

# E-Happiness Tool (Web Application), Measuring of Poor Family Happiness

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**Abstract**—Is your family happy? Many factors can affect family happiness. e-Happiness Tool can assess whether your family is happy or not based on factors that are valid and reliable from previous studies. These factors are life satisfaction, affect, and meaning of life. The e-Happiness Tool also presents a percentage of the level of family happiness. Another feature of e-Happiness Tool is the map of the distribution of happiness levels at the provincial and district/city level in Indonesia (case study). E-Happiness Tool can be accessed online and for free.

**Keywords:** family happiness, e-Happiness Tool, map of the distribution of happiness level

## I. INTRODUCTION

Slums in urban areas were chosen as research locations because someone in a household living in an urban area has a greater risk of experiencing a high level of inequality and requires more resources to achieve a minimum level of welfare that is socially acceptable, so [4] also states that the location of residence affects how one's perception of their welfare status. Supposedly, people who live in poverty will experience conditions of low subjective well-being compared to those who are not poor. However, in a study [5] entitled Making the Best of A Bad Situation: Satisfaction in the Slums of Calcutta it was found that poor people living in slums in Calcutta, despite experiencing adverse conditions, but in many cases found a life satisfaction that reflects good subjective well-being which often becomes a substitute term for happiness.

Happiness is perceived subjectively for everyone who feels it, and this also depends on the degree to which they positively assess the quality of their whole lives [9,12]. According to [8] states that there are two affective components and cognitive components to measure happiness. The affective component is related to the extent to which an individual feels positive about himself (hedonic level of affect), while the cognitive component is related to the level of individual satisfaction with what he gets in life (contentment / life satisfaction). The word "happiness" is often a vague term for some experts so they often change the term happiness to "subjective well-being" to define it. The term "subjective" is used because in reality a person experiences happiness is relative only to those who experience it alone [15]. Or in other words, "the best judge of how a person feels happiness is that person". But in the end a number of studies have succeeded in delivering accurate and reliable reports to measure individual happiness [3].

Happiness is an indication of well-being which includes aspects of feeling good and positive emotions, as well as the meaning and satisfaction of life [15]. In other words, happiness as an experience of positive emotions combined with deeper feelings about the meaning and purpose of life.

Badan Pusat Statistik (BPS) [6] sets happiness measurements with 3 (three) dimensions namely: (1). Life satisfaction dimensions consisting of Personal Dimensions and Social Dimensions; (2). Dimension of Feeling (Affect); and (3). Dimension of the Meaning of Life (Eudaimonia). Based on the results of the 2017 Happiness Index it is implied that the score of life satisfaction dimension is 71.07, where the scores of each personal and social sub dimension are 65.98 and 76.16. While the dimensions of Feelings and Meanings of Life are 68.59 and 72.23, respectively. Contributions in the measurement of the Happiness Index for Each dimension of life satisfaction, feelings, and meaning of life were 34.8 %, 31.18 %, and 34.02 %. In other words, the average contribution in each of the dimensions of happiness is relatively the same at around 30 %.

Indonesia's happiness score is 70.69 and the happiness index in DKI Jakarta Province is above Indonesia's happiness index which is 71.33. This means, the happiness of the population in DKI Jakarta Province is in the Medium category [7]. What about the happiness of poor households in DKI Jakarta, especially in the Municipality of North Jakarta? The number of poor people in North Jakarta Municipality is highest compared to the number of poor households in other Municipality in DKI Jakarta Province.

The measurement of happiness that has existed so far, which is measured by BPS and OECD (UNDP) [11] is limited to the measurement of happiness that relies on areas in the index measure. However, when asked which household is happy, or how the level of happiness owned by a household - has not been answered and cannot be disclosed.

Based on this explanation, the researcher will detect indigently the poor household whether happy or unhappy, then it will detect the type of happiness it has. Detection is carried out using indicators that will be discussed in the research method. These indicators are the basis for developing the e-Happiness Tool (Web Application).

## II. METHOD

There are several things used in the method in this study. Among them are Alkire-Foster Method, Composite Index

Calculation Method (Happiness Index), and Website Development Method E-happinesstool.com.

#### A. Alkire-Foster Method

The Alkire-Foster (AF) Method [1] is a way to calculate multidimensional poverty developed by OPHI's Sabina Alkire and James Foster. This method was built based on poverty calculation by Foster-Greer-Thorbecke, which calculates the different types of deprivation that a person experiences at the same time, such as lack of education, unemployment, health and low standard of living. Deprivation criteria are analyzed to identify who is poor and then used to build a multidimensional poverty index. This research uses the method [2] to calculate the multidimensional poverty index because this method is easily applied and can be used to monitor changes in poverty over time. This can be seen from the changes in dimensions and indicators directly and quickly [2]. The following are the stages of the method [2]:

##### 1) Select the unit of analysis

The unit of analysis commonly used is individuals or households but it can also be a community or school, clinic, company, village or other unit.

##### 2) Select dimensions.

Dimension selection can be made based on survey data or research on people's perceived needs, the results of general consensus such as human rights declarations, SDGs, national or regional policies.

##### 3) Select an indicator.

Indicators are selected for each dimension with accuracy rules (using as many indicators as needed so that analysis can form the basis of policy) and parsimony (using indicators as little as possible to ensure ease of analysis for policy and transparency purposes). Statistical properties are often relevant for example, when possible and reasoned is the best choice for choosing indicators that are not highly correlated.

##### 4) Establishing the deprivation cut-off point.

The cut-off point is set for each indicator. This stage forms the intersection point which is the first intersection point in this methodology that can identify someone deprived or not for each indicator.

##### 5) Determine the weight / weight for each dimension and variable.

Weights used can be either the same weight (equal weighted) or different weights (equal weighted).

##### 6) Calculate the deprivation score (ci) experienced by each unit of analysis formulated as follows:

$$ci = w1I1 + w2I2 + \dots + wdId \quad (2)$$

Information:

$Ii = 1$  if the unit of analysis is identified as poor and  $Ii = 0$  other on variables i.

$wi$  = weighting of variable i, where  $\sum wi = 1$   $d i=1$ .

##### 7) Set the second intersection point (k).

Determine the number of deprived indicators (k) to identify someone experiencing multidimensional poverty or not.

##### 8) Apply the intersection point k to get the second poverty line. The unit analysis at i was identified as having multidimensional poverty when $ci \geq 1/k$ . If $ci < 1/k$ then the

unit of analysis does not experience multidimensional poverty and all information is replaced with zero (0).

#### B. Composite Index Calculation Method (Happiness Index)

Happiness index measures the level of a happy life based on three dimensions, namely the Dimensions of Life Satisfaction, Feelings, and Meaning of Life [10,13,15].

Life Satisfaction dimensions include:

1) Sub dimensions of Personal Life Satisfaction include Educational Variables and Skills; Main work / business / activities; Household income; Health; House conditions and home facilities;

2) Sub dimensions of social life satisfaction include variables of family harmony, availability of free time, social relations, environmental conditions and security conditions.

The Dimension of Feeling (affect) includes: Feeling happy / happy / happy; Feelings of not worrying / worrying; and Feelings are not depressed.

Dimensions The meaning of life (Eudaimonia) includes: Independence, environmental control, personal development, positive relationships with others, life goals, and self-acceptance. The three dimensions of measuring happiness in question have a weight of 1/3 each, and each indicator in the dimensions is also weighed equally. So we get the weight of indicators as follows: the weight of the dimensions of life satisfaction consisting of 11 indicators valued at 1/33, the weight of the dimensions of feelings consisting of 3 indicators rated 1/9, and the weight of meaning of life consisting of 6 indicators rated 1/18.

Everyone assessed in the worksheet is seen from the indicators assessed. The assessment consists of dummy 0 or 1. When someone meets the happiness assessment according to a multidimensional happiness indicator, then given a point 1. The assessment will continue to be done on each indicator. After getting an assessment of twenty indicators, it will be calculated based on the following formula:

$$Ci = W1I1 + W2I2 + \dots + WpIp$$

Information:  $Ii = 1$ , if someone include on the indicator I  
dan  $Ii = 0$ , if not.

$Wi$  is the weight of the indicator to the total  $n$ = the weight is 1.

Then the value of  $Ci$  is compared with a weight of 1/3, if it is greater then the household is categorized as "HAPPY". Based on the happiness dimension of the BPS version [7], this study will detect poor households who have happiness and are unhappy. The development of the detection is done by giving a value of 0 (No / None) or 1 (Yes) of the indicators in each dimension, as simplified in the following worksheet.

TABLE 1. WORKSHEET OF POOR HOUSEHOLDS HAPPINESS PREDICTION

Measuring of Poor Family Happiness					
INDICATOR	Number of individuals in the sample households				Score
	A	B	C	.....	
LIFE SATISFACTION (weight = 3)					
SUB DIMENSION OF LIFE SATISFACTION:					
1). No family member has dropped out of school	...	...	...	...	...
2). Have family member that participated in skills training	...	...	...	...	...
3). No family member is unemployed	...	...	...	...	...
4). Have fixed income per month	...	...	...	...	...
5). No family member has chronic disease	...	...	...	...	...
6). Own homeowner	...	...	...	...	...
SUB DIMENSION OF SOCIAL LIFE SATISFACTION					
1). Harmonious family	...	...	...	...	...
2). Have lots of free time for family	...	...	...	...	...
3). No family member has ever had conflict with neighbour	...	...	...	...	...
4). Have comfortable environment	...	...	...	...	...
5). Have never experienced a crime	...	...	...	...	...
AFFECTION (weight = 3)					
1). Feel happy/cheerful	...	...	...	...	...
2). No feeling of worry / anxiety	...	...	...	...	...
1) No feeling of depression	...	...	...	...	...
MEANING OF LIFE ( <i>Eudaimonia</i> ) (weight = 3)					
1). Independent family					
2). No feeling of stress due to the environment	...	...	...	...	...
3). Feel self develops	...	...	...	...	...
4). Have positive relationship with other people	...	...	...	...	...
5). Have purpose in life	...	...	...	...	...
6). Able to control emotions (self-acceptance)	...	...	...	...	...
SCOR (Ci)	...	...	...	...	
HAPPY if $C1 \geq 1/3 = 0,333$	...	...	...	...	

### C. Development Method of E-happinesstool.com Website

The indicators described earlier were used to develop the e-happinesstool.com website. Development is done using the Laravel Framework because it has the features needed in the development process. There are several features available at e-happinesstool.com including Family Happiness Test, Family Happiness Distribution Map of Cities in Indonesia,

Family Happiness Distribution Map of Indonesia, and data management via admin login.

### III. RESULTS AND DISCUSSION

Website development is divided into two parts, namely front-end and back-end. The following is a display of www.ehappinesstool.com that has been developed:



Fig.1. Home Page

Figure 1. Display the home page of the website www.ehappinesstool.com. There is an explanation of

Happiness and how this website can see whether a poor household is happy or not.

Fig.2. Family Happiness Test

Figure 2. Form to measure whether a poor household is happy or not. There are 20 main questions taken based on the indicators discussed earlier. After answering all the questions

in this page, it can be seen whether a poor household is happy or not.



Fig.3. Family Happiness Distribution Map of Cities in Indonesia

Figure 3. The distribution of happiness is seen at the district / city level. Regencies / cities contained in the map are from all regencies / cities in Indonesia.



Fig.4. Family Happiness Distribution Map of Province in Indonesia

Figure 4. The distribution of happiness seen at the Provincial level. The provinces contained in the map are from all districts / cities in Indonesia.

Fig.5. Administrator Login

Figure 5. Login page for administrators. To enter into the administrator's dashboard you must go through this page.

No	Questions	Edit	Delete
1	Have never experienced a crime	<a href="#">Edit</a>	<a href="#">Delete</a>
2	Able to control emotions (self-acceptance)	<a href="#">Edit</a>	<a href="#">Delete</a>
3	Have purpose in life	<a href="#">Edit</a>	<a href="#">Delete</a>
4	Have positive relationship with other people	<a href="#">Edit</a>	<a href="#">Delete</a>
5	Feel self develops	<a href="#">Edit</a>	<a href="#">Delete</a>
6	No feeling of stress due to the environment	<a href="#">Edit</a>	<a href="#">Delete</a>

Fig.6. Administrator's Dashboard

Figure 6. On this page, administrators can set various questions (indicators) that will be displayed on the happiness test page of poor households. In addition, all data contained on the website can be retrieved through this page.

#### IV. CONCLUSIONS

BPS and UNDP have data on how happy they are in certain areas, but they have not been able to specifically answer whether a poor household is happy or not. The development of a website-based e-Happiness Tool with the address [www.ehappinesstool.com](http://www.ehappinesstool.com) can answer whether a poor household is happy or not. The website can also see the level of distribution of happiness at the district / city and provincial levels. It is expected that future research can utilize much more practical media such as the Android or iOS application.

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