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ARTIFICIAL INTELLIGENCE, BEHAVIORAL MECHANISM LINKING FINANCIAL LITERACY TO FINANCIAL PLANNING: A SURVEY FROM FIRST JOBBERS

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ABSTRACT

Empirical evidence is required regarding the importance of financial literacy for the younger generation in managing individual finances. This is considered important because approximately 24% of Indonesians are first jobbers. Therefore, this study aims to examine the direct effect of financial literacy on cognitive bias, artificial intelligence, and financial planning of first jobbers. Another objective is to determine the mediating role of cognitive bias and artificial intelligence on financial literacy and financial planning. Data were collected through a survey conducted between October and November 2025 using a questionnaire distributed to 420 first jobbers and analyzed with Smart-PLS. The results showed the significant direct effect of financial literacy on cognitive bias, artificial intelligence, and financial planning. However, cognitive bias did not have a significant effect on financial planning and lacked a mediating role in the relationship between financial literacy and financial planning. It was observed to have a partial mediation effect for artificial intelligence. The trend showed that the integration of financial literacy and the adoption of artificial intelligence-based technology could be a key element in improving the quality of financial management for the younger generation. This study contributes to existing academic literature by focusing on first jobbers who are transitioning from college to career.

KEYWORDS: Artificial Intelligence, Behavioral Mechanism.

1. INTRODUCTION

The current workforce is dominated by Gen Z who are known as first jobbers and defined as individuals in an academic profession, professionals with permanent employee status, and not full-time freelancers for six months. Moreover, the transition from the status of being students to workers is associated with income shock. This phenomenon is identified from the fact that first jobbers often use promoted digital financial products such as Fear of Missing Out (FOMO), You Only Live Once (YOLO), Fear of People's Opinion (FOPO), and Buy Now Pay Later (BNPL). The process leads to the inability to manage basic finances such as the plan for an emergency fund and the prioritization of consumption over saving.

Indonesian Statistics in 2025 projected the population of the country to be 285.44 million with 23.6% identified as first jobbers based on the age group. This shows that $\frac{1}{4}$ of the entire population are currently first jobbers. Meanwhile, Kamalbatcha et al. (2024) reported a lesser focus on financial management behavior such as saving, spending, and debt management at a young age. There is also limited understanding in relation to making financial decisions (Cho, 2024). Therefore, this study focuses on behavioral tendencies such as 'will not save' or 'cannot save'.

Very limited studies have been conducted on individual analysis units specifically in relation to first jobbers despite the effect of financial literacy understanding on financial management behavior. Previous studies also showed varying debatable results with a positive and significant relationship identified between the two concepts (Hutabarat & Wijaya, 2020; Kamalbatcha et al., 2024; Cho, 2024; Subedi & Bhandari, 2024; and Yuliani et al., 2019). Some others reported that financial literacy had a negative and significant effect on financial planning (Y. Chiu et al., 2025; Tohar & Akron, 2025).

The weaknesses identified in relation to financial management in the context of individual finance provided different aspects of novelty for this study. First, there is a shift from classic behavior towards the adoption of AI or machine learning in terms of financial literacy. Second, cognitive bias is introduced as a new concept which has not been considered in the model developed in previous studies despite the strong conceptual connection to first jobbers. Third, the focus is on first jobbers who are currently dominant in the Indonesian job market.

2. LITERATURE REVIEW

Financial literacy is defined as the ability to

understand and use financial information in the decision-making process. A high level of financial literacy allows individuals to make better investment decisions which include avoiding the effect of cognitive bias such as overconfidence (Iram et al., 2023). The trend shows that individuals with a good understanding of finances have better tendencies of conducting effective financial planning and subsequently improve their financial stability.

Cognitive bias is explained as the systematic errors in thinking that affect decision-making and is considered important in the financial planning process. Individuals who understand the principles of financial literacy tend to have the ability to manage the cognitive bias in making investment decisions (Rahayu et al., 2023). For example, heuristics that lead to impulsive financial decisions can be avoided by leveraging the knowledge possessed. Pranata et al. (2024) reported that financial literacy had a positive effect on financial management behavior. This was because individuals with higher literacy levels tended to have better financial planning practices.

The relationship becomes more complex when considering the moderating effect of income factors. This was observed from the result of a previous study that income influenced the relationship between financial literacy and financial management behavior (Pranata et al., 2024). The submission was associated with the fact that individuals with higher incomes and good financial literacy made wiser and more strategic decisions. This shows that financial literacy is important but individual economic context also contributes to the efficiency of financial planning.

Emotional manipulation in financial decision-making is often affected by cognitive bias. This is due to the detrimental effect of emotional biases such as excessive optimism on financial planning by causing irrational decisions despite having good levels of financial literacy (Dureha & Vaishali, 2022). The trend shows the need for the ability to recognize and manage intrusive biases in addition to the possession of financial literacy because the two factors simultaneously affect financial management practices.

Good financial planning can support the development of financial literacy skills. This is observed from the fact that individuals who practice disciplined planning adapt and respond better to different market risks (Kasoga, 2021). Moreover, the adoption of a systematic method in financial planning allows individuals to focus on their financial goals and reduce the tendency to be affected by cognitive bias such as herding behavior where

decisions are made based on the actions of others rather than in-depth analysis.

The connection between financial literacy, cognitive bias, and financial planning requires better interventions. This is important due to the ability of educational programs that combine financial literacy with learning about cognitive bias to ensure more rational investment decisions and reduce the possibility of making mistakes (Suresh, 2021). The provision of education on numbers and financial strategies as well as the psychological aspects of decision-making can allow a more supportive environment to achieve financial goals. This description leads to the development of the following hypotheses:

H1: Financial literacy has a significant effect on financial planning for first jobbers

H2: Financial literacy has a significant effect on cognitive bias for first jobbers

H3: Cognitive bias has a significant effect on financial planning for first jobbers

H4: Cognitive bias as a mediating role in the effect of financial literacy on financial planning for first jobbers

The relationship between financial literacy, artificial intelligence (AI), and financial planning is becoming increasingly relevant in the context of rapid technological developments and the need to empower individuals in relation to financial management. Financial literacy is defined as the understanding of financial products and concepts by an individual. It is considered an important factor affecting the ability of an individual to plan finances effectively. Moreover, digital financial literacy is essential for improving financial well-being and the ability to conduct proper financial planning (Gosal & Nainggolan, 2023). The provision of sufficient knowledge on financial management can allow individuals to make better decisions in investing and managing resources.

AI has great potential to support financial literacy and financial planning. This was observed from the report of Zapata et al. (2024) that the use of AI tools in financial education improved the understanding of students about financial planning and analysis as well as expense management. The technology is capable of providing individualized recommendations and predictive insights that can assist in formulating more effective financial plans. Therefore, the integration of AI into financial literacy education can increase motivation and engagement with further contribution to the development of financial planning skills.

High financial literacy has the capacity to facilitate

the use of AI tools in financial planning. This is associated with the ability of deep understanding of financial concepts and risk management to assist individuals in leveraging existing AI applications and platforms to improve decision-making skills (Hwang & In Park, 2022). The adoption of AI-powered solutions can also ensure easy understanding of complex financial information and customization of investment strategies according to desired financial goals. This shows that financial literacy and AI are mutually beneficial in providing a solid foundation for effective financial planning.

Individuals face several obstacles in combining AI and financial literacy despite the significant benefits. This was observed from the report of Hidayat & Moin (2023) that individuals required an adequate level of financial literacy to manage the information provided properly toward optimizing the benefits of AI technology. A solid foundation in financial literacy is needed to use AI tools optimally and avoid making poor financial decisions. The study also emphasized the need for comprehensive financial literacy education as a foundation for leveraging technological advancements such as AI.

Effective financial literacy education can enhance the expertise to manage an investment portfolio. For example, Mulyadi et al. (2023) emphasized the importance of a good understanding of investment and risk management as part of a better financial planning process. The knowledge was considered important in forming the skills to become more successful in diversifying assets and managing financial risk. The trend shows that strong financial literacy and the support provided by AI technology allow for more effectiveness in the process of planning a financial future.

The combination of financial literacy and AI was generally observed to provide a platform for more accessible and effective financial planning. Furthermore, the openness to using AI tools in financial literacy education can improve the understanding of finance and equip individuals with the skills necessary to make better decisions. The utilization of both is capable of leading to the achievement of long-term financial goals with more confidence and empowerment (Kaur & Dhiman, 2024). The current digital age requires an adaptation and combination of financial education and technology that allows more people to achieve financial well-being.

Several studies have been conducted on financial management behavior for the younger generation in different countries with a focus on young adults, students, youth, and millennials. However, the focus

has mostly been on conventional aspects without discussing the adoption of machine learning technology. This was observed from the effort of Hasan et al. (2023) who applied a manual paired t-test to evaluate the financial planning programs in Himachal Pradesh, Punjab, and Chandigarh, India. Hutabarat & Wijaya (2020) also predicted the level of financial literacy in retirement preparation with a regression of the population using 120 respondents from Indonesian universities. The results showed a difference in the level of financial literacy and retirement preparation at the medium category.

The adoption of machine learning with a specific focus on AI was initiated by Bayakhmetova et al. (2025) through the exploration of Generative Artificial Intelligence (GAF) in the decision-making process. AI adoption has become a trend in financial studies with most applications observed in individual finance. For example, Z. Hu et al. (2024) combined AI with ChatGPT to interpret financial articles and news published information about the Stock Market in Taiwan. AI has also been used to evaluate ESG ratings (Choudhary et al., 2024b), compile portfolios (Yuliani & Adam, 2024), reduce risk (Rasiwala, 2021) and influence decision-making process such as in investments (Tuncer, 2021). However, the exploration of AI technology with different conveniences is causing the retrieval of information from less relevant sources. This leads to the quick collection of information without in-depth analysis which causes bias to arise in financial decision-making. Therefore, the description is used to propose the following hypotheses:

H5: Financial literacy has a significant effect on AI

H6: AI has a significant effect on financial planning for first jobbers

H7: AI a mediating role in the effect of financial literacy on financial planning for first jobbers

3. METHODS

This study applied a quantitative design, and the sample size was determined through the Krejcie and Morgan tables previously used in Richards et al. (2024). This is because the majority of Generation Z born between 1995 and 2010 are currently the first jobbers dominating the Indonesian labor market. The employment data released by the Central Statistics Agency (BPS) in 2024 showed that 152.11 million individuals in the workforce were in the range of 15-

29 years. The sampling method was adopted due to the large population at a 95% confidence level and a 5% margin of error. The process led to the determination of 420 individuals based on certain criteria which included being in the age range of 15-29 years, employed or having a fixed income for a minimum of 6 months before this study, living in Indonesia, using digital financial services, and not working in the financial industry sector. Data were collected using the survey method through offline and online distribution of questionnaires. This study was based on an individual analysis unit which was the first jobbers in Indonesia. Therefore, the data collected were analyzed using Structural Equation Modelling (SEM) in SmartPLS Ver 4.

4. RESULT

The characteristics of the respondents who participated in this study were determined. The focus was on the gender, marital status, and education level as presented in Table

Table 1: Respondent Profile (420 First Jobbers).

Respondent Characteristics		Frequency (n)	Percentage (%)
Gender	Man	185	44,0
	Female	235	56,0
Age (year)	15 - 20	55	13,1
	21 - 26	244	58,1
	<= 29	121	28,8
For the first time, get a job	15 - 20	147	35,0
	21 - 26	257	61,2
	<= 29	16	3,8
First-time salary amount	< IDR 500.000	108	25,7
	< IDR 3 million	233	55,5
	< IDR 5 million	58	13,8
	>IDR 5 million	21	5
Marital Status	Single	250	59,5
	Married	170	40,5
Education Level	Senior High School or Equivalent	182	43,3
	Diploma/Bachelor's Degree	211	50,2
	Magister's Degree	25	6
	Doctoral Degree	2	0,5
Occupation	Freelance	92	21,9
	Employee	226	53,8
	Entrepreneurs	71	16,9
	Academics	31	7,4

A reflective measurement model was developed, and the validity of the indicators was observed through the outer loading based on a value >0.6. Therefore, invalid indicators were dropped or deleted from the measurement model as presented in Table 2.

Table 2: Reliability and Validity Testing.

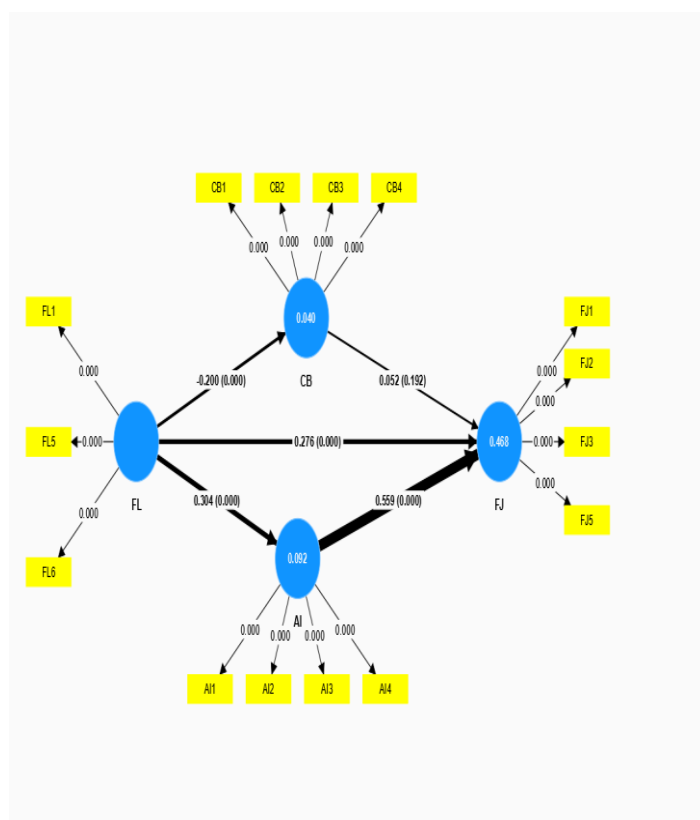
Variables	Indicators	Outer loadings 1	Outer loadings 2	Cronbach's alpha	CR	AVE
Financial Literacy	FL1	0,653	0,798	0,641	0,808	0,585
	FL2	0,630	Dropped			

	FL3	0,556	Dropped			
	FL4	0,631	Dropped			
	FL5	0,664	0,682			
	FL6	0,705	0,809			
Cognitive Bias	CB1	0,799	0,781	0,878	0,913	0,724
	CB2	0,802	0,826			
	CB3	0,872	0,879			
	CB4	0,917	0,912			
Artificial Intelligence	AI1	0,815	0,817	0,831	0,887	0,663
	AI2	0,834	0,827			
	AI3	0,832	0,835			
	AI4	0,772	0,776			
Financial Planning First Jobbers	FJ1	0,709	0,704	0,697	0,814	0,522
	FJ2	0,655	0,723			
	FJ3	0,713	0,735			
	FJ4	0,605	Dropped			
	FJ5	0,658	0,728			
	FJ6	0,464	Dropped			

Table 3 shows the F-Square value which is used to determine the magnitude of the effect on each of the cognitive bias, AI, and financial planning. The results showed that the effect of financial literacy on the level of financial planning was in the medium category with an F-Square value of 0.126 and on AI with 10.2%. The effect of AI was observed to be high with 52.5%.

Table 3: Hypothesis Testing Results.

Path model	Path coefficient	p-value	Decision	R Square	F Square
Financial Literacy → Financial Planning First Jobbers	0,276	0,000	H ₁ accepted		0,126
Financial Literacy → Cognitive Bias	-0,200	0,000	H ₂ accepted	0,040	0,042
Cognitive Bias → Financial Planning First Jobbers	0,052	0,192	H ₃ rejected		0,050
Financial Literacy → Cognitive Bias → Financial Planning First Jobbers	-0,210	0,235	H ₄ rejected		
Financial Literacy → Artificial Intelligence	0,304	0,000	H ₅ accepted	0,092	0,102
Artificial Intelligence → Financial Planning First Jobbers	0,559	0,000	H ₆ accepted		0,525
Financial Literacy → Artificial Intelligence → Financial Planning First Jobbers	0,339	0,000	H ₇ accepted	0,468	



4.1. DISCUSSION

The results from the inner model showed a significant positive effect of financial literacy on financial planning for first jobbers. The coefficient of 0.276 or 27.6% was a sign that better financial literacy with a specific focus on the understanding of money led to efficient time value. The concept of time value also known as the time value of money is the main foothold in understanding the difference between the current and future value of money. The results showed the acceptance of H1 and financial literacy was extended beyond the basic understanding of

time value to the management and application of financial knowledge in financial planning decisions.

The trend identified proves that knowledge and time value of money are important aspects of financial literacy in line with the position of the Theory of Planned Behavior (TPB). The aspects of knowledge and understanding reflect the cognitive skills of first jobbers. For example, Renaldo (2021) reported the positive contribution of financial literacy to the increase in the development of healthy financial behaviors among students and young workers. This shows that individuals with strong financial knowledge tend to be wiser in taking financial measures including the implementation of more strategic financial plans.

The results were consistent with the report of several previous studies (Adam et al., 2017; Frisancho, 2018; Khan et al., 2023) that financial literacy had a significant positive impact on financial planning for the younger generation, college students, and millennials (Cude et al., 2021; X. Hu et al., 2025; Mhlanga, 2023; Patiu et al., 2025). The first jobbers were able to manage finances effectively as reflected in the compilation of cash flows, records, and consistent investments. Adiputra (2021) also showed that financial literacy increased financial satisfaction based on the ability to plan and manage finances effectively. In the context of first jobbers, financial literacy provided the skills needed to formulate a budget, save, and invest. This knowledge was particularly important and relevant for first jobbers who were just starting their careers and any financial decision made could have a significant effect on long-term well-being. Riaz et al. (2022) also emphasized how self-confidence in financial management skills was directly proportional to financial literacy levels. This reinforced the argument that increased financial literacy could assist in overcoming financial challenges early in life.

Financial literacy had a significant negative effect on cognitive bias. This showed that first jobbers with increased financial literacy tended to avoid common mistakes associated with cognitive bias. The result led to the acceptance of H2 and the empirical facts reflected that the unstable nature of first jobbers motivated financial decision-making such as investments in line with trends. This is possible because the average age of 21-26 years is often associated with cognitive bias due to the less effective management of spending and income by the younger generation. The situation is also reinforced by digitalization, promotion, and ease of transaction in the current industrial era. Choung et al. (2023) identified financial literacy as a key factor in

consumer engagement within financial markets and services. This supported the positive relationship identified between financial literacy and better decision-making. The results are also consistent with the position of financial behavioral theory that a better knowledge of financial concepts can assist in reducing reliance on adverse biases.

Previous studies by Ahmad et al. (2025), Choudhary et al. (2024a), and Murini et al. (2025) further reported that an individual with better financial literacy tended to avoid mistakes caused by cognitive bias and could make more rational financial decisions. F. Liu & Sun (2025) and Y. Liu & Jin (2023) also showed that bias in investment decisions due to a lack of understanding of market trends reduced the effects of cognitive bias towards avoiding overconfidence and information bias.

Table 3 shows that the effect of cognitive bias on financial management is insignificant and leads to the rejection of H3. The trend proved that greater cognitive bias had less of an effect on the financial decisions of the younger generation. The observation is very important the management of finances needs to be rational in order to easily evaluate and monitor any form of bias. Behavioral finance theory states that every financial decision is caused by psychological factors such as the risk profile which is either conservative, moderate, or aggressive. The respondents were the younger generation employed after graduating from college to earn income and this showed the possibility of the risk profile causing cognitive bias. This condition is supported by the inevitable and massive digitalization era which requires understanding the concept of risk profile. Therefore, the method applied in individual finance management is a reflection of the theory of financial behavior.

The mediating role of cognitive bias in the relationship between financial and financial planning was not proved and this led to the rejection of H4. The interpretation is that the management of finances by an individual with good financial literacy cannot be affected by biased behavior. This shows that webinars, influencers, and short tips on financial management can serve as good sources of financial education but first jobbers are required to focus on deep learning and making rational decisions. The lack of mediation is a reflection of more emphasis on financial literacy and the trend is considered to be good. It is also in line with the focus and role of regulations such as the Financial Services Authority (OJK) which periodically conducts surveys on the financial literacy index.

The results further showed that financial literacy

had a significant positive effect on AI. This study proved empirically that better financial literacy of the younger generation led to more effective adoption of AI in finance. The trend led to the acceptance of both H5 and H6 with a coefficient value of 0.304 or 30.4%. The current increasing widespread use of AI has made the younger generation more adaptable to different financial features such as investments, risk profile detection, and analysis of stock prices. This shows that the presence of AI has led to more financial literacy for the younger generation. The phenomenon can be related to a very fast civilization associated with the rapid advancement of technology. For example, the AI developed using machine learning is making the management of finances very easy for the young generation through features such as chatbots, robo-advisors, budgeting applications, and virtual financial advisors. These features offer convenience and privacy in financial management specifically for individuals who consider the discussions about finances to be relatively sensitive.

Previous studies supported the results by showing that financial literacy was better after the adoption of financial AI (Y.-L. Chiu *et al.*, 2025; Piotrowski & Orzeszko, 2023; Waliszewski & Warchlewska, 2020). Meanwhile, Singh & Karamcheti (2025) emphasized the need to discuss and consider the risks associated with the use of AI. The situation shows the possibility of the younger generation easily trusting and applying financial advice provided by AI fully and immediately despite risks such as dependence, instant investment decisions, and the need to pay for some versions of the technology. The inference is that the use of AI is good but there is a need to remain vigilant and adjust every financial decision to each risk profile.

AI was reported to have a partial mediating role in the relationship between financial literacy and management. The results proved the direct effect of financial literacy on the financial management of first jobber and the process could be better through the

adoption of AI. This led to the acceptance of H7 and the empirical facts reflected the usefulness of AI in ensuring work became faster and easier in the current technological era. The situation is supported by the wide application of technologies such as AI in all fields including the financial industry. The trend showed that an increase in financial literacy and the adoption of relevant AI could lead to more effective management of finances.

5. CONCLUSION

In conclusion, this study showed that a higher level of financial literacy increased the ability of first jobbers to manage finances effectively and reduced the tendency to exhibit cognitive bias in the financial decision-making process. Meanwhile, cognitive bias did not contribute to financial management or serve any mediating role in this study. Strong financial literacy motivated the adoption of artificial intelligence in financial management practices. Partial adoption of AI also had a positive and significant effect on the ability of the younger generation to manage finances.

5.1. Implications

The combination of financial literacy with the use of AI-based technology is a key element in improving the quality of financial management for the younger generation.

5.2. Limitations

The results showed that financial literacy was an important factor in successful financial management. However, the coefficient value did not reach 50% which reflected the need for continuous improvement. Future studies should add other variables to improve financial management capabilities specifically in the context of the younger generation as an effort to welcome the Golden Indonesia 2045.

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