

# CONFIRMATORY FACTOR ANALYSIS OF LIVELIHOOD ASSETS OWNERSHIP FOR B40 HOUSEHOLD INCOME GROUP IN SOUTHERN REGION OF KELANTAN

Nor Zuriati Amani Binti Ab Rani<sup>1</sup>  
Rospidah Binti Ghazali<sup>2</sup>  
Mohd Khairi Bin Ismail<sup>3</sup>  
Farahiyah Akmal Binti Mat Naw<sup>4</sup>

<sup>1</sup>Faculty of Business and Management, Universiti Teknologi MARA, Kelantan Branch, Machang Campus, Kelantan, Malaysia, (E-mail: norzuriati@uitm.edu.my)

<sup>2</sup>Institute For Environment And Development (LESTARI), Universiti Kebangsaan Malaysia, Bangi, Selangor, Malaysia, (E-mail: rospidah@ukm.edu.my)

<sup>3</sup>Faculty of Business and Management, Universiti Teknologi MARA, Terengganu Branch, Dungun Campus, Terengganu, Malaysia, (E-mail: khairiismail@uitm.edu.my)

<sup>4</sup>Faculty of Business and Management, Universiti Teknologi MARA, Selangor Branch, Puncak Alam Campus, Selangor, Malaysia, (E-mail: farahiyahakmal@uitm.edu.my)

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**Abstract:** *The B40 household income group is the government's focus on inclusive development through the 10th Plan (2011-2015), the 11th Plan (2016-2020), the Shared Prosperity Vision Policy 2030 (WKB30) in Malaysia and Sustainable Development Goals (SDGs). This study discusses a Confirmatory Factor Analysis of livelihood assets ownership for the B40 household income group in Malaysia specifically in the Southern Region of Kelantan. For the implementation of CFA, this study uses the analysis of livelihood assets ownership which consists of five types of assets, namely physical assets, financial assets, human assets, social assets, and natural assets. The data collected using a face-to-face questionnaire involving 385 respondents consisting of Heads of Household. The results of the study found that the physical assets, financial assets, human assets, social assets and natural assets were factors of the sustainability livelihood assets for the B40 household income group in Southern Region of Kelantan.*

**Keywords:** *Sustainability, Livelihood Assets; Structural Equation Model (SEM)*

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## Introduction

The B40 household income group is the government's main focus in inclusive development through the 10th RM (2011-2015), RM 11th (2016-2020), the Shared Prosperity Vision Policy 2030 (WKB30) and Sustainable Development Goals (SDGs). The ending of poverty is a strategies of SDGs to solve the problem of people with build up their economic growth and address a range of social including education, health, social protection and their job opportunities. In Malaysia, the B40 group is defined as the lowest 40 per cent income household

group with a household income limit of RM4,850 and below in 2019 (Department of Statistics Malaysia, 2020). This study discusses a Confirmatory Factor Analysis of livelihood assets ownership for the B40 household income group in Malaysia specifically in the Southern Region of Kelantan. Livelihood assets ownership of the B40 household income group consists of five types of assets namely physical assets, financial assets, human assets, social assets and natural assets. All the assets were interlinked.

### Literature Review

Livelihood assets ownership was related to achieve sustainability livelihood (Ahmad Zubir et. al, 2018). The idea of sustainable livelihoods was introduced by the Brundtland Commission on Environment and Development and was expanded the concept by United Nations Conference on Environment and Development on 1992 to achieve of sustainable livelihoods as a goal for poverty eradication (Lasse, 2001). The livelihood assets consists of five types of assets which is physical assets, financial assets, human assets, social assets and natural assets.

**Physical assets** refer to the basic amenities needed by households to sustain their lives, for example transportation facilities, safe shelter, water and sanitation facilities, clean environment and access to information (DFID, 1999). Ahmad Zubir (2017), stated that physical assets include basic infrastructure and manufactured goods needed to support the life of the community. Physical assets also known as produced or human-made capital comprises the stock of plant, equipment, infrastructure, and other productive resources owned by individuals, the business sector, or the country itself (Ahmad Zubir et. al, 2021). Impact of physical assets is essential for societal development because it includes infrastructure such as transport, roads, vehicles, secure shelter and buildings, water supply and sanitation, energy, communications and technology such as tools and equipment for production, seed, fertilizer, pesticides, traditional technology to produce commodities required to sustain livelihoods (G. R. Sargani et al., 2022).

**Financial assets** are used to achieve the goal of sustainable living. Financial assets are financial resources consisting of savings and money transfers (DFID, 1999). The financial resources are available to people, involve income, savings and access to credit (Rospidah, 2017; Ahmad Zubir et. al, 2021).

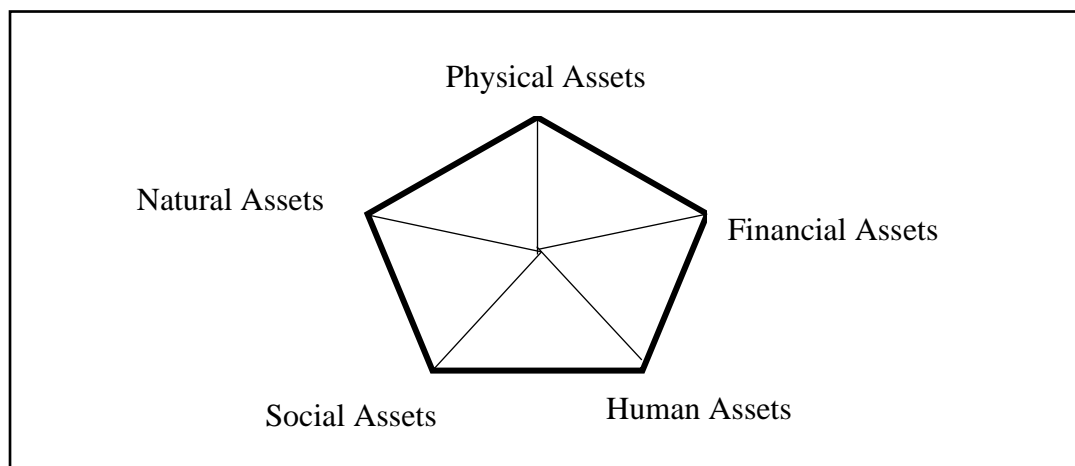
**Human assets** represent skills, knowledge, workforce abilities and good health to achieve livelihood (DFID, 1999). Human assets are one of the most important assets in impacting a perfect life. Rospidah (2017), states human assets refer to a person's education, skills and experience in employment and health status. While according to Ahmad Zubir et. al, (2021), human assets includes investments in education, health, and the nutrition of individuals. Labour is a critical asset linked to investments in human capital, health status determines people's capacity to work, and skill and education determine the returns from their labour.

**Social assets** are formed through relationships and networks between households to increase trust and the ability to work together as well as expand access to other organizations such as politics and non -governmental organizations (DFID, 1999). While Nik Fuad and Noraien (2007) emphasize that social assets are a component that determines the economic status of an individual or community. Social assets have a significant function in increasing people's living standards (Li et al., 2020; G. R. Sargani et al. 2022). The social asset is defined as the rules, norms, obligations, reciprocity, and trust embedded in social relations, social structures, and societies' institutional arrangements, which enable its members to achieve their

individual and community objectives. Social capital is embedded in social institutions at the macro institutional level communities and households as well as referring to the rules and regulations governing formalized institutions in the marketplace, the political system, and civil society (Ahmad Zubir et. al, 2021).

**Natural assets** are essential in life and are based on natural resource activities such as land and its production, water and aquatic resources, trees and forest products, wildlife, biodiversity, environmental services, plantations, mineral resources and public goods (atmosphere, soil, , air etc.) (DFID, 1999; Nik Fuad and Noraien, 2007; Ahmad Zubir et. al, 2021).

All livelihood assets were interlinked and it can be shown in figure 1.



**Figure 1: Livelihood Assets**

## Materials and Method

### Structural Equation Model

Confirmatory Factor Analysis (CFA) is part of the procedure of performing a Structural Equation Model (SEM). Structural Equation Modeling is a technique for analyzing multiple variables that combine aspects of factor analysis and multiple regression analysis in one procedure (Hair et al., 2014). This means that this method of analysis allows a series of separate but interrelated multiple regression equations to be estimated simultaneously. In addition, SEM also tests the relationship between latent and observed variables. In this method, the observed variable is an indicator used in the model, while the latent variable is an unobserved variable that results from a set of observed independent variables that have interrelationships that are regressed to it (Hair et al., 2014).

The study used questionnaire instruments that were distributed face-to-face to the respondents. The form of study question was likert scale using five scales ranging from one (strongly disagreed) to five (strongly agreed) for each item statement. For this study there were five types of constructs, namely physical assets, financial assets, human assets, social assets and natural assets, while 36 items/indicators as variables were observed. Indicators for each asset are shown in Table 1.

The population of this study consists of 208053 people which is 400 sample respondents selected based on Yamane's (1967) estimation sample and Krejcie Morgan's (1970). From the 400 questionnaires distributed to the respondents, only 385 respondents (96.25 %) were returnable the questionnaire and were acceptable completely while 15 respondents (3.75 %) did not completely answer the question. So, the study used 385 respondents as a sample of the study. In addition, the total study sample of 385 people is sufficient in analyzing the Structural Equation Model (SEM) that wants to be applied in the study. According to Hair et al. (2010), the minimum sample depends on the complexity of the model and the characteristics of the measurement model construct. In the context of the study, there are five or fewer constructs in the model and each construct has more than three measurement items. Therefore, the minimum sample required for the Structured Equation Model (SEM) is 150 samples. Therefore, the total sample of 385 people is sufficient and meets the characteristics measurement model. The study respondents consisted of the Head of Household B40 in the Southern Region of Kelantan. The data were analyzed using the Structural Equation Model (SEM) using IBM SPSS Amos 21.0 software.

**Table 1: List of Indicators for Livelihood Assets Ownership for B40 Household Income Group in Southern Region of Kelantan**

Construct	Code	Indicators
Physical Assets	F1	Have a comfortable home
	F2	Appropriate household appliances
	F3	Infrastructure of basic facilities in sufficient area
	F4	Have sufficient equipment to carry out the work
	F5	Lack of equipment for employment equipment affects income
Financial Assets	K1	Income from employment is sufficient
	K2	Income earned helps reduce the cost of living
	K3	Have ancillary income
	K4	Make savings
	K5	Savings are important for future life
	K6	Performing financial loans
	K7	Financial assistance can help reduce financial problems
Human Assets	M1	Education can change living standards
	M2	Able to finance the cost of education
	M3	Higher education can provide better jobs
	M4	Education is important for self-development
	M5	Courses and training are easily obtained by respondents
	M6	Knowledge of the respondent is increasing through skills programs and courses
	M7	Courses and training can contribute to increased income
	M8	More highly motivated after attending training and skills courses The experience of doing full time/part time work is increasing
	M9	Long time working experience causes the respondents to become
	M10	more efficient and skilled in the work
	M11	Having good health is important
	M12	Satisfied with the health of the family
	M13	Good health can facilitate more work
	M14	Health problems affect income

Social Assets	S1	The relationship between respondents and the family is close.
	S2	The relationship between respondents with the local community/neighbors is close.
	S3	Respondent's involvement in community activities gives more benefit.
	S4	The relationship between respondents and the implementing agency is good.
	S5	The relationship between respondents and the implementing agency officer is close.
	S6	The implementing agency is always involved with local community activities.
Natural Assets	Se1	Respondents get clean water at home
	Se2	A clean environment is important in everyday life
	Se3	Environmental pollution causes animals and trees affected
	Se4	Respondents were satisfied with the cleanliness of the environment in the home area

### Fitness Indexes

In SEM, there are several fitness indexes that measure the constructed model. There are three categories in measuring the fitness index which are Absolute Fit, Incremental Fit and Parsimonious Fit. Table 2 shows the fitness index and the level of acceptance of the fitness indexes.

**Table 2: Fitness Indexes**

Categories	Index	Name of Index	Level of Acceptance	References
Factor Loading	Standardized Regression Weight		Factor Loading > 0.6	Hair et. al (2006) Zainudin (2018)
Absolute Fit	Chi Square	Discrepancy Chi Square	P-value > 0.05	Wheaton et al. (1977)
	RMSEA	Root Mean Square of Error Approximation	RMSEA < 1.0	Browne and Cudeck (1993)
	GFI	Goodness of Fit Index	GFI > 0.90	Joreskog and Sorbom (1984) Hair et. al, 2014 Zainudin (2018)
Incremental Fit	AGFI	Adjusted Goodness of Fit	AGFI > 0.90	Tanaka and Huba (1985)
	CFI	Comparative Index	CFI > 0.90	Bentler (1990)
	TLI	Tucker-Lewis Index	TLI > 0.90	Bentler and Bonett (1980)
	NFI	Normed Fit Index	NFI > 0.90	Bollen (1989b) Hair et.al, 2014 Zainudin (2018)
Parsimonious Fit	Chisq/df	Chi Square/Degrees of Freedom	Chi-Square/df < 5.0	Marsh and Hocevar (1985) Hair et.al, 2014 Zainudin (2018)

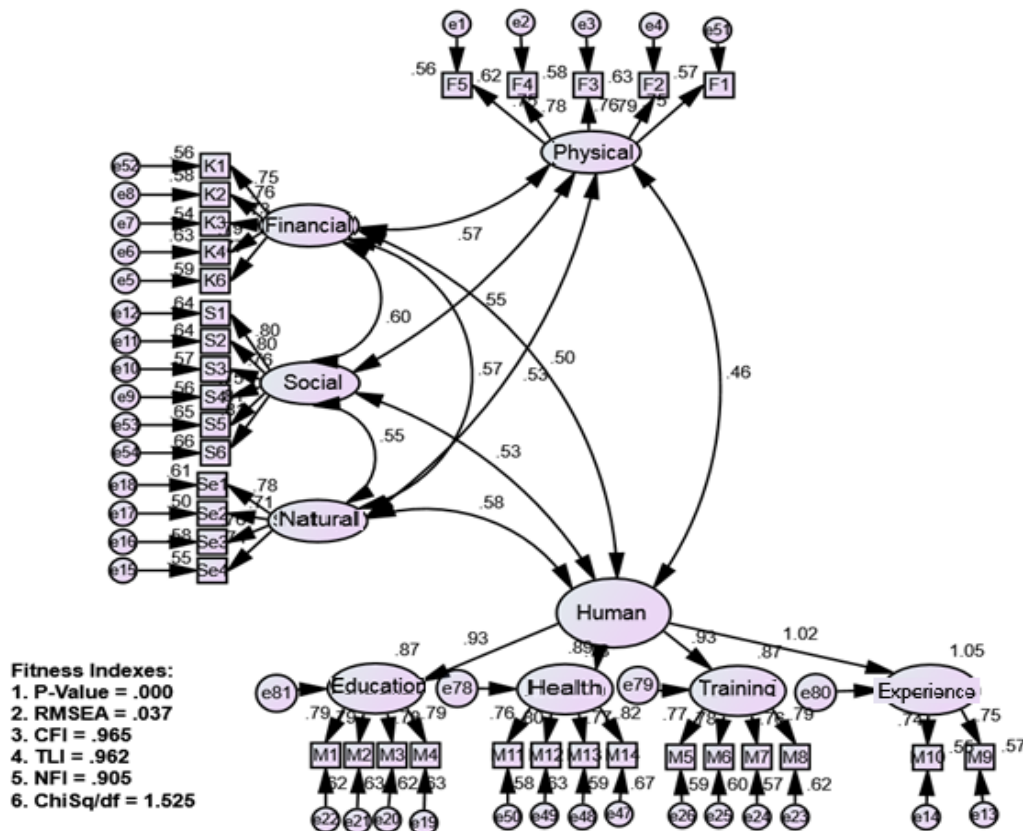
### Validity and Reliability of Measurement Models

Validity is the ability of an instrument to measure a construct. According to Zainudin (2018), there are three types of validity required for each construct measurement model, namely Convergent Validity, Construct Validity and Discriminant Validity. Convergent Validity is achieved when all items in a model are measured to be statistically significant. This validity can also be achieved by calculating the Average Variance Extracted (AVE) using the factor weights of each item. The AVE value must reach a minimum value of 0.5 for this validity to be achieved. Construct Validity is achieved when the fitness indexes of the construct reaches the required level. Discriminant validity shows the measurement model of a construct is independent of overlapping items.

Reliability means the measurement model used is consistent in measuring construct. According to Zainudin (2018), a reliable assessment of a construct measurement model can be made according to the Composite Reliability (CR) and AVE. Composite Reliability shows the extent of internal consistency of the items that measure a construct. A value of  $CR > 0.6$  indicates the reliability of the composite for a construction that has been achieved. While AVE is the percentage of the variance value extracted by the items that measure the construct. The AVE value was also estimated using the factor weights of each item. A minimum value of  $AVE > 0.5$  indicates the reliability of the construct of the measurement model that has been achieved.

### Results

The results of the study found that the physical assets, financial assets, human assets, social assets, and natural assets were factors of the sustainable livelihood assets ownership for the B40 household income group in the Southern Region of Kelantan. Figure 2 shows the construct confirmatory factor analysis of livelihood assets ownership is accepted. The fitness indexes show the results of  $ChiSq/df$  reaching a fitness index value of  $1.525 < 5.0$ ,  $RMSEA = 0.037 < 0.08$ ,  $CFI = 0.965 > 0.90$ ,  $TLI = 0.962 > 0.90$ , and  $NFI = 0.905 > 0.90$ . Therefore, confirmatory factor analysis for livelihood assets ownership is accepted. The fitness indexes are shown in table 3.



**Figure 2: Confirmatory Factor Analysis of Livelihood Assets Ownership for B40 Household Income Group in Southern Region of Kelantan**

**Table 3: Fitness Indexes of Livelihood Assets Ownership for B40 Household Income Group in Southern Region of Kelantan**

Categories	Name of Index	Results of Study	Comments
Absolute Fit	RMSEA	0.037	Acceptable
Incremental Fit	CFI	0.965	Acceptable
	TLI	0.962	Acceptable
	NFI	0.905	Acceptable
Parsimonious Fit	Chisq/df	1.525	Acceptable

After all the constructs simultaneously, the construct validity and reliability values are shown in Table 4. The AVE value is above the value of 0.5 where the AVE value  $\geq 0.5$  indicates convergent validity is achieved. The Composite Reliability (CR) value was found to be above 0.6 where CR  $\geq 0.6$  indicates composite reliability has been achieved for the measurement model.

**Table 4 : Convergence Validity and Composite Reliability Analysis**

Constructs	Code	Factor Loading	CR (CR $\geq$ 0.6)	AVE (AVE $\geq$ 0.5)			
Physical Assets	F1	0.754	0.879	0.592			
	F2	0.795					
	F3	0.763					
	F4	0.785					
	F5	0.750					
Financial Assets	K1	0.746	0.873	0.579			
	K2	0.764					
	K3	0.734					
	K4	0.792					
	K6	0.766					
Human Assets	M1	0.787	0.971	0.892			
	M2	0.791					
	M3	0.785					
	M4	0.791					
	M5	0.770					
	M6	0.778					
	M7	0.758					
	M8	0.790					
	M11	0.765					
	M12	0.796					
	M13	0.767					
	M14	0.818					
	Social Assets	S1			0.800	0.907	0.620
		S2			0.798		
S3		0.755					
S4		0.751					
S5		0.808					
S6		0.811					
Natural Assets	Se1	0.782	0.836	0.560			
	Se2	0.708					
	Se3	0.763					
	Se4	0.739					

Based on Table 5, the discriminant validity value for all constructs of livelihood assets ownership for B40 households income group in Southern Region of Kelantan can be achieved.

**Table 5: Discriminant Validity**

Construct	Natural Assets	Physical Assets	Financial Assets	Social Assets	Human Assets
Natural Assets	0.749				
Physical Assets	0.534	0.770			
Financial Assets	0.568	0.569	0.761		
Social Assets	0.552	0.551	0.598	0.788	
Human Assets	0.582	0.462	0.499	0.532	0.945



## Conclusion

The findings of CFA confirmed that the five assets of livelihood asset ownership for the B40 household income group in the Southern Region of Kelantan are explained by physical assets, financial assets, human assets, social assets and natural assets. The results of the fitness index showed values of  $1.525 < 5.0$ ,  $RMSEA = 0.037 < 0.08$ ,  $CFI = 0.965 > 0.90$ ,  $TLI = 0.962 > 0.90$ , and  $NFI = 0.905 > 0.90$  were accepted. The AVE value is above the value  $\geq 0.5$  so it shows convergent validity is achieved. The CR value also indicates that composite reliability has been achieved for the measurement model when the CR value  $\geq 0.6$  in the construct.

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