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Developing An Instruments of Financial Education Among University Students : Exploratory and Confirmatory Factor Analysis

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Abstract: This study aims to develop and validate a financial education instrument for university students. A survey method with a quantitative approach was utilized, and data analysis employed exploratory factor analysis and confirmatory factor analysis. A total of 440 respondents participated in the confirmatory analysis. This study constructed three factors, namely formal financial education, non-formal financial education, and informal financial education, which comprise 25 items. The results revealed that formal financial education presents a curriculum and learning program that is well structured and scheduled so that students can obtain recognition in the form of an official certificate from the government. Meanwhile, non-formal financial education can include financial seminars, financial training, and financial workshops organized by formal institutions. Informal financial education emphasizes the importance of the role of the family environment in understanding finance. Informal financial education emphasizes the importance of the role of the family environment in understanding finance. The implications of this study can have an impact on the readiness of universities in preparing financial education curricula that are easy to understand and practice.

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Introduction

Financial education is a strategic agenda that various countries must carry out. Most financial education policies and programs are carried out by countries that are members of the OECD (Organization for Economic Cooperation and Development). Financial education is the main door to achieving better public financial literacy because, basically, financial education is a series of activities to improve financial literacy (Suleiman et al., 2022). Based on data from the Indonesian Financial Authority Services, it is revealed that financial inclusion is more significant than financial literacy, namely 76.19% compared to 38.03% (Suleiman et al., 2022). The gap between financial inclusion and financial literacy indicates that someone needs to gain sufficient financial knowledge about the products and services they use. It can happen to university students in Indonesia. Current financial facilities allow students to make transactions quickly, so they must have sufficient knowledge to spend their pocket money wisely. Financial education is essential for someone, especially students, to control their finances (Silva et al., 2017).

Financial education is a pillar in strengthening one's financial literacy. Indonesia's financial literacy position compared to that of other countries in ASEAN and other countries in the world can be seen in the table below.

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Table 1. Financial literacy scores of ASEAN countries and other countries in the world

Rank	Country	Score
1	Singapore	71
2	Taiwan	71
3	New Zealand	71
4	HongKong	69
5	Australia	68
6	Malaysia	67
7	China	67
8	Thailand	67
9	Sri Lanka	67
10	Indonesia	62

Source: (Nuryanti & Sobandi, 2018)

Table 1 illustrates that the financial literacy index in Indonesia is still relatively low, namely with a score of 62. Indonesia's financial literacy is the lowest compared to other ASEAN countries, namely Singapore, Malaysia, and Thailand. This description indicates that a person's financial education has yet to be fully implemented. Another reason is that people need to have adequate financial education, which has an impact on the financial literacy of Indonesian people, which is still low. Based on previous research and existing literature, factors influencing a person's financial education can be divided into formal financial education, non-formal financial education, and informal financial education. Therefore, this research will explore and confirm the determinants of financial education, especially for university students.

Financial education is a process by which financial users increase their understanding of financial products and concepts and, through objective information, instruction, or advice, develop the confidence and skills to become more aware of financial risks and opportunities, make informed choices, and take action—another effective way to improve financial well-being (OECD, 2015). Financial education teaches students knowledge, education, and information about managing money and assets, learning to invest, and getting to know credit, taxation, and insurance. In addition, students must understand the basic concepts of money management and use this knowledge and understanding of money management to plan their finances well and wisely. Financial education has been considered a means to understand finances holistically and improve students' financial well-being in the future (De Beckker et al., 2021). Therefore, financial education is vital in forming people's financial literacy in formal, non-formal, and informal education.

The following is the scope of financial education and its implementation, which can be seen in Table 2 below.

Table 2. Implementation of financial education

	Scope	Implementation
Financial Education	Formal financial education	Kindergarten, elementary school, junior high school, senior high school, and university.
	Non-Formal financial education	Seminars, workshops, training, noncommercial education institutions, people's experiences.
	Informal financial education	Family and social society

Formal financial education is organized, structured, systematic, and managed based on norms and laws and follows the government's methodology, objectives, and curriculum (Eshach, 2016). Financial education is the main foundation for increasing financial literacy and providing financial information to citizens, consumers, workers, and the next generation.

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Many countries provide access to financial information to the public through education in schools, colleges, and workplaces (Lusardi, 2019). In this research, formal financial education is defined as learning knowledge and skills about finance from regular education levels, namely school or university (Chen et al., 2022). Non-formal financial education is considered the opposite of formal education, a training program within an institution that results in participants being awarded a certificate of recognition for the skills acquired (Tudor, 2013). Someone with personal awareness attends this training to complement the learning obtained from formal education. An example of non-formal financial education is education in the form of financial skills training organized by financial professional organizations. Training activities can be carried out in the form of financial training, and participants will receive a financial expertise certificate for the competencies taught at the financial institution (Eshach, 2007).

Non-formal financial education is a significant need for students, in addition to formal and informal education. This need can be met if students are fully aware of and responsible for the importance of gaining comprehensive financial knowledge. Therefore, to support the need for sufficient knowledge, non-formal financial education is a solution to overcome this problem. While formal financial education only emphasizes theoretical and knowledge aspects, non-formal financial education presents practical aspects of learning so that students will be more aware of natural conditions in the field (Eshach, 2016). Informal financial education is obtained from the family environment, community environment, workplace environment, and other people's experiences (Chen et al., 2022; Eshach, 2007). For students, informal financial education is essential to understand in order to be able to make wise financial decisions. The financial experience students gain can come from knowledge inside and outside school. The financial education process in the family environment occurs spontaneously without being designed or programmed beforehand. In this process, for example, parents' daily attitudes and communication between parents and children play a crucial role in financial education in the family. (Suryani, 2017).

Financial literacy of students has so far been measured by how much someone has taken formal and informal education in the field of finance. The knowledge gained from school to college and financial knowledge gained at home are the main references for students in understanding and managing finances. However, this is not enough, therefore studies on financial knowledge through non-formal education have been minimally studied. In previous studies, the variables of formal financial education and informal financial education were discussed more and used as benchmarks to determine students' financial literacy (Corsini & Giannelli, 2021; Lusardi, 2019). Therefore, in this study, to determine students' financial literacy, a study is needed on the non-formal aspect of financial education. Where this is often overlooked, because the role of non-formal education also determines the level of students' knowledge in managing finances from the beginning. Therefore, this study aims to develop and validate an instrument to build financial education among university students.

Research Method

This research used a survey method with a quantitative approach to determine the adequacy of financial knowledge through financial education obtained by accounting education undergraduate students. Quantitative data was collected using a self-designed survey questionnaire from the Google Form application and face-to-face. This research also included an extensive literature review to find items used to assess financial education constructs. In addition, the items in the questionnaire were checked for internal and external

validity regarding content, structure, and methodology using predetermined content standards and expert input from outside the university to ensure the validity and reliability of the hypotheses. To determine the accuracy of the contents of the questionnaire, we involved three experts from several universities in Indonesia, namely from Universitas Negeri Malang, Universitas Negeri Surabaya, and Universitas Jember.

Before the research was conducted, a pilot test was conducted on undergraduate students of economics education from various universities in East Java and selected randomly. The results of the pilot test were analyzed using exploratory factor analysis. After the pilot test was conducted, a study was conducted involving 440 respondents who were selected to then be analyzed using confirmatory factor analysis. The sample selection criteria in this study were economics education students at state universities in East Java, at least 3rd semester students and had participated in seminars/workshops on financial education online or offline. Harman's one-factor test was used to check Common Method Bias (CMB) and ensure the quality of data collection in this study (Podsakoff et al., 2003, 2012). The statistical results show that CMB is not a concern in this study because the total variance extracted by one factor for the sample is 37.5%, i.e., <50%. This research uses 25 items to measure how much financial education students understand. From the results of 112 respondents' responses to the 25 questionnaire items, all met the specified loading factor decision so that all items could be used in further analysis using CFA analysis.

The steps for data analysis in this study are defining the research question, determining the required characteristics of primary studies, retrieving a sample potentially relevant literature, selecting the pertinent literature, synthesizing the literature, reporting the results (Sauer & Seuring, 2023). The researchers created items based on the theories and opinions established for the constructs of this study. Then, the research items are presented in a form and distributed to the respondents. Further details regarding the 25 items are presented in Table 3 below.

Table 3. Items in the Questionnaire of Financial Education (FE) Construct

Construct	Construct Code	Measurement	Sources
Formal Financial Education (FFE)	PKF1	I learned the introduction of economics from the teaching and learning process at university.	(Allaste et al., 2022; Julianto, 2019; Werquin, 2010)
	PKF2	I learned the introduction of accounting from the teaching and learning process at the university.	
	PKF3	I learned the introduction of economics according to the University of Economic Education syllabus.	
	PKF4	I studied the introduction of accounting according to the economic education syllabus at the university.	
	PKF5	I read economic introduction materials from books or e-books.	
	PKF6	I read introductory accounting material from books or e-books.	
	PKF7	I read introductory economics material from a website.	
	PKF8		
	PKF9	I read introductory accounting material from a website.	
	PKF10	I took a midterm exam to determine my financial knowledge.	
	PKF11	I took the final exam to determine my financial knowledge.	
		I get a report on the results of the financial exam.	

Non-Formal Financial Education (NFE)	PKNF1 PKNF2 PKNF3 PKNF4 PKNF5 PKNF6 PKNF7	I like to take financial seminars online or offline. I like to take financial workshops online or offline. I like to take training in finance online or offline. I like to watch economic news on television, radio, and newspapers, especially finance-related ones. I like to listen to economic news through television, radio, and newspapers, especially finance-related ones. I get the latest science and economic issues through online or offline seminars, especially finance-related ones. I get knowledge of the latest economic issues through online or offline workshops, especially related to finance.	(Allaste et al., 2022; Julianto, 2019; Werquin, 2010)
Informal Financial Education (IFE)	PKIF1 PKIF2 PKIF3 PKIF4 PKIF5 PKIF6 PKIF7	I get pocket money from my parents. My parents introduced me to savings. My parents taught me to plan my daily finances. I am motivated to save because of the support of my friends. My friends taught me to plan my daily finances. I study economics, especially finance, for community financial activities. I learned economics, especially finance, from community experience.	(Allaste et al., 2022; Julianto, 2019; Werquin, 2010)

Results and Discussion

In the factor analysis, 25 items in the financial education (FE) construct item were tested and divided by dimensions among university students, mainly three items in the FFE, NFE, and IFE dimensions. EFA results are presented in Table 4, which includes KMO and Bartlett tests, eigenvalues, loading factors, and Cronbach's alpha scores in each financial education dimension.

Kaiser-Meyer Olkin (KMO) and Bartlett's Tests

Table 4. KMO and Bartlett's Tests of Financial Education

KMO and Bartlett's Tests (Financial Education)
Kaiser-Meyer-Olkin Measure of Sampling Adequacy (Formal Financial Education)
.776
Bartlett's Test of Sphericity (Approx. Chi-Square)
1183.363
Df
55
Sig.
.000
Kaiser-Meyer-Olkin Measure of Sampling Adequacy (Non-Formal Financial Education)
.800
Bartlett's Test of Sphericity (Approx. Chi-Square)
698.671
Df
21
Sig.

.000
Kaiser-Meyer-Olkin Measure of Sampling Adequacy (Informal Financial Education)
.832
Bartlett's Test of Sphericity (Approx. Chi-Square)
541.025
Df
21
Sig.
.000

Eigenvalues

Eigenvalues based on varimax rotation have a total number >1. In contrast, cumulative eigenvalues (%) indicate a > value of 60%, precisely 61.371% for the FFE dimension, 67.854% for the NFE dimension, and 62.279% for the IFE dimension (Table 5). Based on these findings, it is possible to infer that all items have an overall value >1 and a cumulative eigenvalue > 60%. As a result of the eigenvalue findings, all items in the FE construct can be applied as a data collection.

Table 5. Components and Total Variance Extracted by Financial Education

Construct	Initial Eigenvalues			
	Component	Total (%)	Variance (%)	Cumulative (%)
Formal Financial Education (FFE)	1	6.751	61.371	61.371
	2	1.098	19.986	71.356
Non Formal Financial Education (NFE)	1	4.750	67.854	67.854
Informal Financial Education (IFE)	1	4.360	62.279	62.279
	2	1.062	15.167	77.446

Loading Factors

Factor loading is a coefficient that explains the level of relationship between indicators and latent variables where factor loading has a standard of 0 to 1. The factor loading value, in general, must be > 0.60, thus indicating that the value is above the error variance value. The following factor loading values for each item on each construct in this study are presented in Table 6.

Table 6. Components and Items Used in The Study

Construct	Item Code	Loading 1
Formal Financial Education	PKF1	0.790
	PKF2	0.792
	PKF3	0.860
	PKF4	0.757
	PKF5	0.704
	PKF6	0.687
	PKF7	0.754
	PKF8	0.821
	PKF9	0.839
	PKF10	0.838
	PKF11	0.755
Non-Formal Financial Education	PKNF1	0.819
	PKNF2	0.782
	PKNF3	0.852
	PKNF4	0.816
	PKNF5	0.851
	PKNF6	0.817

	PKNF7	0.826
Informal Financial Education	PKIF1	0.852
	PKIF2	0.785
	PKIF3	0.836
	PKIF4	0.516
	PKIF5	0.789
	PKIF6	0.841
	PKIF7	0.850

The table above shows the steps in carrying out EFA analysis. This analysis aims to see the factor loading value of each item on each subconstruct. The table above shows that the loading factor value for each item in each sub-construct has a value > 0.60. This means that the required loading factor value has been met.

Cronbach's Alpha

Cronbach's alpha value for each item in constructing Financial Education (FE) is > .60. Specifically, Cronbach's alpha value for the FFE dimension is .936, followed by the NFE dimension with .920, and the IFE dimension with .892 has very high-reliability values due to the discriminant index is .70 < r11 < .90 (Jihad & Haris, 2013). All items in each dimension also have different distinguishing abilities. However, all can be used since each item has met the requirements and can be used to collect data (Table 7).

Table 7. Reliability Analysis of The Items for Financial Education

No	Sub Construct	Code	Number of Items	Cronbach's Alpha	Discriminant Index	Interpretation of Differentiating Power
1.	Formal Financial Education	FFE	11	0.936	.70 < r11< .90	High Reliability
2.	Non-Formal Financial Education	NFE	7	0.920	.70 < r11< .90	High Reliability
3.	Informal Financial Education	IFE	7	0.892	.70 < r11< .90	High Reliability

After obtaining the EFA results, the next step is to carry out a CFA analysis to validate all the items in the financial education construct.

First Order CFA

The first-order CFA of the financial education construct shows that the factor loading of all indicator items has a value of > .50, by acceptable factor loading criteria > .50 (Awang, 2014; Hair et al., 2010). Factor loading for all indicator items ranges from .67 to .83. Figure 1 also shows that these items have shown a good correlation with their latent variables. All items were met in the CFA analysis, so the total instrument items in the financial education (FE) can be accepted in the first-order CFA measurement with 25 instrument items. This means that all items in this sub-construct can accommodate respondents' understanding of the purpose of this study so that there is a common perception between researchers and respondents who assess that financial education has three sub-constructs (FFE, NFE, IFE).

It is also known that the correlation value for each factor or dimension that represents the construct of financial education starts with .58 to .70, meaning that the correlation of each factor is in the criterion smaller than .85 (Kline, 2016), so it can be concluded that each factor represents three sub-constructs of financial education (FFE, NFE, and IFE) have differences from each other. After paying attention to factor loadings and correlation values, the next step is to look at the Goodness of Fit index (GoF). From the GoF value, it is known that the model in the first-order CFA test appears to have an appropriate criterion value. It can be seen from

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the RMSEA value < .08. TLI and CFI also have values > .90. By paying attention to the test criteria of the first level of CFA that have met the requirements of the analytical test, the next step is to test the second-order CFA.

Second Order CFA

The results of the second-order CFA financial education construct show that the index value on the financial education construct meets the required GoF index criteria and does not reduce the number of indicators that have been approved in the first-order CFA analysis, so in the second-order CFA analysis, there are no modifications and deleted items. The analysis results also show that the loading factor values of the three sub-constructs included in the financial education construct have loading factor values> .5. Then, the loading factor for each dimension in each sub-construct of financial education is also > .50, ranging from .76 to .82. This means that the loading factor belonging to the three sub-constructs and the loading factor belonging to each dimension has met the test criteria of a loading factor value > .5 (Hair et al., 2010). The results of the second-order CFA for the financial education construct also show that all the GoF value criteria have met the GoF criteria required in the construction of the model ChiSq/df = 2.853, TLI = .919, CFI = .928, and RMSEA = .065. In other words, the results of the second-order CFA of the financial education construct prove that the financial education construct consists of three main dimensions (FFE, NFE, and IFE).

Table 8. Summary of Second Order CFA Result of Financial Education Construct

Construct	Sub-Constructs	Loading Factors	Construct Reliability ($CR \geq .70$)	Average Variance Extracted ($AVE \geq .50$)
Financial Education	Formal Financial Education	.96	.943	.847
	Non-Formal Financial Education	.94		
	Informal Financial Education	.86		

Based on Table 8, the CR and AVE values in the financial education construct also show values that CR > .70 and AVE > .50. Therefore, it can be concluded that the subconstructs in the financial education construct (FFE, NFE, and IFE) have internal consistency and have conceptual differences.

Discussion

In this study, financial education emphasizes the discussion of formal financial education, non-formal financial education, and informal financial education. Based on these findings, the financial education needed by someone, especially students in the real world, is formal, non-formal, and informal. Understanding good financial education provides good financial practices in managing each individual's finances. In this case, each student is also directed on how to prepare a budget and prioritize using right-on-target funds. The development of knowledge about finance has begun to be introduced at various levels of education, and it can be used in various aspects of human life, both daily and for long periods. Formal financial education presents a structured and well-scheduled curriculum and learning program. Because of this program, students will receive an official graduation certificate issued by an institution recognized by the government (Denkowska et al., 2020). To support financial education at every level of education, the government through the financial services authority has designed a national financial literacy strategy that encourages people to have good financial literacy. This strategy is also applied in the university curriculum, especially in the faculty of economics and business. The financial education

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policy at higher education is provided through courses in financial management, budgeting, introduction to accounting, and investment management (Trisna Herawati, 2015).

Non-formal financial education in this study emphasizes understanding financial learning obtained outside formal channels. Non-formal financial learning is almost the same as formal learning, but the graduation certificate obtained only complements the formal graduation certificate. Certificates obtained from non-formal education act to change a person's educational level to a higher level but as additional knowledge recognized by society (Denkowska et al., 2020). Non-formal forms of financial education can include financial seminars, financial training, and financial workshops organized by formal institutions, course institutions, and independent institutions registered in the government database. Various groups can participate in this activity, namely ordinary people, students, educators, or other professionals requiring adequate financial knowledge. Non-formal financial education in courses is one way to train someone to manage their finances. The existing courses can improve personal quality, long-term planning, and practice using financial products properly. The involvement of students in the financial decision-making process is intended to ensure that they can gain experience in managing finances. In addition, students are expected to be able to position themselves in financial activities involving the community (Allaste et al., 2022). Student activities at university do not only involve academic aspects, but they will involve themselves in campus organizational activities. If students have previously equipped themselves with sufficient knowledge through seminars, training, or workshops, this will make it easier for them to do financial planning in organizations. (Silva et al., 2017).

Financial education can be done informally through financial education in the family environment. The family environment is the first educational environment for children because, in this family, children receive education and guidance for the first time (Suryani, 2017). Family education has a significant influence on children's choice of account book. This study is supported by previous research, which states that informal financial education is positively related to financial literacy (ZHang & Xiong, 2020). The higher the mother's education, the deeper the instillation of managing finances in their children. This shows that the role of parents can provide good knowledge for their children and impact their behavior in using money. Parents involved in a particular program will actively guide their children's financial behavior because the program the parents follow serves as a guide to provide advice. (Lusardi, 2011). However, financial learning in the family and financial learning in college are the same. Several factors that cause differences will result in different responses because students find it challenging to adopt the principles in the family and at college, so the emerging attitudes will also be different. Some benefits of educating children or students in managing finances are that children can become financially responsible adults, develop a positive attitude that money is not the primary goal but only a tool to achieve goals, and learn habits of using it: consistent money and practical financial skills (Suryani, 2017).

Conclusion

Formal financial education presents a curriculum and learning program that is well structured and scheduled so that students can obtain recognition in the form of an official certificate from the government. Meanwhile, non-formal financial education can include financial seminars, financial training, and financial workshops organized by formal institutions. Informal financial education emphasizes the importance of the role of the family environment in understanding finance. Informal financial education emphasizes the importance of the role of the family environment in understanding finance. The implications of this study can have

an impact on the readiness of universities in preparing financial education curricula that are easy to understand and practice.

Recommendation

Based on the results of this study, it is recommended for university leaders to provide a financial education curriculum that is easy to learn and practice by students and the community. Meanwhile, lecturers are expected to provide basic financial education for students by implementing appropriate learning strategies.

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