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The Development of Financial Technology, Financial Literacy, and Financial Management Behavior in Generation Z (A Case Study of Economics Students at UIN Maulana Malik Ibrahim Malang)

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Authors' contributions

This work was carried out in collaboration among all authors. Author BR designed the research, conducted the statistical analysis, wrote the research protocol, and drafted the initial manuscript. Author IF managed the data collection and analysis, ensuring the integrity and accuracy of the findings. Author TA contributed to the literature review and provided critical insights during the writing process. Authors BR, IF, TA and PEP did interpretation of the results and reviewed the manuscript, ensuring that it met the highest academic standards. All authors approved the final version of the manuscript for publication.

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ABSTRACT

This study aims to analyze and explore the influence of financial technology development on financial literacy and financial management behavior in generation Z, especially for students at the Faculty of Economics, UIN Maulana Malik Ibrahim Malang with a birth year range of 1997-2012 as many as 100 respondents. This study used a quantitative approach and purposive sampling technique which amounted to 100 qualified respondents. This study used a sample of generation Z at the Faculty of Economics, UIN Maulana Malik Ibrahim Malang and this research was conducted in the period March-August 2024. This research method is SEM (Structural Equation Modeling) analysis with the PLS Partial Least Square (PLS) approach. Hypothesis testing in this research is to understand the relationship between variables. To test the validity and reliability of researchers using the outer model. Hypothesis testing using the inner model. The results showed that financial technology has a significant positive effect on financial literacy and student financial management behavior, financial literacy has a significant positive effect on student financial management behavior and literacy is able to mediate the relationship between financial technology and student financial management behavior.

Keywords: Financial technology; financial literacy; financial management behavior; Generation Z; students.

1. INTRODUCTION

Developing countries, including Indonesia, face the challenge of undertaking significant economic transformation in order to compete in the global market and achieve sustainable economic growth in an era of globalization and intensified competition. The process of economic transformation involves shifting from traditional to modern sectors, increasing productivity, diversifying the economy, and increasing per capita income [1]. The development of technology and digitalization is inevitable, the advancement of digital technology, in the UK, the 18th century industrial revolution caused changes in the industrial structure, which had an impact on almost everything, both good and bad.

Various industrial sectors in Indonesia are now getting a boost through various new innovations that are able to revolutionize their business models, making them more effective and efficient. Advances in information technology have given birth to new technologies that facilitate financial innovation in the service sector, known as fintech (financial technology) [2] According to Hsu et al [3] Financial Technology, known as Fintech, is finance through new innovations [4].

The growth of various online-based services and products has triggered changes in the payment system. Currently, the transaction system is increasingly digitized, so the term financial technology or often called fintech has emerged [5]. Fintech payment applications such as E-Wallets, which have many types, also continue to influence students to use this payment method more often by offering different incentives such as cashback, discounts, and vouchers. This will certainly increase the interest in using these payment methods, especially in the Millennial generation [6].

This convenience causes a person to often buy a product that is not actually needed, just following his desires. If this is often done, it will affect a person's consumptive behavior and will have a negative impact on his financial condition. Therefore, it is necessary to understand good financial behavior to avoid excessive consumptive behavior.

Consumptive behavior also occurs among the millennial generation including college students and this is a phenomenon that attracts public attention because this generation is a large group in the population and has a role in the economy. According to the Indonesia Millennial Report, more than half, 51.1%, of the millennial generation's income is used for consumption, while only about 10.7% is saved and only 2% is invested. Therefore, it is important for millennials, especially students, to improve their understanding of financial behavior in order to manage their spending to build a more stable and sustainable financial future.

Financial literacy is the ability of individuals to apply financial management, obtain and evaluate information that is commonly intended for decision making and see the consequences received [7]. With financial literacy, a person can easily understand and know things about finance and financial risks that may occur so as to avoid various financial problems [8].

Financial Behavior or what can be called financial behavior is behavior related to financial applications. According to Statman [9], financial behavior is a discipline in which the interaction of various disciplines is embedded and continuously integrated so that the discussion is not carried out separately. Financial behavior is currently a topic of much discussion. Short-term thinking habits are often associated with impulse spending, so even if someone has enough income, they can still face financial problems due to unwise financial behavior. Financial behavior includes an individual's ability to manage daily funds through planning, budgeting, monitoring, managing, controlling, searching, and saving. In addition, financial management behavior can also be interpreted as a financial decision-making process that aligns individual interests with organizational goals. The effectiveness of fund management also depends on how the flow of funds is directed in accordance with a predetermined plan. Indicators in this variable are the type of financial planning and budgeting owned, financial planning preparation techniques, saving activities, insurance activities, pension funds and unexpected costs, investment activities, credit / debt, and bills, monitoring financial management, and evaluating financial management.

The issue of financial behavior is an interesting issue to be researched again because there is still a gap in previous research research. Research [10] proves that financial literacy has a positive effect on student financial behavior, but research [11]. shows that financial literacy has a negative effect on student financial behavior. The results of research [12] prove that financial technology has a positive effect on student financial behavior, but research [13] states that financial technology has no effect on financial behavior. Meanwhile, another study conducted by Afif and Sulhan [14] revealed that financial technology is able to positively influence the improvement of financial literacy. Research [15, 6] also states that financial literacy affects financial management behavior.

This study aims to determine the impact of financial technology developments on financial literacy and financial management behavior in generation Z, with a special focus on economics study program students at Maulana Malik Ibrahim State Islamic University, Malang. Economics students are expected to have a deeper understanding of financial concepts, but their exposure to financial technology also provides new dynamics that need to be understood.

This research is relevant because it will provide a better understanding of how financial technology affects Generation Z's financial behavior in the context of higher education, as well as potential implications for future financial education and policy. The sample in this study is students at the Faculty of Economics of UIN Maulana Malik Ibrahim Malang, this study will collect in-depth and contextual data to describe the interaction between financial technology, financial literacy, and financial management behavior in this group. Thus, this study not only fills the gap in academic knowledge but also provides useful insights for the development of more effective and adaptive financial education strategies to support Generation Z's readiness to face future financial challenges.

2. LITERATURE REVIEW

2.1 Fintech

Fintech is an abbreviation of Financial Technology, which refers to technological innovations that are changing the traditional way of conducting finance, covering various aspects such as digital payments, peer-to-peer lending, and online investment. This definition of fintech reflects the combination of information technology and financial services which continues to develop along with the acceleration of digitalization throughout the world. According to Noorjaya [15] Financial Technology (FinTech) is the hybridization of technology in the process of traditional technology-based financial services. Based on research by Andiani and Maria [16] Financial Technology is the creation of new financial service models through the development of information technology.

Digital Financial Innovation includes all forms of innovation that add value to financial services. Financial technology (FinTech) is the use of technology to provide solutions in the financial sector [17]. FinTech activities include crypto and digital money, peer-to-peer lending, smart contracts that carry out agreements between buyers and sellers with information technology security, as well as technology-based insurance and regulation [18]. In Indonesia, FinTech is developing in line with consumer needs, policies and existing technological infrastructure. Now, FinTech not only includes digital payments and online loans, but also other digital financial innovations, such as investment management, insurance, digital financial support, and crowdfunding services in the form of shares, as reinforced by Financial Services Authority Regulation No. 37/POJK.04/2018.

According to Catradiningrat in research conducted by Saleh and Fatima [19] fintech is an entity that combines technology with financial services, creating creative disruption in the financial market by changing the existing order. Fintech has similarities to conventional finance but does not have a physical office. Fintech can be grouped into four categories: deposits, lending and capital raising, market provisioning, payments, clearing & settlement, and investment & risk management. Fintech allows the emergence of companies that provide technology to support financial services (start-ups) independently outside traditional financial institutions. Anyone who is able to innovate and develop technology-based financial service applications can become a player in the fintech industry.

The fintech industry encompasses various types of technology-enabled financial services and products. Based on research conducted by Milian [20] fintech can be classified into several main categories:

1. Payments and Transfers: Includes e-wallets, mobile payment platforms, and international money transfers.
2. Loans and Funding: Covers peer-to-peer lending, crowdfunding, and microfinance platforms.
3. Investment Management: Includes robo-advisors, online trading platforms, and portfolio management applications.
4. Insurtech: Technological innovation in the insurance industry.
5. Regtech: Technology solutions for regulatory compliance and risk management.
6. Blockchain and Cryptocurrency: Includes blockchain and digital currencybased applications.

Each of these categories has experienced significant development in recent years. For example, in the payments and transfers category, Chen et al [21] reported rapid growth in the use of digital wallets and contactless payments, especially during the COVID-19 pandemic. The development of fintech is driven by various technological innovations. According to research conducted by Gai et al [22], some of the key technologies driving innovation in fintech include:

1. Artificial Intelligence (AI) and Machine Learning: Used for credit risk analysis, fraud detection, and automated customer service.
2. Blockchain: Provides the potential for more secure, transparent and efficient transactions.
3. Cloud Computing: Enables scalability and flexibility in the provision of fintech services.
4. Big Data Analytics: Helps in better decision making and personalization of services.
5. Internet of Things (IoT): Opening up new opportunities in insurance and risk management.
   A study conducted by Mention [23] shows that the integration of these technologies has enabled fintech to offer faster, cheaper and more personalized financial services compared to traditional financial institutions.

Although it offers many opportunities, fintech also presents a number of challenges and risks. Research conducted by Ryu [24] identified several main risks in fintech adoption, including:

1. Cybersecurity Risks: Increased reliance on digital technology increases vulnerability to cyberattacks.
2. Data Privacy Risks: Extensive collection and use of consumer data raises concerns about privacy.
3. Systemic Risk: Increased interconnection in the financial system may increase systemic risk.
4. Regulatory Risk: Regulatory uncertainty and differences in regulatory approaches between countries create challenges for fintech companies.

Looking ahead, several key trends are expected to shape the fintech landscape of the future. According to research conducted by Lee and Shin [25] several emerging trends include:

1. Increased use of AI and machine learning in financial decision making.

2. Growth in the use of blockchain technology for various financial applications.
3. Increased focus on cybersecurity and data protection.
4. Developments in biometric technology for authentication and security.
5. Increased collaboration between fintech companies and traditional financial institutions.

The study conducted by Gomber et al [26] also highlight the potential of fintech in driving sustainable finance and socially responsible investment as a significant area of future growth.

According to Pesqué-Cela et al [27], there are several indicators used to measure Financial Technology, namely:

1. Ease of Use (ease of use)
   How easy it is for customers to use the available information technology applications.
2. Benefits of Use (usefulness)
   Advantages or benefits received by customers from using available information technology applications, such as speeding up the transaction process, increasing the efficiency of transaction costs, ease and flexibility of transactions.
3. Trust

Trust in financial technology products provides a private space that can only be accessed by Privacy users. The security provided to customers when using information technology applications includes protection from cybercrime, viruses, system failures, and so on.

2.2 Financial Management Literacy

Financial literacy management is an important element of financial literacy, encompassing the knowledge, skills and attitudes necessary to manage personal finances well. A person is considered to have financial literacy if they have sufficient abilities and skills to utilize resources to achieve their goals. According to Maulana et al [28] financial literacy includes knowledge, skills and beliefs that influence attitudes and behavior in improving the quality of decision making and financial management in order to achieve prosperity. Based on research by Renata et al [29] financial literacy is a series of processes or activities to increase the knowledge, confidence and skills of consumers and the general public so that they are able to manage their finances better.

According to Sholeh et al [30] a study of student financial literacy at universities shows that students with business majors tend to understand finances better than those from other majors. However, no effort has been made to track financial knowledge and skills as students complete their studies. In addition, there has been no attempt to correlate individual financial literacy levels with various scientific disciplines.

From this description, it can be concluded that students' understanding of financial literacy is influenced by the major they take during their studies. According to Aquino et al [31], to avoid personal financial problems, it is important for individuals to have understanding and skills in financial management. Financial problems often arise due to a lack of understanding and skills in finance and financial management.

According to Saputra [32], the younger generation, including students, face complex challenges in managing their finances in the future. They have more freedom in making personal financial decisions, but often learn from experience and mistakes. The problem is the extent of their financial readiness to live independently and build a family [19] [33] divides financial literacy levels into four categories, namely:

1. *Well literate*: Have in-depth knowledge and confidence in financial service institutions and their products and services, including an understanding of the features, benefits, risks, rights and obligations involved, as well as skills in using these financial products and services.
2. *Sufficiently literate*: Have knowledge and confidence in financial services institutions and their products and services, including an understanding of the features, benefits, risks, rights and obligations involved.
3. *Less literate*: Only have basic knowledge about financial services institutions and their products and services.
4. *Not literate*: Do not have knowledge or confidence in financial service institutions and their products and services, and do not have the skills to use these financial products and services.

Research conducted by the PISA [34] stated that financial management literacy has variable indicators that cover several aspects to measure an individual's ability to manage finances. The following are several indicators, including:

1. Understanding of Financial Concepts: Ability to understand basic terms and concepts in finance, such as interest, investment, and budget.
2. Ability to Manage a Budget: Ability to plan and manage a personal budget, including spending and savings.
3. Financial Decision Making: The ability to make informed decisions regarding financial products, such as choosing a bank account, investment, or loan.
5. Analysis and Evaluation of Financial Information: Ability to analyze financial information and evaluate the risks and benefits of financial decisions taken.
6. Long Term Financial Planning: Ability to plan for future financial needs, including retirement and education planning.
7. Attitude towards money: Individual attitudes and behavior towards money management, including discipline in saving and spending wisely.
8. Knowledge of Financial Products: Understanding of the various financial products available, such as insurance, investments, and loans.

Various factors can influence a person's level of financial management literacy. Based on a longitudinal study conducted by Lind et al [35] these factors include:

1. Education: The level of formal education is generally positively correlated with financial management literacy.
2. Socio-economic: A family's socio-economic status can influence exposure to financial concepts and practices from an early age.
3. Gender: Several studies show that there is a gender gap in financial management literacy, although this gap has tended to narrow in recent years.
4. Age: Financial management literacy tends to increase with age, but then decreases in old age.
5. Financial Experience: Individuals who have more experience in managing personal finances tend to have higher financial management literacy.
6. Technology Access: In the digital era, access to and skills in using financial technology can influence financial management literacy.

Given the importance of financial management literacy, various strategies have been developed to improve it. Fernandes et al [36] identified several effective approaches:

1. Financial Education in Schools: The integration of financial education into the school curriculum has been proven to be effective in increasing financial management literacy from an early age.
2. Financial Education Programs for Adults: Training programs targeted to specific age groups and professions can help improve financial management literacy among adults.
3. Utilization of Technology: Mobile applications and online platforms can be effective tools for conveying financial information and practicing financial management skills.
4. Regulations and Public Policy: Policies that encourage transparency in financial products and protect consumers can help increase people's financial management literacy.
5. Multisector Collaboration: Collaboration between governments, financial institutions, and non-profit organizations can produce more comprehensive initiatives to improve financial management literacy.

Although there are many initiatives to improve financial management literacy, several challenges still need to be overcome. Research by Urban et al [37] identified several key challenges:

1. Digital Divide: Although technology can be a powerful tool for increasing financial management literacy, gaps in technology access can widen gaps in financial literacy.
2. Behavioral Biases: Psychological factors and cognitive biases can influence how individuals apply their financial knowledge in decision making.
3. Financial Product Complexity: Innovations in financial products often exceed the average consumer's ability to understand them, creating new challenges in financial management literacy.
4. Cultural Differences: Strategies for increasing financial management literacy need to be adapted to different cultural and social contexts.

2.3 Financial Management Behavior

Financial management is closely related to the application of financial literacy. Financial management behavior reflects a person's ability to manage funds or daily finances, including budgeting, planning, auditing, managing, controlling, searching and storing. This relates to individual responsibility in managing finances productively, with the aim of managing and controlling finances effectively.

According to Chaulagain et al [38] financial behavior is part of financial literacy which is believed to have a positive impact on a person's financial well-being. Gradually, conscious financial behavior can be seen in decision making, comparison of opportunity costs, and search for alternatives to reduce waste. Wicaksono et al [39] added that behavioral finance studies how humans behave in financial decisions, especially how psychology influences financial decisions, companies and financial markets. These two concepts clearly show that behavioral finance is an approach that explains how humans invest and manage finances, which is influenced by psychological factors.

Financial behavior reflects how individuals respond to the financial decisions they face. Behavioral finance theory is rooted in psychology, revealing how emotions and cognitive storage influence investors' decisions. In the current global economic era, it is important for every individual to be a wise consumer, managing personal finances by building a strong financial understanding. Self-control is the main key in implementing healthy financial behavior in everyday life [29]

Various factors can influence an individual's financial management behavior. Research by 40. Henager and Cude [40] identified several main factors, including:

1. Demographic factors: Age, gender, education level, and income level have been shown to have a significant influence on financial management behavior. For example, individuals with higher levels of education tend to exhibit better financial management behavior.
2. Psychological factors: Attitudes toward money, locus of control, and level of financial anxiety can influence how individuals manage their finances. Individuals with an internal locus of control tend to show more proactive financial management behavior.
3. Social factors: The influence of family, peers, and social media also play an important role in shaping financial management behavior. Financial socialization in the family has a long-term impact on children's financial management behavior in adulthood.
4. Financial literacy: The level of understanding and knowledge of financial concepts has a positive correlation with good financial management behavior. The importance of financial literacy in improving the quality of financial decision making.
5. Technological factors: With the development of fintech, the accessibility and use of financial technology has also become an important factor influencing financial management behavior. Adoption of digital financial applications can increase individual financial awareness and control.

According to Humaira [6] financial management behavioral indicators include the following things:

1. the types of financial planning and budgets that are owned
2. Techniques for preparing financial planning
3. Saving activities
4. Insurance activities, pensions and unexpected expenses
5. Investment activities, credit/debt, and bills
6. Monitoring financial management
7. Evaluation of financial management

Various factors can influence an individual's financial management behavior. Potrich [41] identified several key factors, including:

1. Demographic factors (age, gender, education, income)
2. Psychological factors (attitude towards money, locus of control)
3. Social factors (influence of family, peers, media)
4. Financial literacy
5. Access to financial services

In the context of the digital era, access to financial technology is also an important factor influencing financial management behavior. The digital era has brought significant changes to the financial landscape, creating both new opportunities and challenges in personal financial management. Research by Brüggen et al [42] identified several key challenges:

1. Information overload: The abundance of financial information available can cause confusion and difficulty in decision making.
2. Financial product complexity: Increasingly sophisticated financial products require a higher level of understanding.
3. Cyber security risks: The rise in online transactions also increases the risk of fraud and financial data breaches.
4. Rapid changes in financial technology: Individuals need to continually update their knowledge and skills to keep up with the latest developments.

2.3.1 Measurement of financial management behavior

Accurate and comprehensive measurement of financial management behavior is critical for research and intervention in this area. Several measurement instruments that have been developed by Xiao and O'Neill [43] include:

1. Financial Management Behavior Scale (FMBS): This scale measures four main dimensions of financial management behavior: cash flow management, credit management, savings and investments, and insurance management.
2. Financial Capability Scale (FCS): This scale measures not only financial behavior but also financial capability more broadly, including access to financial services and confidence in financial decision making.
3. Multidimensional Financial Management Practices Scale: A multidimensional scale that covers aspects such as retirement planning, risk management, and digital financial literacy.

2.3.2 Strategy for improving financial management behavior

Based on a deeper understanding of the factors influencing financial management behavior, several strategies have been proposed by Netemeyer et al [44] to improve this behavior:

1. Financial education: Financial education interventions can have a significant positive impact on financial behavior, especially if designed with the specific context and needs of the target audience in mind.
2. Use of technology: Proper integration of financial technology can help individuals track expenses, set financial goals, and make better investment decisions.
3. Nudging and choice architecture: an update of the concept of "nudge" in a financial context, showing how small changes in choice architecture can encourage better financial behavior without limiting freedom of choice.
4. Holistic approach: An approach that integrates psychological, social, and contextual factors in financial behavioral interventions, emphasizing the importance of understanding individuals' motivations and barriers to managing their finances.

3. HYPOTHESIS

3.1 The Effect of Fintech Development on Financial Literacy in Generation Z Financial

Indonesia is currently in the era of demographic bonus because the millennial generation is the dominant population. This means that the country has an opportunity due to the large proportion of the productive age population. This phenomenon allows Indonesia to encourage economic growth through economic digitalization, namely financial technology.

The role of fintech is very helpful in realizing the digitalization of the economy that is being promoted by the government [45]. In order for the digitalization of the economy to run according to the target, the community needs to improve its financial literacy. Based on research Lusardi et al. [53] and Sholekha et al [54] shows that the role of fintech has a significant effect on financial literacy. Therefore, the first hypothesis in this study is formulated as follows:

> H1 = The development of fintech affects financial literacy in Generation Z.

3.2 The Effect of Financial Literacy on Financial Management Behavior in Generation Z

Financial literacy refers to a person's knowledge and understanding of financial concepts, such as how to budget, manage money, and make wise financial decisions [7]. Financial literacy and student life are interrelated, because both are the basis for students in making personal decisions in managing finances [30]. According to Gustika et al [8] with financial literacy, one can easily know and understand financial problems and financial risks that may occur, so as to avoid various financial problems. If someone has a positive attitude towards financial knowledge, they have a good understanding of how important this knowledge is in their lives. Then the second hypothesis in this study is:

H2= Financial literacy affects financial management behavior in Generation Z.

3.3 The Effect of Fintech Development on Financial Literacy in Generation Z

Fintech has become a very influential and widely used feature by college students. Fintech allows financial transactions to be made without the need to carry cash, which can be done online [46] Fintech payment trends can significantly influence students' financial decisions. When students increasingly use fintech as their payment option, it will affect how they manage and make their financial decisions [47] and [48] can increase financial awareness and encourage better saving behavior. Research [49] also shows that fintech payments have a positive or significant influence on student financial management behavior. This is due to the understanding and effective use of fintech by students, the majority of whom often use fintech payment services for their daily needs. In line with that, a study conducted by Clavijo et al [50] showed that the adoption of fintech-based financial management applications can increase users' financial awareness and encourage better saving behavior.

However, not all literature supports the view that fintech development has a significant impact on management behavior. As research conducted by Maritz and Donovan [51] shows that although fintech can facilitate innovation in the firm, its presence alone is not enough to directly change management behavior. In addition, research conducted by Huston [52] discusses the limitations of fintech, especially those related to data privacy aspects, and concludes that the challenges presented by fintech do not always encourage changes in management behavior. If students have a positive view of fintech because they see it as an effective and convenient tool for managing money, they will be more likely to adopt fintech in their financial behavior. Therefore, the third hypothesis in this study is formulated as follows:

H3: Fintech developments influence financial management behavior in Generation Z

3.4 The Influence of Fintech Developments on Financial Behavior Through Financial Literacy in Generation Z

Fintech refers to the emergence of new financial service models that have emerged as a result of advances in information technology [16] In line with this, financial behavior, as stated by Chaulagain [38] is an important component of financial literacy which is believed to have a positive impact on individual financial well-being. Conscious financial behavior can be reflected in the decisions taken, comparison of opportunity costs, as well as the search for alternatives to reduce waste. In addition, financial literacy itself, according to research by [29] involves a series of processes and activities aimed at increasing individual knowledge, confidence and skills in financial management. In other words, financial literacy plays an important role in helping individuals to manage their finances more effectively.

The development of financial technology (fintech) has changed the landscape of individual financial management. Various studies show that fintech adoption can have a positive impact on financial management behavior, but it also has potential risks that need to be watched out for. Research by [49] revealed that the use of fintech-based financial management applications can increase financial awareness and encourage better savings behavior. This is in line with findings from [47] and [48] which show that fintech payments have a positive and significant effect on students' financial management behavior. Ease of access, affordable costs, and the ability to transact and invest through fintech payments are considered as driving factors for changes in financial behavior. According to [46] also warn about potential risks, such as overtrading in investments or excessive borrowing through peer-to-peer lending platforms. This emphasizes the importance of adequate financial literacy to face an increasingly complex financial landscape.

Financial literacy, which includes an understanding of basic financial concepts, money management, savings and investments, and risk management, is becoming increasingly important in the fintech era [52]. [53] even emphasized that in addition to understanding traditional financial concepts, individuals also need to understand the risks and opportunities associated with digital financial products, including online security, data privacy, and how fintech platforms work. Financial behavior itself reflects how individuals respond to the financial decisions they face. Research conducted by [54] states that increasing financial literacy plays a positive and significant role in making it easier to use fintech payments and developing better financial management behavior for students. This is reinforced by previous research conducted by [5,55] and [19] and [30,56] where the results that have been studied have a positive and significant influence on fintech payments and student financial management behavior. This is because the higher the level of financial literacy an individual has, the better the individual's financial behavior will be. Conversely, if an individual has a low level of understanding of financial literacy, it can be concluded that the individual will face financial problems in his personal life. This is in line with research conducted by [54] and [57] which used financial management literacy as a mediating variable between financial technology (fintech) and financial management behavior. Both research shows that the use of fintech payments has a positive influence on students' financial management behavior. However, this influence is stronger when supported by a good level of financial literacy. Therefore, the second hypothesis in this study is formulated as follows:

> H4: The Influence of Fintech on Financial Management Behavior through Financial Literacy Generation Z

4. METHODOLOGY

4.1 Research Design

The type of research used is quantitative research. Quantitative research according to [58], quantitative research is an approach that emphasizes objective measurement and statistical analysis of data collected through surveys, questionnaires, or other measurement tools. This research uses a survey method with a questionnaire approach to determine the relationship between variables assisted by the Smart Pls statistical tool. This method was chosen because researchers wanted to know about the influence of financial technology on financial management behavior and financial management literacy as an intervening variable in generation Z at the Faculty of Economics, UIN Maulana Malik Ibrahim Malang.

4.2 Population and Sample

4.2.1 Population

According to [59], population in the context of social research refers to a collection of individuals or objects that have characteristics that can be observed and measured. This population is the entity that is the object of research and from which samples will be taken. Populations can be people, groups, organizations, or even documents that have certain things in common that are relevant to the research being conducted. The population that is the object of this research is students from the 2021-2023 class of the Faculty of Economics, UIN Maulana Malik Ibrahim Malang.

4.2.2 Sample

[60] defines a sample as a subset of the population selected for research. This sample must represent the population accurately so that the research results can be generalized back to the wider population. The sample can be considered representative of the total population of the symptoms observed and researched. The sample criteria for this research include:

1. Respondents were students from the 2nd to 6th semester of the Faculty of Economics or students from the 2021 to 2023 class of the Faculty of Economics, UIN Maulana Malik Ibrahim Malang.
2. Respondents consisted of students from the economics faculty majoring in management, accounting and sharia banking, class 2021 to 2023.

Table 1. Number of Faculty of Economics Students 2021 – 2023

Year	Number of FE students
2021	461
2022	492
2023	606
Total	1,559

Source: FE UIN Maulana Malik Ibrahim Malang (2024)

Table 2. Number of Students in Each Department at the Faculty of Economics 2021 – 2023

Major	Year			Amount
	2021	2022	2023	
Management	214	244	300	758
Accountancy	147	145	205	497
Sharia Banking	100	103	101	304

Source: FE UIN Maulana Malik Ibrahim Malang (2024)

4.2.3 Sampling technique

The total population in this study were students from the Faculty of Economics at UIN Maulana Malik Ibrahim Malang class 2021 to 2023. The sample size in this study was determined using the Solvin formula as follows:

$n = N / 1+N (e)^2$

Information:

n : Sample size or number of respondents

N: Population Size

e : Percentage of sampling error accuracy;

e: 10%

The population in this study was as many as1,559students, so that the allowance percentage used is 0.1 and the calculation results can be rounded to achieve suitability. Based on the sample calculation , the number of samples that can be used as respondents in this research is adjusted to be as many as100 sample from students at the Faculty of Economics, UIN Maulana Malik Ibrahim Malang.

4.2.4 General description of research objects

In this study, respondents were selected from Accounting students at the Faculty of Economics, UIN Maulana Malik Ibrahim Malang, based on the following criteria: they were aged 18-25, representing Generation Z, which is the main target for fintech utilization research; an equal number of male and female participants were chosen to ensure gender-balanced insights on fintech use. Respondents were required to be at least in their third semester of undergraduate study, assuming they had a foundational understanding of financial management and experience in handling personal finances. Additionally, all respondents had prior experience using fintech services, such as digital banking, e-wallets, or online investment platforms, ensuring relevant knowledge for the study. Furthermore, they were expected to have a basic interest in or knowledge of personal financial management to enhance the quality of the data collected.

4.3 Data and Data Types

The data used in this research is primary data. Primary data was obtained by distributing questionnaires or surveys to a number of respondents who meet the criteria of being students of the Faculty of Economics at UIN Maulana Malik Ibrahim Malang. The next criteria are students majoring in management, accounting, and Islamic banking.

4.4 Data Collection Technique

In this study, the methods used for data collection are surveys and questionnaires. Surveys are conducted to obtain quantitative data covering various aspects relevant to the research topic. Meanwhile, questionnaires are used to collect data directly from respondents, allowing researchers to obtain more in-depth and specific information. These two methods were chosen because they are considered effective in collecting accurate and reliable data, as well as enabling comprehensive analysis of the research results.

4.5 Data Analysis

The data from this research was analyzed using the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach, which allows researchers to evaluate the relationships between latent variables in the structural model, this is strengthened by the opinion of who explain that data analysis in quantitative research involves the use of statistical techniques to test hypotheses and interpret data. In PLS-SEM, two sub-models are required: the measurement model (outer model) and the structural model (inner model). The measurement model is used to evaluate the relationships between latent variables and their indicators, measuring the validity and reliability of variables that are not directly observable. Meanwhile, the structural model is used to test the relationships between latent variables, ensuring whether the hypotheses proposed in the theoretical model are supported by the data

5. RESULTS AND DISCUSSION

5.1 Research Data Analysis

In this research, Microsoft Excel was used to enter and calculate data for each indicator. Next, SmartPLS version 3 software is used to input and calculate these indicators. All latent variables in this research have reflective indicators. In the initial test, Y3 was removed because it was deemed irrelevant, caused by a low loading factor below 0.5, a small contribution to the latent variable, or failure to pass validity and reliability tests. this removal was carried out to simplify the model and retain only significant indicators, thereby enhancing the accuracy of the analysis. The results of the research model calculations using Smart PLS 3 software are in below:

5.2 Hypothesis Testing Results

The result table for inner weights from the results of running bootstrapping is used to determine the direct influence of variables from each hypothesis. The T-value used in this research is 1.96 with a significance level of 0.005. In line with the statement by [61] which states that the t value is 1.96 with a significance level of 0.05 as a reference for assessing the statistical significance of the relationship between variables in the model. This means that if the T-statistic value exceeds 1.96 and the p-value is at or below 0.05, then the hypothesis can be considered significant.

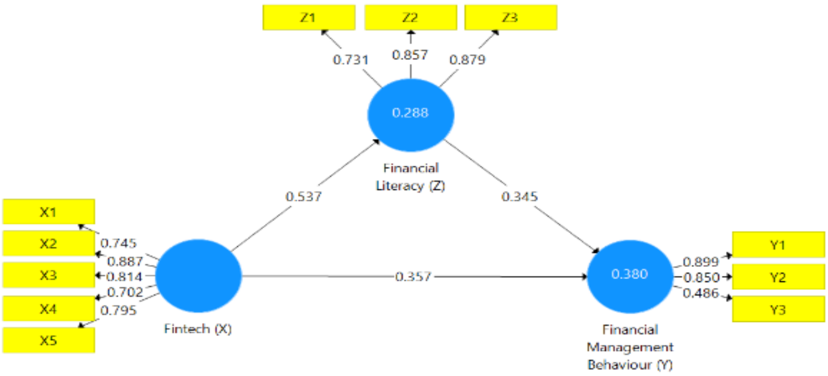

Fig. 1. Inner model and outer model path diagram

Source: PLS 3 result data, processed (2024)

Based on the picture above, it can be seen that all indicators have loading factor values above 0.7

	Financial Literacy (Z)	Financial Management Behavior (Y)	Fintech (X)
X1			0.742
X2			0.888
X3			0.813
X4			0.701
X5			0.799
Y1		0.909	
Y2		0.863	
Z1	0.729		
Z2	0.855		
Z3	0.882		

Fig. 2. Convergent validity test

Source: PLS 3 result data, processed (2024)

Based on the table above, it shows that the loading factor indicator value for fintech ranges from 0.701 – 0.888, the loading factor indicator value for financial management behavior ranges between 0.863 – 0.909, and the loading factor indicator value for fintech ranges between 0.729 – 0.882. All indicators are declared valid because the loading factor value is above 0.70

Fornell-Larcker Criter... | Cross Loadings | Heterotrait-Monotrait ...

	Financial Literacy (Z)	Financial Management Behavior (Y)	Fintech (X)
X1	0.341	0.457	0.742
X2	0.556	0.518	0.888
X3	0.491	0.541	0.813
X4	0.244	0.349	0.701
X5	0.409	0.288	0.799
Y1	0.506	0.909	0.556
Y2	0.451	0.863	0.430
Z1	0.729	0.365	0.358
Z2	0.855	0.388	0.456
Z3	0.882	0.558	0.500

Fig. 3. Discriminant validity test

Source: PLS 3 result data, processed (2024)

Based on the Discriminant Validity Test, it shows that the cross loading correlation value of all Fintech indicators on the latent variable is greater than the cross loading correlation value of other latent variables because it ranges between0.70 – 0.88, then all Fintech indicators are declared valid. The cross loading correlation value of all Financial Management Behavior indicators towards the latent variable is greater than the cross loading correlation value of other latent variables because it ranges between 0.86 - 0.90, so all Financial Management Behavior indicators are declared valid. The cross loading correlation value of all Financial Literacy indicators on the latent variable is greater than the cross loading correlation value of other latent variables because it ranges between 0.72 – 0.88, then all Financial Literacy indicators are declared valid.

Matrix | Cronbach's Alpha | rho_A | Composite Reliat

	Average Variance Extracted (AVE)
Financial Literacy (Z)	0.680
Financial Management Behavior (Y)	0.785
Fintech (X)	0.626

Fig. 4. Average variance Extracted test

Source: PLS 3 result data, processed (2024)

Based on the test results, it shows that the AVE value for each variable is > 0.50. This means that the variables Fintech, Financial Management Behavior and Financial Literacy are reliable

Matrix | Cronbach's Alpha | rho_A | Comp

	Composite Reliability
Financial Literacy (Z)	0.864
Financial Management Behavior (Y)	0.880
Fintech (X)	0.893

Fig. 5. Composite Reliability Test

Source: PLS 3 result data, processed (2024)

Based on the results of the Composite Reliability test, it shows that the Composite Reliability value of the Financial Technology variable is 0.893, the Composite Reliability value of the Financial Management Behavior variable is 0.880, and the Composite Reliability value of the Financial Literacy variable is 0.864. This means that all variables can be said to be reliable because they have a Composite Reliability value greater than 0.70

Matrix | R Square | R Square Adjuste

	R Square
Financial Literacy (Z)	0.289
Financial Management Behavior (Y)	0.397

Fig. 6. R-Square test

Source: PLS 3 result data, processed (2024)

Based on the table above, predictive-relevance values can be obtained using the following calculations:

Q2 = 1 – (1 – R12) (1 – R22);Q2 = 1 – (1 – 0.397) (1 – 0.289); Q2 = 1 – 0.428733; Q2 = 0.57

The results of the Q square calculation in this study were equal to0.57 or 57%.This means that the model in this research is suitable for explaining the endogenous variable, namely Financial Behavior.

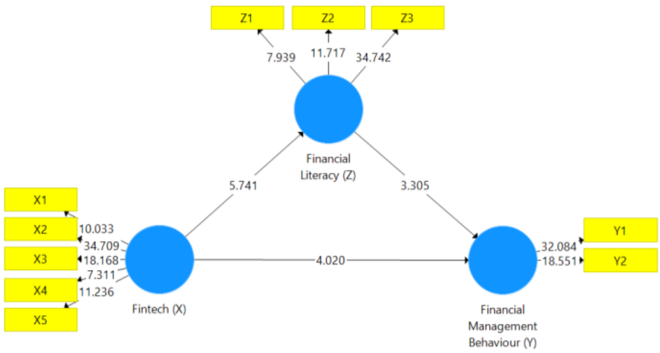

Fig. 7. Bootstarpping Value

Source: PLS 3 result data, processed (2024)

Mean, STDEV, T-Values, P-... | Confidence Intervals | Confidence Intervals Bias ... | Samples | Copy to Clipboard: | Excel Format | R Form

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistic...	P Values
Financial Literacy (Z) -> Financial Management Behavior (Y)	0.337	0.343	0.100	3.360	0.001
Fintech (X) -> Financial Literacy (Z)	0.538	0.547	0.093	5.769	0.000
Fintech (X) -> Financial Management Behavior (Y)	0.381	0.383	0.093	4.120	0.000

Fig. 8. Path Coefficient

Source: PLS 3 result data, processed (2024)

5.3 Discussion

5.3.1 The influence of financial technology on financial literacy in Generation Z

Based on the results of the test analysis carried out, it shows that Financial Technology (X) has a positive and significant effect on Financial Management Literacy (Z), with an original sample value of 0.538 (positive), t-count > t-table (0.538 > 1.96), and the p-value is 0.000 < 0.05. The majority of students studied have good literacy about personal finance, where the background of these students are economics students who belong to generation Z. There is a close relationship between the use of fintech and financial management literacy, where fintech makes a substantial contribution in increasing financial literacy, p. This indicates that the more individuals utilize fintech services, the better their understanding of financial management. This significant relationship confirms that fintech is not only a transaction tool, but also an effective educational tool in improving one's financial management abilities. The increasingly widespread use of fintech can be a major driver in the development of financial literacy, especially in helping individuals manage their finances better and wiser.

This is in line with research conducted by [52] & [53] which states that by understanding traditional financial concepts, individuals also need to understand the risks and opportunities associated with digital financial products, including online security, data privacy, and how fintech platforms work, which will reflect how individuals respond to the financial decisions they face.

5.3.2 The Influence of financial literacy on financial management behavior in Generation Z

The results of the test analysis carried out show that there is a positive and significant influence between financial literacy (Z) on financial behavior (Y), which produces an original sample value of 0.337 (positive), t-count > t-table (0.337 > 1.96), and the p-value is 0.001 < 0.05. This shows that the higher the financial literacy of Generation Z, the better their financial behavior will be. On the other hand, generation Z with a low level of financial literacy is more likely to face financial problems in their lives. Therefore, a deep understanding of financial literacy is essential to avoid problems and achieve financial well-being. Students who have a better understanding of money, investment, and cash flow management will be able to manage their finances wisely and be able to make the right decisions. This means that the higher the level of financial literacy possessed by students, the better the behavior in managing their finances.

This is in line with research conducted by [7,8,30 & 55] which states that good financial behavior can be seen from how they manage money for consumption needs, cash flow management, debt management and discipline in saving and investing.

5.3.3 The influence of financial technology on financial management behavior

Based on the results of the tests that have been carried out, it is concluded that Financial Technology (Z) has a positive and significant influence on Financial Behavior (Y), which produces an original sample value of 0.381 (positive), t-count > t-table (0.381 > 1 .96) and p-value 0.000 < 0.05. This research shows that the use of fintech can support generation Z in increasing their insight and knowledge regarding financial technology, as well as providing positive experiences in carrying out transactions through fintech. This is very important because a deep understanding and knowledge of technology can help someone better assess their financial condition. The benefits obtained from using fintech have a positive impact, which ultimately can help individuals manage their finances more efficiently and effectively.

Mean, STDEV, T-Values, P-... | Confidence Intervals | Confidence Intervals Bias ... | Samples | Copy to Clipboard: | Excel Format | R Forma

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistic...	P Values
Financial Literacy (Z) -> Financial Management Behavior (Y)					
Fintech (X) -> Financial Literacy (Z)					
Fintech (X) -> Financial Management Behavior (Y)	0.181	0.187	0.063	2.895	0.004

Fig. 9. Total Indirect Effect

Source: PLS 3 result data, processed (2024)

a. *Fintech has a positive and significant influence on Financial Management Behavior. With an original sample value of 0.381 (positive), the t-value > t-table (0.381 > 1.96) and the p-value 0.000 < 0.05.*
b. *Fintech has a positive and significant influence on Financial Literacy. With an original sample value of 0.538 (positive), the t-value > t-table (0.538 > 1.96), and the p-value 0.000 < 0.05.*
c. *Financial Literacy has a positive and significant influence on Financial Management Behavior. With the original sample value of 0.337 (positive), the t-value > t-table (0.337 > 1.96), and the p-value 0.002 < 0.05.*
d. *Fintech has a positive and significant influence on Financial Management Behavior through Financial Literacy. With the original sample value of 0.181 (positive), the t-value > t-table (2.573 > 1.96), and the p-value 0.006 < 0.05*

In line with this, research by Mukti et al [47] and [48] shows that fintech payments have a positive or significant influence on students' financial management behavior. This is due to the understanding and effective use of fintech by students, the majority of whom often use fintech payment services for their daily needs. Correspondingly, a study by [46] show that the adoption of fintech-based financial management applications can increase users' financial awareness and encourage better savings behavior.

5.3.4 The Influence of fintech on financial management behavior through financial literacy

Based on the results of data analysis tests, Financial Technology (X) has a positive and significant effect on Financial Behavior (Y) through the Financial Management Literacy variable (Z), where the original sample value is 0.181 (positive), the t-count value > t-table (2.573 > 1.96), and p-value 0.004 < 0.05. Thus, it shows that there is a close relationship between behavior and literacy regarding good personal financial management and the use of fintech, which then contributes to better financial management behavior among students, and it can be concluded that increasing financial literacy has a positive and significant impact in making things easier. fintech adoption and help shape better financial management behavior for generation Z.

This is in line with research conducted by [54] which states that increasing financial literacy plays a positive and significant role in making it easier to use fintech payments and building better financial management behavior for students. This is reinforced by previous research conducted by [55] and [19] and [56] where the results that have been studied have a positive and significant influence on fintech payments and student financial management behavior. This is because the higher the level of financial literacy an individual has, the better the individual's financial behavior will be. Conversely, if an individual has a low level of understanding of financial literacy, it can be concluded that the individual will face financial problems in his personal life.

6. CONCLUSION AND RECOMMENDATION

6.1 Conclusion

Based on research that has been conducted, the influence of financial technology (fintech) on financial management behavior among generation Z, especially students at UIN Maulana Malik Ibrahim Malang. The results of the analysis show that the use of fintech significantly increases students' financial literacy and financial management behavior. Fintech provides easier access for generation Z to understand financial concepts through digital banking applications, fintech payment and investment platforms.

Generation Z often actively uses fintech products and tends to have a better understanding of financial management, which contributes to better financial management behavior. With an original sample value of 0.381 and a p-value of 0.000, this research confirms that the more often they use fintech, the better their financial behavior will be. In addition, financial literacy functions as a mediator that strengthens the relationship between fintech and financial management behavior. The results show that increasing financial literacy is very important in facilitating fintech adoption, with an original sample value of 0.181 and a p-value of 0.006.

From this study, four hypotheses were tested: first, fintech affects financial literacy; second, financial literacy affects financial management behavior; third, fintech influences financial management behavior and fourth, fintech has an influence on financial management behavior through financial literacy. These four hypotheses are supported by the results of the analysis that has been conducted.

6.2 Recommendation

Suggestions from this research include the need for fintech companies to design products that suit the needs of generation Z, the integration of financial education in the curriculum in educational institutions, further research can consider including new variables that might influence the relationship between fintech, financial literacy, and financial management behavior , such as social and cultural factors that can influence the adoption of financial technology, and are expected to make a greater contribution to understanding the relationship between financial technology, financial literacy and financial management behavior among generation Z.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models

(ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of this manuscript.

CONSENT

As per international standards or university standards, respondents' written consent has been collected and preserved by the author(s).

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COMPETING INTERESTS

The authors declare that there are no competing interests related to this research. All authors have disclosed any financial and personal relationships with individuals or organizations that could potentially influence the work presented in this manuscript. There are no employment, consulting, honoraria, paid expert testimony, patent applications/ registrations, or other funding sources that could create a conflict of interest. If any such relationships were to exist, they would have been disclosed here. And Mrs. Puji Endah Purnamasari who always helped guide us to complete this research. Therefore, the authors affirm that there are no competing interests.

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