BUDGETING IN THE AI ERA: EXPLORING THE MODERATING EFFECTS OF AI UTILIZATION AND ISLAMIC FINANCIAL LITERACY ON SANTRI'S FINANCIAL LIFE)

Shofi Mustajibullah[1]*, Nurhidayah[2], Eny Zuhrotun Nasyi'ah[3]
Universitas Islam Malang*
Universitas Islam Malang [2]
Universitas Islam Malang [3]
E-mail: 22402081007@unisma.ac.id*, aya@unisma.ac.id[2], eny_zu@unisma.ac.id[3]

Abstract

One of the religious student groups in Indonesia with a fairly large scope is santri. Santri who are currently studying at university are known as Mahasantri, and are the object of this study. Their average financial resources range from Rp. 500,000 - Rp. 1,000,000, which is located in the lower middle class. Based on this, the financial problems experienced by Mahasantri are an illustration of this study to examine factors that can support *financial life management* , so that the daily needs of the students can be met. This study used a questionnaire on 375 students of the Nurul Jadid Probolinggo Islamic Boarding School . SmartPLS software version 03 was used to test the research hypothesis of *the budgeting behavior* variable as variable X, *Islamic financial literacy* as variable Z1, *artificial intelligence utilization* as variable Z2, and *financial life management* as variable Y. The test results of this study indicate that the first hypothesis of *budgeting behavior* has an effect on *financial life management* with a t-statistic of 4.089 and a p-value of 0.000. Meanwhile, the second and third hypotheses, namely the *Islamic financial literacy variable* with a t-statistic of 0.523 and a p-value of 0.601, and the *artificial intelligence utilization variable* with a t-statistic of 0.214 and a p-value of 0.830, were proven not to function as moderating variables. Therefore, the findings of this study are expected to provide a basis for policy-making by educational institutions related to supporting their students' personal finances. Institution managers can conduct regular financial literacy programs.

Keywords: *budgeting behavior, Islamic Financial Life, Artificial Intelligence Utilization, Financial Life Management,* **Mahasantri**

INTRODUCTION

Indonesia has a diverse group of religious students, one of which is the Islamic boarding school (pesantren) students (santri), who predominantly reside in Islamic boarding school (Kemenag, 2022). The primary focus of this research is the group of students specifically pursuing university education. This group is called "Mahasantri." These students have entered the transition to economic independence in making financial decisions. The age range for individuals who must make personal financial decisions is 18-24 years (Correa et al., 2025). The demand for financial independence presents a challenge for female Islamic boarding school students, as the majority still rely on financial support ranging from Rp 500,000 to Rp 1,000,000 (Safitri et al., 2024). However, the average financial support received by female Islamic boarding school students falls within the spending range of lower-middle class or poor students (Central Statistics Agency, 2025). This limited financial access often prevents students from completing their studies (Mathew, 2022). Based on this phenomenon, all students are required to be meticulous in managing their personal finances to ensure proper management and prevent excessive consumption habits (Auza'i et al., 2024). Previous research shows that *the Budgeting Behavior variable* influence on *Financial Life Management* (Sabri et al., 2024; Azhar & Syarif, 2025), where financial activities in the form of budgeting impact better financial management. This study proposes the variables *Islamic Financial Literacy* and *Artificial Intelligence Utilization.* as a moderating variable because it has been proven to be successful as a moderating variable (Ahmed et al., 2020; Ebrahimi & Ebrahimi, 2025; Lestari et al., 2025) both of which show success as moderating variables.

However, no previous research has considered *Artificial Intelligence* as a moderating variable. Similarly, no research has linked the use of imitative reasoning to personal financial management. Furthermore, previous studies have not specifically examined students who have already attended college.

LITERATURE REVIEW
Budgeting Behavior
According to Lukas & Howard (2023) Budgeting behavior in general is behavior that utilizes practical tools used to manage and improve financial well-being. Furthermore, budgeting behavior varies, from measuring and planning the use of financial resources to predicting and targeting specific outcomes (Ülkümen et al., 2008). Financial budgeting behavior is behavior that allows consumers to evaluate the affordability of goods and divide expenses into various categories (Kivetz & Simonson, 2002) and influences consumers' estimates of disposable income (Thaler, 1999). Several factors are determinants of this variable, namely demographics, *financial attitudes* , *financial socialization* and *financial self-efficacy* (Nuris et al., 2023).

H1: *Budgeting Behavior* has an effect on *Financial Life Management*

Islamic Financial Literacy
Islamic *Financial Literacy* According to Rahmanita et al. (2023), Islamic financial literacy encompasses a wide range of competencies, from basic budgeting to sophisticated investment strategies, and is often viewed as a crucial factor in financial well-being in accordance with Sharia principles (Rahmanita et al., 2023) . Islamic financial literacy is a dynamic concept that continues to evolve along with the development of Islamic financial products, highlighting the need for ongoing education to maintain financial well-being. Improving Islamic financial literacy is considered a strategic approach to improving overall financial management behavior, particularly among young individuals facing significant long-term financial decisions (Widityani et al., 2020). This is particularly important for the group of Islamic students (santri) who, despite their technological proficiency, may lack sufficient Islamic financial knowledge to effectively manage their finances in accordance with Sharia guidelines (Osman et al., 2024).

H2: *Islamic Financial Literacy* have an impact *Budgeting Behavior* on *Financial Life Management*

Artificial Intelligence Utilization
" Artificial Intelligence" was officially coined and defined by John McCarthy during his time as "the science and engineering of making intelligent machines" (Russel and Norvig, 2020). Meanwhile, the variable *Utilization is* based on research absorption from Trice & Treacy (1988) the level of utilization of a resource, system, service, or facility, which can be measured by the amount of effort used to operate it or the amount of output produced in a certain period. The definition of *Artificial Intelligence Utilization is the frequency of use of* artificial intelligence technology by individuals in the work environment, which has a direct impact on increasing the progress of user competence (Amayreh, 2025).

H3 *: Artificial Intelligence Utilization* have an impact *Budgeting Behavior* on *Financial Life Management*

Financial Life Management
Daily Financial Management or *Financial Life Management* According to Management, it is an important element in personal finance, encompassing the strategies individuals use to effectively manage their financial assets (Agustina & Mardiana , 2020). Furthermore , daily financial management also involves how a person or organization makes decisions about spending, including whether they prioritize needs or wants, or whether they engage in impulsive spending (Radiman et al . , 2023). Simply put, financial management in life is a person's ability to manage daily financial funds (Kholilah & Iramani, 2013). Financial management behavior refers to an individual's ability to effectively manage various financial activities (Radiman et al ., 2023). This includes planning, budgeting, monitoring, managing, controlling, seeking, and protecting financial resources (Hilgert et al., 2003).

LITERATURE REVIEW

The research model based on previous research and theoretical review is depicted in Figure 1.
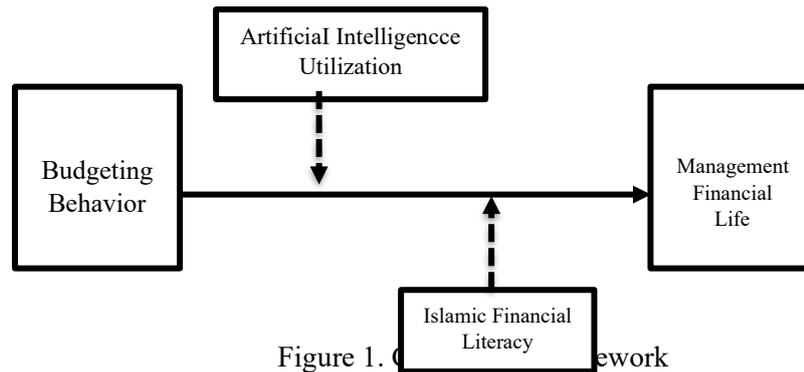

Figure 1. Conceptual Framework

METHOD

This study uses a quantitative approach to examine how *Budgeting Behavior* influences daily financial management, with Islamic financial literacy and the use of *imitation* reason as moderating variables and using a survey method. According to Ghanad (2023) , quantitative research has a research model that requires data accumulation, analysis, and interpretation and is able to measure and prove hypotheses in certain studies. The explanatory research design was chosen to explain the position of the variables studied and the relationship between one variable and another (Sugiyono, 2012). This research is focused on students who reside at the Nurul Jadid Islamic Boarding School . The population was taken from all students or students who are divided into three dormitories, namely Ibnu Arabi as many as 188 students, Imam Al-Ghazali as many as 109, Al-Amiri 78. The sample used in this study uses a sampling technique in the form of *Total Sampling* . According to Sugiyono (2007) *total sampling* is a sampling technique where the total sample is equal to the total population. Therefore, the number of samples from this study is 375 to adjust the total population.

The Budgeting Behavior variable is measured using indicators such as estimating expenses, planning finances, predicting future expenses, categorizing expenses, using digital tools to manage finances, and being able to achieve financial goals with a clear plan (Noh, 2022) and (Tan, 2024). Islamic Financial Literacy is measured by financial knowledge and financial awareness (Azman et al., 2023). Based on Ellison et al., (2007), AI Utilization is measured by sustainability and intensity indicators. Following Dew and Xiao (2011), Financial Life Management is measured using indicators of expenditure, cash flow management, saving and investment, and debt management. The response range used is a 6-point Likert scale due to its ability to differentiate slightly more clearly between agreements (Kusmaryono et al., 2022). This study uses a SEM-PLS model evaluation that aims to test construct validity and reliability, appropriateness of fit, path coefficients, and moderating effects. This method was chosen because of its comprehensive nature and wide use in variance-based path analysis, as well as its flexibility in not requiring the assumption of normality, thus allowing for robust analysis (Henseler et al., 2016).

RESULTS AND DISCUSSION

Evaluation of Measurement Model

Convergent validity testing on a partial model is conducted by assessing the loading factor value, which is the correlation between the indicator and the construct it measures. The loading factor value indicates how strongly the indicator represents the latent construct. In general, the recommended loading factor value is greater than 0.70. The higher the loading factor value, the greater the indicator's contribution to the formation of the construct. Therefore, a practical requirement to meet convergent validity is that the outer loading must be greater than 0.70 (Chin & Todd, 1995). This study shows that all indicators for each variable are valid, except for indicators X.6, X.8, and X.11 of the *Budgeting Behavior* variable , which showed results below 0.70.

Table 1. Example of table description

Indicator	Variable l	Item	*Loading Factor*
X.1		Able to estimate weekly expenses for college and Islamic boarding school needs.	0.890
X.2		Get used to having surpluses (money left over from remittances) from month to month.	0.776
X.3		Get used to making a monthly budget so that expenses do not exceed remittances.	0.756
X.4		Have determined the primary needs to be met before allocating funds to other expenses.	0.847
X.5		Estimate additional expenses in certain periods, such as campus activities or Islamic boarding school activities.	0.722
X.6	*Budgeting Behavior*	Consider the long-term impact of expenses when managing personal finances.	0.680
X.7		Always record expenses by category, such as food, academics, or other needs.	0.740
X.8		Reduce expenditure items in non-essential categories	0.594
X.9		Utilize applications or digital records to control income and expenses.	0.860
X.10		Utilize digital financial services to facilitate financial transactions and monitoring.	0.840
X.11		Have certain financial goals that you want to achieve within a certain time period.	0.623
X.12		Have a commitment to follow the financial plan that has been designed so that these goals are achieved.	0.786
Z1.1		Understand in depth the basic concept of transactions (bai') in Islam.	0.877
Z1.2	*Islamic Financial Literacy*	Able to differentiate between Islamic and conventional financial products	0.950
Z1.3		Always try to ensure that every financial transaction is in accordance with sharia principles.	0.898
Z1.4		I feel the need to manage money according to Islamic values in my daily life as a student.	0.952
Z2.1		Planning to continue using *Artificial Intelligence based applications* for expense management	0.924
Z2.2	*Artificial Intelligence Utilization*	Feel the importance of utilizing Artificial Intelligence continuously in personal financial planning	0.934
Z2.3		Intense use of Artificial Intelligence-based applications to record and monitor daily expenses.	0.775
Z2.4		Utilizing Artificial Intelligence to prepare a budget for college and Islamic boarding school needs.	0.741
Y.1		Control daily expenses so that they do not exceed income.	0.813
Y.2		Reduce discretionary spending	0.709
Y.3		Set the payment schedule for your needs so as not to disrupt your monthly cash flow.	0.744
Y.4	*Financial Life Management*	Set aside part of your income to save regularly.	0.868
Y.5		Interested in learning about sharia-compliant investment procedures for the future.	0.826
Y.6		Try not to get into debt, unless it's an emergency.	0.821
Y.7		If I have debt, I plan how to pay it off so that it doesn't create a financial burden.	0.799
Y.8		Saving for a specific purpose.	0.903

Processed data source , 2025

The next validity test is discriminant validity. This test can be measured by comparing the AVE value for each construct to its correlation with other constructs. Based on Chin et al.'s (1997) standards, this validity is considered

reliable if the AVE root value of a construct is higher than the correlation value of that construct with other variables in a model of 0.5, then it is considered valid. In this study, all variables were found to have valid results.

Table 2. Discriminant Validity Test Results

Variables	AVE	Results
Budgeting Behavior	0.585	0.890
Islamic Financial Literacy	0.846	0.776
Artificial Intelligence Utilization	0.719	0.756
Financial Life Management	0.660	0.847

Processed data source , 2025

The next step in the research was reliability testing. This study aimed to evaluate the internal consistency of the instrument to ensure stable results (Hartono, 2008). The evaluation techniques used included checking *Cronbach's alpha* and *composite reliability values* . A research construct is considered reliable if its score is greater than 0.70 (Hair Jr, 2008). In this study, all four variables demonstrated *Cronbach's alpha* and *composite reliability values* greater than 0.70. Therefore, the constructs in this study are reliable.

Table 3. Discriminant Validity Test Results

Variables	*Cronbach's Alpha*	*Composite Reliability*	Conclusion
Budgeting Behavior	0.585		0.890
Islamic Financial Literacy	0.846		0.776
Artificial Intelligence Utilization	0.719		0.756
Financial Life Management	0.660		0.847

Processed data source , 2025

Based on Table 4, the t-statistic value for variables including *Budgeting Behavior, Islamic Financial Literacy, Artificial Intelligence Utilization* exceeds the t-table value of 1.96, with a p-value below 0.05. These results indicate that these variables have a substantial impact on the *Financial Life Management variable* . In addition, the positive path coefficient value indicates that the improvement in daily financial management can be caused by financial behavior, Islamic financial literacy, and the use of imitation reason. The results of the moderation test show that the t-statistic value is below the t-table criterion of 1.96, with a significance level exceeding 0.05. This indicates that Islamic financial literacy and the use of imitation reason do not act as moderators in the relationship between budgeting behavior and daily financial management. The results of the hypothesis testing are shown in Table 4.

Table 4. Hypothesis Test Results

Variables	Original Sample	Standard Deviation	T Statistics	P Values	Description
X -> Y	0.257	0.041	6,318	0, 000	Significant
Z1 -> Y	0.295	0.072	4,089	0, 000	Significant
Z2 -> Y	0.021	0.041	0, 523	0, 601	Significant
X*Z1 -> Y	-0.009	0.044	0.214	0.830	Not Significant
X*Z2 -> Y	0.439	0.067	6,569	0,000	Not Significant

Processed data source , 2025

DISCUSSION

Budgeting behavior patterns impact a person's daily behavior in managing their personal finances. Persistent, disciplined, and consistent budgeting has been shown to reduce consumptive spending (Lukas & Howard, 2023). In practice, budgeting applies to various items as needed. It can be based on percentages or other benchmarks. In addition to impacting personal financial management, budgeting simultaneously impacts financial well-being. This is evident from a study involving 360 respondents aged 18–29 from Malaysia, which found that budgeting skills can impact personal financial management, leading to financial well-being (Sabri et al., 2024).

Although *Islamic financial literacy* is crucial for upholding sharia values in transactions, it has been shown to be ineffective in moderating budgeting activities in personal financial management. The majority of students in Islamic boarding schools (pesantren) do not believe that Islamic financial literacy can impact financial aspects, including financial attitudes (Bustomi & Nurhidayah). This may be due to the complexity of Islamic financial concepts and the lack of comprehensive Islamic financial literacy programs targeted at future generations (Osman et al., 2024). Consequently, *Islamic financial literacy* has not been able to moderate budgeting activities in daily financial management. The lack of relevance of Islamic financial literacy practices to the modern *financial context* creates a gap for the younger generation (Lamichhane et al., 2024).

Technological advances such as *Artificial Intelligence* have now entered the realm of everyday human life. The use of artificial intelligence itself can support user performance and competition (Amayreh, 2025). However, in the financial context, the use of artificial intelligence has not been able to moderate budgeting for personal financial management. In the macrofinance sector itself, the use of artificial intelligence has not been able to have a strong influence on innovation and breakthroughs in the banking sector (Rabbani et al., 2023). This may occur due to obstacles in artificial intelligence such as the inability to identify the target audience, the absence of evaluation metrics for explainability, and data security, resulting in decisions suggested by users not being in line with what is desired (Černevičienė et al., 2024). Because of this, the use of *artificial intelligence* has not been able to influence *budgeting behavior* on *financial management* .

CONCLUSION

This research consistently shows that budgeting behavior patterns significantly influence daily personal financial management. Dividing financial items based on needs, habitually maintaining *a surplus* between income and expenses, and determining primary and secondary needs can encourage individuals to reduce or even eliminate debt, control spending, and improve daily financial management. However, the findings of this study indicate that Islamic financial literacy and the use of imitation reason do not substantially moderate the relationship between budgeting behavior and daily financial management. This implies that, despite low levels of Sharia-based financial literacy and minimal intensity of imitation reason utilization, budgeting behavior remains important in supporting individuals' daily financial management.

The theoretical implications of this study's findings include additional empirical research related to the study of personal finance. Practically, this study is expected to contribute to the personal financial behavior of all students and serve as a basis for solving problems related to budgeting and personal financial management. Policy-wise, the findings of this study contribute as a basis for decision-making by relevant institutions and educational institutions in general, and suggest the establishment of financial literacy outreach programs related to budgeting, Islamic financial literacy, the use of imitation reason, and personal financial management. A limitation of this study is that the institutions did not emphasize personal finance issues with students, resulting in a largely irrelevant sample. Furthermore, another limitation is a gap in understanding of the research object, with terms such as indicators and variables being quite unfamiliar to them. Consequently, information absorption from the entire sample was not optimal.

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