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Determinants of Financial Literacy and Investment Behavior: Evidence from University Students

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Abstract

The research explores Financial Literacy (FL) among undergraduate students. The study aims to evaluate the FL of a specific group of undergraduate students. It investigates how different demographic and socioeconomic factors influence these students' FL and analyzes various demographic and socioeconomic factors to determine if they are better predictors of FL among students. The demographic and socioeconomic factors analysis shows that FL among university students is generally low. Male students studying business and coming from higher-income families have improved FL, while students in their early twenties typically have lower levels of FL. Educators should help low-income parents and women with FL, promoting financial inclusion. Helping women improve their financial understanding brings numerous benefits and positively influences the financial attitudes of their children, encouraging them to foster strong financial skills and knowledge from an early ages.

Introduction

Financial skills have become increasingly important for young people due to financial liberalization and globalization. Due to the intense competition in domestic and international markets, financial markets are becoming less regulated, and sophisticated institutions are being introduced. Access to credit is easier than in the past. Potential investors: However, many individuals are confused about the available investment opportunities in the market and their associated risks and returns due to a deficiency in financial knowledge. For this purpose, the higher education sector of Pakistan needs to take responsibility for educating students about basic knowledge of finance.

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The variation theory of learning suggests that variation is necessary in teaching for students to learn effectively. Studies have shown that varying how content is presented can enhance learning. By analyzing what is made possible to learn from a lesson, we can also identify what is not made possible to learn.

The significance of FL for sound financial choices is undeniable. Courchane, Gailey, and Zorn (2008) asserted that higher annual mortgage rates increased the probability of credit refusal or experiencing “bad” financial events, usually led by the inability to assess credit quality. People with higher levels of FL are more likely to make well-informed decisions (Perry, 2008). Investors with financial knowledge can quickly make critical decisions and maximize their profitability. Thus, increasing FL among students leads to high efficiency in investors' decisions, so students should be motivated to register for such courses. However, the existing financial education is questionable as to whether it contributes to improving financial knowledge among students. If so, how effectively can the education system improve FL (Cude et al., 2006)? Secondly, whether individuals effectively manage their finances or is there a requirement for policy formation to help them achieve a better financial education. (Lusardi et al., 2010).

Similarly, Susanti et al. (2019) and Mändmaa (2019) indicated that various factors significantly influence students' FL. These factors encompass gender, pocket money, lifestyle, parent income, financial education, and financial attitudes, including holding a debit card, having a bank loan, and pre-planning daily financial matters. The results also highlight the importance of students' interest in seeking information about financial services and monetary topics, leading to improved FL. Notably, students pursuing science or mathematics-oriented subjects, particularly males, exhibit heightened financial knowledge. These collective findings provide valuable insights for enhancing financial education and steer the course of future research efforts.

Individuals' financial decisions are critical and directly impact their lives. These decisions include financing a child's education, purchasing a car or home, and saving for retirement. FL teaches the wise use of savings and making informed financial decisions (Cordray, 2013; Greenspan, 2005; Hilgert et al., 2003; Lusardi & Mitchell, 2007; Mishkin, 2008; Morton, 2005). FL among the young generation is weak, which leads to irrational decisions. Even after graduating from university, many individuals become victims of scams due to a lack of financial knowledge (Gaberlavage, 2009). Students who graduated with majors in finance are comparatively better investors than others (Chen and Volpe, 1998, 2002; Marcolin and Abraham, 2006). Furthermore, having a strong understanding of financial matters is linked to higher levels of savings, higher contributions to retirement funds, and timely loan payments (Garman et al., 1999; Chen and Volpe, 1998; Danes and Hira, 1987; Henry et al., 2001).

This research investigates the financial knowledge of undergraduate students in Pakistan. FL is known to be affected by Different demographic and socio-economic factors which

makes them more literate than others. Furthermore, the study evaluates different demographic and socio-economic factors and finds out whether they are a better forecaster of financial knowledge among students or not.

This research attempts to enhance our understanding of the levels of financial knowledge in higher education institutions. The study examines the impact of factors like ethnicity, gender, family background, and income on financial knowledge and how effectively they predict FL for students. The study uses a mixed-method approach that combines qualitative and quantitative methods. It is a survey-based study focused on the familiarity of financial concepts in undergraduate students. The study aims to answer three questions:

A) What level of FL do university students in Pakistan have? B) Do various demographic and socio-economic factors influence notable variations in students' FL? C) To what degree can various demographic and socio-economic factors accurately predict the level of FL?

The research shows that most students lack enough financial knowledge (Beal and Delpachitra, 2003); Marcolin & Abraham, 2006; Ibrahim et al., 2009). The data shows that male students majoring in business during their senior years and coming from families with higher incomes generally better understand financial matters.

The outcome of this research provides a valuable contribution to the practical understanding of FL. Specifically, the research identifies the crucial determinants to improve financial knowledge and highlights the differences in financial knowledge among undergraduate students from different fields of study, ethnicities, gender, demographics, and socioeconomic backgrounds. One of the critical implications of the study is to enhance FL among students. The findings suggest that effective financial decision-making is essential for households, and this study highlights the importance of rational allocation of funds from lenders to borrowers.

The article's remainder is in the following order: the next section provides a literature review, followed by the methods sections. The subsequent section explains the results and discussion, followed by the study's conclusion and recommendations.

LITERATURE REVIEW

Many authors have examined FL among students and teenagers (Chen & Volpe, 1998; 2002; Beal & Delpachitra, 2003; Khawar et al., 2021; Khurshid et al., 2024; Sherraden et al., 2007; Jorgensen and Savla, 2010; Altintas, 2011) and found that young people do not possess adequate FL (Mandell, 2008; Noor et al., 2020) and make less informed decisions. Considerable studies show that gender impacts FL (Chen and Volpe, 2002; Fornero and Monticone, 2011; Lusardi and Mitchell, 2011; Sarpong-Kumankoma et al., 2023; Rink et al.,2021). Other studies do not find any significant relationship between the two variables (Pahlevan et al.,2020; Altintas, 2011). The financial knowledge of men and women is

different (Worthington, 2006). Gender is more critical in general risk aversion (Bajtelsmit & Bernasek, 1996; Bajtelsmit et al., 1999; Hallahan et al., 2004).

Students who studied financial management in high school tend to save more in middle age compared to those who did not (Bernheim et al., 2001; Mandell & Klein, 2009; Zhou et al., 2023). Age has always been an essential factor for researchers when evaluating FL. Mostly, it follows an inverted U-shaped relationship reflecting FL increases up to a certain age and then starts decreasing (Koskelainen et al., 2023; Van Rooij et al., 2011; Finke et al., 2016; Lusardi and Mitchell, 2014). Experience also plays a vital role in one's financial development. It has been observed that individuals learn financial know-how from their parents, peers, and personal experiences (Hilgert et al., 2003; Ibrahim et al., 2010; McKenzie, 2009; Satria et al., 2023) found that most of the respondents indicate that they acquire money management skills from their personal experiences. Investors with educated parents make more informed and rational decisions (Murugiah et al., 2023; Mandell, 2008; Tennyson and Nguyen, 2001; Ibrahim et al., 2009; Lusardi et al., 2010). The FL of university students from limited-income families is depicted as poor in saving, portfolio management, and investments (Altintas, 2011; Chen and Volpe, 1998; Xu et al.,2023).

FL increases when students grow older over time. This increment in FL may result from gained knowledge or through financial experiences by trial-and-error method (Hwang et al., 2023; Jorgensen, 2007; Jorgensen, 2007; Altintas, 2011; Chen & Volpe, 1998). Similarly, Klapper et al. (2013) explain disparities in FL among different regions. Cole, Sampson, and Zia (2008) show the individuals living in rural areas have low financial knowledge. A diversified sample is used in this study, which incorporates different universities and students from different areas of the country. Considering the above arguments, we argue that FL among students can negatively impact their financial decision-making. We aim to fill the gaps in the current literature by studying the level of FL among university students in Pakistan. Additionally, we will explore how demographic and socio-economic factors impact students' FL and their ability to predict their FL levels.

METHODOLOGY

This research is conducted among undergraduate students of the top four public sector universities in Islamabad as per HEC 2015 ranking: (a) Quaid-e-Azam University, Islamabad; (b) National University of Science and Technology (NUST), Islamabad; (c) COMSATS Institute of Information Technology, Islamabad; and (d) Pakistan Institute of Engineering and Applied Sciences (PIEAS), Islamabad. All the students were majors in economics, business, engineering, and public policy. Stratified sampling and convenience sampling are used. The questionnaire is adapted from Van Rooij *et al.* (2011), Atkinson and Messy (2011), and Fornero (2011) and adjusted to fit the Pakistani cultural context. The survey comprised 19 multiple-choice questions for the FL test and 9 questions regarding personal and demographic profiles. A total of 710 questionnaires were

distributed among students; about 504 participants completed the whole survey, and 87 of the responses were found ineligible, thus yielding a total response rate of 80.90%.

The correct answers to the FL questions measure the level of FL among the participants. The scores from the basic and advanced levels are combined to create an overall score for each participant. The scores are then categorized into three groups: high, average, and low, based on the rating scale developed by Mandell (2008). The sample is split into two groups, with the median percentage of correct responses as cut-off points. Subsequently, a logistic regression is employed to forecast FL.

The level is assessed by assessing the accuracy of responses to questions about FL. The research adds scores from both fundamental and advanced levels of FL to calculate an overall score for each individual. The overall score is then divided into high, average, or low categories based on the rating scale created by Mandell (2008).

The logistic regression model predicts FL based on independent variables. The research employs this model to assess the correlation between the dependent variable and independent variables and to identify the independent variables that have a notable impact on the FL level of participants. This analysis will assist researchers in comprehending the factors that influence individuals' FL and in formulating effective strategies to enhance FL across the general population.

The questionnaire used in the survey has been developed following Van Rooij et al. (2011), Atkinson and Messy (2011), and Fornero and Monticone (2011), which have been adapted to suit the cultural context of Pakistan. The survey aims to assess FL and related personal and demographic information. The survey assesses FL through 19 multiple-choice questions covering managing personal finances, investment options, and risk management. The survey comprises nine questions regarding personal and demographic information, such as age, gender, education level, and income.

A total score of correct answers from each financial management area and for the overall survey are summed up to make three indexes. Correct answers are categorized into three groups based on mean percentage (Danes and Hira, 1987; Volpe et al., 1996). The rating scale of Mandell (2008) is used, initially developed for a Jump$tart survey: Mean scores of 70% represent a high FL. Between 50%-70% indicates average FL, while 50% or below indicates a low FL. Those scoring higher than the median have high FL, while those scoring lower are considered to have low levels of knowledge. The binary variable is the dependent variable in the logistic regression model and is predicted simultaneously by all independent variables. Based on students' answers (correct vs. incorrect), the internal consistency of the instrument's FL measure is acceptable using KR20 alpha (75.8). Factor analysis was separately performed on the binary variables for both basic and advanced literacy using the principal component method. Due to the nature of the questions, only one factor was retained (Van Rooij et al., 2011; Lusardi and Mitchell (2007). The Kaiser-Meyer Olkin measure (KMO) for basic FL is 0.755, and for advanced literacy, it is 0. 784.

Values of Bartlett's Test of Sphericity of both basic and advanced literacy ensure a significant patterned relationship among variables ($p < .001$). Those questions have been dropped from further analyses comprising loadings below 0.3 because only loadings of 0.30 or above significantly impact sample size greater than 350 (Hair et al., 2009). Figure 1 presents the research framework, and Table 3-1 displays the factor loadings of basic and advanced literacy.

Figure 1: Research Framework

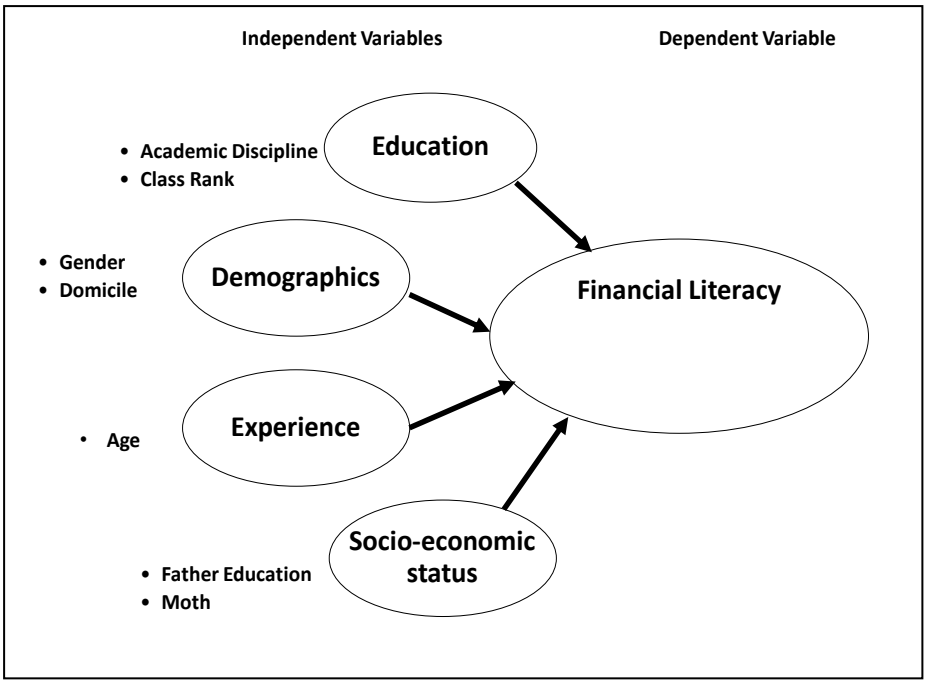

Table 3-1: Factor-loadings (FL) on the fundamental (FLQs) to advanced literacy questions (ALQs).

FLQs	FL
Numeracy	0.6107
Interest compounding	0.6219
Inflation	0.6307
Time value of money	0.5848
Money illusion	0.6085
Definition of inflation	0.554
ALQs	
Function of Stock Market	0.5591
Stock ownership	0.6033
Knowledge of Mutual Funds	0.5021
Bonds Concept	0.3638
Long Period Returns	0.1942
Highest Fluctuations	0.6225
Risk Diversification	0.5538
Risk and return	0.5977
Bonds Working	0.2413
Riskier: Stocks or Bonds	0.5543
Safer: Company Stock or Mutual Fund	0.3351
Relation between Interest Rates and Bond Prices	0.0865
Relation between Equity Funds and Stock Market Prices	0.2464

This research employs a logistic regression to address the objectives of the study. The model takes the following form:

$$y = \alpha_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \cdots + \beta_{25} X_{25} + \varepsilon$$

Where,

y = Individual FL score.

α = Intercept

β = (β_1, β_2, ..., β_n) Slope of demographics.

Every first category of independent variables will be used as the reference group, excluding gender, majors, and experience. Female, nonbusiness majors, and participants with no experience are taken as reference categories for these variables.

RESULTS and DISCUSSION

Table 4-1: Sample summary:(N=504)

	Participants	% age
A. Education		
1. Academic Discipline		
a) Majors in Business	352	69.8
b) Non-business areas of study	152	30.2
2. Class Rank		
a) 1-2 semester	57	11.3
b) 3-4 semester	166	32.9
c) 5-6 semester	169	36.7
d) 7-8 semester	96	19.0
B. Demographics Characteristics		
1. Gender		
a) Male	313	62.1
b) Female	191	37.9
2. Domicile		
a) Punjab or Federal capital	348	69.0
b) KPK	65	12.9
c) Balochistan	10	2.0
d) FATA or Gilgit-Baltistan	39	7.7
e) Azad Kashmir	14	2.8
f) Sindh (Urban and Rural)	28	5.6
C. Experience		

1. Age		
a) 18--19	122	24.2
b) 20--21	266	52.8
c) 22--23	111	22.0
d) 24 above	5	1.0
2. Work Experience		
a) Yes	148	29.40
b) No	356	70.6
A. Socio-economic Status		
1. Father Education		
a) Matric or less	58	11.5
b) Intermediate/equivalent	64	12.7
c) 14 years' education	114	22.6
d) 16 years of education	156	31.0
e) 18 years of education and above	112	22.2
2. Mother Education		
a) Matric or less	135	26.8
b) Intermediate/equivalent	107	21.2
c) 14 years' education	123	24.4
d) 16 years of education	84	16.7
e) 18 years of education and above	55	10.9
3. Family Income		
a) Under R.s 30,000	38	7.5
b) R.s 30,001 – R.s 59,999	98	19.4
c) R.s 60,000 – R.s 89,999	145	28.8
d) R.s 90,000 or more	223	44.2

The FL level of students ranged from 51% to 84.9% in the basic level of finance. On the other hand, 13.1% of students struggled to solve inflation-related problems. 81% are found with a grasp of fundamental FL. However, in advanced FL, the results ranged from 20.8% to 62.9%, where students are comfortable with the stock market problems. 42.9% are unaware of the difference between mutual funds and stock markets, and 34.1% lack knowledge of mutual funds. Overall, students demonstrate weaker proficiency in advanced FL compared to basic literacy. Table 4-2 shows the detailed responses.

Table 4-2: Proportion of students providing answers to both fundamental and advanced FL questions (N=504)

	Correct Response % (n)	Incorrect Response % (n)	Don't Know % (n)
Basic FL			
Numeracy	81.3(410)	15.1(76)	3.6(18)
Interest compounding	84.9(428)	8.2(44)	6.9(35)
Inflation	62.1(313)	24.8(125)	13.1(66)
Time value of money	51.0(257)	37.7(190)	11.3(57)
Money illusion	65.9(332)	28.1(135)	6.0(30)
Definition of inflation	81.0(408)	11.3(57)	7.7(39)
Advance FL			
Function of Stock Market	69.2(349)	18.9(95)	11.9(60)
Stock ownership	56.7(286)	33.8(170)	9.5(48)
Knowledge of Mutual Funds	19.6(99)	46.3(233)	34.1(172)
Bonds Concept	40.7(205)	41.8(211)	17.5(88)
Highest Fluctuations	57.1(288)	30.0(151)	12.9(65)
Risk Diversification	50.6(255)	37.1(187)	12.3(62)
Risk and return	62.3(314)	19.2(97)	18.5(93)
Riskier: Stoc Bonds	61.3(309)	20.4(103)	18.3(92)

Safer: Company Stock or Mutual Fund	20.8(105)	36.3(183)	42.9(216)

The study reports students reflect a moderate in FL, with an average of 57.65% correct responses. Only 1.8% of responses to the survey are correct. The median percentage of correct responses for the entire survey is 60%, indicating a medium level of FL among students. Participants responded effectively in the Basic FL section with an overall mean percentage of 71.03. By contrast, the average percentage of correct responses in advanced FL is 48.72%, and only 2.8% of students answered all the advanced FL questions correctly. The average percentage of correct responses for all questions can be found in Table 4-3.

Table 4-3: Correct Responses

	FL		
	Low Below 50%	Medium 50-70%	High Over 70%
I. Fundamental FL			
Interest compounding			84.9
Numeracy			81.3
Definition of inflation			81.0
Money illusion		65.9	
Inflation		62.1	
Time value of money		51.0	
Mean of correct response.			71.03
Median of Correct Response			83.33
II. Advanced FL			
Function of Stock Market		69.2	
Risk and return		62.3	
Riskier: Stocks or Bonds		61.3	
Stock ownership		56.7	
Highest Fluctuations		57.1	

Risk Diversification		50.6	
Bonds Concept	40.7		
Safer: Company Stock or Mutual Fund	20.8		
Knowledge of Mutual Funds	19.6		
Mean correct response	48.72		
Median Correct Response		55.56	
Mean - Correct Response		57.65	
Median - Correct Response		60.00	

The ANOVA report indicates a significant connection between students' FL scores and personal characteristics, as detailed in Table 4-4. Furthermore, it highlights to what extent the students' FL is impacted by academic discipline. Students from the business major group answered 59.58% of the entire survey correctly. Results indicate that senior students outperformed junior students in the advanced section of the FL survey. Students of the final semesters correctly answered 52.66% compared to students of early semesters 43.27%. These results are inconsistent with the overall survey; for example, students from all class ranks perform equally in basic FL. Similarly, no difference can be found in FL among students for the whole sample. There is a noticeable disparity in gender-based FL, with 58.96% of males answering correctly compared to 55.50% of females. domicile, age, work experience, father's education, mother's education, and family income gave no significant difference.

Table 4-4: Mean percentage of correct responses across subgroups and differences in FL by student's characteristics (ANOVA). (N = 504)

	Basic	Advance	For-Sample
A. Education:			
1. Academic Discipline:			
a) Business major:	72.68	50.85	59.58
b) Non-Business major:	67.21	43.79	53.16
F	4.658	8.578	9.350

	Basic	Advance	For-Sample
Sig	.031	.004	.002
2. Class Rank			
a) 1-2 semester	70.47	43.27	54.15
b) 3-4 semester	70.28	46.32	55.90
c) 5-6 semester	71.53	50.51	58.92
d) 7-8 semester	71.70	52.66	60.28
F	.097	2.538	1.519
Sig	.962	.056	.209
B. Demographics Characteristics			
1. Gender			
a) Male	72.79	49.73	58.96
b) Female	68.15	47.06	55.50
F	3.746	1.351	2.990
Sig	.054	.246	.084
2. Domicile			
a) Punjab or Federal capital	70.69	49.87	58.20
b) KPK	72.05	45.81	56.31
c) Balochistan	61.67	51.11	55.33
d) FATA or Gilgit Baltistan	74.79	46.72	57.95
e) Azad Kashmir	73.81	42.06	54.76
f) Sindh (Urban and Rural)	69.64	46.43	55.71
F	.493	.633	.209

	Basic	Advance	For-Sample
Sig	.782	.675	.959
C. Experience			
1. Age			
a) 18-19	74.59	50.27	60.00
b) 20-21	69.61	48.25	56.79
c) 22-23	70.27	49.45	57.78
d) 24 above	76.67	20.00	42.67
F	1.121	2.432	1.398
Sig	.340	.064	.243
2. Work Experience			
a) Yes	71.85	51.13	59.41
b) No	70.69	47.72	56.91
F	.203	1.936	1.377
Sig	.653	.165	.241
D. Socio-economic Status			
1. Father Education			
a) Matric or less	72.41	50.77	59.43
b) Intermediate/equivalent	64.32	43.58	51.87
c) 14 years' education	73.39	48.44	58.42
d) 16 years of education	70.30	49.57	57.86

	Basic	Advance	For-Sample
e) 18 years of education and above	72.77	49.70	58.93
F	1.482	.863	1.355
Sig	.206	.486	.249
2. Mother Education			
a) Matric or less	70.49	48.72	57.43
b) Intermediate/equivalent	72.27	47.35	57.32
c) 14 years' education	70.60	47.24	56.59
d) 16 years of education	73.02	53.70	61.43
e) 18 years of education and above	67.88	47.07	55.39
F	.401	1.078	.858
Sig	.808	.366	.489
3. Family Income			
a) Under R.s 30,000	68.86	49.12	57.02
b) R.s 30,001 – R.s 59,999	70.24	47.05	56.33
c) R.s 60,000 – R.s 89,999	68.28	46.90	55.45
d) R.s 90,000 or more	73.54	50.57	59.76
F	1.339	.810	1.320
Sig	.261	.488	.267

To what degree are students' characteristics a better predictor of FL?

The logistic regression analysis examines the connection between dependent and independent variables in both the basic and advanced sections of the survey, as well as overall. The dependent variable is dichotomous, created by categorizing participants into two further groups based on the median percentage of correct responses. Students with more significant than the median percentage of the sample are classified as more financially literate, and those with equal or lower than the median percentage are less

financially literate. Results given by logistic regression are reported in Table 4-5. For the overall model, the chi-square is significant, with 50.567 significant p-values of less than 5%; thus, the model has explanatory power. The Nagelkerke-R^2 for the model is acceptable at 0.128. For the overall sample, 63.9% observations are correctly categorized in contrast to 54.2% of chance classification. In addition to the model's fitness, the coefficient of Class Rank is positively and significantly significant at the $p < 0.05$ level; results indicate that students from senior semesters are more financially literate than the junior ones. The positive coefficient of the variable "majors" indicates a widely held belief that students majoring in business have higher FL compared to those who do not major in business. There is a significant difference in FL among different age groups at the level of .000, .001, .057. Negative coefficients indicate that with increasing age, the group level of FL decreases; these results are inconsistent with the results of ANOVA. Male students are likely to be extra knowledgeable than female students, which is consistent with the ANOVA result. Students from higher-income families (Rs. 90,000 or more) tend to have better FL compared to students from lower-income backgrounds (Under Rs. 30,000). Variables like Domicile, Father Education, Mother Education, and Experience do not significantly impact logistic regression, this is in line with the ANOVA findings.

Table 4-5: Results of logistic regression

Estimated Coefficients and p values for different sections and the entire sample						
	Basic		Advance		For the sample	
Variables	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Class Rank1	(Reference group)					
Class Rank2	.476	.185	.713**	.070	1.091**	.004
Class Rank3	.753***	.070	1.497**	.001	1.674*	.000
Class rank4	.902***	.065	1.960*	.000	2.012*	.000
Age1	(Reference group)					
Age2	-.773**	.008	-.474	.113	-1.132*	.000
Age3	-.741***	.052	-.759***	.053	-1.335**	.001
Age4	.573	.643	-21.612	.999	-2.045***	.057
Male	.663**	.001	.249	.252	.528**	.012
Domicile1	(Reference group)					
Domicile2	-.166	.559	-.608***	.057	-.217	.452

Domicile3	-1.867**	.024	.471	.497	-.728	.304
Domicile4	-.012	.974	-.319	.418	.003	.994
Domicile5	.097	.866	-.675	.330	-.232	.694
Domicile6	-.576	.175	-.205	.644	-.359	.406
Family Income1	(Reference group)					
Family Income2	.111	.783	.042	.921	.311	.443
Family Income3	-.196	.615	-.242	.563	.164	.676
Family Income4	.227	.554	.356	.385	.777**	.046
Father Education1	(Reference group)					
Father Education2	-.325	.423	-.235	.593	-.400	.332
Father Education3	.346	.366	-.014	.972	-.077	.842
Father Education4	.176	.648	.147	.720	-.377	.333
Father Education5	.327	.429	.043	.921	-.065	.877
Mother Education1	(Reference group)					
Mother Education2	-.060	.846	.663**	.046	.182	.557
Mother Education3	.004	.990	.445	.181	-.054	.861
Mother Education4	.144	.676	.770**	.034	.577***	.099
Mother Education5	-.510	.206	.758***	.076	.069	.864

Experience	-.103	.633	.033	.881	.054	.804
Business Major:	.244	.269	.602**	.011	.593**	.008
Constant	-0.5437		-0.2312		-1.3306	.030
-2 log Likelihood	660.246		611.023		644.622	
Overall Chi-Square	36.151	.069	44.763	.009	50.567	.002
Nagelkerke-R^2	0.092		0.117		0.128	
Note: ***, **, and* indicate significance at the 1%, 5%, and 10% levels, respectively.						

FINDINGS

On average, students achieved a FL score of 57.65% for the overall survey. The score shows that students lack a high level of FL. This is due to the prior findings, specifying that students do not possess an optimum level of FL (Beal and Delpachitra, 2003; Ibrahim et al., 2009; Marcolin and Abraham, 2006). Furthermore, students outperform in the primary FL section by achieving the mean correct score of 71.03%, and their knowledge of advanced FL is shallow, 48.72%.

Students belonging to business majors tend to outperform the overall survey by achieving an overall score of 59.58%. The results are in line with those of Hanna, Hill, and Perude (2010) who found that business students generally have a higher level of FL. They also support a cross-country comparative analysis by Marcolin and Abraham (2006), which showed that primary school students studying business have a high level of FL in the UK, USA, and Australia.

Class rank tends to be a significant factor in predicting students' FL. Students from senior semesters are more financially literate compared to junior students. Because they are more capable of critical thinking and have problem-solving skills, their ability to make better financial decisions improves. These results align with the results of Altintas (2011) and Jorgensen (2007), who found a significant difference between all class knowledge ranks; it increases gradually from freshman to master. Similar findings are reported by Mandell (2006) and Savla (2010). Interestingly, no significant difference in FL is found based on class rank in the primary section on FL. This shows that students from lower class rank are knowledgeable about basic finance concepts.

When gender is associated with Socioeconomic status and ethnicity, it usually leads to differences in FL (Mandell, 2008). Findings report that being male will result in high FL. Evidence shows that women give more importance to English and humanities courses, while men prefer mathematics and science subjects (Chen and Volpe, 2002; Altintas, 2011)).

Ansong and Gyensare (2012) provided the same results, finding no difference in knowledge among students from urban and rural areas. While assessing Sharia FL among lecturers, Setyawati and Suroso (2016) reported no effect of domicile on the FL of individuals. These results agree with those of our study.

Results indicate that the 18-24 age group has low financial knowledge. Ibrahim et al. (2010) and Agarwal et al. (2009) have found the same, reporting that the 20-27 age group holds a lower level of financial knowledge than older groups. Dusek and Furlong's (2010) results also indicate that individuals under 30 have low FL.

Although Chen and Volpe (2002) found out that FL increases with age, the authors argued that age does not matter to FL, but what matters is the financial exposure. Therefore, one can argue that being in 4 years of a bachelor's degree does not necessarily add up to experience in a student's life compared to individuals from higher age groups, and there will be no significant increase in the level of FL within one year.

Regarding work experience, no differences in FL have been found. On the contrary, several authors find a significant impact of work experience on FL (Hilgert and Hogarth, 2003; Mandell (2004); Beal and Delpachitra, 2003). A possible reason for the relationship between work experience and students' FL could be that most undergraduate students are enrolled without any prior work experience. Within a degree, they can do two internships for two months each. Thus, four months do not statistically increase an individual's knowledge.

The education level of parents does not impact students' FL. Sabri et al. (2010) also found no significant impact of FL based on parents' education. It has been said that parents influence students' financial attitudes but do not teach their children financial knowledge. Thus, no effect of parental influence on children's financial knowledge can be seen (; Clarke et al., 2005). Furthermore, Ibrahim et al. (2010) and Altintas (2011) also found no differences in the students' financial knowledge based on their father's education. However, several studies suggest that mothers impact students' FL(Ibrahim et al., 2010; Lusardi et al., 2010). Interestingly, these findings can be proved in the advanced FL section, where mothers education is a major factor in predicting advanced knowledge. Students with mothers have more than 16 years of education are financially literate. The level of FL in individuals varies depending on their family income. Students with higher family income tend to be more knowledgeable than those with base group family income. This agrees with previous findings (Altintas, 2011; Johnson and Sherraden, 2007;

Atkinson et al., 2007; Mandell, 2008). Students from limited-income families exhibit poor FL, and surplus funds are required to carry out saving and investing.

CONCLUSION

The objective of this research is to examine the FL levels of university students. The study examines the impact of demographics, socioeconomic factors, and income on FL among students. Additionally, the study assesses the effectiveness of these factors as predictors of FL among students. The study employs a mixed-method approach that combines both qualitative and quantitative methods. The study is survey-based and measures FL based on familiarity with financial concepts and basic financial management skills. We first explore the level of FL among university students in Pakistan, followed by the impact of demographic and socio-economic factors on students' FL. Lastly, we examine how demographic and socio-economic factors effectively predict students' FL levels.

Overall, this research's findings indicate that FL is generally low. Furthermore, being male with business majors from the senior semester and a higher family income will result in a high level of FL.

Students must improve FL to be efficient financial consumers and investors in today's volatile economy. The ability of students to carry out important personal financial decisions will affect them for the rest of their lives. There is a great need to include FL as a general requirement in colleges and universities to improve students' FL levels. As the age group 18-24 holds a significant portion of our population, policymakers and educators must educate young people to develop healthy financial practices and actively participate in financial inclusion. For this, it is necessary to provide financial education at the elementary and secondary school levels so the foundation of FL can be created and irrational financial decisions may be avoided. Also, short and easily accessible methods like workshops and seminars are not only beneficial for the age group 18-24 but also help students of non-business majors. Besides, there is a need to introduce interdisciplinary courses in the university curriculum, especially for engineering studies.

There is a great need to financially educate parents and women as children learn explicitly and implicitly from their parents. Educators can target low-income parents and women, focusing on FL and how parents can increase their ability to discuss financial matters with their parents. This will help children and low-income parents to be involved in financial inclusion. Lastly, high FL will not only help women themselves, but it will also help their children develop sound financial attitudes and behavior.

The findings of this research are limited to Pakistan students in universities taking top 04 ranked universities. For greater generalizability, future studies might consider a more significant sample into consideration.

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