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Investigation of Construct Validity of The Indonesian Version of The Financial Wellness Questionnaire

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Abstract

Developing a financial wellness questionnaire in Indonesia is necessary to evaluate household financial situation. However, there has been a scarcity of research that adapts and tests the psychometric properties of the financial wellness questionnaire in Indonesia. The purpose of the current study was to evaluate the psychometric properties of the Indonesian version of Joo's Financial Wellness Questionnaire. Data was collected using an online survey consisting of 388 participants (25-60 years). The results provided two evidences of the validity of the Indonesian version of the Financial Wellness Questionnaire based on the scale's internal structure. Firstly, the structure of relationships between items in the questionnaire fits the theoretical model of financial wellness, which includes objective and subjective measurements. Furthermore, the structure of relationships between items in the subjective measure fits the theoretical model of the subjective measure of financial wellness, which comprises aspects of subjective perception, financial behavior, and financial satisfaction. Based on the evaluation of the Multiple Indicator Multiple Cause (MIMIC) model fitted, we also identified the effects of gender, education, and socio-economic status (SES) on some of the subjective financial wellness indicators. Therefore, the questionnaire should consider the aforementioned variables in interpreting the questionnaire scores.

Keywords: confirmatory factor analysis, differential item functioning, financial wellness, MIMIC model.

Abstrak

Perkembangan skala kesehatan keuangan di Indonesia penting untuk mencegah dampak buruk masalah keuangan rumah tanggal. Namun, belum ada penelitian yang mengadaptasi dan memeriksa properti psikometrik skala kesehatan keuangan versi Indonesia. Tujuan dari penelitian ini adalah mengevaluasi properti psikometrik skala kesehatan keuangan versi Indonesia. Pengumpulan data dilakukan dengan survei daring yang melibatkan 388 partisipan (usia 25-60 tahun). Hasil penelitian ini menyediakan dua bukti validitas berdasarkan struktur internal. Pertama, struktur hubungan antar item fit dengan model teoritis kesehatan keuangan yang mencakup pengukuran objektif dan subjektif. Kedua, struktu hubungan antar item dalam pengukuran subjektif fit dengan model teoritis, terdiri dari persepsi subjektif, perilaku keuangan, dan kepuasan keuangan. Hasil analisis model MIMIC menunjukkan model fit dengan data. Kami juga mengidentifikasi efek gender, pendidikan, dan status sosial ekonomi terhadap pengukuran kesehatan keuangan subjektif. Oleh karena itu, penggunaan kuesioner kesehatan keuangan versi Indonesia harus mempertimbangkan variabel-variabel tersebut di atas dalam menafsirkan skor. Harapannya, hasil penelitian ini dapat memfasilitasi penelitian selanjutnya mengenai kesehatan finansial di Indonesia.

***Keywords**: analisis faktor konfirmatori, differential item functioning, kesehatan keuangan, MIMIC model.*

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Introduction

This research on financial wellness is relevant to anticipating the negative impact of household financial problems. The literature review suggests expanding research on financial wellness' conceptual, contextual, personal, and consequential factors (Brüggen et al., 2017; Renanita & Hidayat, 2023; Singh & Malik, 2022). However, there is a lack of consensus and clarity about how financial well-being has been measured and defined in previous studies (Sorgente & Lanz, 2017). Therefore, a validated financial wellness measuring tool is needed in Indonesia. This study aimed to adapt the financial wellness questionnaire to the Indonesian context and investigate its psychometric properties. The research provides financial wellness measurements that can be used in studies investigating the antecedents and consequences of consumer financial wellness in Indonesia. Furthermore, the use of measurement invariant analysis would allow for equitable comparisons of scores across various demographic groups, resulting in a more precise comprehension of the impact of demographic characteristics on financial well-being in Indonesia.

Financial wellness is a comprehensive financial condition that combines the ability to meet current and future needs, availability of financial resources, knowledge of the financial situation, and satisfaction with the household's financial situation. In the literature, researchers often use several terms, namely economic well-being (Sabelhaus and Manchester, 1995), financial wellness (or health) (Britt et al., 2015; Rehman et al., 2014), and financial well-being (Mahdzan et al. 2020). These terms are used interchangeably by previous researchers. In this study, we also use these terms interchangeably.

Financial wellness plays a vital role in the welfare of the society. Among others, financial wellness influences psychological, physical, and social well-being and harmony in family relations. Research has demonstrated that higher financial wellness improves the quality of life (Mugenda et al., 1990) and overall happiness (Spuhler & Dew, 2019). Conversely, financial strain, such as unemployment, excessive debt, poverty, and arrears, could result in mental health problems (e.g., anxiety, depression, and suicidal tendencies) and/ or physical health problems (e.g., bad self-care habits and physical disorders) (French & Vigne, 2019). Financial issues could also undermine marital quality (Archuleta et al., 2011) and satisfaction in family life (Blom et al., 2019). Social repercussions of financial challenges include poverty and increased likelihood of criminal behavior (French & Vigne, 2019).

In the 2016 Indonesian Family Resilience Development, household finances are one of the dimensions of family resilience (Central Bureau of Statistics and Ministry of Women's Empowerment and Child Protection, 2015). A prosperous family economy is described as the ability to meet needs for sustainable survival. In the family resilience index, family economics has the second largest weight after the basic dimensions of legality and family integrity. However, data shows personal financial problems in Indonesia, such as increasing consumer debt and non-performing loans (NPL) (Otoritas Jasa Keuangan, 2020). In 2020, 74.3% of households in Indonesia experienced a decrease in income, 24.4% experienced an increase in expenses, 51.5% had no savings to reuse, 27.3% pawned their possessions to survive, and 25.3% were borrowing money informally from family or friends (UNICEF et al., 2021). On a macro level, financial issues are crucial for attaining several United Nations Sustainable Development Goals (SDGs). Hence, it is crucial to consistently assess the situation to minimize financial issues' effects.

Over the past few decades, numerous micro-level studies emerged to understand financial wellness and its dynamics. Financial wellness research identifies factors influencing household financial wellness (Sorgente & Lanz, 2017). The investigation is underpinned by a scoping review by Renanita and Hidayat (2023), illustrating the prevalence of studies on financial well-being in Indonesia that primarily focus on determining factors influencing financial well-being. Moreover, there is a lack of consensus on a universally recognized tool for assessing financial well-being, particularly within the specific framework of Indonesia.

Previous studies have utilized various instruments to assess financial wellness. Brüggen et al. (2017) identified three clusters of instruments: those that solely measure objective or subjective components and those that incorporate both. The first is the objective approach, which measures monetary indicators such

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as net worth, savings, and the possession of emergency funds (Sabelhaus & Manchester, 1995). The second approach is subjective, in which researchers seek to examine the subjective perceptions and evaluations of financial situations (Britt et al., 2015; Center for Financial Services Innovation, 2017; Narges & Laily, 2011; Rehman et al., 2014). Other studies summarized financial wellness by combining subjective and objective measurements (Henager & Wilmarth, 2018; S. Joo, 1998).

Baek and De Vaney (2004) suggested that the measurement of financial wellness should incorporate objective and subjective aspects of monetary indicators to obtain a more comprehensive overview of financial wellness. Among the aforementioned instruments, the Financial Wellness Questionnaire (Joo, 1998) and Financial Wellness Index (Henager & Wilmarth, 2018) contained objective and subjective measurements of financial wellness. Henager and Wilmarth (2018) employed the Financial Wellness Index, a modified financial wellness questionnaire developed by Joo (1998). Additionally, they introduced financial literacy as a measure of objective status. However, including financial literacy in the Financial Wellness Index has raised concerns. A meta-analysis study showed that financial literacy was an independent construct, influencing various financial outcomes (Santini et al., 2019). Researchers posit that financial literacy is not a foundational element of financial wellness, as indicated by these considerations. Nonetheless, financial literacy serves as an additional determinant that impacts financial wellness. Therefore, the current study focused on adapting and evaluating the psychometric qualities of the financial wellness questionnaire developed by Joo (1998).

Joo (1998) conducted a principal component analysis to obtain four financial wellness factors: subjective perception, financial behavior, financial satisfaction, and objective status. These four factors are treated as independent measurements with their reliability coefficients. The subjective perception factor measures an individual's perceptions of personal finance, including cash management, credit management, income adequacy, personal financial management, and shopping skills. The behavioral factor comprised individuals' behavior with cash management, credit management, income adequacy, personal financial management, and shopping skills. The financial satisfaction factor represents an individual's satisfaction with their overall financial state, including satisfaction with one's financial situation, perceived financial wellness, and emotional response to one's financial situation. The factor of objective status represented multiple aspects of an individual's economic status, including their solvency measure, reserve fund, credit card bills, monthly saving amount, monthly allocation to pension funds, and loan payments (excluding those related to mortgages).

Based on the statement items and answer options, objective status is a quantifiable and unbiased monetary aspect (Rutherford & Fox, 2010). Meanwhile, the components of subjective perception, financial behavior, and financial satisfaction are self-assessment. Joo and Grable (2004) showed that positive financial behaviors, such as paying bills on time, correlate with financial satisfaction. Meanwhile, views on money and financial plans or attitudes toward money predict financial decisions (Shih & Ke, 2014). Aboagye and Jung (2018) reported that financial behavior—such as shopping and saving for emergency funds or for retirement—is associated with increased financial satisfaction. Based on this research, the authors propose that financial wellness consists of objective and subjective financial wellness components. Subjective perceptions, financial behavior, and financial satisfaction are representations of a latent variable named subjective financial wellness. In the current study, the researchers divide financial wellness into two measurements, namely objective and subjective financial wellness. In the current study, the structure of relationships between scale items and the three factors of subjective financial wellness were tested to provide evidence of validity based on the internal structure of the questionnaire.

Another evidence of validity was also provided by examining whether the questionnaire provided scores that were invariant across demographic characteristics considering the known effects of demographic characteristics on financial behavior (Brüggen et al., 2017; Mohamad Fazli Sabri & Nurul Farhana Zakaria, 2015; Tran et al., 2019; West & Friedline, 2016). The study fitted a Multiple Indicators Multiple Causes (MIMIC) model to investigate the effect of education level, gender, and socio-economic status (SES) on suspected items after controlling for latent factors variation.

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Methods

Participants

Data were then collected using an online questionnaire conducted in June 2021 with a convenience sampling technique. Initially, 409 participants completed the questionnaire, but only 388 retained. Of the excluded participants, 19 did not meet the age criteria, and two lived outside of Indonesia during the study period. The participants ranged from 25 to 60 years old, with a mean of 35.29 (SD = 8.784). Most participants were female, had a tertiary education, and belonged to the middle-income group. Table 1 shows the sample demographic summary.

Table 1. Participant Demographic Characteristics

Variable	Frequency (n = 388)	Percentage
Gender		
Female	267	68.8
Male	121	31.2
Highest Level of Education		
< Under tertiary education	31	8.0
Tertiary education	357	92.0
Socio-Economic Status (SES)		
Low	59	15.2
Middle	268	69.1
High	61	15.7

Sources: Personal Data (2021).

Before data collection, the authors conducted Monte Carlo simulations to determine an appropriate sample size to yield parameter estimates with the desired degree of precision. Several parameters were set to conduct the simulations: (1) the number of factors was three following the number of factors for subjective measure, (2) no amount of missing data was set assuming complete data would be obtained, (3) factor loadings for all items were set to be .7 assuming strong relationship between factors and items, (4) no cross loading allowed assuming each item loaded to only one factor, (5) the number of items were set following the number of items in the original questionnaire, and (6) restriction were put on the variance of the latent factor allowing factor loading of all items estimated. Following Muthén & Muthén (2002), the sample size would be deemed sufficient if the parameter estimates resulting from the simulation met some criteria: (1) the amount of bias of parameter estimates and their standard error were less than .05, (2) the power to test the parameter estimates were larger or equal to .80, and (3) the coverage of confidence intervals were larger than .90.

Procedure

Data collection consisted of three stages: the author conveyed the research procedure, the participants provided their consent, and then responded to the questionnaire. Data were collected using Google Forms. To ensure the confidentiality of the data, the author downloaded all the collected data from the cloud and transferred it to a secure computer device. Access to the data was restricted to only the author, maintaining the privacy and confidentiality of the participants' responses. This research was approved

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and ethically certified by the Faculty of Psychology Research Ethics Committee, Universitas Gadjah Mada, Indonesia. Certificate of approval No: 2095/UN1/FPSi.1.3/SD/PT.01.04/2020.

Instruments

The Financial Wellness Questionnaire (Joo, 1998) consisted of 29 items. The questionnaire covers the following four factors: objective status, subjective perception, financial behavior, and financial satisfaction. Objective status (OS) consisted of questions on solvency measures, reserve funds, credit card bills, amount of monthly savings, pension fund allocation, and loan bills (not including mortgages).

Subjective perception (SP) is related to consumers' feelings on cash management, credit management, income adequacy, personal financial management, and consumer shopping skills. Subjective perception covers financial attitude and financial knowledge. Subjective perception consisted of eight items with four response choices: 1 = strongly disagree to 4 = strongly agree. Table A of the Appendix lists items SP4, SP5, SP6, and SP7 as unfavorable items. The Alpha Cronbach for subjective perception scale α = .8429,

Financial behavior refers to consumers' manner of operating various economic aspects to maintain their financial situation. For example, cash management, credit management, income adequacy, personal financial management, and consumer shopping skills. Financial behavior (FB) consists of 12 items with four response choices: 1 = never to 4 = always. Table A of the Appendix lists items FB6, FB8, FB9, FB10, FB11, and FB12 as unfavorable items. The Alpha Cronbach for financial behavior assessment α = .8062.

Meanwhile, financial satisfaction was satisfaction with the consumers' overall financial situation, including satisfaction with the consumers' financial situation, perceived financial wellness, and feeling about financial situations. Financial satisfaction consisted of three items. The personal financial situation items were presented as a Likert scale from 1-10, with 1 = low and 10 = high. Response options for the perceived financial wellness and feeling about financial situations items are on a scale of 1 to 5. A score of 1 = I feel like my family is always in financial trouble/ It feels difficult to meet my needs and pay the bills, and a score of 5=I feel like my family's financial situation is very good/I am able to save more money than my family spends. The Alpha Cronbach for financial satisfaction scale α = .8940.

For subjective perception and financial behavior, the even number of responses forces the participants to choose an answer. Therefore, in the current study, the author included a midpoint of "neutral" for the subjective perception factors and "sometimes" for the financial behavior factors. Adding a midpoint allowed participants to express neutrality and helped them feel comfortable choosing an answer. A midpoint lowers Extreme Response Style (ERS) and Misresponse to Reversed items (MR) (Weijters et al., 2010). Thus, for this study, the number of responses was five. For favorable items, a score of 1 = strongly disagree/never, and 5 = strongly agree/always. For unfavorable items, a score of 1 = strongly agree/always, and a score of 5 = strongly disagree/never.

Adaptation and Validation Process

Before the adaptation process, the author applied for permission to adapt the scale from Joo (personal communication, March 27, 2020). The author referred to the Guidelines for the Process of Cross-Cultural Adaptation of Self-Report Measures (Beaton & Guillemin, 2000) to adapt the financial wellness questionnaire to the Indonesian language. The adaptation stages applied are forward translation, synthesis of translation results, expert review, and pretesting.

In the translation stage, two independent translators translated the financial wellness questionnaire into Indonesian. Next, the author synthesized the two translations, considering the context of Indonesia. In this study, the authors did not perform back translation because it did not provide information about the equivalence of the Indonesian version of the item with the original version. Two experts checked the compatibility of the synthesis results with the content. Both experts are Doctor of Philosophy in psychology holders, have knowledge of economic psychology and can communicate in English fluently. The final step was pretesting the final version of the scale on 20 participants between the ages of 25 and

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60 years to ensure that the participants understood the scale. The Indonesian translation is presented in Appendix A.

Next, the authors collected data from 388 participants online and analyzed it to obtain evidence of construct validity. The objective status items were not a psychological scale. Therefore, the validation process was conducted by interviewing 10 participants. The interviews aimed to check the congruity of the participants' responses and conditions.

Statistical Analysis

Confirmatory factor analysis (CFA) was conducted to provide evidence of the validity of the score interpretation of the Indonesian subjective financial wellness questionnaire based on its internal structure. The analysis was chosen because it is suitable for confirming a hypothesized factor structure (Wang & Wang, 2020). The analysis tested the fit between the structure of inter-relationships among the questionnaire's items and the theoretical construct, which posited three factors of subjective financial well-being: subjective perception, financial behavior, and financial satisfaction.

To obtain parameter estimates in the CFA, the authors chose weighted least squares (WLSMV) as the estimation method (Wang & Wang, 2020). This choice was made because the use of a Likert scale with five or fewer response choices in the questionnaire generated ordered categorical data, which could not be appropriately estimated using normal-based Maximum Likelihood estimation, hence the decision to use WLS (Kline, 2016; Li, 2016; Schumacker & Lomax, 2010).

The model proposed in the current study was a second-order factor model. In this model, the questionnaire items were loaded on only one of three factors: subjective perception, financial behavior, and financial satisfaction. These three factors, in turn, loaded on a higher-order factor known as subjective financial well-being.

Based on the initial analysis results, items meeting two criteria were dropped: (1) factor loadings that were not significant or lower than .4, and (2) large Modification Indices suggesting the addition of correlation between residuals of items with other items. The model was then fitted again and evaluated using the remaining items to provide evidence of validity based on the internal structures of the questionnaire. Based on the latter analysis's estimates, the observed scores' reliability was estimated using the omega coefficient (McDonald, 1999; McNeish, 2017).

After confirming the fit of the measurement model, the authors examined the effect of covariates on subjective financial wellness using the Multiple Indicators Multiple Causes (MIMIC) model. A MIMIC model was created to investigate whether gender, education level, and socio-economic status (SES) affected the predicted factor structure. The covariates examined were gender (0=male; 1=female), education level (0=under tertiary education; 1=tertiary education), and socio-economic status (SES) (1=low SES; 2 = medium SES; 3 = high SES). SES is an ordinal variable. The SES was calculated using factor scores derived from the scores of six objective status items. The authors then classified them into three SES categories based on the empirical mean of factor score.

Furthermore, the measurement invariance of several items was examined by specifying the direct effect of the three covariates on each item. We constrained all direct effects to zero and examined the Modification Indices (MI). The Modification Indices indicate how much the model fit would be improved if the paths were freely estimated. Higher MI indicates greater improvement. The path with the highest MI was freely estimated. A path from the covariate to these factors/items indicates a significant association between the covariate and the factors/items after controlling for the relevant latent variable. This process was repeated until all factors/items directly associated with the covariates were identified. A significant covariate effect on the latent variable would imply differences in the latent mean score.

Fit indices that were used to evaluate the models mentioned above were Chi-square, root mean square error of approximation (RMSEA), Comparative Fit Index (CFI), Tucker Lewis Index (TLI), and standardized root mean square residual (SRMR). The model proposed was claimed to be supported by

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data if the value of RMSEA < .08, CFI/TLI > .95, and SRMR < .08 (Hu & Bentler, 1999), while the Chi-square value was not significant (p > .05). The author adopted two approaches to identify the ordinal CFA model: freeing the factor loadings of each item and setting the variance of each factor to 1 (Wang & Wang, 2020). All aforementioned analyses were conducted using Mplus 8.3 (Muthén & Muthén, 2017).

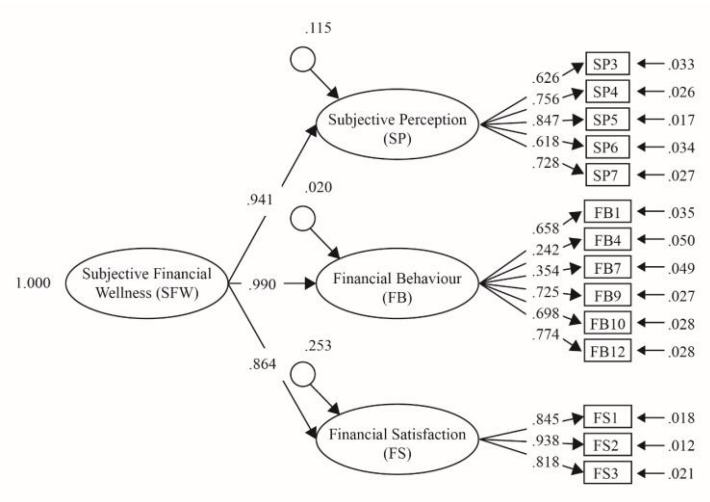
Results and Discussion

Confirmatory Factor Analysis

The result of the initial confirmatory factor analysis (CFA) provided poor support from the data given only one fit index that met the criteria, i.e., SRMR. It meant that the empirical data did not fit the theoretical model for financial wellness (Chi-square (227) = 1046.997, p < .001, RMSEA = .096 [.091; .102], SRMR = .074, CFI = .902, TLI = .891).

Standardised regression coefficients (β) were reported for each factor loading. The results also showed that several items from all three factors had factor loadings less than .4. For example, the subjective perception item factor loadings ranged between .192 and .732, the financial behavior item factor loadings were between -.012 and .778, and the financial satisfaction item factor loadings were between .816 and .919

Based in the result of the initial analysis, authors gradually selected items according to the two criteria. The items with factor loadings less than .4 were FB5, FB6, and FB8, while items with large MI suggesting residual correlation were SP1, SP2, SP8, FB2, FB3, and FB11. Then, the authors decided to drop the items with a higher standard error. The selection process produced 14 items, which were further analyzed using CFA for the same model. Only the Chi-square (X2) value that did not meet the criteria set before (Chi-square (74) = 203.597, p < .001). However, according to Kline (2016), the χ2 value is sensitive to sample size. The χ2 value tends to increase as the sample size increases. Therefore, the authors consulted the other indices to check the model's fitness. The other four indices meet the criteria set before showing the fitness of data to the proposed CFA model (RMSEA = .067, [0.056; 0.078], SRMR = .036, CFI = .979, TLI = .974). Furthermore, all items have factor loadings larger than .4; for example, for the subjective perception factor, items' factor loadings were between .618 and .847, the financial behavior items factor loadings were between .242 and .774, and for the financial satisfaction item factor loadings were between .818 and .938. The distribution of factor loadings resulting from this analysis can be seen in Figure 1.



Sources: Personal data

Figure 1. Factor Loadings for the Second-Order Confirmatory Factor Analysis

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Reliability

In this analysis, the Omega coefficient for the subjective perception factor subscale is ω = .830, 95% CI = [.800; .860], financial behavior ω = .754, 95% CI = [.692; .816], and financial satisfaction ω = .901, 95% CI = [.883; .919]. Only two scales provided ω statistically significantly larger than .7 shown by the exclusion of .7 from the 95% CI with the lower bound larger than 0.7. The financial behavior has a 95% CI that covers ω value less than 0.7. However, since the lower bound of CI was still larger than 0.69, the reliability was still satisfactory.

Multiple Indicators Multiple Causes (MIMIC) model Results

The MIMIC model indicated a good fit (Chi-square (113) = 263.442, p < .001; RMSEA = .059 (90% CI) = .049-.068), CFI= 0.967, TLI= 0.961, SRMR=.056). RMSEA, CFI, TLI and SRMR were a close fit in the CFA and the MIMIC model. The chi-square was also significant, but the large sample size probably resulted in this finding (Schumacker & Lomax, 2010).

Based on these findings, it was concluded that the MIMIC model provided a satisfactory representation of the data. The study findings also revealed that gender does not directly impact subjective financial wellness (b= -.034). This suggested that subjective financial wellness remained invariant regardless of gender. Concurrently, the result demonstrated a significant correlation between education level, SES, and subjective financial wellness (see Table 2). The results suggest that participants with a higher level of education had greater subjective financial wellness scores than those with a lower level of education (b= .606*). Furthermore, participants with a higher SES obtained higher scores on subjective financial wellness assessments than those with a lower SES (b=1.279*).

Table 2. The Impact of Covariates on Subjective Financial Wellness

Covariates	MIMIC Model			
	B	**SE.**	**P**	**β**
Gender	-.034	.121	.779	-.013
Education	.606	.177	.001	.131*
Socio-Economic Status (SES)	1.279	.118	P<0.05	.568*

Note. B=unstandardized estimate; S.E.=standard error; β=standardized estimate; Gender: 1= Female, 0= Male; Education; (0 = Under tertiary education; 1 = Tertiary education).
**p<0.01.*
Sources: Personal data

The MIMIC model with DIF analysis indicated a good fit to data in which education level and SES influence the subjective financial wellness model (Chi-square (107) = 216.841, p < .001; RMSEA= .051 (90% CI) = .042-.061), CFI=.976, TLI=.970, SRMR=.040). Table 3 presents the standardized regression coefficients of the direct effects of the three covariates on subjective financial wellness. It can be seen in Table 3 that there is no direct effect of gender on subjective financial wellness (b=-.004). This result showed that subjective financial wellness was invariant across genders. Meanwhile, education level (b= .448*) and socio-economic status (b= 1.225*) directly impacted subjective financial wellness. This indicated that participants with a higher level of education reported higher scores of subjective financial wellness. Furthermore, participants with higher SES had higher subjective financial wellness than the ones with lower SES.

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Table 3. The Impact of Covariates on Subjective Financial Wellness with DIF

Covariates	MIMIC Model			
	B	**SE.**	**P**	**β**
Gender	-.004	.122	.975	-.001
Education	.488	.180	.007	.108*
Socio-Economic Status (SES)	1.225	.118	P<0.05	.555*

Note. B=unstandardized estimate; S.E.=standard error; β=standardized estimate; Gender: 1= Female, 0= Male; Education; (0 = Under tertiary education; 1 = Tertiary education).
**p<0.01.*
Sources: Personal data

The DIF testing criteria are carried out by looking at the estimation results obtained by creating a model with a direct effect of each covariate on each item. DIF occurs when a test item does not have the same relationship to a latent variable across two or more examinee groups (Lai et al., 2005). To ascertain the presence of Differential Item Functioning (DIF) in an item, researchers may determine its status by analyzing the probability value associated with that specific item. If the probability value is less than .05, the item is identified as exhibiting DIF. Five items (SP6, SP7, FB1, FB9, and FS3) showed DIF, indicating that participants from various groups (gender, education level, and SES) have different probabilities of responding to the corresponding item given the same score on the underlying factor (see Table 4). There is evidence of DIF across educational levels for items SP6 and SP7. Participants possessing a tertiary education exhibited a greater score on item SP6 and item SP7 compared to those with an educational qualification below a tertiary education. Item SP6 also exhibited DIF across SES. On item SP6, participants with a lower SES demonstrated higher scores than those with a higher SES. FB1 and FS3 were found to demonstrate DIF across SES. On FB1 and FS3, participants belonging to a higher SES had higher scores than those with a lower SES. Item FB9 did not function in the same manner for males and females. On item FB9, female participants scored higher than male participants.

Table 4. Items Showing Differential Item Functioning

Covariate	Item	B	SE.	P	β
Gender	FB9	-0.230	0.107	0.032	-0.097
Education	SP6	0.607	0.197	0.002	0.155
	SP7	0.515	0.230	0.026	0.126
SES	SP6	-0.267	0.101	0.008	-0.141
	FB1	0.404	0.132	0.002	0.195
	FS3	0.393	0.103	0.000	0.183

Note. B=unstandardized estimate; S.E.=standard error; β=standardized estimate, FB=Financial behaviour item, SP=Subjective perception, FS=Financial Satisfaction.
Sources: Personal data

Discussion

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This study aimed to examine the structure of the financial wellness measurement factors in a sample of consumers in Indonesia. The authors proposed financial wellness as a model consisting of objective and subjective financial wellness. Objective financial wellness is the measurement of several financial ratios. Objective status was validated using interviews to confirm the congruity of the participants' answers with their actual financial conditions. The six confirmation points were solvency ratio, amount of reserve funds, monthly credit card payments, monthly installment payments, monthly savings, and total pension fund allocation. In general, the participants' answers were in sync with the information provided when completing the questionnaire.

The author conducted ordinal CFA to examine the psychometric properties of the subjective financial wellness scale. The results of the Monte Carlo analysis of the sample show that the sample size was sufficient for factor analysis (Muthén & Muthén, 2002). The results confirmed that subjective financial wellness consists of subjective perception, financial behavior, and financial satisfaction. They were statistically significant and conceptually related to each other.

Although the model fit the data, one item (FB4) showed a low factor loading (< .300). For the current study, the low factor loading was not removed as the short version of the second-order factor model was found to fit. The ordinal CFA of the subjective financial wellness second-order factor produced 14 valid items. It has been shown in the study that subjective perception consists of five valid items, financial behavior consists of six valid items, and financial satisfaction consists of three valid items. For the subjective perception factor, the two indicators were not represented by items: cash management (SP1) and shopping skills (SP8). The authors dropped item SP1 because we suspect that this item is closely related to the financial satisfaction factor. This is evident in the high standardized residual of item SP 1 with FS1 (7.162) and FS2 (6.835).

Meanwhile, item SP8 was excluded because this item had a low factor loading. For the financial behavior factor, two items of shopping skills had low factor loadings. The two items were FB5 and FB6. The shopping skills indicators for the subjective perception and financial behavior factors did not function in the shortened version of the financial wellness scale. A further in-depth study is required on the cause of the non-functioning of these items to determine whether the indicators did not contribute or whether the items themselves were poor.

The results of the MIMIC model analysis showed that SES and educational attainment were significantly associated with subjective financial wellness. Individuals with tertiary educational attainment exhibited greater subjective financial wellness scores than those under tertiary education. Individuals with a higher level of education exhibit better financial planning skills compared to those with a lower level of education. Furthermore, individuals with higher levels of education indicated lower financial vulnerability than those with lower levels of education (Brunetti et al., 2016; Khor et al., 2020). Participants with higher SES also showed greater subjective financial wellness scores than those with lower SES. According to Sabri and Zakaria (2015), higher-income individuals have greater financial capability than other demographic segments. Income enables individuals to fulfill their necessities and contributes to their perceived financial well-being. Meanwhile, it is noteworthy that gender does not influence an individual's subjective financial well-being. This discovery contrasts with the outcomes of Brüggen et al. (2017) research, which suggested that gender is an individual characteristic that impacts financial well-being.

On FB9, female participants scored higher than their male counterparts. The female respondents also expressed that their expenses exceeded their income. Even though men typically earn more than women, women are often far more involved in domestic financial activities, such as paying bills and making transactions for daily and monthly purchases.

The results indicated that individuals with a tertiary education exhibited higher scores on items SP6 and SP7 compared to those with educational qualifications below the tertiary education level. The individuals expressed concern regarding their current amount of debt and perceived limited accessibility

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to loan options when necessary. This finding contradicts the findings of Bruijn and Antonides (2020), who concluded that education does not protect individuals from financial anxiety and rumination.

On SP6 items, participants with a lower SES scored higher than those with a higher SES. In other words, participants with a lower SES are more concerned about their level of debt. The present finding aligns with the research by Bruijn & Antonides (2020), which suggests that individuals with low-income encounter difficulties meeting their needs, possess inadequate financial buffers, and are burdened with debt. This condition induces financial anxiety among individuals with low incomes or limited financial resources.

The findings suggested that individuals with a higher SES obtained higher scores on items FB1 and FS3 than those with a lower SES. A plausible explanation is that individuals with a higher SES can allocate funds towards savings and believe they have a greater level of financial capability. Those with a higher SES are likely to have access to financial flexibility that allows them to plan for savings and other budget allocations. Consequently, they also tend to feel more financially capable.

This study is limited in terms of the source of validation evidence. We rely on content and internal structure to obtain evidence-based test content. Future researchers can collect evidence based on relation to other variables. Evidence-based relationships with other variables offer insights into how these relationships align with the construct underlying test score interpretations (AERA et al., 2014).

The present study has important theoretical and practical implications for behavioral science. This is a novel finding since such specific context-based studies are not common in literature. This research contributes to the development of financial wellness research in Indonesia. Methodologically, applying the CFA and MIMIC model in this study also contributes to developing psychometric research in Indonesia.

Conclusion

Overall, this study revealed that the shorter version of the financial wellness scale is reliable and valid for measuring financial wellness in Indonesia. The financial wellness scale consists of objective and subjective measurements. Using ordinal CFA, we produced a shortened version of the financial wellness questionnaire supported by adequate psychometric properties. There are three dimensions of subjective financial wellness: subjective perception, behavioral assessment, and overall financial satisfaction. We also identify two significant correlations between education and SES and subjective financial wellness. More importantly, the findings indicate that Differential Item Functioning (DIF) is present in a few items when participants from different groups with varying gender, educational attainment, and socio-economic status (SES) are considered. Differential item performance does not necessarily indicate a flaw or weakness in the measurement. Items sharing a common attribute may exhibit varying functionality among groups of individuals with similar scores. This suggests a form of multidimensionality that could either deviate from expectations or align with the parameters of the assessment. This issue calls for further investigation in future research endeavors.

An important implication of our findings is that a combination of objective and subjective measures would impact financial wellness. Research on financial wellness should take into account the element of personal characteristics as a potential predictor of financial wellness. In order to develop and implement strategies to improve financial wellness, stakeholders must acquire a more comprehensive understanding of the heterogeneity of consumer behaviors manifested through various indicator levels. The financial wellness questionnaire in Indonesia has been validated and proven reliable, making it a valuable tool for researchers and financial counselors in assessing financial wellness. This tool identifies individuals or households facing financial challenges, with the results serving as a foundation for developing interventions and strategies to enhance financial well-being.

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Conflict of Interest

Researchers declare that there are no conflicts of interest regarding the publication of this paper.

Authors Contribution

Conceptualization, TR, RH, AS.; methodology, TR, RH, AS.; Software, TR and RH.; formal analysis, TR and AS.; data collecting, TR.; writing original draft preparation, TR.; editing, RH and AS, supervision, RH and AS.

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Appendix A

Table A. The English version and the Indonesian version of the Subjective Financial Wellness Questionnaire

Factor	Number	English Original Version	Indonesian Translation
Subjective perception			
Cash management	SP1	I am satisfied with the amount of money that I am able to save.	Saya puas dengan jumlah uang yang dapat saya/keluarga tabung.
Credit management	SP6(R)	I worry about how much money I owe.	Saya merasa khawatir dengan besarnya utang yang saya/keluarga miliki.
	SP7(R)	I would have trouble borrowing $2,000 cash if I needed it.	Tidak mudah bagi saya/keluarga untuk mendapatkan akses pinjaman sebesar Rp. 20 juta saat saya membutuhkannya.
Income adequacy	SP4(R)	I have difficulty living on my income.	Dalam 6 (enam) bulan terakhir, saya/keluarga menghadapi kesulitan untuk hidup dengan penghasilan saya.
	SP5(R)	I worry about being able to pay monthly living expenses	Saya khawatir dengan kemampuan saya/keluarga untuk membiayai kebutuhan bulanan.
Personal financial management	SP2	When I think of my financial situation, I am optimistic about the future.	Ketika memikirkan kondisi keuangan saya/keluarga, saya optimis tentang masa depan.
	SP3	I think I will have enough money to live comfortably throughout retirement.	Saat tiba masa pensiun, uang yang saya/keluarga miliki akan cukup untuk hidup nyaman.
Consumer shopping skills	SP8	I am knowledgeable about consumer protection laws and regulations.	Saya/keluarga memahami undang-undang dan peraturan perlindungan konsumen.
Financial behavior			

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Factor	Number	English Original Version	Indonesian Translation
Cash management	FB1	I set money aside for savings	Saya/keluarga saya menyisihkan uang untuk ditabung.
	FB2	I set money aside for retirement.	Saya/keluarga saya menyisihkan uang untuk tabungan hari tua.
	FB9(R)	I spent more money than I had	Pengeluaran saya/keluarga lebih besar daripada penghasilan.
Credit management	FB7	I paid credit card bills in full and avoided finance charges.	Seandainya benar-benar memiliki utang, saya/keluarga bisa membayar semua tagihan sehingga terhindar dari denda.
	FB8(R)	I reached the maximum limit on a credit card.	Seandainya benar-benar harus mengambil utang, saya/keluarga akan menggunakan semua plafon/pagu pinjaman.
Income adequacy	FB10(R)	I had to cut living expenses.	Saya/keluarga terpaksa mengurangi jatah belanja kebutuhan sehari-hari.
	FB11(R)	I had to use a credit card because I ran out of cash.	Saya/keluarga terpaksa meminjam kanan-kiri karena kehabisan uang.
	FB12(R)	I had financial troubles because I did not have enough money.	Saya/keluarga menghadapi kesulitan ekonomi karena masalah dalam pengelolaan keuangan.
Personal financial management	FB3	I had a plan to reach my financial goals.	Saya/keluarga memiliki cara untuk mewujudkan tujuan keuangan.
	FB4	I had a weekly or monthly budget that I followed.	Saya/keluarga menetapkan jatah pengeluaran mingguan atau bulanan yang saya patuhi.
Consumer shopping skills	FB5	I comparison shopped at two or more stores for an expensive consumer product.	Saya/keluarga membandingkan dua toko atau lebih sebelum membeli sesuatu yang berharga mahal.

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Factor	Number	English Original Version	Indonesian Translation
	FB6(R)	I purchased something expensive that I wanted, but really did not need.	Saya/keluarga menuruti hasrat membeli sesuatu yang berharga mahal padahal sebenarnya tidak saya perlukan.
Financial satisfaction			
Satisfaction with financial situation	FS1	On the stair steps of financial wellness, mark (with a circle) how satisfied you are with your present financial situation. Those who are not satisfied will be towards the lower steps. Those who are satisfied will be towards the higher steps.	Pada rentang nilai 1-10, dimana nilai 1 berarti Anda sama sekali tidak puas dengan kondisi kesehatan keuangan, dan nilai 10 berarti Anda sangat puas, berapakah nilai yang Anda berikan untuk kondisi keuangan keluarga?
Perceived financial wellness	FS2	How well are you financially?	Seberapa baikkah kondisi keuangan Anda/keluarga Anda?
Feeling about financial situation	FS3	How do you feel about your financial situation?	Seberapa kuat kemampuan keuangan Anda/keluarga Anda?

Note. SP=Subjective perception, FB: Financial Behavior, FS: Financial Satisfaction, (R) = reverse score

Sources: Personal data

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Table B. The English version and the Indonesian version of the Objective Financial Wellness Questionnaire

Indicator	Number	English Original Version	Indonesian Translation
Solvency measure	SO1	Suppose you were to sell all of your major possessions (including your home), turn all of your investments and other assets into cash, and pay all of your debts. Would you be in debt, break even, or have something left over?	Seumpama Anda hendak menjual seluruh harta utama Anda (termasuk rumah Anda), mengubah seluruh investasi dan aset lain Anda menjadi uang tunai, dan membayar seluruh hutang Anda. Apakah Anda akan cukup, kurang, atau masih bersisa?
Reserve fund	SO2	If you lost your job today, how many months could you live using your savings?	Jika Anda kehilangan pekerjaan hari ini, berapa bulan Anda bisa bertahan dengan gaya hidup yang sama dari tabungan Anda?
Credit card bills	SO3	About how much money, if any, do you usually pay toward your credit cards each month?	Berapa besar rata-rata pembayaran tagihan kartu kredit bulanan Anda?
Monthly saving amount	SO4	About how much of your income, if any, do you put into savings in each month (excluding retirement plans)?	Kira-kira berapa banyak yang bisa Anda tabung dari penghasilan bulanan Anda (kecuali tabungan pensiun)?
Loan payments (excluding those related to mortgages).	SO5	About how much money, if any, do you pay for your vehicle loans and other installment loans in each month (excluding home mortgage)?	Berapa besar rata-rata pembayaran angsuran bulanan atas kredit kendaraan dan pinjaman lain-lain (kecuali KPR) Anda?
Monthly allocation to pension funds	SO6	About how much of your income, if any, do you voluntarily contribute to the 403(b) tax-sheltered retirement investment program through XYZ each month?	Berapa banyak, jika memang ada, dari penghasilan bulanan yang Anda bisa sisihkan untuk membayar premi asuransi dana pensiun dan/atau BPJS Ketenagakerjaan?

Sources: Personal data

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