Developing Items for Measuring Financial Well-being Among Single Mothers in Malaysia: An Exploratory Factor Analysis Procedure

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Abstract

This paper explains the steps involved in conducting an Exploratory Factor Analysis (EFA) on the survey questionnaire to ensure its validity and reliability. A cross-sectional study was utilized and data was collected through a multi-stage random sampling method. The pilot study utilized a self-administered questionnaire distributed to single mothers in Malaysia who received "Bantuan Khas Ibu Tunggal" (BKIT) in 2020. The construct is represented by ten items carefully selected from studies. To ensure validity and reliability, Cronbach's Alpha was calculated for the construct and confirmed that it was reliable. This paper provides a detailed explanation of the procedures for conducting the EFA on Financial Well-being construct. The findings indicated that the instrument for the Financial Well-being construct satisfied the criteria for both construct validity and reliability and could therefore be utilized in further research.

1. Introduction

Financial well-being during downturns plays a significant role, in shaping household behaviour. It refers to the sense of maintaining one's living standards and financial independence while striving towards desired goals (Brüggen et al., 2017). When someone becomes a single mother, it might be difficult for them to adjust to a decrease in income, especially if their spouse used to provide it. This was highlighted by Isahak et al. (2009) in their study. The financial challenges that may arise from this transition can put single mothers in a tough and frequently confusing situation. Consequently, they may find it difficult to maintain their lifestyle. May have limited savings, which could necessitate seeking additional employment to meet their expenses (Nor et al., 2018). According to a study conducted by Talib et al. (2020) in the Malaysian

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Population and Housing Census Report, from 2010 revealed an increase in the number of mothers in Malaysia. The report shows that from 2000 to 2010 the number rose from 620,389 to 831,860 resulting in a rise in households headed by women. In fact, the report indicates that there were 990,800 households in 2010 compared to just around 663,300 in 2000 (Nor et al., 2018). This surge can be attributed to the growing occurrence of divorce cases separations within families the passing away of husbands and the increasing societal acceptance of divorce, within communities (Mohamed, 2002). Financial well-being is a pressing concern in Malaysia, and single mothers constitute a substantial portion of the population facing distinct financial challenges. To address these challenges, research focusing specifically on the financial well-being of single mothers is urgently needed.

2. Literature Review

One of the components of personal well-being is Financial Well-being (FW), which has different definitions according to different scholars. The degree of a person's financial health is the definition of financial well-being in the previous study by Joo and Grable (2004). It highlights the significance of having stable finances in one's life by implying that a person's entire well-being is strongly related to their financial health. Goldsmith (2003) draws attention to the issue of economic security and sufficiency, stressing the necessity for people and families to have the means necessary for a safe and secure existence. FW includes the whole picture of a person's ability in financial matters, according to CFPB (2015b). It takes into account both the future and the current financial condition. Mokhtar et al. (2015) study added to our understanding of FW by delving into the elements that drive it, such as financial management techniques. According to Niu et al. (2020), financial well-being extends beyond financial stability and into other elements of one's life. These included the opportunity to work without excessive worry about retirement, fostering excellent mental health, and providing a sense of security and comfort to individuals or families who have attained financial readiness. According to Mahdzan et al. (2019, 2020) financial well-being includes being content with one's situation having confidence in covering unexpected expenses and enjoying the freedom to pursue hobbies and maintain security. Sorgente and Lanz (2017) describe well-being as a state that consists of both objective and subjective elements. The objective aspect involves considering an individual's material resources by balancing income, debt and existing assets like savings accounts and education. On the other hand, the subjective component encompasses well-being along with perceptions and feelings, about one's financial situation.

3. Methodology

The study determined the sample size by following methodologies used in studies (Krejcie and Morgan 1970). The population of this study consists of single mothers from various states in Malaysia. The sampling frame for Malaysian single mothers was defined as those who received benefits from the 'Bantuan Khas Ibu Tunggal' (BKIT) program in the year 2020. This thorough list was provided by the Ministry of Women, Family, and Community Development's Department of Women Development (KPWKM). The questionnaire was adapted from constructs commonly used in financial well-being studies as demonstrated by previous research (e.g., Rahman et al., (2021); Mahdzan et al., 2020). Before using the questionnaire, we conducted pre-tests to refine and improve the adjusted items. During the pre-test phase experts reviewed the questionnaire to ensure all questions were appropriate and necessary corrections were made (Zikmund et al., 2013). For this study content validity was evaluated by eight experts who provided the feedback. Face validity was assessed by English language experts while criterion validity was reviewed by a statistics expert. After completing these validation tests, we distributed the instrument to ten respondents to ensure there were no issues before distributing it to 110 respondents, for a pilot study.

Figure 1: Overview of data analysis phase and measurement assessment
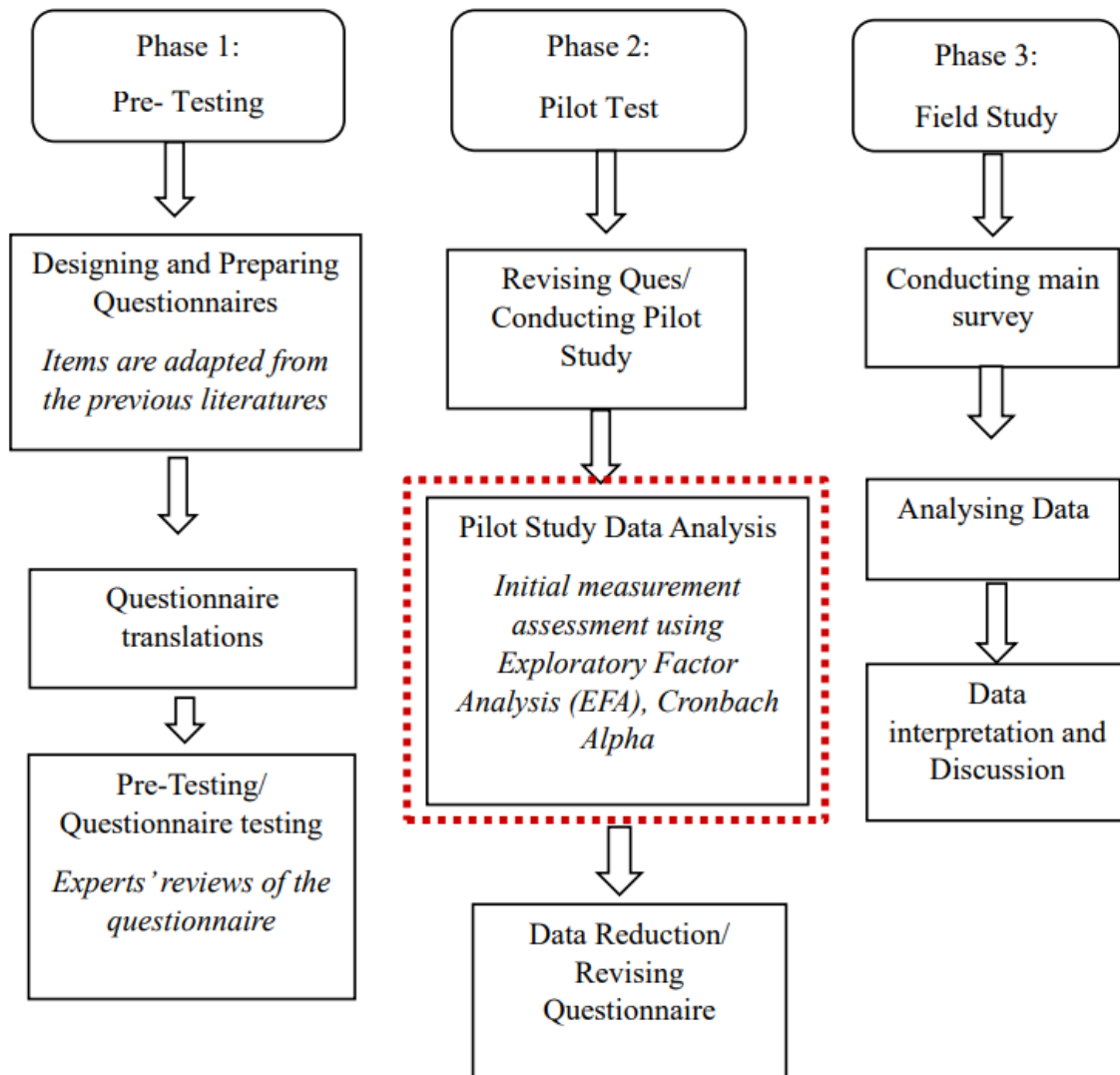
Source: Adapted from Dani et al. (2022)

3.1 Exploratory Factor Analysis (EFA) Procedures

The exploratory factor analysis (EFA) approach evaluates each item's factor loading, demonstrating its efficacy in assessing the construct and elucidating the dimensionality of the items. According to Bahkia et al. (2019), the lowest permissible factor loading was 0.60. Furthermore, the EFA approach determined the Total Variance Explained (TVE) by the construct. Following the criteria provided by Alias et al. (2020), a TVE value of at least 0.60 was established as the minimum criterion, suggesting that the items and their potential components should account for at least 60% of the construct. Cronbach's alpha was calculated to determine the internal reliability of the measurement items. According to Dehisat and Awang (2020), internal reliability examines the degree to which the selected items are strongly related with the measurement of the construct. Cronbach's alpha was set at a minimum of 0.7 as the threshold. After identifying the items and their components, the study used the retained items, i.e., those with factor loadings greater than 0.6, to collect data in a field study.

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4. Results

4.1 The Exploratory Factor Analysis (EFA) For Financial Well-Being (FW) Construct

The Financial Well-being construct is measured using a 10-item questionnaire. The view presented by Muda et al. (2020) that a 10-point scale provides better accuracy than a 5-point scale in the measurement model because of its wider range of options and greater independence is supported by the use of a 10-point interval scale. According to Table 1, this construct is categorized as FW1 through FW10. All of the items that measure the Financial Well-being construct have descriptive statistics that are provided in Table 1. The ranges of the mean values and standard deviations for each item are 8.19 to 9.08 and 1.190 to 1.553, respectively.

Table 1: The Descriptive Statistics for items measuring Financial Well-being Construct

Items	Statement	Mean	Std Deviation
Financial Well-being			
FW1	My financial position is steady enough to cover an emergency expenditure of RM1000	8.19	1.553
FW2	My financial position is steady enough to cover medical costs of RM1,000	8.25	1.460
FW3	I feel my financial position is steady enough to cover holiday costs of RM1,000	8.58	1.323
FW4	I feel my financial position is steady enough to cover my expenses for 3 months if I were to be retrenched	8.71	1.295
FW5	Sometimes, I have to borrow to buy basic need	8.24	1.781
FW6	I can afford to buy the items that I want	9.08	1.190
FW7	I feel my financial position is enough to cover my daily needs	9.08	1.182
FW8	My financial position is steady enough to cover my basic needs to live comfortably after retirement	8.61	1.227
FW9	I have extra money at the end of the month	8.35	1.418
FW10	I feel confident about my financial future	8.67	1.382

Source: (Mahdzan et al., 2020; Prawitz, 2006; Rahman et al., 2021)

Bartlett's Test and KMO Value

This section explores the findings from the exploratory factor analysis (EFA) with reference to the construct of financial well-being. Ten items, designated as FW1 through FW10 in Table 1, were used to measure this construct. A 10-point interval scale was used to rate each statement; 1 meant "Strongly disagree," and 10 meant "strongly agree." The researcher performed the exploratory factor analysis (EFA) procedure on the construct's elements using the extraction technique of Principal Component Analysis with Varimax (Variation Maximization) Rotation. Then, two measures used to assess the suitability of the data for EFA: The Bartlett's Test of Sphericity (p-value < 5 per cent) and the Kaiser-Meyer-Olkin (KMO) measure, which evaluates sampling adequacy (with a threshold of at least 0.6) (Awang, 2019). Table 2 displays a significant Bartlett's Test of Sphericity with a p-value of 0.000 and a KMO value of 0.707. Based on the criteria proposed by Baistaman et al. (2020) and Dehisat and Awang (2020), these results show that the sample size is deemed adequate for carrying out the EFA.

Table 2: The Value for KMO Bartlett's Test

KMO and Bartlett's Test for Perceived Pressure		0.707
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		
Bartlett's Test of	Approx. Chi-Square	459.210

| **Sphericity** | df | 45 |
| | Sig. | 0.000 |

Table 3, which uses eigenvalues larger than 1.0 as the criterion, illustrates how three distinct components come out of the EFA process. Components 1 (26.658%), 2 (25.979%), and 3 (19.040%) accounted for the components of variance, and the computed eigenvalues ranged from 2.2858 to 3.1199. Combining these three factors, the total measured variation can be explained by 71.677%. A total variance explained that surpasses the acceptable requirement of 60% is noteworthy, as demonstrated by the studies by Bahkia et al. (2019), Hoque et al. (2017), Hoque et al. (2018), and Yahaya et al. (2018). The last three components and the specific items that fall under each are shown in Table 3.

Table 3: Total Variance Explained for every component.

Total Variance Explained			
Component	**Rotation Sums of Squared Loadings**		
	Total	% of Variance	Cumulative %
1	3.199	26.658	26.658
2	3.117	25.979	52.637
3	2.285	19.040	**71.677**
Extraction Method: Principal Component Analysis			

The EFA process also ascertained the quantity of components that surfaced in relation to the items. Sorting items according to related themes was part of this process. Figure 2 shows the final components for this construct that were obtained using the EFA process. The EFA procedure was successful in dividing the ten things into three main components, each of which has a unique collection of constituent parts. As described in detail by Bahkia et al. (2019), Hoque et al. (2017), and Hoque et al. (2018), the rotational component matrix offers a clear indication of the precise relationship of each element with its associated component. The three components that make up the financial well-being category are visually represented in Figure 2.2, which also serves as a means of classifying the ten measurement items into three different components.

Figure 2: The Scree plot for Financial well-being construct

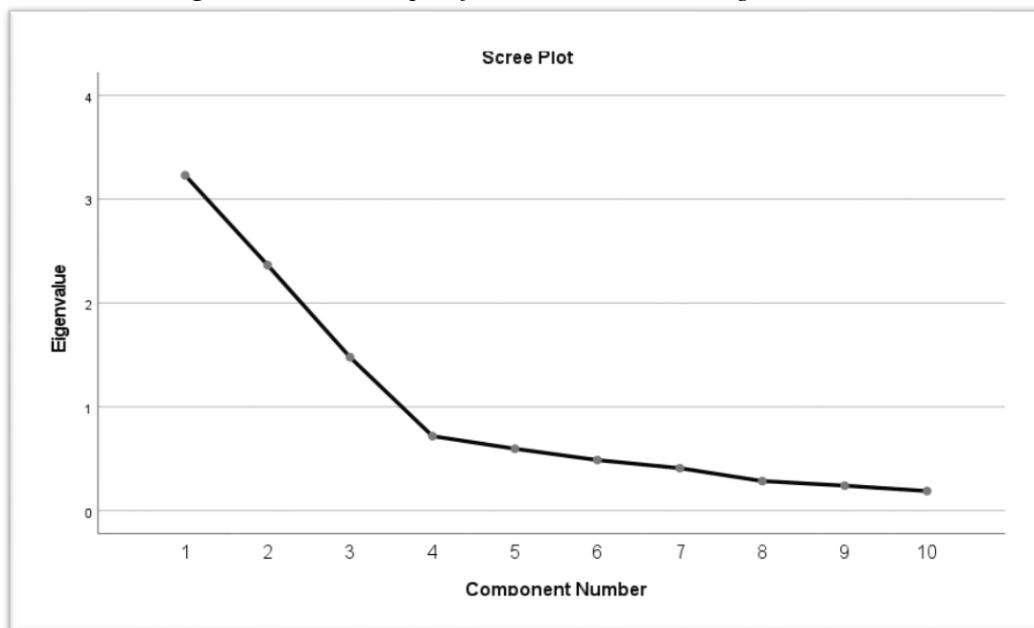Int. Journal of Socio-Economic Planning Vol. Xx No. xx (2024) p.

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Table 4 offers a detailed summary of the elements, the particular items connected to each element, and the matching factor loadings for each item. It is essential to remember that, based on Awang (2012), each item's factor loading must be greater than 0.6 in order to be kept for the actual study instruments. As such, items below this cut-off have to be eliminated from the final study instruments. After doing an exploratory factor analysis (EFA) to investigate the measuring items under the Financial Well-being Construct, three different components were produced. The following is the arrangement of these parts: Component 2 and Component 3 each consist of three items, whilst Component 1 consists of four items. Furthermore, the 10 suggested items were all kept for the analysis.

Table 4: *The Rotated Financial Well-being Component Matrix for Construct*

Item code	Comp 1	Comp 2	Comp 3
FW1	0.864		
FW2	0.849		
FW3	0.709		
FW4	0.649		
FW5			**0.774**
FW6			**0.842**
FW7			**0.843**
FW8		0.887	
FW9		0.913	
FW10		**0.725**	

Extraction Method: Principal Component Analysis
Rotation Method: Varimax with Kaiser Normalization.

4.2 Internal Reliability

Finally, the research computes Cronbach's Alpha, an important measure that evaluates the consistency of the retained items in measuring FW construct. Cronbach's Alpha, which measures internal consistency, indicates how well a scale's items align when measuring particular constructs. Table 5 shows the results of the reliability analysis for the financial well-being construct. The approach suggested by Awang et al. (2018) is used to calculate Cronbach's Alpha in order to examine internal reliability. Interestingly, the result is considered excellent because it is higher than the minimum requirement of 0.70, as specified by Muda et al. (2018).

Table 5: *The internal reliability value for each component*

Reliability statistics		
Component	**Number of items**	**Cronbach's Alpha**
1	4	0.805
2	3	0.759
3	3	0.816
All items	10	0.744

All three components have Cronbach's alpha values that are higher than the 0.7 cutoff. Furthermore, the Cronbach's Alpha average for all ten items, which is 0.744, is higher than the significance level of 0.7. This main result emphasizes that the instruments used to measure the Financial Well-being construct have a satisfactory degree of internal reliability, which is consistent with the viewpoints of Bahkia et al. (2019), Hoque et al. (2017), Hoque et al. (2018), Noor et al. (2015), and Yahaya et al. (2018). In light of this, the findings confirm that the reliability measures of the three elements that make up the FW construct are significantly more than the required values. As such, the constituents and the items that correspond with them are considered appropriate and reliable to measure the FW construct. Therefore, the incorporation of these construct features in subsequent research endeavours is recommended by this study.

5. Conclusion

In conclusion, measuring the financial well-being of single moms in Malaysia was the main goal of the survey instrument's development and validation in this study. Concerning the particular difficulties and obligations faced by single mothers, this tool measured their ability to make ends meet, financial resilience and the conditions of their current financial position. Item questions from earlier studies on financial well-being and single motherhood were carefully adapted to create this instrument. Survey refinement was achieved through a pilot study, and relevant statistical techniques, including Exploratory Factor Analysis (EFA), were used to examine the completed data. The construct in the instrument had a thorough inspection as part of the verification procedure to guarantee its validity and dependability. The consistency and robustness of the data were evaluated using statistical measures such the Bartlett Test and Cronbach's Alpha value and showed values higher than the minimal requirements. The EFA analysis's findings strongly supported the survey instrument's usage in upcoming studies about Malaysian single mothers' financial well-being by confirming its internal validity and consistency. Scholars are urged to contemplate utilizing this established tool to delve more into the financial obstacles and prospects encountered by single mothers in Malaysia. It is also possible to modify it for parallel investigations in other nations or areas. This tool can be a useful tool for researching the financial stability and empowerment of single mothers as well as for assisting them in managing their finances.

6. Contribution

The study on financial well-being among single mothers in Malaysia offers significant contributions. This instrument will eventually help government agencies and policymakers by providing empirical data to inform evidence-based decision-making, identifying specific challenges and factors influencing financial well-being, recommending targeted interventions, and introducing a holistic approach to measuring success. This research equips policymakers with valuable insights to design more effective policies and support programs tailored to the unique needs of single mothers, ultimately improving their financial well-being and overall quality of life, while also serving as a foundation for advocacy efforts to raise awareness about the challenges faced by this vulnerable group.

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