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Article

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Cogent Economics & Finance

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Suggested Citation: Mireku, Kwame; Appiah, Francis; Agana, Joseph Akadeagre (2023) : Is there a link between financial literacy and financial behaviour?, Cogent Economics & Finance, ISSN 2332-2039, Taylor & Francis, Abingdon, Vol. 11, Iss. 1, pp. 1-25, <https://doi.org/10.1080/23322039.2023.2188712>

This Version is available at:

<https://hdl.handle.net/10419/304011>

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To cite this article: Kwame Mireku, Francis Appiah & Joseph Akadeagre Agana (2023) Is there a link between financial literacy and financial behaviour?, Cogent Economics & Finance, 11:1, 2188712, DOI: [10.1080/23322039.2023.2188712](https://doi.org/10.1080/23322039.2023.2188712)

To link to this article: <https://doi.org/10.1080/23322039.2023.2188712>



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Published online: 01 Apr 2023.



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Received: 11 November 2021
Accepted: 03 March 2023

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GENERAL & APPLIED ECONOMICS | RESEARCH ARTICLE

Is there a link between financial literacy and financial behaviour?

Kwame Mireku¹, Francis Appiah² and Joseph Akadeagre Agana^{1*}

Abstract: In this paper, we are motivated by the growing complexity of financial service products amidst an unending wave of Ponzi schemes as well as the low levels of financial literacy reported by prior studies. Particularly, while the extant literature has focused on various determinants of financial literacy, limited insights exist on the implications of financial literacy on financial behaviour. Consequently, we focus our empirical test on identifying the link between financial literacy and financial behaviour. We formulated our hypotheses from the family resource management theory which postulates that individual behaviour is a function of their knowledge. Thus, relative to financial literacy and financial behaviour, we argue that financially literate individuals are more likely to exhibit sound financial behaviour than those who are financially illiterate. We tested our hypothesis by using the logistic regression technique on a cross-sectional sample of 3,932 students pursuing various undergraduate and postgraduate programs in Ghanaian public and private universities. Notably, we selected our respondents from six (6) public and six (6) private universities. Consistent with our theoretical predictions, our results show that financially literate students are more likely to exhibit sound financial behaviour. Specifically, the results demonstrate that financial literacy is a major input for financial behaviour. Additionally, we observe that variables such as family characteristics particularly the father's educational background, and discussion of financial matters at home are significant predictors of sound financial behaviour. Generally, our results have implications for various stakeholders including governments, academic institutions, and families.

Subjects: Economics; Finance; Business, Management and Accounting; Adult Education and Lifelong Learning

Keywords: financial literacy; financial behaviour; Ghana, Logit

1. Introduction

Globalization has kept pace in bringing forth rapid development across countries and has caused financial literacy to become increasingly significant in achieving greater economic success (Banthia & Dey, 2022). Financial literacy plays a critical role in assisting individuals to gain insights into the financial system thereby equipping them with sufficient information to make informed judgments concerning their finances. In this sense, financial literacy could reduce the vulnerability of individuals to bad investment choices regarding their hard-earned financial resources, especially in a world of unending Ponzi schemes otherwise known as get-rich-quick schemes (Levmore,

2012). Particularly, one's level of financial literacy has the propensity to greatly influence his/her capacity to critically evaluate investment choices and deploy financial resources wisely. Financial literacy is therefore indispensable for one's business, the economy, and the nation in this era of globalization (Lusardi & Wallace, 2013). Individuals with the ability to appropriately manage a bank account, prepare a financial plan, make investments for the future, and acquire strategies to minimize or evade debt are known to be financially literate.

Given the unending and increasing presence of Ponzi schemes especially in the developing world, an individual's ability to appreciate basic financial issues regarding savings and investment is critical in managing scarce financial resources. This is notably more important to the youth due to their strategic role as future managers of these developing economies and the likelihood for them to fall victim to these get-rich-quick schemes. Here, statistics show some students became victims of these get-rich-quick schemes by using their school fees to invest in some of these schemes (Levmore, 2012). Moreover, as the world's financial system and products/services are increasingly becoming more complex with new developments in digital currency, it is imperative for stakeholders to show special interest in understanding and responding to the dynamics underlying financial literacy among the youth, especially tertiary students. Furthermore, as governments around the world, especially those in the developing world seek to finance tertiary education through state-provided loans, an understanding of tertiary students' financial literacy and the associated consequences is worth exploring.

In the case of Ghana, available statistics indicate that as of September 2019, debts to the tune of GHS75 million approximately USD 6,107,051.25¹ (SLTF annual report, 2019) were accrued under the Student Loan Trust Fund. These statistics are indicative that most tertiary students are unable to make informed decisions regarding the monies that they received. In this regard, various commitments such as the Financial Literacy Week organized by the Ministry of Finance in collaboration with financial institutions, and other financial education programmes have been instituted to ensure tertiary students are equipped with vital information and skills to make wise financial decisions and exhibit good financial behaviour.

Studies on financial literacy have generally shown that tertiary students do not exhibit sufficient knowledge of basic issues of finance (Beal & Delpachitra, 2003; Chen & Volpe, 1998; Evans et al., 2019; Kolade et al., 2022; Lusardi et al., 2010; Md & Ahmad, 2020; Oseifuah et al., 2018; Van Rooij et al., 2011). Whilst these studies have provided important empirical insights on financial literacy especially on factors affecting students' level of financial literacy, the link between financial literacy and financial behaviour is underexplored from the developing world context. As stated earlier, it is critical for deeper insights on this link as it could help policymakers and the youth in particular to embrace financial literacy programs. Thus, we focus on exploring the link between financial literacy and financial behaviour. We examine this by first identifying the factors associated with financial literacy and subsequently test whether financially literate individuals are more likely to exhibit sound financial behaviour. We followed the methodological approach of Chen and Volpe (1998) as well as Lusardi and Mitchell (2011). Generally, our empirical results show there is a positive relationship between financial literacy and financial behaviour. Specifically, we first observe that students with more years of work experience, higher levels of income, and older exhibited more knowledge of financial literacy. Secondly, we find that students with higher scores on our financial literacy scale are more likely to exhibit better judgment about financial issues and financial behaviour. As our study builds on prior financial literacy literature by focusing on the consequences of financial literacy on financial behaviour, we contend that our findings could enhance and shape policy discussion on financial behaviour, especially among the youth.

The rest of the study is made up of a brief review of literature, followed by data and methodology. Section 4 discusses the empirical results and Section 5 makes conclusions with policy implications.

2. Literature review

The system theory was developed to explain the characteristics that arise within complex systems by Baridon & Loomis in 1931 and was first applied to gain insights into the problems related to relationships, structure, and interdependence of organizational and human functions (Katz & Kahn, 1966; Miller, 1971). It utilizes a flow chart to categorize various activities by an individual or organization into inputs, throughputs, outputs, and feedback. Concerning the financial management literature, Bubolz and Sontag (1993) used the tenets of the theory to propose financial management as a concept that has its roots in anthropology and utilizes concepts that are relatively associated with the family resource management theory, entrenched in the systems theory. The family resource management model was introduced by Deacon and Firebaugh (1981) as a management procedure that defined management as ‘the method of attaining objectives through the deployment of resources. The four steps within this model (inputs, throughputs, outputs, and feedback) explain how people make financial decisions and develop financial behaviours. The family resource management theory was adapted to ascertain the financial literacy level of college students and explain how financial knowledge affects their financial behaviour.

The first stage of the family resource model is the input stage which depicts the resources the individual has at any specified time (Hayhoe et al., 2005). These resources are made up of values, attitudes, knowledge, and personal characteristics. For a sound judgment to be exhibited by people about financial issues, financial knowledge becomes the basic resource needed. Thus, a person’s financial literacy is the input that contributes to the person’s overall financial behaviour. The second stage which is termed throughput comprises planning, executing, decision-making, communicating, and use of resources. In relation to the current study, it reflects the personal finance opinions, decisions, and financial management practices of students, since it represents the use of resources (financial literacy) from the first phase. The third and fourth phases are the feedback and output stages but are not used in this study since such phases are suitable for longitudinal studies (Jorgensen, 2007). Feedback transmits to input by utilizing increased knowledge. whilst the output phase concentrates on whether the goal that is preferred was achieved (Jorgensen, 2007).

Financial behaviour can also be explained using the life-cycle theory/hypothesis, the prospect theory, and the theory of planned behaviour. In relation to the life-cycle hypothesis, Ahmed et al. (2006) argued that it is suitable for explaining financial behaviour, particularly savings behaviour. The life-cycle hypothesis postulates that individuals are forward-looking, time-consistent (no contradiction over time) in behaviour, and consume in line with their preferences, but are constrained by the available resources over their whole life (Modigliani & Brumberg, 1954). Consequently, the forward-looking nature of individuals as well as the constraints in their resources accounts for the motivation to save towards dealing with uncertainties over their whole life. The prospect theory on the other hand argues that the most significant factor considered by investors in making decisions in finance is risk. Thus, investors assess all avenues of investment and then evaluate the potential losses or gains before making decisions on the best alternative (Kahneman & Tversky, 1979). Financial literacy, therefore, helps investors in comprehending the pros and cons attached to all avenues of investment, which allows them to make the best selection out of the options available which invariably impacts their financial behaviour (Chen & Volpe, 1998). The theory of planned behaviour introduced by Ajzen (1985) is the advanced model of the theory of reasoned action (Ajzen, 1991). It predicts, explains, and makes meaning from human behaviour. It argues that individuals’ desire to execute an action is reliant on three determining factors: 1. Attitudes towards behaviour: individuals’ examination of behaviour concerning whether it is a negative or positive assessment. 2. Subjective norms refer to the social factors that place pressure and influence on individuals concerning whether they want to exhibit or not exhibit a particular behaviour. 3: Perceived behavioural control relate to the individuals’ perception of behaviours with regard to how difficult or easy it is towards the implementation of individuals’ perception of obstacles that exist in realizing the behaviour reliant on past experiences. Prior studies such as Lajuni et al. (2018) applied the theory of planned behavior in examining the

relationship between financial literacy and financial behaviour. They observed that financial literacy influences the desire to make changes to financial behaviour among undergraduate students in Malaysia.

Khalisharani et al. (2022) used a sample of 204 undergraduate students from Malaysia and Indonesia to examine the relationship between financial literacy, financial attitude, and financial behaviour. Their results show that Indonesian students scored higher on financial literacy whilst Malaysian students recorded better scores on financial behaviour. Additionally, except for Malaysian students, they observed an inverse relationship between financial literacy and financial behaviour. Similarly, Kolade et al. (2022) focused on the nexus between financial literacy and financial behaviour of Nigerian undergraduate students and concluded that financial literacy influenced financial behaviour in the form of decision-making. Prasad and John (2022) also examined the relationship between financial literacy and financial behaviour among management graduates in Hyderabad and found that the average level of financial literacy of management graduate students in Hyderabad is 33% higher than that of the national average of 25%. Male financial literacy levels were also higher than that of females. Eloriaga et al. (2022) examined the link between financial literacy and financial behaviour of young professionals in Metro Manila and found that financial literacy has a significant influence on financial development and financial well-being. They further concluded that capability and utilization of money are two determinants that influence the financial literacy of young professionals. The study made use of the purposive sampling technique to select young professionals in Metro-Manila. Zulaihati et al. (2020) also examined the impact of teachers' financial literacy on financial behaviour using 142 Secondary School Greater Jakarta, Indonesia. Generally, their results show that financial literacy significantly impacts financial behaviour. Similarly, Rai et al. (2019) focused on the association of financial attitude, financial behavior, and financial knowledge towards financial literacy by examining data obtained from 394 working women in Delhi, India. The study found that financial literacy is strongly associated with financial behaviour. Their study made use of structural equation modeling approach using structured questionnaires designed on a five point likert scale.

Arofah et al. (2018) examined financial literacy, materialism, and financial behaviour of 129 undergraduates in Economics and reported that financial literacy has a significant and direct impact on financial behaviour. Thus, they concluded that undergraduate students with high financial literacy exhibited good financial behaviour. (2018) also examined the financial behaviour, confidence, risk preferences, and financial literacy of university students using data from Free State in South Africa and confirmed the assertion that university students make use of information available to them in making decisions. They concluded that students have unlimited cognitive capacity to store and process information, which was evident through the differences across financial literacy levels. They also concluded that understanding of financial behaviour of individuals requires one to take cognizance of their preferences, perceptions, financial literacy knowledge, and psychological factors. Age, income, geographical location, and financial decision-making status are reported to have a significant influence on the financial behaviour of students.

Prior studies mostly in developed countries have revealed that financial literacy is a vital element of sound financial decision-making and can have significant consequences for financial behaviour (Atkinson et al., 2007; Despard & Chowa, 2014; Lusardi & Mitchell, 2011; Rutledge et al., 2010). Nevertheless, the effects of financial education are debatable (Alsemgeest, 2015). Some researchers advocate that financial education has positive impacts on consumer financial outcomes (e.g. B. Bernheim et al., 2001; Danes et al., 1999) while other studies propose that it has narrow effects on financial outcomes (e.g. Fernandes et al., 2014; Mandell & Klein, 2009).

According to (2012), financial literacy influences the financial behaviour of college students. (2010) conducted a mixed-methods study using a cluster of college students who were given a "financial management intervention." The programme was designed with the postulation that if students were given a tool to increase their awareness of spending behaviour, they would

minimize their borrowing and be more considerate of their spending. The results indicated that students who participated in the programme were more conscious of their spending habits and eventually improved their spending behaviour. In Russia, a study conducted by Klapper and Panos (2011) considered the effects of financial literacy on the retirement savings of the populace. They reported that higher levels of literacy are linked to retirement planning and private pension funds investment. Additionally, Collins (2012) submits that individuals who possess more financial knowledge are predisposed to patronize services on investment, insurance, and tax, as opposed to acquiring information on how to access a loan. It is also established that financial literacy positively influences savings and borrowing, as well as increases the likelihood of commencing new income-generating activities (Sayinzoga et al., 2016). Involvement in a financial literacy programme may also minimize late repayments of debts (Sayinzoga et al., 2016).

Finally, an extensive financial literacy experiment in Mexico City by (2013), focused on the impact of a short financial literacy course and concluded that it had some short-term impacts on knowledge and savings. A study by (2012) among college students in Malaysia found that financial literacy was associated with better financial behaviour, and negatively related to financial problems. A study in Rwanda by Sayinzoga et al. (2015) disclosed that offering financial literacy training encourages savings, borrowing, and repayment behaviour.

On the contrary, the findings by Mandell and Klein (2009) showed that individuals, who enrolled in a personal financial management course and had completed 1 to 4 years earlier, were not more financially literate than those who had not taken the course. Nababan and Sadalia (2013) examined the personal financial literacy and financial behaviour of undergraduates and concluded that the likelihood of respondents practicing behavioral finances does not surge steadily with the corresponding increase in their financial literacy. This is because the behaviour of people is not always influenced by their knowledge, but also by other factors, such as psychological factors, emotional, and others. Moreover, Falahati et al. (2011) advocated that the financial literacy of business students, which could be based on their apparent introduction to financial education, does not essentially lead to better financial behaviours. In her study on the impact of financial literacy on high school students' financial decisions, Green (2013) found no significant impact. She also discovered that for undergraduates, prudent financial behaviours such as keeping a formal budget or paying off one's credit card on time are not influenced by higher levels of financial literacy.

2.1. Financial literacy, personal finance decisions, opinion, and practice

There are enormous benefits associated with financial literacy. For example, individuals who are financially educated are often in positions to exhibit better decisions in finance (Akpene Akakpo et al., 2022). Financial decisions are extremely influenced by financial literacy (Chen & Volpe, 1998). Financial literacy helps individuals with financial knowledge to build household budgets, initiate savings plans and make tactical investment decisions. Financial literacy also empowers individuals to be knowledgeable in finance and enlighten them significantly in their lives and energizes them to utilize this knowledge to appraise products and make informed decisions (Wachira & Kihui, 2012). They concluded that financial knowledge once understood helps individuals and households to meet their financial obligations through astute planning and resource allocation in order to gain the utmost utilization.

Financially literate individuals exploit a mix of debt and equity which include stocks of a portfolio because of their understanding of risk diversification (Christelis et al., 2010). It was concluded by (2013) that individuals with high financial illiteracy levels are likely not to plan for their retirements, accumulate wealth, and may find it difficult to take part in the security market. Individuals financial planning improved their overall fulfillment with retirement (Bell et al., 2009). (2011) indicated that entrepreneurs with higher levels of financial literacy show better business performance and sales (Mullock & Turcotte, 2012). These are all the indications that financially literate individuals understand the significance of

retirement planning and will subsequently accumulate wealth for retirement. Based on the review provided, the following hypotheses are formulated;

H1: There exists a positive significant relationship between financial literacy and personal finance opinion.

H2: There exists a positive significant relationship between financial literacy and personal finance decision.

H3: There exists a positive significant relationship between financial literacy and personal financial management practices.

2.2. Financial literacy and financial behaviour

Financial behaviour refers to the skill to capture and comprehend the overall effect of decisions in finance on one's circumstances (i.e. person, family, community, country) and make decisions about proper cash management, precautions, and planning opportunities (Prasad, 2020). Bailey and Global (2019) also defined financial behaviour as human actions relevant to the management of cash, credit, and savings. On the other hand, financial literacy may be defined as the ability of individuals in making informed judgements and decisions concerning money management (Australian Securities and Investment Commission, 2003; Godsted & McCormick, 2007). This may be extended as "enabling people to make informed and confident decisions for all aspects of their budgeting, spending and savings and their use of financial products and services, from everyday banking through to borrowing, investing and planning for the future (Morgan, 2003). According to Kumar et al. (2017) financial literacy supports individuals to take financial behaviours more effectively. Individuals have to make some financial decisions to meet their needs, hence the need for the right financial behaviour (Huston, 2010). Financial illiteracy leads to poor financial behaviour, which includes behaviour on retirement planning (Agnew et al., 2013; Lusardi & Mitchell, 2007), savings and retirement (Bateman et al., 2010), stock market participation (Van Rooij et al., 2011), decisions on investment (Hassan Al-Tamimi & Anood Bin Kalli, 2009) and behaviour on savings-investment (Bhabha et al., 2014).

Van Rooij et al. (2012) stated that there exists a clear indication that there is an effect of financial literacy on financial actions, which then increases the holding of wealth through the control of many demographic variables and facilities for the accumulation of wealth. Less literate customers tend to borrow at high rate of interest and fees, with the tendency of excessive debt leading to credit default (Lusardi & Mitchell, 2007). Major studies done in the past indicated that financial literacy has a positive influence on self-beneficial financial behaviour. Ahmed et al. (2006) found that those who have lower educational background exhibit less favourable financial behaviours. Thus those who have school certificate exhibited lower good practices in finance, compared with holders of diploma and higher. Mian (2014) and Zulaihati et al. (2020) also found stated that financial literacy can have positive implications on financial behaviour. Based on this review the following hypothesis would be tested;

H4: There exists a positive significant relationship between financial literacy and financial behaviour.

3. Methodology

3.1. Data and model specification

We collected data from a sample size of 5000 college students chosen considering the report by De Vaus (2002). Also, the sample size was chosen based on the recommended required sample size at a confidence level of 98% for a one million population (Saunders et al., 2007). This sample

size surpasses the required minimum of 2395 by far. The sample size was determined for 12 universities in Ghana; six private and 6 public universities, and considered diverse levels and programs of study in the various universities.

Probability and non-probability sampling methods was used to choose the twelve universities. Non Probability sampling as used by Mulasi and Mathew (2021) in their study on the Role of Financial Literacy in Predicting Financial Behaviour: The Mediating Role of Financial Self-Efficacy. And Probability sampling as was used by Kolade et al. (2022) on the determinants of Financial Literacy and its Effects on the Financial Behaviour of Undergraduates in a Nigerian University.

A non-probability (purposive) sampling technique was utilized in choosing the twelve (12) universities; six private universities and six public universities. The non-probability (purposive) sampling was used for the universities since they were selected on the basis of having accreditation from National Accreditation Board and having graduates from their institutions. The six public universities used in the study are the University of Ghana (UG), University of Cape Coast (UCC), Kwame Nkrumah University of Science and Technology (KNUST), University of Education Winneba (UEW), University for Development Studies (UDS) and University for Professional Studies (UPS). The purposive selection was used for UG, KNUST, UCC, and UEW given that they are the traditional universities with large student populace. Being the only prominent University in the Northern sector, UDS was also included in this study. UPS was chosen based on being the only university that offers both professional and academic programs. The private was also selected based on having accreditation from the National Accreditation board and having graduated students. Students were selected for the study using a probability (stratified sampling) sampling technique.

To ensure that the sample is more characteristic of the population, it was imperative to group the population into diverse but significant strata; to guarantee that each of the divisions was well represented within the sample. Based on the field of study of the students, the population was first divided into three strata; business and economics, sciences, and other humanities. Grouping the study population into several but important strata, meant that the sample is more representative, as it makes sure that each stratum was represented well in the sample Saunders et al. (2007). Initially equal samples was considered where an equal proportion was allocated to the population. However, it was noted by the researchers that private universities will not have adequate sample representation from the three disciplines (business, sciences, and humanities) as well as the ranks in class (level 100 to postgraduate). In all universities with postgraduates, 15 groups were considered and 12 groups were for universities with only undergraduate students. The respective sample size for all the universities was equally distributed among these two groups. For example, Garden City University (12 groups) will have 4 students per strata. A minimum of 150 participants was allocated to each of the private universities to ensure adequate representation. The students from public universities were a maximum of 860 respondents to buffer the numbers of the private universities. The populations of the universities were obtained from individual university websites, fact/statistics books, and congregational addresses by Vice Chancellors.

The study made use of questions on financial literacy adopted from Chen and Volpe (1998) since the researcher acknowledge its completeness. The survey was made up of seven segments. The first part covered the personal characteristics of respondents. The second section addressed the participants' understanding of fundamental issues in personal finance. Section three looked at knowledge of savings and borrowing. The fourth section examined respondents' acquaintance with basic investment issues. Section five looked at students' familiarity with simple topics in insurance. Respondents were assessed on their financial issues, practices, and choices in section six, which was to aid the researcher test the hypothesis of the study. Questions that ascertained students' exposure to financial matters were asked in the final segment. The simplified regression model estimated takes the form:

$$\text{Log}(p/1 - p) = \beta_0 + \beta_1(\text{FINLIT}) + \beta_2(\text{PC}) + \beta_3(\text{FC}) + \beta_4(\text{EXPO 1}) + \beta_5(\text{EXPO 2}) + \varepsilon \quad (1)$$

Where p , the dependent variable represents a binary outcome which suggests the likelihood that a participant is (1= likely to exhibit financial behaviour, 0 if not). FINLIT, PC, FC, EXPO1 and EXPO2 are vectors of variables. The regression intercepts and residual terms are represented by β_0 and ε , while β_1 , β_2 , β_3 , β_4 , and β_5 are vectors of regression coefficients. The resulting coefficients describe the range to which the financial behaviour of each categorical variable is similar to or contrasts with the reference group.

There are four models including model one. Below are models 2, 3, and 4.

$$\text{Log}(d/1 - d) = \beta_0 + \beta_1(\text{FINLIT}) + \beta_2(\text{PC}) + \beta_3(\text{FC}) + \beta_4(\text{EXPO 1}) + \beta_5(\text{EXPO 2}) + \varepsilon \quad (2)$$

Where d , the dependent variable represents a binary outcome which suggests the likelihood that a participant is (1= 1 if the individual scored above the mean of correct responds under personal finance opinion, 0 if <or = the mean).

$$\text{Log}(e/1 - e) = \beta_0 + \beta_1(\text{FINLIT}) + \beta_2(\text{PC}) + \beta_3(\text{FC}) + \beta_4(\text{EXPO 1}) + \beta_5(\text{EXPO 2}) + \varepsilon \quad (3)$$

Where e , the dependent variable represents a binary outcome which suggests the likelihood that a participant is (1= 1 if the individual scored above the mean of correct responds under personal finance decisions, 0 if <or = the mean).

$$\text{Log}(f/1 - f) = \beta_0 + \beta_1(\text{FINLIT}) + \beta_2(\text{PC}) + \beta_3(\text{FC}) + \beta_4(\text{EXPO 1}) + \beta_5(\text{EXPO 2}) + \varepsilon \quad (4)$$

Where f , the dependent variable represents a binary outcome which suggests the likelihood that a participant is (1= 1 if the individual scored above the mean of correct responds for personal financial management practices, 0 if <or = the mean).

3.1.1. Model extension

The regression model estimated is therefore extended to the form

$$\begin{aligned} \log\left(\frac{P}{1 - P}\right) = & \beta_0 + \beta_1(\text{FINLIT}) + \beta_2(\text{Rank1}) + \beta_3(\text{Rank2}) + \beta_4(\text{Shsstudy1}) + \beta_5(\text{Shsstudy2}) \\ & + \beta_6(\text{Accounting}) + \beta_7(\text{Unistudy}) + \beta_8(\text{Male}) + \beta_9(\text{Experience1}) + \beta_{10}(\text{Experience2}) \\ & + \beta_{11}(\text{Age1}) + \beta_{12}(\text{Age2}) + \beta_{13}(\text{Age3}) + \beta_{14}(\text{Income1}) + \beta_{15}(\text{Income2}) \\ & + \beta_{16}(\text{Fathersch1}) + \beta_{17}(\text{Fathersch2}) + \beta_{18}(\text{Mothsch1}) + \beta_{19}(\text{Mothsch2}) \\ & + \beta_{20}(\text{Fathocc}) + \beta_{21}(\text{Fathocc1}) + \beta_{22}(\text{Mothocc}) + \beta_{23}(\text{Mothocc1}) \\ & + \beta_{24}(\text{Discusfinan2}) + \beta_{25}(\text{Drive}) + \beta_{26}(\text{Capitaltown}) + \beta_{27}(\text{House1}) + \beta_{28}(\text{House2}) \\ & + \beta_{29}(\text{House3}) + \beta_{30}(\text{Educfinan1}) + \beta_{31}(\text{Educfinan2}) + \beta_{32}(\text{Educfinan3}) \\ & + \beta_{33}(\text{Personalac}) + \beta_{34}(\text{Investaccount}) + \varepsilon \end{aligned}$$

3.1.2. Variables and measurement

This section presents the variables and their measurement as well sources from which it was obtained. 2003) analysed financial behaviours of investors considering their spending and saving habits, borrowing patterns, budgeting level, and their ability to comprehend financial products. In this study financial behaviour was defined in line with White (1999) where financial behaviour is defined as the process of how individuals understand and act on financial knowledge to make sound investments. Financial behaviour is made up of three components, which include personal finance opinion, personal finance decision, and personal finance management.

Financial literacy on the other hand is also made up of four constructs which include, general personal finance knowledge, knowledge of savings and borrowing, knowledge of investment, and knowledge of insurance. We present in Table 1 a summary of the variables and their measurement.

3.2. Empirical strategy

The financial behaviour responses and the financial literacy responses were tested for internal consistency using Cronbach alpha. All the variables have a Cronbach alpha above 0.89. The descriptive statistics of the sample show the degree of financial behaviour with regard to financial literacy and the exposure variables, and the analysis of variance (ANOVA) is further used to ascertain differences among the various groups. The prevailing literature states that financial behaviour differs amongst subdivisions of students. The analyses include the descriptive statistics of the sample; the degree of financial behaviour with regards to financial literacy and other exposure variables.

An explanatory variable coefficient is used by the logit regression model to estimate the probability of a binary variable dependent measure. The respondents are categorized into two groups using the median percentage of the correct scores and the scores were given numeric codes. “0” was for respondents with marks equivalent to or lower than the median. They were considered as students who were less likely to exhibit sound financial behaviour and “1” for those with scores higher than the median: indicating those who were more likely to exhibit sound financial behaviour. This approach was utilised by Volpe et al. (1996); and Chen and Volpe (1998). After adding all the items forming the construct for the three dimensions of financial behaviour (Personal Finance Opinion, Personal Finance Decision and Personal Financial Management Practices). The median score is identified and used as a cut-off point to create a binned variable for all the three components which were used as dependent variables. Personal Finance Opinion takes a binary form of 1 for those scores above the median, and 0 for respondents with scores lower than the median. Personal Finance Decisions takes a binary form of 1 for those scores above the median, and 0 for respondents with scores lower than the median. Personal Financial Management Practices also take a binary form of 1 for those scores above the median, and 0 for respondents with scores lower than the median. The binary variable was included in the regression as the dependent variable; hence, four models were used to explain it as seen in models 1, 2, 3, and 4. The independent variables included in the model comprised academic discipline, exposure to finance and monetary issues, gender, work experience, age, income, and educational level as shown in models 1, 2, 3, and 4. A logistic regression analysis is then used to analyze the effect of financial literacy on financial behaviour.

4. Empirical results and discussion

4.1. Descriptive statistics

From the total sample of 5000 students selected from the twelve universities under study, 3932 fully answered questionnaires were retrieved representing a response rate of 79%. The missing number of responses emanates from the slight variations for the various sections of the survey. Demographics such as educational background, gender, work experience, and income levels were analyzed as displayed in Table 2. Most of the participants in the study are male students representing 60.8% of the entire respondents and 39.2% are female students. The large proportion of male respondents reflects the gender gap in tertiary education in Ghana.

In terms of education, we present descriptive statistics on academic discipline, business concentration, class rank and SHS education. With respect to academic discipline, 42.9% of the students major in business whilst 57.1% are non-business students. Among the business students, 66% are majoring in accounting and finance whilst 34% are majoring in other areas like marketing, human resource management, etc. This could buttress the assertion that most business students in Ghanaian universities prefer to major in accounting and finance-related programmes of study.

Table 1. Variables and measurment

Variable	Measurement
Personal Finance Opinion	1= I if the individual scored above the mean of correct responds under personal finance opinion, 0 if <or = the mean
Personal Finance Decision	1= I if the individual scored above the mean of correct responds under personal finance decisions, 0 if otherwise
Personal Finance Management Practices	1= I if the individual scored above the mean of correct responds for personal financial management practices, 0 if otherwise
<i>Financial Behaviour</i>	1= if the score is above the mean score of the aggregates, 0 if otherwise.
<i>Financial Literacy</i>	1= if subject is financially literate, 0 if not.
PC – Variables for Personal Characteristics	
Rank 1	1 if respondent is a level 100 and 200 student, 0 if not
Rank 2	1 if respondent is a level 300 and 400 student; 0 if not
SHS-Field of Study1	1 if respondent business at SHS; 0 if not
SHS-Field of Study2	1 if respondent studied general arts with economics at SHS; 0 if not
SHS-Field of Study3	1 if respondent studied general arts without economics at SHS; 0 if not
SHS-Field of Study4	1 if respondent studied Science at SHS; 0 if not
SHS-Field of study 5	1 if respondent studied visual arts at SHS; 0 if not
Acc & Finance	1 if subject majors in accounting and finance; 0 if not
Unistudy	1 if subject is not a Business student; 0 if not
Male	1 if subject is a male; 0 if not
Exp1	1 if subject has no work experience; 0 if not
Exp2	1 if subject has less than 2 years work experience; 0 if not
Age1	1 if subject's age is up to 20 years; 0 if not
Age2	1 if subject is in the age group of 21 to 25 years; 0 if not
Age3	1 if subject is in the age group of 26 to 30 years; 0 if not
Income1	1 if subject earns less than GH¢400; 0 if not
Income 2	1 if subject earns GH¢400 to 1,499; 0 if not
FC - Variables for Family Characteristics	
FatherSch1	1 if respondent's father's education is SHS and below; 0 if not
FatherSch2	1 if respondent's father has training college and polytechnic/equivalent education; 0 if not
MotherSch1	1 if respondent's mother education is JHS and below; 0 if not
MotherSch2	1 if respondent's mother has SHS, training college and polytechnic/equivalent education; 0 if not
FathOccu1	if subject's father is Unemployed;; 0 if not
FathOccu2	1 if subject's father is Self-employed; 0 if not
MothOccu1	1 if subject's mother is Unemployed; 0 if not
MothOccu2	1 if subject's mother is Self-employed; 0 if not
Discusfinan	1 if respondent has never discussed financial issues; 0 if not;

(Continued)

Variable	Measurement
Drive	Drive = 1 if subject drives a car; 0 if not.
EXPO1 - Variables for Exposure Via Housing Arrangement and Financing of Education	
Capitaltown	1 if subject is living in a capital town; 0 if not
House1	1 if subject resides on-campus hall; 0 if not
House2	1 if subject resides off-campus rent/hostel; 0 if not
House3	1 if subject off-campus own house; 0 if not
Educfinan1	1 if subject's education is fully financed by self; 0 if not
Educfinan2	1 if subject's education is fully financed by family; 0 if not
Educfinan3	1 if subject's education is financed by both self and family; 0 if not
Personalac	1 if subject does not have a personal account; 0 if not
Investaccount	1 if subject does not have an investment account; 0 if not

In terms of class rank, 15.3% are postgraduate students with the rest evenly distributed among level 400, 300, 200, and 100 students.

The majority of the students (approximately 34%) have less than 2 years of working experience. This is not surprising as a large proportion of the respondents are post-high school undergraduate students. With respect to age distribution, 48.6% of the respondents are in the age range of 21 to 25 years. Whilst 20.6%, 19.1%, 10.3%, and 1.5% are within the age groups up to 20 years, 26 to 30 years, 31 to 40 years, and 41 and above respectively. This is indicative that the majority of the respondents are part of the youthful population. Arguably, this group constitutes a critical component of the country's human resource capacity. Generally, given the youthful composition of our sample, the findings could be critical in shaping public policy on financial literacy for Ghana's youthful population.

4.2. Univariate statistics

We first investigate whether there exist significant differences in the financial behaviour scores of respondents based on the various demographic and exposure variables using the analysis of variance (ANOVA) test. Financial behaviour in this study has three components including personal finance opinion, personal finance decision, and personal financial management practices. Generally, the results show that there exist significant differences in the financial behaviour scores of our respondents based on students' and financial exposure characteristics. Specifically, the results presented in Table 3 show that there are significant differences in personal finance decision scores between business and non-business students. For instance, the average personal finance decision score for business majors (45.68%) is significantly higher than that of non-business majors (39.36%). On the other hand, there are significant differences in personal opinion and personal financial management scores. Notably, the educational background does not account for differences in personal opinion and personal financial management practices. The overall scores also show that there exist no significant differences in financial behaviour among business and non-business majors. This confirms the findings of (2015) who find no significant differences in financial behaviour between business and non-business majors. Intuitively, given that personal finance decisions entailed an individual's ability to decide on the most economical use of scarce monetary resources, business students fared much better than non-business students.

Table 2. Demographic characteristics of respondents

	Number of Respondents	Percentage
A. Education		
1. Academic Discipline		
a) Business Majors	1682	42.9
b) Non-Business Majors	2242	57.1
2. Business Concentration		
a) Accounting and Finance Majors	1105	66.0
b) Non-accounting and Finance Majors	570	34.0
2. Class Rank		
a) Level 100	802	20.4
b) Level 200	815	20.7
c) Level 300	968	24.6
d) Level 400 and above	745	18.9
e) PG	602	15.3
4. SHS Education		
a) Business	1528	38.8
b) Arts	1188	30.1
c) Science	1225	31.1
B. Gender		
a) Male	2390	60.8
b) Female	1541	39.2
C. Experience		
1. Years of Work Experience		
a) None	1348	34.4
b) Less than 2 years	1235	31.5
c) Two to less than 4 years	635	16.2
d) Four to less than 6 years	300	7.7
e) Six years or more	403	10.3
2. Years of Age		
a) Up to 20	808	20.6
b) 21–25	1911	48.6
c) 26–30	749	19.1
d) 31–40	406	10.3
e) 41 and above	57	1.5
D. Income		
1. Student personal income		
a) Under GH¢ 400	1444	36.8
b) GH¢ 400–1,499	1548	39.5
c) GH¢ 1,500–4,999	558	14.2
d) GH¢ 5,000–14,999	241	6.1
e) More than GH¢ 15000	130	3.3

Regarding class rank, the results show that there exist differences among all three dimensions of financial behaviour (personal finance opinion, personal finance decision and personal finance management practices). Specifically, post graduate students score higher on personal finance opinion (63.95%) and personal financial management practices (58.31%) while level 200 students

Table 3. Mean % of responses by personal characteristics and results of ANOVA

	Personal Finance Opinion	Personal Finance Decision	Personal Financial Management Practices	Financial Behaviour
Education				
a) Business Majors	43.07	45.68	42.73	42.94
b) Non-Business Majors	42.32	39.36	42.79	42.57
F-Statistics	(0.222)	(15.985)***	(0.002)	(0.056)
Class Rank				
a) Level 100	59.73	55.49	46.76	51.50
b) Level 200	55.95	56.44	47.24	52.02
c) Level 300	58.47	43.29	45.66	51.65
d) Level 400	57.99	40.67	50.20	51.01
e) Post Graduate	63.95	31.06	58.31	57.31
F-Statistics	(2.462)**	(33.623)***	(7.100)***	(1.731)
Business Concentration				
a) Accounting/ Finance	61.12	38.35	48.04	53.02
b) Other	58.29	49.35	49.60	52.45
F-Statistics	(2.650)	(39.358)***	(0.779)	(0.106)
SHS-Field of Study				
a) Business	60.46	41.97	48.42	52.83
b) General Arts with Economics	60.85	47.34	50.81	54.39
c) General Arts without Economics	57.45	44.26	50.21	49.36
d) Sciences	57.15	50.66	47.70	51.48
e) Visual Arts	43.02	48.84	55.81	48.84
F-Statistics	(3.404)*	(5.448)***	(0.974)	(0.799)
Gender				
Male	59.12	45.61	49.33	52.13
Female	58.73	46.92	48.54	52.95
F-Statistics	(0.060)	(0.648)	(0.234)	(0.252)
Work Experience in Years				
a) None	57.12	54.01	42.80	48.81
b) Less than 2years	58.54	45.59	46.48	50.53
c) 2 to less than 4 years	61.10	40.94	52.60	55.75
d) 4 to less than 6 years	60.33	40.00	59.67	58.00
e) 6 or more years	62.53	33.75	63.28	61.54
F-Statistics	(1.383)	(17.815)***	(18.744)***	(7.245)***
Age in Years				
a) Up to 20	58.29	52.85	46.66	51.11
b) 21 to 25	57.82	48.14	43.80	49.50
c) 26 to 30	60.75	39.92	57.14	57.94

(Continued)

Table 3. (Continued)

	Personal Finance Opinion	Personal Finance Decision	Personal Financial Management Practices	Financial Behaviour
d) 31 to 40	61.82	35.96	61.82	58.62
e) 41 and above	61.40	38.60	57.89	52.63
F-Statistics	(0.918)	(12.031)***	(18.014)***	(5.649)***
Income				
a) Under 400	56.99	50.62	43.42	49.58
b) 400–1,499	61.30	45.03	49.87	54.07
c) 1,500–4,999	56.99	40.50	55.56	52.69
d) 5,000–14,999	60.17	40.66	58.09	55.60
e) 15000 and above	57.69	42.31	55.38	57.69
F-Statistics	(1.737)	(5.844)***	(9.617)***	(2.199)*
*P < 0.1, **P < 0.05 and ***P < 0.01				

score higher on personal finance decisions. With respect to financial behaviour, the aggregate scores show that there exist no significant differences based on class rank.

The result from the study indicates that there is a significant difference in personal finance decision among accounting and finance students (38.35%) and other students (49.35%). The overall means indicate that there is no statistically significant difference in financial behaviour between accounting/finance students and other students. With respect to SHS-Field of study, we observe significant differences among the various groups. For example, respondents with SHS background in business and general art with economics score significantly higher in personal finance opinion than those in other. Consistent with Mandell and Klein (2009), our results on financial behaviour show that there are no significant differences among the various SHS-Field of study. The average overall score of female respondents (52.95%) is not significantly higher than that of male respondents (52.13%). This pattern persists across all three components of financial behaviour.

The students with 6 or more years of experience exhibit more prudent financial behaviour than those with less than 2 years of experience. The difference is statistically significant at 1%. This implies that those with more work experience exhibit more prudent financial behaviours than students with less than two years of work experience. Additionally, there exist significant differences in personal finance decisions and personal finance management practices among the students with respect to work experience. Specifically, students with 6 or more work experience exhibit more prudent personal financial management practices. It can be deduced from the scores for the three dimensions that personal finance decision and personal financial management practices significantly vary with age while personal finance opinion does not vary with age. The overall means show that students between the ages of 26 to 40 exhibit more prudent financial behaviour. The findings suggest that respondents with an annual income of GHS 150,000, and above exhibit more sound financial behaviours than students in the other income groups. This is followed closely by students who earn annual income of GHS5,000 to 14,999. The mean difference is significant at a 10% level.

4.3. Family Characteristics and financial behaviour

We investigated whether there exist significant differences in the financial behaviour scores of respondents based on the various family characteristics using the analysis of variance (ANOVA) test. As shown in Table 4 there is no significant difference in financial behaviour with the respondent's father's educational background. However, there exist significant differences in

Table 4. Mean % of responses by family characteristics and results of ANOVA

	Personal Finance Opinion	Personal Finance Decision	Personal Financial Management Practices	Financial Behaviour
Family Characteristics				
1.Fathers Education				
a) None/JSS/MSLC	60.84	42.50	47.66	53.01
b) SHS/Equivalent	60.22	45.98	44.27	51.55
c)Training College, Nursing College, Polytechnic/ Equivalent	60.86	47.90	50.66	54.62
d) Bachelor's degree	55.49	47.54	51.88	50.72
e)Masters/ doctorate/ professional	59.08	48.15	52.00	53.85
f) Other	30.77	53.85	38.46	30.77
F-Statistics	(2.133)*	(1.709)	(2.525)**	(1.109)
2.Mothers Education				
a) None/JSS/MSLC	62.50	42.43	47.29	52.71
b) SHS/Equivalent	59.77	46.66	46.53	51.54
c)Training College, Nursing College, Polytechnic/ Equivalent	57.28	45.40	54.02	55.06
d)Bachelor's degree	53.27	58.29	49.25	52.51
e)Masters/ doctorate/ professional	54.13	52.29	54.13	50.00
F-Statistics	(3.533)***	(7.777)***	(2.977)**	(0.658)
3.Fathers Occupation				
a) Unemployed	53.04	43.59	48.07	50.83
b) Self Employed	58.41	47.63	48.18	53.18
c. Employee	61.82	52.82	50.51	52.83
F-Statistics	(5.463)***	(8.615)***	(1.051)	(0.337)
4.Mothers Occupation				
a) Unemployed	53.57	51.83	46.26	49.57
b) Self Employed	60.30	45.01	48.84	52.93
c) Employee	60.51	45.57	51.87	54.43
F-Statistics	(4.705)***	(4.421)	(2.390)*	(1.714)

*P < 0.1, **P < 0.05 and ***P < 0.01

personal finance opinion and personal financial management practices with respect to the father's educational background. Thus, students with fathers having postgraduate/professional certificates exhibit better personal finance opinion (59.00%) and personal finance management practices (52.00%) than the others.

The findings suggest that respondents' personal finance opinions, personal finance decisions, and personal finance management practices vary with their mother's educational background. Respondents whose mothers had None/JSS/MSLC education were seen to exhibit better personal finance opinion (62.50%) than those with mothers having bachelor's degrees (53.27%). On the other hand, students whose mothers have postgraduate or professional degrees (54.13) as well as those with training college, nursing college, and polytechnic education (54.02%) were seen to exhibit better personal financial management practices. The Overall means show that differences in students' mothers' educational background does not account for differences in students financial behaviour, since the F-Value of 0.658 is not significant

The results indicate that respondents' fathers' occupations and mothers' occupations account for significant differences in their personal finance opinion. Students whose mothers and fathers are employed (61.82% and 60.51% respectively) exhibit better personal financial opinions than those students whose parents are unemployed. This is followed closely by students whose mothers and fathers are self-employed (58.41% and 60.30% respectively). The differences in mean patterns are highly significant at 1%. Moreover, students whose fathers are employed take better personal finance decisions (52.82%) than those whose fathers are unemployed. This difference is statistically significant at 1%. Students with mothers as employees also exhibit better personal financial management practices. Despite the differences observed in the various individual areas, overall, there is no significant difference in financial behaviour of students with respect to their parent's occupational background.

4.4. Exposure variables and financial behaviour

We also examined whether differences in exposure (e.g capital town, housing arrangement, driving etc) account for differences in the respondents financial behaviour. Although there are no significant differences in the overall financial behaviour of students with regard to whether they drive or not, there exist significant differences in personal finance decisions and personal financial management practices of students with respect to whether they drive or not.

Students who drive exhibit better personal financial management practices (53.41%) than those who do not drive. Concerning personal finance decisions, students who do not take better personal finance decisions (47.23%) than those who drive. The results presented in Table 5 show that there are no significant differences in the financial behaviour between students who stay in the capital town and those who do not. However, there are significant differences in the personal finance opinions and personal finance decisions of students with respect to where they stay (capital town versus non-capital town). Thus, students who stay in the capital town exhibits better personal finance opinion (62.52%) than those who do not, while students who do not stay in the capital town exhibits better personal finance (53.25%) decisions than those who do.

The differences in mean patterns show that there is a significant difference in financial behaviour among students with respect to their housing arrangements. Students with off campus-own house exhibit sound financial behaviour (55.46%) than those with other housing arrangements. This is followed closely by students who stay in off-campus rented or hostel accommodation (54.60%). Students with off-campus own-house exhibit sound personal financial management practices (57.38%) while students with on-campus housing exhibit sound personal finance decisions (47.69%). Students who live with their parents or relatives received the lowest mean value of 44.55%, which implies that such students exhibited less sound financial behaviour. With regards to educational financing, it is realized from the entire survey that students whose education is financed by them and family with an average score of 61.05% exhibit better financial behaviour than those who finance their education through other means. It was realized that there is a significant difference in all three dimensions of financial behaviour in terms of educational finance. Specifically, students whose education is fully self-funded and on scholarship or sponsorship exhibits sound personal financial management practices (65.69%) and personal finance decision (46.03%) respectively. On the other hand, students with both self and family funding exhibit sound personal finance decision (64.62%). The differences in mean patterns also indicate

Table 5. Mean % of responses by exposure variables and results of ANOVA

	Personal Finance Opinion	Personal Finance Decision	Personal Financial Management Practices	Financial Behaviour
Driving Experience				
Yes	58.18	43.61	53.41	54.26
No	59.81	47.23	47.35	52.10
F-Statistics	(0.903)	(4.330)**	(12.078)***	(1.530)
Capital Town				
Yes	62.52	41.08	50.31	53.60
No	55.96	53.25	47.71	52.16
F-Statistics	(16.625)***	(55.820)***	(2.484)	(0.774)
Housing Arrangement				
a) On-campus	58.29	47.69	46.25	50.72
b) Off-campus rent/ hostel	60.69	46.35	50.21	54.60
c) Off-campus-own house	59.84	43.17	57.38	55.46
d) Live with Parents/relative	54.50	37.91	46.92	44.55
F-Statistics	(1.133)	(2.150)*	(4.245)***	(2.925)**
Financing Education				
a) Fully Self	60.32	38.07	63.69	61.26
b) Fully family	57.63	48.78	43.55	48.27
c) Both Self and Family	64.62	45.47	54.68	61.05
d) Scholarship/ Sponsorship	57.94	46.03	53.17	50.79
F-Statistics	(3.103)**	(6.203)***	(24.996)***	(15.059)***
Financial Market Participation				
Financial Accounts				
a) Personal Accounts				
Yes	82.35	83.79	81.88	82.44
No	81.72	80.63	45.9782.9	81.71
F-Statistics	(0.253)	(6.642) **	(0.115)	(0.350)
b) Investment Accounts				
Yes	95.27	95.31	94.96	95.29
No	95.35	95.23	95.56	95.24
F-Statistics	(0.002)	(0.016)	(0.778)	(0.006)

*P < 0.1, **P < 0.05 and***P < 0.01

that there exist significant differences in the personal finance decisions of students with respect to holding a personal bank account. Thus students with personal accounts tend to exhibit better finance decisions (83.79%) than those without personal accounts. On the overall however, there is no significant difference in financial behaviour of students with or without personal accounts on

their financial behaviour. Finally there is no significant difference in financial behaviour of students with or without investment accounts.

4.5. Impact of financial literacy on financial behaviour

In this section, we rely on multivariate analysis to infer the relationship between financial literacy and financial behaviour. Specifically, we apply the logistic regression analysis technique to ascertain the impact of financial literacy on financial behaviour while controlling for demographic characteristics, family characteristics and exposure variables. The empirical results are reported below

4.5.1. Financial literacy

The results as reported in Table 6 show that financially literate students are more likely to exhibit better financial behaviour. Generally, this suggests that students with higher financial literacy are more likely to have a sound judgment on financial matters, take better financial decisions and engage in prudent financial management practice. Theoretically, this is consistent with propositions from the family resource management theory which suggests that individual's behaviour is dependent on their values and knowledge. In this sense, a person's financial behaviour is a function of the person's financial literacy (knowledge). Relative to the empirical literature, these results are consistent with the findings of Zulaihati et al. (2020). Chen and Volpe (1998) and Mireku (2015).

Regarding the various components of financial behaviour, we observe that students who are financially literate are more likely to take exhibit sound judgment on financial matters than those who are less financially literate. This is consistent with the empirical results on the relationship between financial literacy and financial behaviour. On the other hand, we observe an inverse relationship between financial literacy and personal finance decision, and personal financial management practice. This could be attributable to the general assertion that people normally fail to translate their knowledge into practice.

4.5.2. Gender

As shown in Table 4, there is no evidence to support gender differences in the likelihood of respondents exhibiting better financial behaviour. Thus, personal finance opinion, personal finance decision, personal finance management and financial behaviour received coefficient values of 1.6636, -1.45251, 1.69464 and 1.84593 respectively which are all not significant. The entire result shows that there is no significant impact of gender for all the dimensions of financial behaviour. This is consistent with the findings of Yuan (2015) who found that gender is not a significant predictor of financial behaviour. However, the results contradict the findings of Borghans, Heckman, Golsteyn, & Meijers (2009) and Peach and Yuan (2017) who found that males are more likely to exhibit positive financial behaviours than females.

4.5.3. Education

The coefficients for Rank 1 for all the dimensions are significant at 1%. The negative coefficient for overall financial behaviour with respect to Rank 1 implies that students from lower class rank are less likely to exhibit prudent financial behaviour than those from higher or postgraduate classes. This finding is akin to the finding of Yuan (2015), who discovered that more years in college increased budgeting behaviours of students. It is further seen that all the ranks of students exhibits better personal finance decision since they are all positive and significant at 1% whiles students in Rank 1 and Rank 2 are more likely to exhibit sound personal finance decisions.

Students' area of study at the SHS/equivalent level is not a predictor of their overall financial behaviour since the coefficients are not significant. However, their SHS/equivalent level is a predictor of their personal finance decision as was seen to be significant at 1%. This suggests that students who study business, as well as general art and economics at the SHS, are more likely to exhibit better personal finance decisions. This is though not surprising as students who study

Table 6. Result of logit regression models

	Personal Finance Opinion	Personal Finance Decision	Personal Financial Management Practices	Financial Behaviour
Financial Literacy	0.7562705***	−1.215365***	−0.1136637***	0.0590094 **
Rank1	−.0714976***	0.2767783***	−0.1052855***	−0.0625192***
Rank2	−.0677217***	0.1409501***	0.1045061	0.1163033
ShsStudy1	0.0115787	0.0634206***	0.0088532	0.013566
ShsStudy2	−0.0276682	0.1008815***	−0.026403	−0.0212876
Acc & Finance	0.0988209	−.1537568	.0694321	0.1385245
Unistudy	−0.2270281**	−0.1155807	−0.1614522	−0.2406255**
Male	1.66326	−1.45251	1.69464	1.84593
Exp1	.8265809	−1.022713	−2.001539 *	.6038059
Exp2	3.295748	−4.413138	−7.306936*	2.769863
Age 1	−.1151285	.0727742	−.2493676	−.0435676
Age2	−.0715633	.1874232	−.3637441***	−.0888677
Age3	.0083118	.074511	−.0344636	.0999012
Income1	.6466054	−.3080299	.3010816	.5258731
Income2	1.38409	−1.92773	1.08943	1.51786
FatherSch1	.0565095***	−.0461588**	−.0362085	.0313796
Fathersch2	.0593258***	.0127744	−.0101553	.0395912*
MotherSch1	.0260066	−.0100855	−.0036245	.0177192
MotherSch2	−.0094385	−.0266736	.0464324**	.0383615
FathOccu1	.0878708	−.07384	.1266994	.1264374
FathOccu2	−.1490095	.1708099	.0038327	−.0418367
MothOccu1	.3182756**	.331086**	−.1503251	−.1092543
MothOccu2	−.105725	.1209407	−.0117638	.0002681
Discusfinan2	.0087789	−.0609012	−.3417988***	−.2184141***
Drive	−.1040013	−.0915804	.0518635	−.02097
Capitaltown	.2830752***	−.3958023***	.0876649	.0789877
House1	.2841907*	.0752222	.1400959	.2914071**
House2	.4078996***	.1819244	.2766854**	.4477423***
House3	.3029462*	.2137327	.3447717**	.3469337**
Educfinan1	.1709889	−.177555	.4767369***	.5379663***
Educfinan2	.1320436	−.0117471	−.1553641	.0750648
Educfinan3	.4096765**	−.0420068	.1948566	.573733***
Personalac	.1409227	−.2457461	−.2016294	−.2708461
Investaccount	−.189034	−.0951151	.0386505	−.1281957
Intercept	−13.45702	14.7296	−10.12325	−12.13662
−2 log Likelihood	−2525.6027	−2398.6476	2587.321	−2618.2138
Wald Chi2 (14)	200.54	568.21	212.93	139.98
Prob>Chi2	0.0000	0.0000	0.0000	0.0000
Pseudo R2	0.0382	0.1059	0.0395	0.0260
Correct Classification	63.08%	67.02%	69.63%	67.55%
Chance Classification	72.31%	62.42%	73.04%	65.04%

*p < 0.1, **p < 0.05 and ***p < 0.01

business courses and economics and general arts at the SHS level might have been introduced to the finance issues in accounting, business management and economics.

The findings show that unistudy (referring to non-business majors) are less likely to exhibit prudent financial behaviour than those with business majors in business fields. This is because the coefficient for the overall financial behaviour with respect to non-business study is negative and statistically significant at 5% level. These findings confirm that of Yuan (2015), and Peach and Yuan (2017). Results indicate strong significance of Unistudy on overall financial behaviour; hence, students' field of study at the University is a strong predictor of their financial behaviour. The findings further show that students in the non-business major are less likely to exhibit prudent finance opinions, since the coefficient was negative and significant at the 5% level of significance. On the other hand, there was no significant influence of non-business majors on personal financial management practices and personal finance decisions.

The result reported in Table 6 indicates that a business major (referring to accounting and finance) is not a predictor of financial behaviour, personal finance opinion, personal finance decisions, and personal financial management. This however is surprising since students with business majors are introduced to increased levels of direct reading on finance-related topics and are tasked with the responsibility of listening to and discussing financial reports on the media (Beal & Delpachitra, 2003), hence they tend to be well-informed on financial issues and which should ultimately cause them to exhibit better financial behaviour.

4.5.4. Experience

In respect of work experience, the results show that the work experience of students barely has any significant impact on their financial behaviour. Thus this implies work experience is not a significant determinant of student's financial behaviour. Financial literacy further had no significant impact on personal finance opinion and personal finance decisions, since their coefficients were not statistically significant.

4.5.5. Age

In terms of age, the results from the study are inconclusive. The results reveal that the age of students barely has any significant impact on their financial behaviour. This implies age might not be a predictor of the financial behaviour of students. This finding corroborates that of Shibia and Kieyah (2016) who found that younger adults are less likely to engage in savings behaviour. The results further reveal that the age of students barely influences the personal finance opinions and the personal finance decisions of university students.

4.5.6. Income

The table reveals that across all the dimensions of financial behaviour income levels of students have no statistically significant influence. There is also no significant influence of income levels on their financial behaviour. This contradicts the findings of Hogarth et.al (2003) that negative financial behaviour is linked with low-income earners.

4.5.7. Family characteristics

Some family characteristics were also important predictors of financial behaviour. Student's mother's education barely shows a significant impact on their financial behaviour, personal finance opinion, personal finance decisions and personal financial management practices. Students whose mothers had SHS, training college, and polytechnic/equivalent education are more likely to exhibit prudent financial management practices. Students whose fathers had higher levels of education (SHS, training college, and polytechnic/equivalent education) are more likely to exhibit sound financial behaviour than those whose fathers have lower levels of education (JHS and below), and this is significant at 10 %. Since it has been established that parents play a significant role in the learning process of their children, and parental involvement can even be more decisive in forming financial behaviour (Kumar & Goyal, 2015;

Sundarassen et. al, (2018), this finding is not surprising. With respect to students' personal finance opinion, it is seen that father's education really matters as they both show significant levels at 1%. Father's occupation on the other hand has no significant impact on the financial behaviour, personal finance opinion, personal finance decision, and personal finance management practices of students across the entire results.

It is only seen that mothers' occupation has a significant impact on the students' personal finance opinion and personal finance decisions. Thus, students whose mothers are self-employed are more likely to exhibit better personal finance opinion and personal finance decisions than those whose mothers are not self-employed. Students whose mother has attained higher levels of education (SHS, training college and polytechnic/equivalent education) are also likely to exhibit better personal financial management practices than those whose mothers have lower levels of education (JHS and below). However, on the overall financial behaviour it is evident that student's mother's education and occupation have no significant impact on their financial behaviour. Students who come from houses where finance is discussed are more likely to exhibit prudent financial behaviour than those who come from houses where finance is not discussed. This further contradicts the findings of Kumar and Goyal (2015) and Sundarassen et. al 2016. They posit that since the family is the first agent of socialization for a child, parents play a significant role in the learning process of their children. Hence, by coaching them on basic financial issues and being a model, it will be easier for the children to imitate them and adopt desirable financial behaviour (Kumar & Goyal, 2015).

4.5.8. Residential characteristics and sources of funding

The coefficient of capital town with respect to overall financial behaviour is not statistically significant with the financial behaviour, personal finance decisions, and personal financial management practices. This implies that students in any form of housing arrangement are more likely to exhibit sound financial behaviour. Students in all forms of housing arrangement are likely to exhibit prudent personal finance decisions. On the other hand, students in House 1 and House 2 are likely to exhibit more personal financial management practices. The coefficients for educational funding are significant for fully self and both self and family at 1% significance level. This implies that students who fund their education themselves and those who fund it through both self and family are more likely to exhibit better financial behaviour than those who fund it through other means. On the other hand, students who fund their education and students who fund it through both family and self are likely to exhibit more personal management practices and personal finance opinion respectively.

4.5.9. Financial market involvement

The coefficients of personal account and Investment are not significant in relation to personal finance opinion, personal finance decision, personal finance management practices, and overall financial behaviour. This implies that personal accounts and investment accounts have no significant impact on the student's financial behaviour. We observed that there is no significant difference in the financial behaviour of students based on their possession of personal accounts and investment accounts.

5. Limitations to the study

The researchers faced the problem of the inability to cover all public and private universities in Ghana. This notwithstanding would not have a significant impact on the purpose, validity, and findings of the study since the study utilizes a larger sample size. The study is also limited to only one variable (financial literacy) to study its impact on financial behaviour. However several other variables like financial education, behavioral bias, and financial knowledge among other factors may influence the financial behaviour of students.

6. Conclusion

This study investigates the effects of financial literacy on financial behaviour of tertiary students in Ghana. Precisely, the study examines the effects of students' financial literacy on their personal finance opinion, personal financial decisions, personal financial management practices, and overall financial behaviour. We are motivated by the growing complexity of financial service products amidst an unending wave of Ponzi schemes and documented low levels of financial literacy. We framed our hypotheses from the extant literature and the family resource management theory which postulates that individual behaviour is a function of their knowledge. Thus, relative to financial literacy and financial behaviour, we argue that financially literate individuals tend to exhibit sound financial behaviour more than those who are financially illiterate. We tested our hypothesis by using the logistic regression technique on a total cross-sectional sample of 3,932 students pursuing various undergraduate and postgraduate programs in Ghanaian public and private universities. Notably, we selected our respondents from six (6) public and six (6) private universities.

Consistent with our theoretical predictions, our results show that financially literate students are more likely to exhibit sound financial behaviour. Specifically the results demonstrate that the input needed for sound financial behaviour is anchored on financial literacy. Some of our control variables such as family characteristics particularly father's educational background, and discussion of financial matters at home are significant predictors of sound financial behaviour.

Generally, our results have implications for various stakeholders including the government, academic institutions and families. For instance, in view of the significant impact of financial literacy on the financial behaviour of students in Ghana, it is important that government through the ministry of youth and sports include financial education in national initiatives and programmes targeted at the youth to increase their level of financial literacy. Additionally, since financial literacy shows significant impact on financial behaviours of students it is recommended that the Ministry of Education, and all government educational agencies should work together to include a compulsory course or subject on financial education. The inclusion of financial literacy education to the educational curricula starting from the high school level may be vital in improving financial decision-making in the populace. We also recommend that financial education programmes should have clear objectives and an evaluation methodology that measures the increase in knowledge as well as behaviour change to ascertain that these programmes have the desired effects on the financial behaviours of participants. Our results should be interpreted with caution as we focus on a composite measure of financial literacy. More insights could be obtained by focusing on the individual dimensions of financial literacy.

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Disclosure statement

No potential conflict of interest was reported by the authors.

Citation information

Cite this article as: Is there a link between financial literacy and financial behaviour?, Kwame Mireku, Francis Appiah & Joseph Akadeagre Agana, *Cogent Economics & Finance* (2023), 11: 2188712.

Note

1. This is based on the Bank of Ghana interbank exchange rate on 13th February 2023.

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