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Financial Literacy and Self-Control as the Predicting Variables to the Financial Behavior of Senior High School Students

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ABSTRACT

This study dealt with the finacial literacy and self-control, as predictors to financial behavior among Senior High School students. The primary goal of the study was to determine the level of financial literacy, selfcontrol, and financial behavior in terms of their respective indicators, what domains of financial literacy and self-control substantially influence financial behavior. Also, this study utilized a quantitative-correlational design with 221 respondents among Senior High School students. The average weighted mean, Pearson R, and multiple regression analysis were the statistical tools used in this study. Along with this, results showed a high level of financial literacy among Senior High School students in terms of saving, budgeting, and investing. On the other hand, the results also showed a high level of self-control among Senior High School students in terms of inhibition, initiation, and continuation. Likewise, results showed a high level of financial behavior among Senior High School students regarding saving behavior, spending habits, and financial goal setting. In addition, there is a low correlation, and a significant relationship between financial literacy and financial behavior. Furthermore, there is a high correlation, and a significant relationship between self-control and financial behavior. Hence, this leads to the rejection of the null hypothesis. Saving, budgeting, and investing as domains of financial literacy have a significant influence to financial behavior. Additional, inhibition, initiation, and continuation as domains of self-control have a significant influence to financial behavior. These results helps the student know that their financial behavior or anything financialrelated could be incorporated in their academic and non-academic journey.

Keywords: STEM, Financial Literacy, Self-Control, Financial Behavior, Philippines

INTRODUCTION

Financial behavior can be understood as the ability to understand and apply appropriate management skills in finances. This includes effective ways to manage debt, budgeting and understanding interest (Thomas, 2020). The 2019 National Survey on Financial Behavior and Inclusion (SNLIK) conducted a nationwide survey and found that the problem about financial behavior index was 38.03% and the financial inclusion index was 76.19%, therefore, it has low financial behavior index that shows great impact to the student's financial behavior (OJK, 2022). In Bogor West Java, Indonesia, those in lower grades generally displayed a better financial attitude compared to those in higher grades and this showed that lower-grade students tended to spend money wisely and gather information before making purchases, considering factors such as price and quality of products (Khoirunnisaa & Johan, 2020).





Financial literacy is of paramount importance on a national level in the Philippines, as it directly impacts the economic well-being of individuals and the overall stability of the country's financial system (Lusardi & Mitchell, 2023). Furthermore, in a globalized economy, understanding financial concepts is essential for informed decision-making and participation in financial markets, which is crucial for a developing nation like the Philippines (World Bank, 2019). Promoting financial literacy within the Philippines is thus vital for individual financial well-being, economic progress, and overall financial stability in the country (Smith, 2019).

In Davao Region, according to a survey conducted by the Department of Education in the Philippines in 2020, a significant percentage of students in this region struggle with basic financial literacy concepts, hindering their ability to make informed financial decisions (DepEd, 2020). In addition, lack of self-control illustrates student's low awareness of saving which contributes to the high level of consumption that tends to a wasteful lifestyle (Rachma, 2019). Moreover, there have been an issue that students' management skills and behavior is a concern, for their implication of poor financial management can influence their finances, and can affect their academic performance, mental and physical well-being, and even their ability to find employment after graduation (Nano, 2021). Furthermore, within the community of Mawab, Davao de Oro, where senior high school students in Lorenzo S. Sarmiento Sr. National High School are preparing to take their first steps into adulthood, the importance of financial literacy and self-control cannot be overstated. Among senior high school students, there was an observation on the understanding of financial concepts, such as budgeting, saving, and investing. Hence, the researchers were interested in discovering if the financial behavior of students can be predicted with the variable's financial literacy and self-control.

Research Objectives

- 1. To determine the level of financial literacy of senior high school students in terms of:
- 1.1 Savings;
- 1.2 Budgeting; and
- 1.3 Investing.
- 2. To determine the level of self-control of senior high school students in terms of:
- 2.1 Inhibition:
- 2.2 Initiation; and
- 2.3 Continuation.
- 3. To determine the level of financial behavior of senior high school students in terms of:
- 3.1 Savings Behavior
- 3.2 Spending Habits; and
- 3.3 Financial Goal Setting.
- 4. To determine the significant relationship between financial literacy and financial behavior among senior high school students in Lorenzo S. Sarmiento Sr. National High School.
- 5. To determine the significant relationship between self-control and financial behavior among senior high school students in Lorenzo S. Sarmiento Sr. National High School.
- 6. To determine which of the domains in financial literacy influences financial behavior.
- 7. To determine which of the domains in self-control influences financial behavior.

METHODOLOGY

This study employed a quantitative non-experimental research design utilizing correlational technique. This method was used when the objective was to describe the status of the situation as it existed at the same time of the study to explore the causes of a particular phenomenon. A correlational research design investigates

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relationships between variables without the researcher controlling or manipulating any of them (Bhandari, 2021). In addition, correlational research involves collecting data in order to determine whether the degree of a relationship exists between two of more quantifiable variables (Gay et al., 2006). This survey dealt with quantitative data about the said phenomenon.

The quantitative aspect was an appropriate schedule for gathering the data designed for the target respondents to answer the questions. The process of gathering the data was based through the use of a questionnaire. The focus of the study was to determine the relationship of financial literacy and self-control on predicting financial behavior among senior high school students in Lorenzo S. Sarmiento Sr. National High School.

Population and Sample

Simple random sampling was used in the selection of the respondents. The subjects of the study were the 519 Grade 12 students of Lorenzo S. Sarmiento Sr. National High School. They were ideal respondents for this study because they typically exhibit higher levels of maturity and responsibility compared to younger peers, which makes them well-suited for studying financial behavior and self-control. Additionally, they are on the cusp of graduating from high school, and as they approach this significant life transition, their financial decisions become increasingly crucial.

According to Minsel (2022), sample sizes of 200 to 300 respondents provide an acceptable margin of error and fall before the point of diminishing returns. In the case of Senior High School students, out of a total population of 519 individuals, a random sample of 221 respondents are selected. The sample size was computed using the Raosoft sample size calculator (Raosoft, 2004).

Statistical Tool

The following statistical tools were utilized for the data analysis and interpretation.

Mean. This determined the level of financial literacy, self-control, and financial behavior among senior high school students.

Pearson-r. This statistical tool determined the significance of the relationship between financial literacy and financial behavior, and self-control and financial behavior among senior high school students.

Linear Regression Analysis. This statistical tool determined if financial literacy and self-control predicts financial behaviors among senior high school students.

RESULTS

Level of Financial Literacy among Senior High School students

Table 2 presents the mean score of financial literacy as perceived by the Senior High School students in terms of saving, budgeting, and investing. The overall mean was 3.82 with a verbal equivalent of high with a standard deviation of 0.66. This indicates that the respondents' responses to the level of financial literacy are very evident in saving, budgeting, and investing.

The cited overall mean score was the result obtained from the following computed mean scores from highest to lowest: 3.90 or high for saving and a standard deviation of 0.63; 3.82 or high for budgeting with a standard deviation of 0.69; and 3.73 or high for investing with a standard deviation of 0.6.



Table 2. Level of Financial Literacy among Senior High School students

Indicators	Mean	SD	Descriptive Equivalent
Savings	3.90	0.63	High
Budgeting	3.82	0.69	High
Investing	3.73	0.67	High
Overall	3.82	0.66	High

Level of Self-Control among Senior High School Student

Table 3 presents the mean score of self-control as perceived by the Senior High School students in terms of inhibition, initiation, and continuation. The overall mean is 3.76 with a verbal equivalent of high with a standard deviation of 0.67. This indicates that the respondents' responses to the level of self-control are very evident in terms of inhibition, initiation, and continuation.

The cited overall mean score was the result obtained from the following computed mean scores from highest to lowest: 3.86 or high for initiation and a standard deviation of 0.68; 3.78 or high for continuation with a standard deviation of 0.66; and 3.65 or high for inhibition with a standard deviation of 0.67.

Table 3. Level of Self-Control among Senior High School Student

Indicators	Mean	SD	Descriptive Equivalent
Inhibition	3.65	0.67	High
Initiation	3.86	0.68	High
Continuation	3.78	0.66	High
Overall	3.76	0.67	High

Level of Financial Behavior among Senior High School

Table 4 showed the level of financial behavior among senior high school students in terms of saving behavior, spending habits, and financial goal setting. The overall mean is 3.80 with a verbal equivalent of high with a standard deviation of 0.69. This indicates that the respondents' responses to the level of financial behavior are very evident in terms of saving behavior, spending habits, and financial goal setting.

The cited overall mean score result obtained from the following computed mean scores from highest to lowest: 3.84 or high for financial goal setting with a standard deviation of 0.71; 3.83 or high for saving behavior with a standard deviation of 0.70; 3.74 or high for spending habits with a standard deviation of 0.669.

Table 4. Level of Financial Behavior among Senior High School

Indicators	Mean	SD	Descriptive Equivalent
Savings Behavior	3.83	0.70	High
Spending Habits	3.74	0.66	High
FinancialGoal Setting	3.84	0.71	High
Overall	3.80	0.69	High
Savings Behavior	3.83	0.70	High

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Significance on the Relationship between Financial Literacy and Financial Behavior

Another crucial purpose of this study was to determine whether or not financial literacy has a significant relationship with financial behavior among Senior High School students. Pearson's r was used to determine the correlation between the two variables.

Likewise, the results revealed that financial literacy and financial behavior have a significant relationship. This result is due to a p-value of <.001, which is less than the 0.05 p-value. Hence, this leads to the decision that the null hypothesis which stated that there is no significant relationship between financially literacy and financial behavior among Senior High School students is rejected. Moreover, Pearson's R value, which is 0.860 further means that there is a high correlation between financial literacy and financial behavior.

Significance on the Relationship between Self-Control and Financial Behavior

Another crucial purpose of this study is to determine whether or not self-control has a significant relationship with financial behavior among Senior High School students. Pearson's r was used to determine the correlation between the two variables. The results of the computation are shown in Table 6.

Likewise, the results revealed that self-control and financial behavior have a significant relationship. This result is due to a p-value of <.001, which is less than the 0.05 p-value. Hence, this leads to the decision that the null hypotheses which stated that there is no significant relationship between self-control and financial behavior among Senior High School students is rejected. Moreover, Pearson's R value which is 0.835 further means that there is a high correlation between self-control and financial behavior.

Multiple Regression Analysis of the Influence of Financial Literacy on Financial Behavior

Using the Multiple Regression Analysis, the data revealed that the influence of financial literacy and financial behavior among Senior High School students has an f-value of 196.502 and a corresponding significance p-value of <0.001 which was significant.

This means that the level of financial literacy influences financial behavior among Senior High School students since the probability is less than 0.05. The R squared of 0.731 implies that 73.1% of the financial behavior among Senior High School students is influenced by the level of financial literacy while 26.9% remaining were not covered by the study and are influenced by other factors.

Multiple Regression Analysis of the Influence of Self-Control on Financial Behavior

Using the Multiple Regression Analysis, the data revealed that the influence of self-control and financial behavior among Senior High School students had an f-value of 168.751 and a corresponding significance p-value of <0.001, which was significant. This meant that the level of self-control influenced the financial behaviors among Senior High School students since the probability was less than 0.05. The R square of 0.700 implied that 70% of the variation in student's self-control among Senior High School students was influenced by the level of their financial behavior, while the remaining 30% was attributed to chance variation or other unexplored factors.

DISCUSSIONS

Level of Financial Literacy

In Lorenzo S. Sarmiento Sr. National High School, students exhibit a high level of financial literacy, demonstrating proficiency in crucial indicators. Their competence in savings reflects an understanding of





setting aside funds for future needs. Additionally, their adeptness in budgeting goes beyond basic management, showcasing a nuanced skill in optimizing financial resources for stability.

Furthermore, students display a comprehensive grasp of investing principles, indicating readiness to navigate financial markets for potential wealth growth. This multifaceted proficiency across savings, budgeting, and investing underscores the institution's commitment to providing a well-rounded financial education. This prepares students to approach their financial futures with confidence and competence, positioning them for informed decision-making beyond the academic realm.

Level of Self-control

The respondents' level of self-control in Lorenzo S. Sarmiento Sr. National High School was very high. This means that the level of self-control among senior high school students in Lorenzo S. Sarmiento Sr. National High School was very positive. This further means that their behavior is disciplined and practical minded people in which they exhibit inhibition that refers to the capacity to manage impulsive impulses by momentarily pausing, engaging attention, and reasoning that is essential for future financial endeavors. In addition, initiation was very much evident among the respondents for this refers to the ability to not initiate a behavior before you have evaluated all the information, which is crucial to managing your finances and determining whether to take risk or not. Also, being persistent as to different problems that may come is very important which is labeled as continuation in this study. This specific type of self-control determines that a person is credible if he or she is persistent in what he or she wanted to achieve. In terms of the financial behavior of senior high school students, these three indicators and their results shows that they had mastered self-control as to their financial behaviors.

Level of Financial Behavior among Senior High School Student

The respondents' level of financial behavior at Lorenzo S. Sarmiento Sr. National High School is high. This means their financial behavior was largely positive among senior high school students. This also elicits the fact that students consider financial behavior a crucial aspect in making financial decisions. These findings align to the claim made by Nuris et al (2023) that good student financial behavior comes from good financial planning.

Financial behavior in terms of financial goal setting got a result of high and was interpreted as much felt by the senior high school students. Conde (2023) stated that setting financial goals helps build savings and budgeting habits that could lead to greater financial stability and security. Houston (2023) stated that setting financial goals is an effective way to build wealth, provide a sense of direction and purpose, and keep you on track to achieve financial success.

Significant Relationship Between Financial Literacy and Financial Behavior

The present study reveals a significant relationship between financial literacy and financial behavior among 221 senior high school students Lorenzo S. Sarmiento Sr. National High School. This indicates that financial had a big influence on financial behavior based on the data. This ratifies the supporting theory of this study, the Theory of Planned Behavior (TPB) by Ajzen (1985) that posits that an individual's intention to engage the realm of financial literacy, a positive attitude toward acquiring financial knowledge and financial behavior, influenced by an individual's beliefs and values, plays a crucial role. Applied to personal finance like saving, budgeting, and investing. Saving is an attitude towards saving, subjective norms, and perceived control influence the intention to save money. Budgeting is an attitude towards budgeting, subjective norms, and perceived control shape the intention to budget effectively. And lastly Investing is an attitude towards investing, subjective norms, and perceived control impact the intention to engage in investment activities. These intentions, formed by the perceived control, predict actual behaviors in saving,



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budgeting, and investing within the financial context. The TPB provides a psychological framework for understanding and predicting this financial literacy.

Significant Relationship Between Self-control and Financial Behavior

The present study reveals a significant relationship between self-control and financial behavior among 221 senior high school students Lorenzo S. Sarmiento Sr. National High School. This implies that self-control had a relationship to financial behavior among senior high school students, which can be seen in the data. This confirms the supporting anchor of this study, the proposition of Albert Bandura (1960), which emphasized that it occurs in a social context with a dynamic and reciprocal interaction of the person, environment, and behavior, explores the interplay between self-control and financial literacy in shaping individuals' behavior. This agitates the other supporting anchor proposition used in this study, the proposition of Walter Mischel (1974), that delay of gratification serves as a measure of financial behavior, involving the attainment of more valuable outcomes in the future by enduring delays or investing greater effort in the present.

CONCLUSION

Conclusions are drawn based on the results of the study. The study concludes that the level of influence of financial literacy among Senior High School students was high as well as its indicators, namely, saving, budgeting, and, investing. Furthermore, the study also concludes that the level of influence of self-control among Senior High School students was high as well as its indicators, namely, inhibition, initiation, and continuation. Moreover, the overall level of financial literacy among Senior High School students was high in three domains namely, savings behavior, spending habits, and financial goal setting. Furthermore, the findings reveal that there is a significant relationship between family involvement and financial behavior. On the other hand, self-control and financial literacy also have a significant relationship with a high correlation.

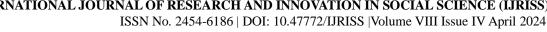
REFERENCES

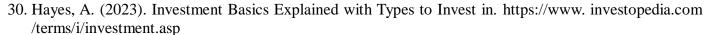
- 1. Abawag, C. F. N., Domingo, I. J., Rabina, G. (2019). Spending Behavior of Managment Students.https://www.academia.edu/38999910/Spending_Behavior_of_Management_Students?fbclid=I wAR35IZ1D6vHi9y2oYyosKKAANgOahT_WueOJA_dFYuenVPPvEb7hle3rwj4
- 2. Ajzen, I. (1985). The Theory of Planned Behavior: Behavioral Intention. https://www.simplypsychology.org/theory-of-planned-behavior.html
- 3. Akin, T. S. (2019). What Is Inhibition and Why Is It a Key Component of Executive Functioning? https://chicagohometutor.com/blog/executiving-functioning-inhibition
- 4. Anderson, J. (2021). The interconnectedness of self-control and financial behavior. Journal of Financial Psychology. https://doi.org/10.1016/j.joep.2021.102447
- 5. Badre, D. (2021). Cognitive Control: Inhibitory control. https://philosophyofbrains.com/2021/01/28/cognitivecontrolinhibitorycontrol.aspx&ved=2ahUKEwjDoonK5mBAxWcwTgGHfJpCKM4FBAWegQICRAB&usg=AOvVaw2qyvIqbO2wZTwB2EvQn3B
- 6. Bandura, A. (1960). The Social Cognitive Theory. https://sphweb.bumc.bu.edu/otlt/mphmodules/sb/behavioralchangetheories/behavioralchangetheories5.html
- 7. Bangco, R. A., Dimatulac, P. A., Sanchez, J. F., Cabauatan, R. (2022). Determinants of Financial Literacy in the MIMAROPA Region. DOI: 10.32996/jefas.2022.4.1.15
- 8. Baranidharan, S. (2023) Financial behaviour of individual life. https://timesofindia.indiatimes.com/readersblog/finance-excel/financial-behaviour-of-individual-life-51840/
- 9. Behune, M. (2020). The Importance of Early Investments for Students. https://uniacco.com/blog/importance-of-early-investments-as-a-





- 10. Bhandari, P. (2021). Correlational Research | When & How to Use. https://www.scribbr.com/methodology/correlational-.
- 11. Bleich, R., Frank, S., Smith, T. (2022) Types of costumers buying behaviors. https://www.indeed.com/career-advice/career-development/types-of
- 12. Blesky, G. (2022). Self- Control and Personality 1. https://osf.io/2eqcz/download
- 13. Brown, C., & Miller, D. (2021). Regular review and updating of financial goals: Linkages to improved financial outcomes. Journal of Financial Management, 42(3), 178-195. https://fbj.springeropen.com/articles/10.1186/s43093-021-00099-0
- 14. Bürgler, S., Hoyle, R., Hennecke, M. (2021). Flexibility in using self-regulatory strategies to manage self-control conflicts: The role of metacognitive knowledge, strategy repertoire, and feedback monitoring. https://journals.sagepub.com/doi/abs/10.1177/0890207021992907?Fbclid=IwAR0w98g5snt T4mf_6G4ybebrRjkzxLXrc3SGNYxb2K9kvjD7vMMzNsuigbw
- 15. Caldwell, M. (2022). Reasons Why You Should Budget Your Money. https://www.Thebalancemoney.com/reasons-to-budget-money-2385699#citation-4
- 16. Carrus, G., Tiberio, L., Mastandrea, S. (2021). Psychological Predictors of Energy Saving Behavior: A Meta-Analytic Approach. Volume 12-2021https://doi.org/10.3389/fpsyg.2021.648221
- 17. Carver, H. (2019). The experiences of carers in using shared activities to communicate with looked-after young people about alcohol, tobacco, and drug use. https://onlinelibrary.wiley.com/doi/abs/10.1111/cfs.12590?fbclid=IwAR3004tunmY210dlJ0wWRodMD2FaCvW_WDRnhtGnuCwjFq GDgm3BSU5TuWI
- 18. DepEd. (2020). Department of Education Philippines. Financial Literacy Survey Report. https://www.deped.gov.ph/?s=Financial+literacy
- 19. Duckworth, A., Taxer, J., Winkler, L., Galla, B., Gross, J. (2019). Self-control and academic Achievement. https://www.msrlab.pitt.edu/wp-content/uploads/2018/07/Duckworth-2019-Self-control-and-academic-
- 20. Eloriaga, E. F., Roxas, E. R., Cauresma, P. J., Cabauatan, R. (2022). A Study on Financial Literacy and Financial Behavior of Young Professionals in Metro https://journal.ijresm.com/index.php/ijresm/article/view/1713
- 21. Ezeh,N.(2022). Short-Term Financial Goals for Students. https://www.linkedin.com/pulse/short-term-financial-goals-students-nneoma-ezeh#:~:text=Your%20financial%20goals%20as%20a,secure%20your%20financial%20well%2Dbeing
- 22. Fernando, J. (2023). Financial Literacy: What It Is, and Why It Is So Important. Investopedia. https://www.investopedia.com/terms/f/financial-literacy.asp
- 23. Fernando, J. (2023). Financial Literacy: What it is, and why it is so important. https://www.investopedia.com/terms/f/financial-literacy.asp
- 24. Froid, L. (2021). Importance of Savings. https://www.iciciprulife.com/protection-saving-
- 25. Galperti, S. (2019). A theory of personal budgeting. https://onlinelibrary.wiley.com/doi/full/10.3982/TE2881
- 26. Garman, E., Forgue, R. (2021) The role of financial Behaviour, financial literacy, and financial stress in explaining the financial well-being of B40 group in Malaysia. https:// fbj. springeropen. com/articles/10.1186/s4 3093-021-00099-0
- 27. Grossman, A. (2022). List of 63 Good & Bad Personal Spending Habits (Identify Yours!). https://www.frugalconfessions.com/spend-less/list-of-spending-habits/
- 28. Hagger, M., Zhang, C., Kangro, E., Ries, F. (2021). Trait Self-Control and Self-Discipline: Structure, Validity, and Invariance Across National Group. https://www.researchgate.net/publication/328065267_Trait_Self-Control_and_Self Discipline Structure Validity and Invariance Across National Groups
- 29. Harries, A. (2022). Financial Education in Schools, The Late Activity https://www.linkedin.com/posts/lillyringlet_financial-education-in-schools-the-late-activity7074318413279416321-AJDm





- 31. Houston, M. (2023) Setting Financial Goals and Achieving Them. https://www.forbes.com/ sites/melissahouston/2023/02/22/setting-financial-goals-and-achieving-
- 32. Indrawati, H. (2021). Analyzing the Impact of Financial Literacy Programs on the Financial Behavior of Students: School **Ouantitative** Study. https://www.encyclopedia.org/en/country/ High A indonesia/publication/analyzing-the-impact-of-financial-literacy-programs-on-the-financial-behavior-ofhigh-school-students-a-quantitative-tudy?fbclid=IwTR1w-okMslFVgzob6QDAG1O7HxRsc7RkCMSB cBFUi
- 33. Jamieleigh, (2023)Investing. https://www.uwyo.edu/uwe/programs/money/ Saving and sainvesting/index.html#:~:text=Saving%20and%20Investing,home%20under%20lock%20and%20k
- 34. Johnson, E. (2022). Achieving significant financial goals: Indicators of successful financial planning strategies. Financial Success Quarterly, 33(1), 45- https://scholarworks.waldenu.edu/cgi/viewcontent. cgi?article=10478&context=dissertations
- 35. Jones, B., et al. (2020). The bedrock of effective financial planning: Specifying and articulating clear financial goals. Financial Planning Journal, 28(4), 245-261. https://core.ac.uk/download/pdf/ 234627714.pd
- 36. Jumena, B., Siaila, S., Widokarti, J. (2022). Saving Behaviour: Factors That Affect Saving Decisions (Systematic Literature Review Approach). September 2022 JURNAL ECONOMIC RESOURCE 5(2):217-235 DOI:10.56750/jer.v5i2.365