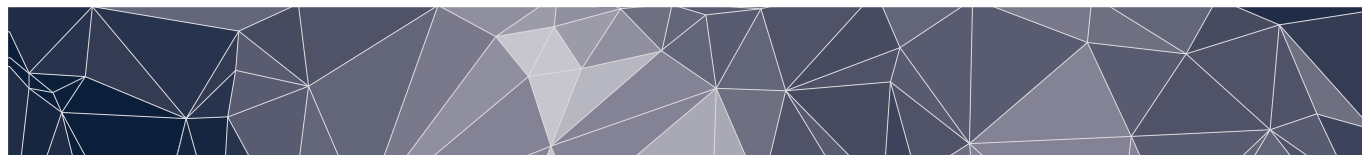
Subjective financial literacy is measured using a Likert scale: "On a scale from 1 to 7, where 1 means very low and 7 means very high, how would you assess your overall financial knowledge?" The responses with "don't know" and "prefer not to say" are also dropped from the responses to this question.

The second key variable is financial hardship. The survey asks, "In a typical month, how difficult is it for you to cover your expenses and pay all your bills?" with responses "Very difficult," "Somewhat difficult," and "Not at all difficult." Binary variables are created for each response, with "Not at all difficult" as the reference category.

The third variable, the credit card behaviour of respondents, is measured using six questions in the survey. The questions related to the following credit card-related experience are used to gather information from the respondents regarding their credit card behaviour:

- i) always pay the credit card in full;
- ii) carry over a balance and charge interest;
- iii) pay the minimum payment only;
- iv) pay a late fee for failing to make a payment on time;
- v) pay an over-limit fee for using a credit line exceeding your credit limit; and
- vi) cash advance using your credit card.

The index is constructed using these six credit card behaviours. "Always pay the credit card in full" is a positive or responsible behaviour in this index, and it is coded as 1 if the answer is "Yes" and 0 otherwise. On the other hand, the other five credit card behaviours are risky or negative and are reverse-coded, meaning that a 1 is assigned if the response is "No," and a 0 otherwise. Adding



these binary items together creates an index ranging from 0 to 6, with a higher index score denoting more responsible behaviour. The responses “don’t know” and “prefer not to say” are excluded. This is done for each of the control variables as well, resulting in a sample size of 36,904.

Table 1: Descriptive Statistics

Variables	Mean (SD)
Dependent variables	
AFS use	0.2246 (0.4173)
Key Variables	
Objective financial literacy	3.4687 (1.5909)
Subjective financial literacy	5.3147 (1.1919)
Credit card behaviour	4.4372 (1.6884)
Financial hardship	
Not at all difficult	0.0763 (0.2654)
Very difficult	0.3051 (0.4604)
Somewhat difficult	0.6185 (0.4857)
Control Variables	
Married	0.5822 (0.4932)
Female	0.5233 (0.4994)
Education	
High school or less	0.2101 (0.4074)
Some College	0.2517 (0.4340)
Associate’s degree	0.1119 (0.3153)
Bachelor’s degree	0.2744 (0.4462)
Post graduate degree	0.1515 (0.3586)
Age	
18-24	0.0683 (0.2523)
25-34	0.1548 (0.3618)
35-44	0.1614 (0.3679)
45-54	0.1711 (0.3766)
55-64	0.1971 (0.3978)
65+	0.2469 (0.4312)
Household Income	
<15k	0.0534 (0.2250)
15k-25k	0.0753 (0.2640)
25k-35k	0.0940 (0.2918)
35k-50k	0.1439 (0.3510)
50k-75k	0.2156 (0.4112)
75k-100k	0.1646 (0.3708)
100k-150k	0.1603 (0.3669)
150k or more	0.0924 (0.2896)
Employment	
Self employed	0.0729 (0.2600)
Work full-time	0.4378 (0.4961)
Work part-time	0.0780 (0.2683)
Homemaker	0.0591 (0.2359)
Full-time student	0.0204 (0.1413)
Sick/disabled/unable to work	0.0329 (0.1785)
Unemployed	0.0353 (0.1846)
Retired	0.2631 (0.4403)
Have emergency fund	0.6295 (0.4829)
Risk tolerance	5.1818 (2.6123)
White	0.7724 (0.4192)

Data are from the 2018 and 2021 NFCS. N=36,904



Table 1 presents the descriptive characteristics of respondents. On average, 22% of respondents said they had used at least one form of AFS. The mean scores for objective financial literacy, subjective financial literacy, and credit card behaviour are 3.5, 5.3, and 4.4, respectively. Approximately 8% responded that they did not have any financial hardship, and 58% were married; 52% were female; 27% had bachelor's degrees; 25% were aged above 65; 9% had income above 150k; 44% worked full time; 62% had an emergency fund; and 77% were white. Risk tolerance is 5.18.

Model

The current study estimates a hierarchical logistic regression model to examine the association between credit card behaviour, financial hardship, objective financial literacy, subjective financial literacy, and the use of AFS. The Model I includes objective financial literacy and subjective financial literacy as key explanatory variables for studying the influence of cognitive factors on the use of AFS. The Model II adds financial hardship as another key explanatory variable to examine the influence of environmental factors. Finally, the present study includes credit card behaviour as the third key explanatory variable in Model III. In Models I, II, and III, marital status, race/ethnicity, gender, education, age, income, employment status, having an emergency fund, and risk tolerance are controlled for.

Results

Table 2 reports the marginal effects and standard deviations of the hierarchical logistic regression on AFS use. While the AFS use is the dependent variable for this study, the key variables include financial literacy, financial hardship, and credit card behaviour. Objective financial literacy, subjective financial literacy, and control variables are predictors for Model I. The MacFadden R^2 for Model I is 0.1936. Similarly, financial hardship is included as an additional predictor in Model II, along with the other variables in Model I. The MacFadden R^2 increased to 0.2245 using Model II. Finally, the full model, i.e., Model III, includes credit card behaviour as an additional predictor, along with the other variables in Model II. The MacFadden R^2 rose to 0.2633 using Model III. According to MacFadden (1979), a MacFadden R^2 value between 0.2 and 0.4 indicates a good fit. Additionally, the variance inflation factor (VIF) is used to test the multicollinearity among predictor variables in this study. VIF ranges from 1.01 to 1.75. According to Jong Hae (2019), multicollinearity is a concern if VIF is greater than 5.

The results of Models I, II, and III show that individuals with higher objective financial literacy are less likely to use AFS, and those with higher subjective financial literacy are more likely to do so. In the full model, i.e., Model III, individuals with higher objective financial literacy have a 2.8-percentage-point lower probability of using AFS, while those with higher subjective financial literacy have a 1.5-percentage-point higher probability of using AFS. The results for objective and subjective financial literacy are significant across all three models. Hence, hypotheses 1 and 2 are supported.

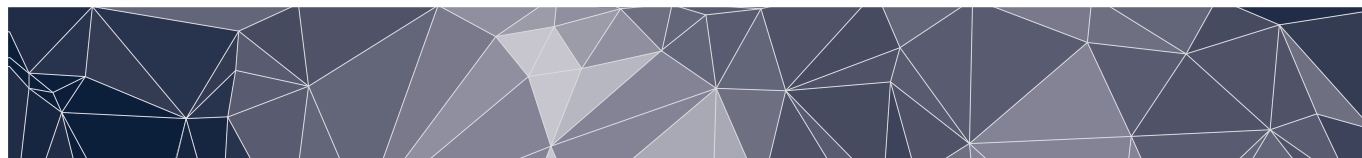


Table 2: Marginal Effects of the Hierarchical Logistic Regression on AFS use.

Variables	Model I	Model II	Model III
Objective financial literacy	−0.0378*** (0.0013)	−0.0333*** (0.0013)	−0.0276*** (0.0013)
Subjective financial literacy	0.0122*** (0.0017)	0.0145*** (0.0017)	0.01491*** (0.0016)
Financial hardship (Reference: Not at all difficult)			
Very difficult		0.2435*** (0.0093)	0.1317*** (0.0085)
Somewhat difficult		0.1263*** (0.0049)	0.0769*** (0.0048)
Credit card behaviour			−0.0475*** (0.0012)
Married	0.0131*** (0.0044)	0.0113** (0.0043)	0.0101** (0.0042)
Female	−0.0428*** (0.0042)	−0.0450*** (0.0041)	−0.0464*** (0.0040)
Education (Reference: High school or less)			
Some College	−0.0026 (0.0059)	−0.0099 (0.0058)	−0.0153** (0.0055)
Associate's degree	−0.0379*** (0.0073)	−0.0378*** (0.0071)	−0.0353*** (0.0068)
Bachelor's degree	−0.0715*** (0.0061)	−0.0688*** (0.0060)	−0.0573*** (0.0058)
Post graduate degree	−0.0646*** (0.0075)	−0.0675*** (0.0073)	−0.0530*** (0.0072)
Age (Reference: 18-24)			
25-34	0.0000 (0.0106)	−0.0115 (0.0102)	−0.0367*** (0.0099)
35-44	−0.0412*** (0.0107)	−0.0472*** (0.0103)	−0.0694*** (0.0101)
45-54	−0.1240*** (0.0106)	−0.1186*** (0.0102)	−0.1312*** (0.0100)
55-64	−0.1837*** (0.0108)	−0.1701*** (0.0105)	−0.1715*** (0.0104)
65+	−0.2239*** (0.0117)	−0.2076*** (0.0115)	−0.2025*** (0.0116)
Household Income (Reference: 150k or more)			
<15k	0.0767*** (0.0117)	0.0233* (0.0113)	0.0361** (0.0114)
15k-25k	0.1312*** (0.0112)	0.0758*** (0.0110)	0.0739*** (0.0108)
25k-35k	0.1048*** (0.0102)	0.0619*** (0.0102)	0.0582*** (0.0100)
35k-50k	0.0797*** (0.0089)	0.0503*** (0.0092)	0.0450*** (0.0090)
50k-75k	0.0469*** (0.0080)	0.0267*** (0.0084)	0.0231*** (0.0082)
75k-100k	0.0369*** (0.0081)	0.0177* (0.0085)	0.0111 (0.0083)

(Continued)

Table 2. Continued

Variables	Model I	Model II	Model III
100k-150k	0.0198** (0.0080)	0.0132 (0.0085)	0.0091 (0.0083)
Employment (Reference: Work full-time)			
Self employed	0.0236*** (0.0078)	0.0119 (0.0075)	0.0114 (0.0072)
Work part-time	-0.0094 (0.0075)	-0.0102 (0.0072)	-0.0039 (0.0070)
Homemaker	-0.0266*** (0.0081)	-0.0219** (0.0080)	-0.0143* (0.0078)
Full-time student	-0.0608*** (0.0107)	-0.0546*** (0.0107)	-0.0397*** (0.0108)
Sick/disabled/unable to work	0.0690*** (0.0118)	0.0487*** (0.0111)	0.0444*** (0.0105)
Unemployed	-0.0143 (0.0098)	-0.0296*** (0.0091)	-0.0240*** (0.0089)
Retired	-0.0280*** (0.0085)	-0.0194* (0.0084)	-0.0083 (0.0082)
Have emergency fund	-0.0967*** (0.0045)	-0.0468*** (0.0045)	-0.0040 (0.0044)
Risk tolerance	0.0200*** (0.0008)	0.0181*** (0.0008)	0.0153*** (0.0008)
White	-0.0534*** (0.0047)	-0.0504*** (0.0046)	-0.0428*** (0.0044)
Year	0.0103*** (0.0013)	0.0117*** (0.0013)	0.0105*** (0.0012)

Data are from the 2018 and 2021 National Financial Capability (NFCs). Sample size = 36,904. Marginal effects are shown along with standard errors in parenthesis. * Indicates significance at the 5% level. ** indicates significance at the 1% level. *** indicates significance at the 0.1% level.

The results for financial hardship in Models II and III are significant, indicating that individuals experiencing financial hardship are more likely to use AFS. In the full model, individuals who find it either very difficult or somewhat difficult to cover expenses have a 13.2- and 7.7-percentage-point higher probability, respectively, of using AFS compared to those with no difficulty in covering expenses. Thus, hypothesis 3 is supported.

Credit card behaviour, as added in the final model (Model III), has a significant association with AFS use, indicating that individuals who exhibit responsible credit card behaviour are less likely to use AFS, with a 4.8-percentage-point-lower probability of using it. Hence, the findings support hypothesis 4.

To enhance the current study, analyses were conducted to examine how financial literacy influences AFS use under conditions of financial hardship. The results are presented in Tables 3 and 4. Table 3 presents the marginal effects and standard errors of the logit model with interaction terms between objective financial literacy and financial hardship. The results for interaction terms are significant and positive, showing that, under financial hardship constraints, higher objective financial literacy increases the probability of AFS use. Table 4 shows the results of the interaction term between subjective financial literacy and financial hardship. The interaction between subjective financial literacy and finding it very difficult to cover expenses is significant and positive, and indicates that among individuals experiencing financial hardship,

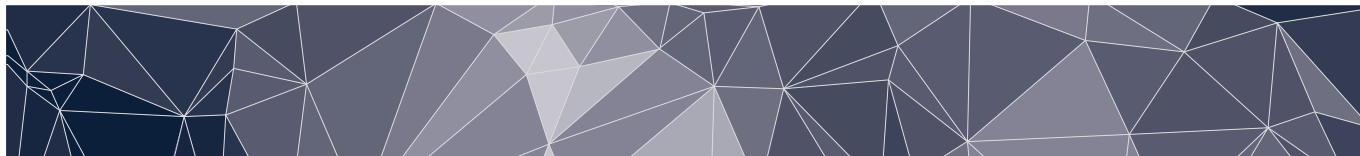


Table 3: Marginal Effects of the Logistic Regression on AFS use with interaction between objective financial literacy and financial hardship.

Variables	
Objective financial literacy	−0.0337*** (0.0018)
Subjective financial literacy	0.0146*** (0.0016)
Financial hardship (Reference: Not at all difficult)	
Very difficult	0.0843*** (0.0129)
Somewhat difficult	0.0393*** (0.0087)
Interaction terms	
Objective Financial Literacy*Very Difficult	0.0725*** (0.0248)
Objective Financial Literacy*Somewhat Difficult	0.0694*** (0.0152)
Credit card behaviour	−0.0473*** (0.0012)
Married	0.0101** (0.0042)
Female	−0.0465*** (0.0040)
Education (Reference: High school or less)	
Some College	−0.0150*** (0.0055)
Associate's degree	−0.0356*** (0.0068)
Bachelor's degree	−0.0574*** (0.0058)
Post graduate degree	−0.0530*** (0.0072)
Age (Reference: 18-24)	
25-34	−0.0366*** (0.0099)
35-44	−0.0692*** (0.0100)
45-54	−0.1311*** (0.0100)
55-64	−0.1710*** (0.0103)
65+	−0.2023*** (0.0115)
Household Income (Reference: 150k or more)	
<15k	0.0349*** (0.0114)
15k-25k	0.0713*** (0.0109)
25k-35k	0.0555*** (0.0100)

(Continued)

Table 3. Continued

Variables	
35k-50k	0.0423*** (0.0091)
50k-75k	0.0203** (0.0083)
75k-100k	0.0087 (0.0084)
100k-150k	0.0076 (0.0084)
Employment (Reference: Work full-time)	
Self employed	0.0109 (0.0072)
Work part-time	-0.0038 (0.0070)
Homemaker	-0.0142* (0.0078)
Full-time student	-0.0400*** (0.0108)
Sick/disabled/unable to work	0.0440*** (0.0104)
Unemployed	-0.0242*** (0.0089)
Retired	-0.0074 (0.0082)
Have emergency fund	-0.0032 (0.0044)
Risk tolerance	0.0153*** (0.0008)
White	-0.0427*** (0.0044)
Year	0.0104*** (0.0012)

Data are from the 2018 and 2021 National Financial Capability (NFCs). Sample size = 36,904. Marginal effects are shown along with standard errors in parenthesis. * Indicates significance at the 5% level. ** indicates significance at the 1% level. *** indicates significance at the 0.1% level.

Table 4: Marginal Effects of the Logistic Regression on AFS use with interaction between subjective financial literacy and financial hardship.

Variables	
Objective financial literacy	-0.0275*** (0.0013)
Subjective financial literacy	0.0098*** (0.0026)
Financial hardship (Reference: Not at all difficult)	
Very difficult	0.0295 (0.0221)
Somewhat difficult	0.0547*** (0.0182)

(Continued)

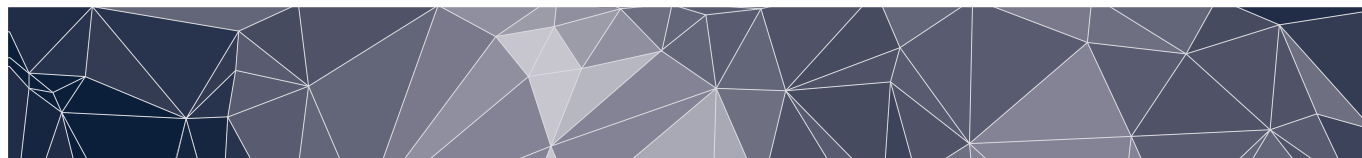


Table 4. Continued

Variables	
Interaction terms	
Subjective Financial Literacy*Very Difficult	0.0176*** (0.0041)
Subjective Financial Literacy*Somewhat Difficult	0.0032 (0.0034)
Credit card behaviour	-0.0475*** (0.0012)
Married	0.0104** (0.0042)
Female	-0.0467*** (0.0040)
Education (Reference: High school or less)	
Some College	-0.0157*** (0.0055)
Associate's degree	-0.0353*** (0.0068)
Bachelor's degree	-0.0569*** (0.0058)
Post graduate degree	-0.0529*** (0.0072)
Age (Reference: 18-24)	
25-34	-0.0369*** (0.0099)
35-44	-0.0692*** (0.0100)
45-54	-0.1305*** (0.0100)
55-64	-0.1708*** (0.0103)
65+	-0.2014*** (0.0116)
Household Income (Reference: 150k or more)	
<15k	0.0368*** (0.0114)
15k-25k	0.0738*** (0.0108)
25k-35k	0.0578*** (0.0100)
35k-50k	0.0444*** (0.0090)
50k-75k	0.0225** (0.0082)
75k-100k	0.0098 (0.0084)
100k-150k	0.0085 (0.0083)

(Continued)

Table 4. Continued

Variables		
Employment (<i>Reference: Work full-time</i>)		
Self employed		0.0115 (0.0073)
Work part-time		-0.0039 (0.0070)
Homemaker		-0.0143* (0.0078)
Full-time student		-0.0401*** (0.0107)
Sick/disabled/unable to work		0.0443*** (0.0105)
Unemployed		-0.0236*** (0.0089)
Retired		-0.0082 (0.0082)
Have emergency fund		-0.0045 (0.0044)
Risk tolerance		0.0153*** (0.0008)
White		-0.0427*** (0.0044)
Year		0.0104*** (0.0012)

Data are from the 2018 and 2021 National Financial Capability (NFCS). Sample size = 36,904. Marginal effects are shown along with standard errors in parenthesis. * Indicates significance at the 5% level. ** indicates significance at the 1% level. *** indicates significance at the 0.1% level.

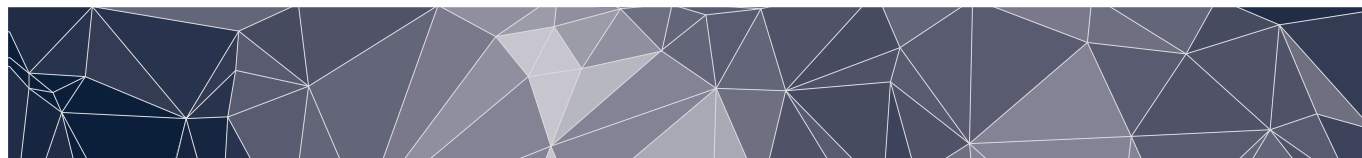
those with higher subjective financial literacy are even more likely to use AFS. This supports hypothesis 5, showing that financial hardship moderates the relationship between financial literacy and the use of AFS.

Discussion

This study uses the 2018 and 2021 National Financial Capability Study (NFCS) to investigate the relationship between financial literacy, credit card behaviour, and AFS use.

Findings from this analysis show that objective and subjective financial literacy are significantly associated with the AFS use examined, thereby providing evidence for H1 and H2. This aligns with the findings of Kim and Lee (2018) and Lusardi and de Bassa Scheresberg (2013), indicating that higher levels of objective financial literacy are less likely to be associated with AFS. Interestingly, individuals who rate their subjective financial literacy higher are more likely to use AFS, consistent with the findings of Robb et al. (2015) and Seay and Robb (2013).

The conflicting association between objective and subjective financial literacy and the use of AFS may be due to overconfidence. Overconfidence arises from an individual's flawed perception of their financial knowledge (subjective financial knowledge) as being greater than their objective



financial knowledge (Koellinger et al. 2007; Robb et al. 2015). This overconfidence can lead individuals to engage in riskier and suboptimal debt decisions like using AFS because they believe they can handle the debts that potentially result more effectively than they actually can (Robb et al. 2015; Moulton et al. 2013).

The discrepancy observed in how objective and subjective financial literacy relate to AFS use speaks to the value of educating individuals on personal finance concepts and principles, and of aligning their perceptions with their objective knowledge. Financial professionals should not only assess what their clients know, but also what they think they know. Professionals can use assessment surveys to gauge their clients' perception of their own financial literacy, then identify discrepancies and help align clients' understanding of financial literacy with their observed financial literacy. Furthermore, in support of H4, this study finds that respondents with responsible credit card behaviour are less likely to use AFS. These results also align with those of Lee et al. (2019), although their study primarily focused on payday lending.

A focal point of this study is its inquiry into the direct role of financial hardship in explaining the use of AFS (H3) and the moderating role it plays in the association between financial literacy and the use of AFS (H5). Consistent with Bandura's (1989) social cognitive theory, the results from this study support H3 and H5, showing that financial hardship is directly associated with the use of AFS, and also moderates the positive association between financial literacy and the use of AFS.

This study has some limitations. Firstly, given the cross-sectional nature of the dataset, only associations, can be established among the variables, rather than causal links. Thus, while the findings suggest a link between financial literacy, credit card behaviour, financial hardship, and AFS use, the study cannot determine a causal direction. Similarly, due to the self-reported nature of the data, the study is susceptible to Common Method Bias (CMB), which could inflate the correlations among the variables. Because the dataset is secondary, the most effective procedural remedies for CMB were not available; however, the Variance Inflation Factor (VIF) analysis confirmed that multicollinearity is not a significant concern for this study. Nevertheless, future research could benefit from using longitudinal data to mitigate CMB and to establish causal relationships among the variables.

Conclusion and Implications

In this study, we utilized the 2018 and 2021 waves of the National Financial Capability Study (NFCS) to investigate the social cognitive approach to understanding the use of AFS, specifically examining the relationship between financial literacy (both objective and subjective financial literacy), financial hardship, credit card behaviour, and AFS use.

The current results show that consumers with higher objective financial literacy are less likely to use AFS, but those who possess higher subjective financial literacy are more likely to do so, despite the risks and costs associated with such services. This finding reiterates the need for consumer financial educators to develop more comprehensive financial literacy programs to enhance their clients' quantitative knowledge and skills, and to continue incorporating financial literacy assessments that can differentiate observed literacy from perceived literacy and competence.



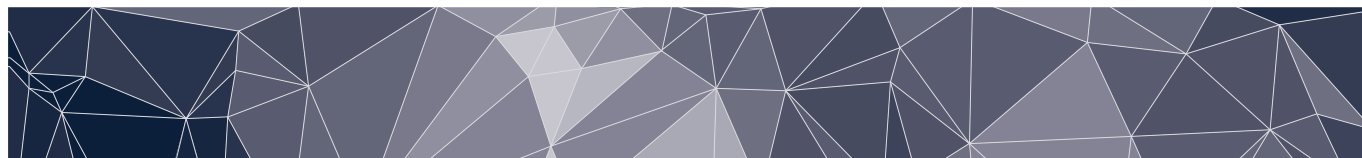
The findings additionally demonstrate that financial hardship is associated with increased AFS use even among financially literate individuals. While working with clients (whether paid or on a pro bono basis), financial professionals can identify and monitor clients who may be susceptible to using AFS by incorporating hardship screenings into their intake assessments (Russell et al. 2025). From a policy standpoint, tax incentives could be provided to employers who offer emergency loan programs to their employees when they experience financial hardship, creating a more affordable loan alternative to high-cost AFS use. Additionally, policymakers can increase funding at the federal and state levels for community development financial institutions (CDFIs), which offer low-cost loans to underserved communities (Congressional Research Service 2022).

Furthermore, this finding suggests that stress (a byproduct of financial hardship) may push individuals into suboptimal choices. This finding underscores the importance of enhancing financial literacy through education and planning, as well as incorporating strategies like emergency savings and debt management to promote financial preparedness in the face of hardships.

However, as this study points out, financial literacy may not be enough. Financial professionals, including financial counselors and advisors, working with these clients on a pro bono basis may help clients identify emotional triggers and develop possible coping mechanisms by integrating various financial therapy models. One such model is cognitive behavioural therapy (CBT), which enables individuals to identify and reframe their emotions and money-related beliefs. CBT involves addressing negative thoughts by replacing negative beliefs with realistic ones, based on the principles that cognition influences behaviour; that behaviour influences cognition; and that positive change occurs when irrational thoughts are challenged — in this case, through the practice of more responsible financial behaviours (Nabeshima & Klontz 2015; Frankham et al. 2020). Another strategy could be Mindfulness-Based Stress Reduction (MBSR). This helps the clients to pause before making an emotional decision under financial stress (Kabat-Zinn 2003). Practicing this with clients helps them make better-informed financial decisions, including those involving AFS.

Similarly, the findings from this study offer valuable insights for financial advisors on how clients' credit card behaviour can influence their likelihood of using high-cost AFS. Irresponsible credit card behaviour was also linked with an increased likelihood of using AFS. By proactively monitoring credit card usage, advisors (possibly working pro bono) can help mitigate financial distress, which often leads to the use of AFS. Implementing regular financial check-ups and providing tools for financial self-assessment are effective preventative measures that can enhance clients' financial health and decision-making.

Policymakers can also create financial literacy initiatives that may encourage responsible credit card behaviour. These could include financial education in schools and universities, and requesting that financial institutions, such as credit card companies, provide financial education on their consumer products. Using this information, consumers can enhance their credit card habits and safeguard themselves against predatory lenders. Additionally, policy could continue to incentivize fintech companies that develop free nudges backed by evidence-based behavioural design, such as alerts on spending and tracking credit utilization, to help clients who may be susceptible to financial hardship. While these nudges already exist, they are usually hidden behind premium-service charges.



Future studies could explore longitudinally how changes in financial literacy over time influence AFS use. Such studies could help ascertain whether financial education programs truly help mitigate overconfidence, over-reliance, and usage of high-cost borrowing. Qualitative research could also implement interviews and observations from individuals who are likely to use AFS to illuminate the cognitive and emotional processes that cause them to use it despite the high risks involved.

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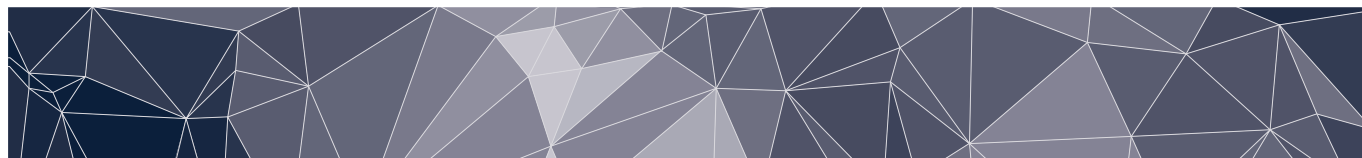
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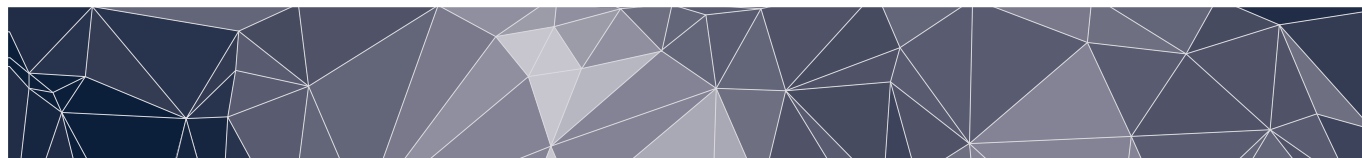
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