Identification of the Elements of Social Well-being Index for Orphans and Vulnerable Adolescents through Principal Component Analysis (PCA)

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Abstract

Purpose: This study aimed to identify the elements of the social well-being index for the orphans and vulnerable adolescents at orphanages.

Design/methodology/approach: This questionnaire was distributed to 300 orphans and vulnerable adolescents at 12 orphanages in Pahang, Malaysia. 270 respondents at the age of 8 to 17 years old returned the completed questionnaires. The questionnaire is comprised of two parts. Three (3) questions are on demographic information, and thirty (30) questions are on social well-being developed from the past literature.

Findings: The results show that there are six elements of the social well-being index for the orphans and vulnerable adolescents in orphanages which include learning ability, orphanage condition, self-efficacy, financial support, emotional health, and social engagement with a range between 6.337% - 8.839%. The study found that learning ability is the main contributor to social well-being and social engagement has the lowest score.

Research limitations/implications: This study only covers 12 orphanages in one state in Malaysia. Consequently, it might produce an incomprehensive result that cannot be used to generalise for the whole population. Therefore, the finding from this study can be the preliminary result for the next study to improve the analysis of social well-being in orphanages in Malaysia.

Practical implications: The development of this social index on well-being will enable the government to keep in touch with the development of the orphans and vulnerable adolescents in the country that will derive social and political working policies from the index provided periodically. Besides, it will help policymakers generate program outcomes to support National Children's Well-being Roadmap and achieve SDG targets.

Originality/value: The study wishes to introduce the Comprehensive Social Well-Being Index for orphans and vulnerable adolescents. This study will also contribute to the new literature by revealing the indicators that can assist orphans, and vulnerable adolescents grow up in an environment that takes care of their well-being.

Paper type: Research paper

Keywords: Well-being, Orphans, Vulnerable adolescent, Orphanages, Principal component analysis

Introduction

In 2017, at least 2.7 million children were estimated to be living in orphanages and institutionalised cares around the world (UNICEF, 2021), and an increase is expected every year in the number of children who live in residential, institutional settings, especially in orphanages. Therefore, these alternative cares play a big responsibility to the care and upbringing of children who lost one parent, both parents, and suffer from impoverishment (Umar et al., 2021). Sadly, these orphans and vulnerable adolescents still lack a fostering

environment needed for their healthy development (van IJzendoorn et al., 2011). Due to that issue, their social well-being is highly affected which indirectly, impacts the Sustainable Development Goals (SDG)'s aim to puts the world's most vulnerable and marginalised people without leaving no one behind, including orphans and vulnerable adolescents, at orphanages. Essentially, several measures have been taken to improve the quality of orphanages, the care and protection of orphans and vulnerable adolescents. Gunnar (2001) explained that three levels of orphanages quality include (i) global deprivation of the child's health (ii) deprivation of the child's stimulation and relationship needs, and (iii) meet all needs except for stable, long-term relationships with consistent caregivers. The quality of orphanages is important to promote such family-like institutions and support the social well-being of orphans.

This study contributes to the new literature in which limited studies focus on the comprehensive social well-being of orphans and vulnerable adolescents in orphanages. Previous studies highly emphasised the psychosocial well-being of orphans (Hailegiorgis et al., 2018; Caserta, Punamäki, et al., 2017), community interventions (Schenk, 2009) and education for orphans (Mokgatle-Nthabu, 2013). This current study can support the development of future generations, which will increase the inclusiveness to strengthen the national economic basis. However, the effort cannot be achieved since there is a lack of attention and incentives to the orphans in terms of comprehensive social well-being. Therefore, this study aims to identify the main contributor to the Comprehensive Social Well-Being Index for orphans and vulnerable adolescents so that it can be a guide to create an environment that promotes their well-being.

Literature Review
Social well-being
Social well-being refers to the individual's experience in the relationship with other people, the neighbourhood, and the surrounding (Keyes et al., 2019). This well-being will create self-happiness, joy, contentment and excitement. There are various elements of social well-being index developed from past researchers, for example, education (Penney et al., 2012), psychological distress (Brennan et al., 2006), governance goals and priorities (Cox et al., 2010).

Research methodology
The orphans and vulnerable adolescents who stayed at Pahang orphanages become the respondents for this study. 488 residents live in 17 orphanages. The respondents were above 8 years old to ensure that there was no language barrier during the data collection. The chosen respondents also received at least early education from school, and they can comprehend the questionnaire so that the result could be more accurate. To ensure the respondents have better understanding on survey questions, the questions was explained by the researchers to respondents during the collection of data. The data were collected from the respondents continuously from September 2020 to December 2020. Out of 488 returned questionnaires, only 270 questionnaires could be used for further analysis.

This study utilised the survey questionnaire to collect the data. The constructs of the questionnaire were derived from the previous literature and existing knowledge in this area. The questionnaire is comprised of two parts. Part 1 was related to the respondent's demographic information, which included three questions. Meanwhile, Part 2 had 30 questions related to social well-being which the items were measured using the five-Likert scale type with 1 for strongly disagree to 5 for strongly agree.

Analytical Methods
This study used SPSS to generate Principal Component Analysis (PCA). According to Abdul-Wahab et al. (2015), PCA is a measurable method that applies a symmetrical change to adjust an arrangement of perceptions of a potentially corresponded variable into an arrangement of estimations of straight uncorrelated factors (PCs).

Findings
Table 1 shows the complete returned questionnaires involved 270 respondents from 12 orphanages in Pahang. Their age is between 8 to 17 years old. Some of the respondents have already stayed at the orphanage from the age of 1, and a few started at the age of 15. The duration of stay in the orphanages among respondents is between 1 to 10 years.

Table 1: Demographic of Respondents

Demographic	Element	Frequency	Percentage (%)
Gender	Male	122	45.19%
	Female	148	54.81%
Age (year)	8	5	1.85%
	9	13	4.81%
	10	25	9.26%
	11	43	15.93%
	12	24	8.89%
	13	34	12.59%
	14	38	14.07%
	15	44	16.30%
	16	18	6.67%
	17	26	9.63%
Duration of stay in the orphanages	Less than 24 months	135	50.00%
	2 years	57	21.11%
	3 years	20	7.41%
	4 years	13	4.81%
	5 years	15	5.56%
	6 years	10	3.70%
	7 years	5	1.85%
	8 years	9	3.33%
	9 years	2	0.74%
	10 years	4	1.48%

Principal Component Analysis (PCA) was implemented to capture the significant elements of the social well-being index for orphans and vulnerable adolescents. In this study, all orphans and vulnerable adolescents in Pahang orphanages were assumed as a homogenous group in terms of the common quest for social well-being. Therefore, they were treated as one group in this analysis.

Table 2: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.790
Bartlett's Test of Sphericity	Approx. Chi-Square	2715.229
	df	435
	Sig.	.000

Kaiser Meyer Olin (KMO) was used to measure the adequacy of the set of variables. Bartlett's Test of Sphericity determines the significance of the data set to run Principal Component Analysis. The value must be more than 0.5 to run Principal Component Analysis (PCA). In this study, Table 2 displays that the KMO value is 0.790, and Bartlett's test is significant at p = 0.000. Therefore, a preliminary test to run PCA was fulfilled as a prerequisite.

Table 3: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.981	19.938	19.938	5.981	19.938	19.938	2.652	**8.839**	8.839
2	3.301	11.003	30.941	3.301	11.003	30.941	2.630	8.767	17.606
3	2.001	6.672	37.612	2.001	6.672	37.612	2.386	7.952	25.558
4	1.687	5.624	43.236	1.687	5.624	43.236	2.355	7.851	33.409
5	1.509	5.031	48.267	1.509	5.031	48.267	2.103	7.009	40.419
6	1.282	4.273	52.541	1.282	4.273	52.541	1.901	6.337	46.756
7	1.219	4.063	56.604						
8	1.168	3.894	60.498						
9	1.033	3.445	63.943						
10	.908	3.026	66.970						
11	.860	2.868	69.838						
12	.808	2.694	72.532						
13	.757	2.522	75.054						
14	.704	2.348	77.402						
15	.677	2.258	79.660						
16	.647	2.156	81.816						
17	.622	2.073	83.888						
18	.542	1.805	85.693						
19	.539	1.796	87.489						
20	.497	1.655	89.144						
21	.448	1.495	90.639						
22	.420	1.400	92.039						
23	.383	1.277	93.316						
24	.361	1.202	94.519						
25	.329	1.096	95.615						
26	.329	1.095	96.710						
27	.283	.944	97.654						
28	.276	.920	98.574						
29	.242	.806	99.380						
30	.186	.620	100.000						

Extraction Method: Principal Component Analysis.

Table 3 lists the eigenvalues related to each previous linear component after extraction and after rotation. Before extraction, six linear components were perceived inside the instructive list. By utilising six factors, the variability is 46.76%. The rotation has the effect of enhancing the factor structure, and one outcome gathered for this datum is that the relative hugeness of

six components is levelled. Before rotation, factor 1 (19.938%) represented significantly more difference than the rest of the factor 2 (11.003%), factor 3 (6.672%), factor 4 (5.624%), factor 5 (5.031%), and factor 6 (4.273%). However, after extraction, it accounts for factor 1 (8.839%), factor 2 (8.767%), factor 3 (7.952%), factor 4 (7.851%), factor 5 (7.009 %), and factor 6 (6.337%).

Table 4: Rotated Component Matrix[a]

	Component					
	1	2	3	4	5	6
S1				.798		
S2				.840		
S3				.688		
S4						
S5			.615			
S6						.515
P1						
P2			.711			
P3					.653	
P4					.743	
P5					.610	
P6					.585	
IR1						.676
IR2						.692
IR3						
IR4						.618
IR5			.563			
IR6			.606			
EN1		.599				
EN2		.702				
EN3		.735				
EN4		.711				
EN5		.520				
EN6						
ED1	.836					
ED2	.815					
ED3	.816					
ED4	.626					
ED5						
ED6						

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalisation.
a. Rotation converged in 6 iterations.

Table 4 shows the rotated matrix rotation utilising varimax with Kaiser Normalisation. Contingent upon the indication of the relating Principal Component (PC) coefficient, the commitment of a variable to a PC can be either positive or negative. The loading factor of more than 0.50 is considered strong, 0.40-0.49 is considered moderate, and less than 0.30 is considered weak (Awang et al., 2015).

Table 4 reflects that PC-1, named as learning ability consists of four factors with an eigenvalue of 2.652. It explains the 8.839% variation of social well-being. PC-1 consists of strong positive contributions of learning ability (ED1-ED4). All PC-1 items have a strong positive relationship with the well-being index. Learning ability determines an individual's learning performance in various tasks. The ability to read, write and calculate is found to have a greater influence on social well-being in orphanages than other items. When they can read, write, and calculate, these abilities make it easier for them to succeed and learn another knowledge, for example, computerisation. Apart from that, these abilities will also direct them to achieve a good result and become active in students' activities. Khan et al. (2021) justified that an individual's confidence will allow people to grasp opportunities to connect better and improve their competency. Children seek company among themselves to ensure that they will be able to manage their emotions and overcome the situation. The intervention from home-based caregivers can also improve educational outcomes, such as school attendance and confidence, develop the individual's abilities and equip them with knowledge, skills, and attitudes (Chatterji et al., 2010).

PC-2 consists of orphanage condition factors that consist of EN1-EN5 with the loading of 0.735. 0.711. 0.702. 0.599 and 0.520, respectively. It has an eigenvalue of 2.630, and it caters to 8.767% of the variations of social well-being due to the respondents' level of comfort and safety when living at the orphanages. The respondents are also satisfied with the facilities for their study and sports activities. Besides, the location of the orphanages is close to public facilities, for example, schools, shops, mosques, and health facilities. Orphans perceive school as place for acquiring life skills, including handling their emotional and creating social networks (Nyamukapa et al., 2018). However, Yuekai (2014) revealed that most orphanages have insufficient accommodation facilities due to the increasing number of orphans and vulnerable adolescents staying there. This problem has led to orphans being exposed to negative behaviours and abuse (Behnke et al., 2018). This issue has become more serious when more children without concomitant improvement are gathering at the existing facilities in the orphanages (Nwaneri et al., 2016).

PC-3 consists of self-efficacy factors that include S5, P2, IR5 and IR6. PC-3 has 7.952% of the variation of social well-being with an eigenvalue of 2.386. Self-efficacy refers to an individual's perception of his or her competence to perform a task successfully. The analysis shows that the respondents have a good perception of their competence to perform a behaviour. The respondents have confidence in dealing with others since they are actively involved with the outside activities organised by non-profit organisations. Some activities they have participated in gave them various benefits. For example, sports activities with outsiders will help them live a healthier lifestyle and produce a healthy physical body. Other than that, some programs provide allowances to them, and they use the money to save. This context is supported through the finding by Salifu Yendork et al. (2015), who found self-efficacy emerged as a significant positive correlation with traits of openness and positive emotionality, which will minimise neuroticism and negative emotionality.

PC-4 is contributed by financial support factors that consist of S1, S2 and S3. PC-4 possesses 7.851% of the variation of social well-being with an eigenvalue of 2.355. Financial support has a strong positive contribution of receiving money from orphanages for every school day. The respondents feel that they have enough money every day to buy the foods and materials. They have also received other financial supports from others, for example, donors, schools, *zakat* institutions. Frimpong-Manso (2021) mentioned that unsustainable funding in orphanages would negatively impact orphans and vulnerable adolescents, especially on social-emotional progress. However, unsustainable funding influences the higher chance of negative psychological risks for orphans because orphans usually have inadequate personal attention

that can bring them to depression, low social esteem, loss of identity, and behavioural problems (Bettmann et al., 2015)

PC-5 illustrates emotional health factors from P3, P4, P5 and P6, which is explained through 7.009% of the variation of social well-being with an eigenvalue of 2.103. Emotional health includes anger, love, hate, loneliness and happiness. Emotional health has a strong contribution from stress management, staying calm when they have problems, and accepting any self-weaknesses. Past study has shown that orphans and adolescents brought up in orphanages are exposed to various emotional difficulties. Akimanimpaye (2021) highlighted those orphans are capable of possessing emotions due to their loss. Emotional health includes anger, love, hate, loneliness and happiness. In this situation, the caregiver plays a big role to promote well-being for the orphans (Helles, 2021).

PC-6 is related to social engagement factors based on S6, IR1, IR2 and IR4. PC-6 has 6.337% of the variation of social well-being with the eigenvalue of 1.901. Social engagement refers to the social interaction with surrounding that will create self-belonging (Baumeister et al., 1995). Through this study, the respondents said that they are well-treated and they feel loved at the orphanages. Some respondents are working on a part-time basis, and most of the time, other people in the community and at work will help them by any means. The sense of belonging will lead to social interaction with the surroundings, increasing social engagement among the target group (Baumeister et al., 1995). The social engagement will form social bonds, the care and support needs of orphans and vulnerable youths (Thurman et al., 2008).

Discussion and Conclusion

This study's findings quantify the five contributor elements of the social well-being index for orphans and vulnerable adolescents through Principal Component Analysis (PCA). There are six elements identified: learning ability, orphanages condition, self-efficacy, financial support, emotional health, and social engagement, which these items range from 6.337% - 8.839%. It was found that learning ability is the main contributor to social well-being, as reported in this study with 8.839%. In the meantime, the 11th Plan Malaysia 2016-2020 states that children in welfare institutions between the ages of 13-18 are given the opportunity to pursue technical and vocational education. It is one of the initiatives from the government towards helping orphans in Malaysia. Alqahtani (2021) discussed that children's learning ability could be influenced by certain situations, such as loss of the family members and living at a care home. The children are prone to facing mental health issues such as depression and anxiety to the extent that emotional distress can impact their academic achievement (Eneji et al., 2021).

Second contributor to social well-being refer to orphanages condition. Many parties are concerned about orphanages condition the comfort of orphanages to guarantee that orphans will have better living accommodation and a conducive environment to grow up. Furthermore, third contributor to social well-being related to self-efficacy. Self-efficacy relates to resilience for the orphans (Salifu Yendork et al., 2015). High resilience among the orphans will guide them to develop a positive mood and self-esteem, and they might be able to possess a protective social environment that might lead them to cope effectively with various life challenges and situations (Dey et al., 2019). Besides, financial support also contributes to social well-being. Orphanages receive financial support from various sources, including the government, donations from donors, orphanage tour agencies, child sponsorship programs, and local philanthropists and corporations (Frimpong-Manso, 2021). Financial support provides the allocation to sponsor an orphan's important needs include for daily used (Huynh, 2019).

Emotional health also apart of contributor to social well-being. It is important to overcome the deep sadness and sorrow of orphans in order to reflect and predict success and failure in one's economic and social life (Ghelbash et al., 2021). Besides, orphanages should provide a

stimulating environment, multi-sensory environment, and positive distraction in orphanages design (Helles, 2021). In addition, social engagement shows the lowest contribution to the social well-being index for orphans and vulnerable adolescents since limited activities was involve with society. To satisfy their needs and feel that they belong to the place, people tend to cultivate possible relationships (Burnett, 2021).

Theoretical, Practical and Social Implications
This study recommends that some guidelines from the policymakers on the social well-being of orphans and vulnerable adolescents at orphanages or any home cares. It is important to achieve SDG targets for children, including poverty, food, health, education, and gender equality. This study provides additional information about aspects of life that are not captured in the SDGs, such as relationships between society and children and social activities and the quality of an orphanage's environment. More importantly, this study permits further improvement of the current policy to ensure that no one will be left behind and positive outcomes for all nations and all members of society. In addition, this study shed some lights due to limited social well-being index literature, especially for orphans and vulnerable adolescents in orphanages.

Limitations and Suggestions for Future Research
As for limitations, this study only took place with a limited number of respondents in one state. Due to the limitation, future studies might gather more information from various orphanages across Malaysia to make a better comparison. Future researchers can also further investigate the effect of the COVID-19 pandemic on orphans and vulnerable adolescents at orphanages.

Acknowledgement

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