

FINANCIAL LITERACY AMONG UNDERGRADUATE STUDENTS: EMPIRICAL EVIDENCE FROM GHANA

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ABSTRACT

This study investigates the level of financial literacy among undergraduate university students in the northern region of Ghana. Specifically, the study examined whether gender, age, programme of study, study years, parent's income level and student's financial status, are related to financial literacy. An adapted version of the OECD/INFE (2015) toolkit for measuring financial literacy was used to collect data on the level of financial literacy for a stratified random sample of 342 undergraduate students at the Nyankpala and Tamale campuses of the University for Development Studies (UDS) in Ghana. Logistic regression and Chi-Square statistical procedures were used to analyse the data using STATA version 14 of statistical software. As expected students' experience in handling money (through managing incomes from working) positively influences their financial literacy as such experience in handling monies would require them to be knowledgeable about financial management matters such as budgeting, investment, interest rate, among others. Saving out of pocket incomes of the students remains a very significant consideration in the management of their personal finances. Being financially literate appears not to have a (statistically) significant influence on savings propensities of the students. On the other hand our finding that as student's monthly pocket money increases their propensity to save will also be high is in accordance with the theory of savings behaviour which posits that saving is a positive function of disposable income.

Keywords: Financial Literacy, Ghana, Logistic Regression, Undergraduate Students.

INTRODUCTION

Financial literacy is an essential life skill that has important impact on individual, family well-being and on the broader economy. Over the past two decades, both developed and developing countries have become increasingly concerned about the level of financial literacy of their citizens, particularly among young people. Moreover, the literature suggest that, globally, financial illiteracy is a major reason for falling saving rates (Hilgert et al., 2003), mounting consumer debt (Stango & Zinman, 2007), inadequate planning for retirement (Lusardi & Mitchell, 2011), basis for divorce, poor mental health and a variety of other negative and unhappy experiences (Kinnunen & Pulkkinen, 1998), the cause of emotional stress, depression and lower self-esteem (Wolcott & Hughes, 1999). This has led to the recognition that better financial literacy skills could contribute to improved financial decision making, and that these decisions could, in turn, have positive effects not only on households but also on economic and financial stability of a country more generally (OECD/INFE, 2017).

Indeed, the acquisition and development of financial literacy skills among young people is increasingly perceived by policy makers as essential for several reasons. First, the current and future financial choices faced by today's youth are likely to be more challenging than those of

past generations, given the greater complexity in the financial products, services and systems now available. Second, young people will probably bear more financial risks in adulthood due to increased life expectancy, a decrease in welfare and occupational benefits, and uncertain economic and job prospects. Third, providing young people with proper financial education may also help bridge financial literacy disparities due to differences in their socio-economic status. Recent studies exhibited mixed results on the level of financial literacy among young people, particularly undergraduate students in both developed and developing countries. This suggests that additional factors merit examination for their impact on financial literacy among the youth. More importantly, the evidence show that the level of financial literacy among female undergraduate students is low compared to their male counterparts (Agnew & Harrison, 2015; Lantara & Kartini, 2015; Philippas & Tzora, 2017). This study, therefore seeks to further explore an understudied part of the globe and reinforce existing knowledge and models by analysing the level of financial literacy among undergraduate university students in northern Ghana.

LITERATURE REVIEW

The issue of financial literacy and financial well-being among college students has received increasing research attention. In fact, financial literacy has been shown to affect a wide range of financial behaviour among the youth, especially college or undergraduate students. In general, the evidence shows that young people have low levels of financial literacy and ability to manage their own finances. For instance, Lusardi et al. (2009) reported that less than a third of American teenagers (age 12-17 yrs) possess basic knowledge of interest rates, inflation, and risk diversification. The study noted further that women, African-Americans and Hispanics, and those with lower educational attainment are associated with lower levels of financial literacy. Other studies even suggested that youth financial literacy has been declining since the late 1990s (Xue & Zia, 2012). Meanwhile, Mandell (2004), the National Council on Economic Education (NCEE, 2005) and the JumpStart Coalition (2005) investigated financial literacy levels among US high school students and concluded that the students demonstrated a lack of both personal financial skills and knowledge. These studies cited various factors that may account for different levels of financial literacy among young people. These are:

1. Labour experience: youngsters working 10-20 hrs a week, having a savings account and plans to pursue post-secondary education are associated with high levels of financial literacy.
2. Knowledge area: business majors are more knowledgeable than non-business majors and within business majors; finance/accounting majors are most knowledgeable.
3. Gender: female college students have been shown to have less knowledge and willingness to learn about personal finance topics than do male college students.
4. Access to financial information: older youths (age 20-24 yrs) have more access to financial information than younger youths (age 15-19 yrs), make greater use of financial services, and are more likely to be the sole financial decision makers in their household. Female and low income youth are also less likely to have access to banking services.

Environmental factors (e.g. parents, family communication patterns, school, peers, books, life experiences, and internet) have also been cited as influencing financial literacy among the youth. For instance, Cude et al. (2006) examined US college student's overall financial management practices using quantitative and qualitative data from a multi-state research project. The study investigated how college students acquire financial knowledge and behaviours and the factors that place some students at greater financial risk than others. The findings show that parents play a key role in their children's financial management practices. The authors concluded that the results provide important insight into financial education opportunities for students,

parents, college administrators, and financial professionals and educators. Moreover, Shim et al. (2009) assessed financial literacy in the context of multiple socialisation factors. Data were collected *via* an online survey conducted at a large state university in the south-western United States. The results suggests that self-actualising personal values, financial education at home, and formal financial education at school play an important anticipatory socialisation role in the ways that young adults acquire knowledge about financial matters and form attitudes and behavioural intentions based on that knowledge. In a similar study, Curran et al. (2018) examined how perceived financial socialisation (from parents, the romantic partner, and young adult's own behaviour), was associated with young adult's life outcomes and well-being (i.e., physical and mental health, finances, romantic relationship). Results from hierarchical regression analyses showed that young adult's own financial behaviours were the most patterned, followed by financial socialisation from the romantic partner, and then from financial socialisation from parents.

Hanson and Olson (2018) explored the relationship between financial literacy and family communication patterns through an online survey for a sample of 96 United States college students between the ages of 18 and 26. The results suggest that conversations within the family regarding financial matters provide important knowledge regarding financial matters and may be a factor to consider in designing any financial literacy curriculum. In further support of such discussions, an attitude towards financial products has also been shown to influence student's financial literacy levels. For example, Ajzen (1991) reported that financial attitudes are established through economic and non-economic beliefs held by a decision maker on the outcome of a financial decision.

Other empirical studies document a positive correlation between measures of financial literacy and good financial decisions on security selection (Guiso and Viviano, 2015), diversification (Abreu and Mendes, 2010; Hanson and Kalthoff, 2018). Guiso and Viviano (2015) used a dataset from a survey conducted by an Italian bank on its clients with the bank's administrative data on the asset holdings and transactions of the same clients. The survey elicited detailed information on individuals and their households. Together with standard socio-demographic characteristics (e.g., gender, age, educational attainment, employment) the survey included questions to elicit investor's attitudes and to measure investor's financial literacy based on three tests of the benefits of financial literacy during the Global Financial Crisis. The results show that high-literacy investors are better at timing the market. High-literacy investors are also more likely to trade according to the prescriptions of normative models and to detect intermediaries' potential conflicts of interest. Similarly, Abreu and Mendes (2011) used a survey of individual investors disclosed by the Portuguese Securities Commission (CMVM) to study the impact of investor's levels of financial literacy on portfolio diversification. The results suggest that investor's educational levels and their financial knowledge have a positive impact on investor diversification. Reyers (2016) used data from a national survey of South Africans to determine whether advice could substitute for low levels of financial sophistication. Additionally, the quality of advice in preretirement cash-out decisions was assessed using survey data collected at a university. The results indicate that professional financial advice complements financial literacy, while advice from other sources could substitute for low levels of financial sophistication. Furthermore, the study found that with respect to pre-retirement cash-out decisions, financially unsophisticated individuals followed advice from human resources departments or fund administrators and received quality advice.

In the case of Ghana, empirical studies have reported links between financial literacy and formal education (Oppong & Kasanba, 2013; Tiboh, 2015); financial literacy and both age and work experience (Ansong and Gyensare, 2012; and information technology and financial literacy (Gyimah et al., 2018). Oppong and Kasanba (2013) assessed financial literacy of undergraduate business students in the School of Business, Kwame Nkrumah University of Science and Technology (KSB) in Ghana. A stratified random sampling technique was used to select a sample of 203 undergraduate students using questionnaire as the research instrument. The results revealed that formal education is the major source of financial literacy of undergraduate students, followed by parents, the media, and peers. Level 400 students are the most literate financially followed by level 300, 100 and 200 students. Also, financial literacy is highest among accounting students followed by banking and finance, marketing, and human resource management students. Ansong and Gyensare (2012) in their study used correlational design to examine the determinants of a sample of 250 undergraduate and postgraduate university working-student's financial literacy levels. The findings suggest that age and work experience were positively related to the level of financial literacy. Furthermore, mother's education was found to be positively correlated to financial literacy. The results, however, showed that level of study, work location, father's education, access to media, were not significantly related to financial literacy. Tiboh (2015) used logistic regression and ANOVA procedures to examine the level of financial literacy a sample of 120 Polytechnic students in the Kumasi Metropolis. The results showed that the participants answered approximately 41% of financial literacy questions correctly. None of the mean scores for financial literacy categories were above 60%. The results also revealed that many of the students are familiar with issues relating to simple interest calculations and loan guarantee. In contrast, the students are less knowledgeable and inexperienced with issues concerning personal financial planning and budgeting, mutual funds and risk return associated with investment decisions. On the basis of the findings, the authors concluded that policy makers should include financial literacy programmes in the academic curriculum. Lastly, Gyimah et al. (2018) used the survey research method to investigate the financial literacy level among a sample of 480 students across public and technical universities as well as teacher-training colleges in Ghana. The findings suggest that on the average, students lack financial knowledge especially on insurance. On the contrary, the results revealed that students are financially literate in terms of savings and borrowing. Also, information technology positively influences 95% of student's financial literacy. Based on the findings, Gyimah et al. (2018) recommended that policy makers should redesign the curriculum to include financial literacy courses especially for non-business students.

HYPOTHESES

The following hypothesis are formulated and informed by extant literature:

H1: Higher level of study is positively correlated with financial literacy.

This hypothesis is based on Atkinson and Messy (2012) who argue that highly educated individuals are more likely to exhibit positive behaviours and attitudes as well as show advanced levels of financial knowledge and literacy.

H2: Male students are more financially literate than their female counterparts.

This hypothesis is informed by Agnew and Harrison (2015). The study found a similar result in samples of university students from England and New Zealand to other countries, that males outperform females on financial literacy quizzes.

H3: There is a correlation between financial literacy and financial decisions such as savings, budgeting, security selection, credit use, and portfolio diversification.

This hypothesis is supported by findings from Chen and Volpe (1998), Abreu and Mendes (2010), Guiso and Viviano (2015), who surveyed undergraduate and graduate students at multiple universities. They found that college students who had higher financial literacy had better financial behaviours.

H4: There is a relationship between both demographic and socio-economic status of a student and financial literacy.

This hypothesis is built on Shim et al. (2009: 2010) Lusardi and Mitchell, (2014), Thompson (2014), Mimura et al. (2015) and Hanson and Olson (2018) who posit that demographic and socioeconomic and environmental factors are significant contributing factor to financial literacy even among students.

H5: There is a correlation between attitude towards money and financial literacy.

This hypothesis is supported by Atkinson, & Messy (2012) and Sundarasan & Rahman (2017) who argues that attitude towards money play a significant role on money management.

METHODOLOGY

The purpose of the study was to investigate the level of financial literacy among undergraduate university students in northern Ghana. The study was limited to the Tamale and Nyankpala campuses (Northern Region Campuses) of the University for Development Studies (UDS) with a total number of registered students of 6604 in the 2016 academic year.

Sample/Participants

To obtain the required sample for the survey on financial literacy among these students, we use the formula:

$$ME = z \sqrt{p(1-p)/n}$$

Using $ME=0.05$, $z=1.96$ for 95% CI and $p=0.5$, to the required sample size n .

$$0.05 = 1.96 \sqrt{0.5 \times 0.5 / n}$$

$$0.05 / 1.96 = \sqrt{0.25 / n}$$

$$\{0.05 / 1.96\}^2 = 0.25 / n$$

$$0.00065077 = 0.25 / n$$

$$n = 0.25 / 0.00065077$$

$$n = 384$$

Where,

ME=Margin of error.

z =level of confidence; i.e. $z=1.96$ for 95% confidence interval.

p =current estimate of proportion of university students in Ghana who are financially literate based on past surveys (Gyimah et al., 2018; Opong Boakye et al., 2013 and Ansong et al., 2012)

n =required sample size.

The study employed stratified random sampling (by faculty) approach for the collection of data. This allowed for every student an equal chance to participate in the study. The total samples of 384 students for the study were accordingly proportionally selected according to the size of students in the five faculty strata identified.

Data Collection

A structured questionnaire was constructed to collect data (a sample of the questionnaire is available from the authors upon request). The data was obtained through the administration of questionnaires distributed to the sample of students in the different faculties. Out of the 384 questionnaires distributed to students during the survey, 342 were returned with all questions responded to and therefore found usable. This represents about 90% response rate. From the 342 usable questionnaires the students were classified into two groups using the median percentage of correct answers of the sample, on questions on financial knowledge. These questions were on compounding of interest rates; inflation and value of money; Risk and return on investment; savings and budgeting. Students who scored higher than the sample median were regarded as those who are relatively more financially literate. Students who obtained scores equal to or below the sample median were classified as students who are relatively less financially literate. The data was analysed using the STATA Statistical software (Version 14) and the results are presented and discussed below.

The socio-demographic characteristics of the sample are summarized in Table 1. Based on correct answers from the participating students, on questions on financial knowledge, slightly more than half (53.5%) of them were found to be financially literate (Table 1) while a sizable 46.5% were found to be financially non-literate. Of the participating students the two most popular fields of study are Agriculture and Medicine with a combined enrolment of close to two-thirds (64.4%) of the sampled students. This is in line with the mission of the University for Development Studies (UDS) which is “*to identify itself with the realities of the predominantly rural communities in northern Ghana and the nation as a whole*”, in this case by training increasing number young people in the critical areas of health and food production for the development of the rural communities in which the university is located.

	Characteristics	N	%
Gender	Male	198	57.9
	Female	144	42.1
Age	18-20	122	35.7
	21-25	196	57.3
	26-30	24	7.0
Programme of Study	Education	39	11.4
	Agriculture	91	26.6

	Agribusiness	33	9.6
	Natural Resources	11	3.3
	Nursing	33	9.6
	Medicine	129	37.8
	Midwifery	6	1.7
	Study Sponsor Self	12	3.5
	Parent	314	91.8
	Scholarship	3	0.8
	Other	13	3.8
Parents' Monthly income	GHS 500 or less	27	7.9
	GHS 501-1000	45	13.2
	GHS 1001-1500	35	10.2
	GHS 1501-2000	32	9.4
	GHS 2000 or more	46	13.5
	Don't Know	157	45.9
Monthly pocket money	GHS 100 or less	100	29.2
	GHS 101-200	112	32.7
	GHS 201-300	75	21.9
	GHS 301-400	30	8.8
	GHS 400 or more	25	7.3
Residence	On Campus	192	56.1
	Off Campus	140	40.9
	Live with parents	10	2.9
Place of permanent abode	Village	19	5.6
	Small Town	53	15.5
	Town	89	26.0
	City	96	28.1
	Large City	77	22.5
	Don't know	8	2.3
Year of Study	Year 1	83	24.3
	Year 2	84	24.6
	Year 3	111	32.5
	Year 4	64	18.7
Level of Financial Literacy	Literate	183	53.5
	Non-literate	159	46.5

This finding reveals the strong commitment of an average Ghanaian family to the education of their children, more so with our results indicating that more than 40% of these families earn incomes of 2000 Credits (about \$440.00) or less a month.

RESULTS

This section presents the results of the data analysis which discusses the statistical relationships based on logistic regression procedures and tabular representations in the context of the study objectives. The sections which follow present the results and analysis of the extent to which financial literacy is influenced by demographic and socio-economic attributes of students as well as the relationship between financial literacy and financial behaviour.

Financial Literacy, Demographic and Socioeconomic Characteristics (*H1 & H4*)

A Logistic regression model was used to analyse the relationship between the levels of financial literacy and both demographic and socioeconomic attributes of the sampled students. The Logistic regression model was estimated in which the binary variable (financially literate and financially non-literate) represented the dependent variable in the logistic regression, which is explained by a number of explanatory (or independent) variables. The explanatory variables used in the logistic regression comprised gender, age, academic residence of student, programme of study, parental income, and year of study, and experience in handling money. In logistic regression, the coefficient of each explanatory variable represent the effect of each subgroup (of participating students) compared with a reference group. As an example, GENDER can be coded 1 if a student participant is female and 0 otherwise (male). In this case the reference category is the male student. If the logistic coefficient is positive, it means that compared to their male counterparts at UDS female students are associated with increased log odds ratio of being more financially literate about personal finance.

The logistic model is expressed as follows:

$$\text{Log}(p/1-p) = \beta_0 + \beta_1(\text{GENDER}) + \beta_2(\text{AGE2}) + \beta_3(\text{AGE3}) + \beta_4(\text{RESIDE}) + \beta_5(\text{EDUCATION}) + \beta_6(\text{AGRIC}) + \beta_7(\text{AGRICBUSI}) + \beta_8(\text{NATRESOURCES}) + \beta_9(\text{MEDICAL}) + \beta_{10}(\text{MIDWIFE}) + \beta_{11}(\text{PINCOME2}) + \beta_{12}(\text{PINCOME3}) + \beta_{13}(\text{PINCOME4}) + \beta_{14}(\text{PINCOME5}) + \beta_{15}(\text{PINCOME6}) + \beta_{16}(\text{YEAR2}) + \beta_{17}(\text{YEAR3}) + \beta_{18}(\text{YEAR4}) + \beta_{19}(\text{EXPERIENCE2}) + \beta_{20}(\text{EXPERIENCE3}) + \beta_{21}(\text{EXPERIENCE4}) + C_i$$

Where,

P=the probability of a student who is financially literate about personal finance.

Several dummy variables are used to identify student's gender; age group; student's place of residence; program of study (including education, agriculture, agribusiness; renewable natural resources; medical sciences and midwifery); parent's monthly income; year of study; and student's experience in handling money. Results of the logistic regression are presented in Table 2.

Variables	Estimate	P>Z
Gender	-0.594	0.022**
AGE2	-0.105	0.72
AGE3	-0.909	0.143
RESIDE	0.100	0.672
EDUCATION	-1.130	0.036**
AGRIC	-0.431	0.342
AGRICBUSI	0.183	0.736
NATRESOURCES	-0.921	0.239
MEDICAL	-0.311	0.463
MIDWIFE	-0.853	0.389
PINCOME2	1.088	0.048**
PINCOME3	1.166	0.045**
PINCOME4	0.699	0.234
PINCOME5	1.115	0.043**
PINCOME6	0.860	0.071*
YEAR2	-0.573	0.095*
YEAR3	-0.256	0.444

YEAR4	0.228	0.589
EXPERIENCE2	0.532	0.041**
EXPERIENCE3	-0.124	0.789
EXPERIENCE4	1.884	0.091*
CONSTANT	0.452	0.562

Note: No. of observations=342; *significant at the 0.10 level; **Significant at the 0.05 level.

The Chi-Square (χ^2) (19; n=342) is 751.049 with a p-value of 0.0078 which is less than 0.01 level of significance, confirming that there is association between financial literacy and the dependent variables. In other words, the explanatory variables are able to explain the variation in the dependent variable (i.e. financial literacy). For the explanatory variables, the coefficient of GENDER is negative and significant at the 0.05 level of significance. The result suggests that male students at UDS are more likely to be more literate about personal finance issues than their female counterparts. The negative but significant coefficient at the 0.05 level for the EDUCATION variable indicate that students enrolled for BSc study in education are more likely to be less literate in personal finance matters than their counterparts studying for BSc Nursing qualification (the reference category). The coefficients for parental monthly incomes above GHS 500 (PINCOME 2-PINCOME6) are positive and significant at the 0.05 level, indicating that participating students whose parents earn more than GHS 500 a month are more likely to be financially literate compared to participating students whose parents earn a monthly income of GHS 500 or less. The coefficient for the level of study at year 2 (YEAR2) is negative and statistically significant at the 0.10 level implying that compared to their year 1 counterparts (YEAR1 is the reference category), students in their second year of study are less financially literate. As expected, the results in Table 2 show that participating student's experience in handling money positively influences their financial literacy. The coefficient of EXPERIENCE2 and EXPERIENCE4 are positive and statistically significant at least at the 0.10 level of significance. The variables AGE2, AGE3, RESIDE, AGRIC, AGRICBUSI, NATRESOURCES, MEDICAL, MIDWIFE are individually not statistically significant at any of the conventional levels of 0.10, or 0.05 or 0.01. This implies that these variables do not affect the level of financial literacy among the participating students. Thus student's age does not necessarily influence his/her level of financial literacy. Residing on campus or not residing on campus; studying for agriculture, agribusiness, natural resources, medical sciences or midwifery appear not to account for any differences in financial literacy among participating students. These are probably variables that would not be considered important in student's decision to know about personal finance issues.

Environmental Influence on the Level of Financial Literacy (H4)

Our survey also solicited the opinions of the participating students on major sources of financial knowledge (Table 3).

Variable	Means score	Inference
Parent	1.5	Some
Friends	2.5	Not applicable
School	2.0	Some
Books	2.1	Some

Life experience	1.7	Some
Internet	3.0	Not applicable

The sources included parents, friends or peers, formal education (school), books, life experiences and internet. For each of these major sources of financial knowledge, the respondent was asked to rate the magnitude of each source's contribution to the respondent's financial knowledge by choosing among the scale 1=a lot, 2=some, 3=not applicable, 4=not much and 5=none. A lower mean rating (score) (close to 1) on a given source means the response is in the affirmative (i.e. the student deemed this source as contributing the most as a source of financial knowledge) and *vice versa*. From the responses in Table 3, the students indicated that parents (mean score 1.5), life experiences (in handling money) (mean score 1.7) are the most important sources of financial knowledge (mean scores are closest to 1). These two are followed by formal education and books in order of importance, as sources of financial knowledge to the students. These findings supports the results of the logistic regression estimation (Table 2) which shows that experience in handling money and family as represented by family incomes as major sources of financial knowledge, tend to exert significant positive influence on student's level of financial literacy.

Financial Literacy and Financial Decision-Making (H3)

Another major objective of this study was to examine how financial literacy impacts on participant student's attitude towards personal finance; the application of the financial knowledge; and the relationship between financial literacy and savings behaviour. The same categorisation of participants that was used to classify students as financially literate or non-literate is employed in this section.

Financial Literacy and Savings Behaviour (H3)

To examine the relationship between the level of financial literacy and savings behaviour of participating students, a logistic regression model was estimated with savings (whether student saves part of monthly pocket money or not) as the dependent variable, while the explanatory variables included the level of financial literacy and a number of other variables as indicated in the model below:

$$\text{Log}(p/1-p) = \beta_0 + \beta_1 (\text{FL}) + \beta_2 (\text{GENDER}) + \beta_3 (\text{AGE2}) + \beta_4 (\text{AGE3}) + \beta_5 (\text{RESIDE}) + \beta_6 (\text{EDUCATION}) + \beta_7 (\text{AGRIC}) + \beta_8 (\text{AGRICBUSI}) + \beta_9 (\text{NATRESOURCES}) + \beta_{10} (\text{MEDICAL}) + \beta_{11} (\text{MIDWIFE}) + \beta_{12} (\text{MINCOME2}) + \beta_{13} (\text{MINCOME3}) + \beta_{14} (\text{MINCOME4}) + \beta_{15} (\text{MINCOME5}) + \beta_{16} (\text{EXPERIENCE2}) + \beta_{17} (\text{EXPERIENCE3}) + \beta_{18} (\text{EXPERIENCE4}) + \beta_{19} (\text{ABODE2}) + \beta_{20} (\text{ABODE3}) + \beta_{21} (\text{ABODE4}) + \beta_{22} (\text{ABODE5}) + \epsilon_i$$

Where,

P=the probability of a student saving part of monthly pocket money.

Several dummy variables are used to identify whether or not a student financially literate; student's gender; age group; student's place of residence, program of study (including education, agriculture, agribusiness; renewable natural resources; medical sciences and midwifery); the size of student's monthly pocket money; year of study; student's experience in handling money; and

whether a student originates from a rural or urban area in Ghana. Table 4 presents the results of the savings logistic regression.

Variables	Estimate	P>Z
Financial Knowledge	0.197	0.435
Gender	0.344	0.214
Residence	0.354	0.145
Schooling Years 2	-0.139	0.694
Schooling Years 3	0.118	0.734
Schooling Years 4	-0.157	0.712
Total expenditure	-0.001	0.137
AGE category 2	-0.140	0.648
AGE category 3	-0.928	0.137
BSc. Education	0.828	0.135
BSc. Agric_Science	0.638	0.169
BSc. Agribusiness & Commerce	0.574	0.308
BSc. Renewable Natural Resource	0.342	0.657
BSc. Medical Science	0.557	0.206
BSc. Midwifery	0.690	0.489
Monthly Income category 2	0.339	0.275
Monthly Income category 3	0.974	0.009***
Monthly Income category 4	0.899	0.069*
Monthly Income category 5	2.179	0.002***
EXP cat 2	-0.421	0.119
EXP cat 3	0.132	0.793
EXP cat 4	1.665	0.145
Place of Abode cat 1	0.744	0.235
Place of Abode cat 2	-0.417	0.276
Place of Abode cat 3	0.186	0.578
Place of Abode cat 5	-0.053	0.877
Place of Abode cat 6	-0.535	0.513
_cons	-1.121	0.178

Note: *significant at the 0.10 level, *** Significant at the 0.01 level. Number of Observations=342; χ^2 (20; n=342) is 682.421 with a p-value of 0.0885.

For the explanatory variables, the coefficient of the Financial Literacy Variable (FLV) is positive but statistically not significant at any of the conventionally acceptable levels of significance. This implies that being financially literate has no influence on savings propensities of the participating students. From the results in Table 4, only the monthly pocket variable has a positive impact on the participating student's ability to save. The p-values of the coefficients at higher levels monthly pocket money are significant at the 0.10, and 0.01 levels of significance, which means that as student's monthly pocket money increases, the student's propensity to save will also be high. Like the level of financial literacy, none of the other socio-demographic variables do exert any discernible influence on savings behaviour of the participating students in this study.

Application of Financial Knowledge (H1)

In our efforts to further examine how participating students apply their financial literacy in financial decision making, students were asked if they patronized any financial literacy services or products. The financial literacy services or products include savings account, investment account, cheque account, and any others. The distribution of the financial services or products used by respondents is summarized in Table 5.

Number of account holdings	Frequency	Percent (%)
None	61	17.84
1	244	71.35
2	36	10.53
3	1	0.29
Total	342	100

Table 5 shows that 71.35%, (n=244) confirmed the usage of savings account in a bank, 10.53% (n=36) have investment in securities, while 17.84% of the students (n=61) did not use any financial service or products provided by the banking system in Ghana. It is interesting to note that only 1 of the 342 (0.29%) participating students had a cheque account. This may be explained by the fact that cheque accounts attract costs which non-working students cannot afford. Our finding shows that majority of the students in the study understand and use savings account to manage their finances, although only 53.5% of them were found to be financially literate.

Attitude towards Personal Finance (H5)

Financial attitude among participating students was measured by their responses to two sets of attributes of good financial attitude which were coded in a Likert-type scale. The first set of attributes are maintenance of adequate financial records; spending less than one's monthly pocket money; and planning and implementing a savings plan, and sticking to a prepared monthly budget. For each attribute, the respondent was asked to rank its importance by choosing among the scale 1=very Important, 2=important, 3=not sure, 4=not Important. A lower mean score (close to 1) means that the response is in the affirmative (i.e. the attribute that the student deemed most important as a financial management practice) and *vice versa* (Table 6).

Variable	Means score	Inference
Maintaining financial records	1.5	Important
Spending less	1.8	Important
Regular savings	1.6	Important
Sticking to monthly budget	1.7	Important

From the responses in Table 6, the students indicated that maintaining financial records (mean score=1.5), saving regularly (mean score=1.6), sticking to monthly budget (mean score=1.7), and spending less of monthly pocket money (mean score 1.8), in that order, were regarded as important personal finance management practices. The second set of measures of financial attitude relates to the student's assessment of the conduct of his/her personal financial matters. The personal financial matters are: *"I am in control of my financial situation; my finances are*

significant source of worry for me; I am uncertain about where my money is spent; I am afraid of credit; I feel savings is important; I have interest in money management issues; enjoy talking to peers about money management issues”.

Variable	Means score	Inference
I am in control	2.3	True
Significant source of worry	2.8	Moderate
Uncertain about my money	3.4	Moderate
Afraid of credit	2.3	True
Feel savings is important	1.7	True
Interest in money management	1.8	True
Talk to friends about money	2.5	Moderate

It can be seen from the responses in Table 7 that saving on monthly basis (with a mean score of 1.7) is the most important issue in the conduct of student’s financial affairs. This is followed, in order, by interest in money management issues, being in control of one’s financial situation, being afraid of credit, and being uncertain about where my money is spent being the least important.

DISCUSSION

This study used a questionnaire instrument to survey a sample of 342 students at the University for Development Studies in Ghana to determine their level of financial literacy and to assess the relationship between financial literacy and socio-demographic attributes and savings behaviour of these students. The study further looked at the environmental factors influencing the level of financial literacy; the application of financial knowledge and attitude of these students towards personal finance. The research was an effort to contribute to the growing literature on financial literacy among university students-especially on the African context.

The main thrust of this study is how knowledgeable are these students in managing their financial resources mostly from parents for their studies. Based on correct answers from the participating students, on questions on financial knowledge, slightly more than half (53.5%) of them were found to be financially literate (Table 1) while a sizable 46.5% were found to be financially non-literate. The first finding from the logistic regression indicates that male UDS students are more likely to be more knowledgeable about personal finance issues than their female counterparts. This finding collaborates with the findings from similar studies by Oppong-Boakye and Kasanba (2013) on undergraduate business students in Ghana’s KNUST, and another study by Oseifuah and Gyekye (2014) conducted on undergraduate commerce students in South Africa. The findings of all these studies, including our own appears to be consistent with the roles traditionally played by males and females in decision making in a typical African household where the male predominates in most decisions, including financial ones. Males are therefore more likely to want to learn more about financial issues than their female counterparts. This possible reason notwithstanding, with more and more women joining the workforce in Ghana, these finding points need to be address the issue of inadequate knowledge about personal finance among women.

Our assessment of the influence of parental incomes on financial literacy among UDS students indicate that participating students whose parents earn more than GHS 500 a month are

more likely to be financially literate compared to participating students whose parents earn a monthly income of GHS 500 or less. The plausible reason for this finding is that students' whose parents earn high incomes, are more likely to receive larger pocket monies and would therefore more likely want to know about various personal finance management matters such as how to save or invest part of the larger pocket monies and earn interest.

Our logistic regression results further shows that, as expected, the participant student's experience in handling money (through managing incomes from working) positively influences their financial literacy as such experience in handling monies would require them to be knowledgeable about financial management matters such as budgeting, investment, interest rate etc. Furthermore, from our analysis of the opinions of the participating students on their major sources of financial knowledge, we found that the most important sources of financial knowledge are from parents (or family members), and experience in handling money. Our result is similar to the findings of a 2012 study by Ansong and Gyensare (2012) who used correlation analysis to examine the level of financial literacy among a sample of undergraduate and postgraduate university working-students in Ghana, and found that among others, work experience was positively related to the level of financial literacy. Another interesting finding from the logistic regression is that student's age; residing on campus or not; studying for agriculture, agribusiness, natural resources, medical sciences or midwifery appear not to account for any differences in financial literacy among participating students. These are probably variables that would not be considered important in student's decision to know about personal finance issues. From the results of the savings logistic regression, the coefficient of the Financial Literacy Variable (FLV) is positive but statistically not significant. This implies that being financially literate has no influence on savings propensities of the participating students.

On the other hand our finding that as student's monthly pocket money increases, the student's propensity to save will also be high is in accordance with the theory of savings behaviour which posits that saving is a positive function of disposable income. Like the level of financial literacy, none of the other socio-demographic variables do exert any discernible influence on savings behaviour of the participating students in this study. Our analysis of the participating student's attitude towards personal finance matters supports our earlier finding that saving out of their meagre incomes of the students at UDS, remains a very significant consideration in the management of their personal finances. Our finding on the use of financial products/services offered by financial institutions, shows that majority (over 71%) of the students in the study understand and use savings account to manage their finances, although only 53.5% of them were found to be financially literate. Although generally attracting low interest incomes, savings account is a generally easily accessible financial instrument, and therefore students who may not be financially literate about other financial market products/services would know about its benefits. On the other hand with only 10.53% of the students having investment account in instruments such as shares, treasury bills or bonds, it could be inferred that students, even if they are willing to invest, are constrained by their meagre monthly incomes to commit their resources to medium and long term investments which may not be easily accessible in case there is urgent need for such financial resources.

LIMITATIONS AND FUTURE RESEARCH

The present study is the first study to the author's knowledge that investigated the level of financial literacy among undergraduate students in the northern region of Ghana. As a pilot study, the sample is relatively small and limited only to the Tamale and Nyankpala campuses,

leaving out Wa and Bolgatanga campuses which houses Commerce and other disciplines. This essentially omits an important component, Commerce undergraduate students, which will have enriched the findings by testing the hypothesis that Commerce students tend to be more financially literate than their non-Commerce counterparts. An important finding this study is that male students are more financially literate than their female counterparts, while at the same time more and more women joining the workforce in Ghana. There appears to be a need to address the issue of inadequate knowledge about personal finance among Ghanaian women. We hope that future studies will replicate and extend the findings of this study. Moreover, the survey results are based solely on responses from undergraduate students. An interesting extension would measure both parental and student financial knowledge in conjunction with family communication patterns. Parents with greater financial literacy have a greater capacity to transmit their knowledge and may be more likely to engage in related conversations. Since family communication patterns also influence motives for talking with others outside the family, future research might investigate the effect of family communication style on the relationship between student's financial literacy levels.

CONCLUSION

This study used a questionnaire instrument to survey a sample of 342 students at the University for Development Studies (UDS) in Ghana to determine their level of financial literacy and to assess the relationship between financial literacy and socio-demographic attributes and savings behaviour of these students. The study further looked at the environmental factors influencing the level of financial literacy; the application of financial knowledge and attitude of these students towards personal finance. This study was aimed at contributing to the growing literature on financial literacy among university students- especially on the African context. The key are that students from wealthier homes were found to be more financially literate compared to their counterparts from low income households. As expected student's experience in handling money (through managing incomes from working) positively influences their financial literacy as such experience in handling monies would require them to be knowledgeable about financial management matters such as budgeting, investment, interest rate etc. Saving out of the pocket incomes of the students remains a very significant consideration in the management of their personal finances. Being financially literate appears not to have a (statistically) significant influence on savings propensities of the participating students. On the other hand our finding that as student's monthly pocket money increases, the student's propensity to save will also be high is in accordance with the theory of savings behaviour which posits that saving is a positive function of disposable income.

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