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e-Happiness Using RStudio Programming Language

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Abstract—**The measurement of happiness that has existed so far is only describing the macro conditions of people's happiness. This study offers a product in the form of an assessment of happiness of a household (individual) Until now there has been no making of e-happiness assisted by the RStudio programming language. e-happiness is an assessment of happiness of a household in real time and fast, because it is built with a programming application. The basis for calculating happiness refers to the dimensions of happiness by the BPS Statistics-Indonesia. This study used the RStudio programming language, which is a programming language commonly used by academics and unpaid, so it is expected that this application can be used by anyone. the results of the assessment of household happiness are around the score 0-100, and the keyword from the happiness score is not possible is 0 or 100.**

Keywords: component, formatting, style, styling, insert

I. INTRODUCTION

Happiness is a measure of relative well-being, and this is characterized by the existence of emotional, and beneficial aspects of life [1]; [2];[3]. The meaning of happiness itself is relative and subjective, so people understand it can vary. Happiness can be interpreted as a condition of feeling happy, and feeling satisfied with something that makes them happy ([4]. Happiness is an effort to fulfill something to achieve certain life goals ([5]; [6]; [7]; [8];[9], [10]. Happiness also means evaluating the life that someone feels based on emotional experience [11], and happiness is a psychological function that works well [12]; [13]; [14]; [15].

According to the [16] happiness covers 3 dimensions of life, namely (1) Dimensions of Life Satisfaction, (2) Dimensions of Feeling, and (3) Dimensions of Meaning of Life (Eudaimonia). The dimensions of life satisfaction are divided into sub-dimensions of personal life satisfaction and satisfaction of social life. The theoretical study that supports the dimensions of happiness is the dimension of Life Satisfaction by [4]. The sub-dimensions are Individual sub-dimensions [17]; [18]; [19] ; [20]; [21]; [22]; and social sub-dimensions [23]; [24] ; [25]; [26]; [27]; and [18]. While the theoretical study of the second dimension of happiness is the dimension of feeling [5]; [6]; [28]; and [8]; [9]; [10]; [29]; [1]; [18]. Specifically theoretical studies of dimensions of the meaning of life by [12]; [13]; [14]; [30]; [1].

The measurement of happiness that has existed so far is only describing the macro conditions of people's happiness as implemented by BPS Statistics-Indonesia regarding happiness index. The results of the happiness analysis in BPS Statistics-Indonesia publications imply that the magniude of

the index of each dimension that makes up the happiness index Indonesia, namely: (1) life satisfaction dimension index 71.07 (Index the sub-dimension of personal life statisfaction is 65.98 and the sub-dimension index social life satisfaction 76.16); (2). Feeling dimension index 68.59; and (3). Life meaning dimension index 72.23. Whole index measured on a scale from 0-100. Life satisfaction dimension index above 50 and close to 100 show increasing population valuation satisfied with the objective conditions of his life domain, and vice versa. Furthermore, the feeling dimension index is above the number 50 and close to that number 100 shows the assesstment of citizens who are increasingly sensitive in undergoing everyday life [16].

Based on the explanation above is an estimate of happiness by region (province) level. When asked which household is happy? BPS Statistics-Indonesia Publications cannot answer that. So that in this study offers a product in the form of an assessment of happiness of a household (individual) by discussing RStudio programming.

II. METHOD

A. Worksheets for Happiness

Based on the 3 dimensions of happiness that exist, the weights for each dimension are determined. the weight for each dimension is 1/3, because there are 3 dimensions. The number of indicators in the dimensions of life satisfaction are 11 indicators, so the weight values for the dimensions of life satisfaction are $(1/3) \times (1/11) = (1/33)$. considering the number of indicators on the feeling dimension are 3 indicators, then the bobor for the feeling dimension is $(1/3) \times (1/3) = (1/9)$. while the weight for the dimensions of the meaning of life is 1/18, because the number of indicators in that dimension are 6 indicators. the score for each indicator is only code 0 or 1. Code 1 means that there is a case of what is asked for each indicator, and code 0 otherwise [31]. thus and so on, and then calculated E (I) specified are as follows:

$$E (I_i) = W_1 I_1 + W_2 I_2 + ... + W_p I_p$$

Where: $ii = 1$, if there is a household member (including the head of the household) answer "yes" to the case that was asked for the amsing of each indicator, and the code o vice versa (no). Wj is the weight of the indicator.

Furthermore, the value of E (I_i) is compared with the weight of 1/3, if the value of $E (I_i) > (1/3)$, then the intended household can be categorized as "happy". The following is a worksheet to assess whether a household can be said to be "happy" or "unhappy" (Table 1):

TABLE I. WORKSHEET FOR ASSESSMENT OF HAPPINESS

Dimension/sub-dimension/indicator	Sample of Household (Hh)				Weight (Wj)
	Hh. A	**Hh. B**	**Hh. C**	**…… Hh. Z**	
	Ii = 1, if household member is hit by indicators I and I = 0, if not				
LIFE SATISFACTION					*1/3*
Personal Subdimension:					
1). Nobody dropped out of school	**1 or 0**	**1 or 0**	**…**	**…**	**1/33**
2). Some have participated in skills training	**1 or 0**	**1 or 0**	**…**	**…**	**1/33**
3). No one is unemployed	**1 or 0**	**1 or 0**	**…**	**…**	**1/33**
4). There is a fixed income per month	**1 or 0**	**1 or 0**	**…**	**…**	**1/33**
5). No one has a chronic disease	**1 or 0**	**1 or 0**	**…**	**…**	**1/33**
6). Own Home Ownership	**1 or 0**	**1 or 0**	**…**	**…**	**1/33**
Social Life Satisfaction Subdimension:					
7). Harmonious family	**1 or 0**	**1 or 0**	**…**	**…**	**1/33**
8). Lots of free time for family	**1 or 0**	**1 or 0**	**…**	**…**	**1/33**
9). No one has ever had a conflict with a neighbor	**1 or 0**	**1 or 0**	**…**	**…**	**1/33**
10). Comfortable environment	**1 or 0**	**1 or 0**	**…**	**…**	**1/33**
11). Never experienced a crime	**1 or 0**	**1 or 0**	**…**	**…**	**1/33**
Total dimensi 1 score					
FEELINGS (Affect)					*1/3*
1). There is feeling happy	**1 or 0**	**1 or 0**	**…**	**…**	**1/9**
2). There is no feeling of worry/anxiety	**1 or 0**	**1 or 0**	**…**	**…**	**1/9**
3). No feeling depressed.	**1 or 0**	**1 or 0**	**…**	**…**	**1/9**
Total dimensi 2 score					
MEANINGS OF LIFE (*Eudaimonia*)					*1/3*
1). Independent family	**1 or 0**	**1 or 0**			**1/18**
2). No stress due to the environment	**1 or 0**	**1 or 0**	**…**	**…**	**1/18**
3). The self feels developing	**1 or 0**	**1 or 0**	**…**	**…**	**1/18**
4). There is a positive relationship with other people	**1 or 0**	**1 or 0**	**…**	**…**	**1/18**
5). Have a purpose in life	**1 or 0**	**1 or 0**	**…**	**…**	**1/18**
6). Can control emotions (there is self-acceptance).	**1 or 0**	**1 or 0**	**…**	**…**	**1/18**
Total dimensi 3 score					
$E(I_i)$ = Expected value of I, i = 1, 2, 3, ….,p	**C_1**	**C_2**	**C_3**	**…**	
Happy (H) Categories If $E(I_i) \geq (1/3)$. Note:There are 3 dimension	***H or not***	***H or not***	***H or not***	**…**	

B. RStudio Programming Language

Then we try to make a simple application that contains the instruments that we have made using RStudio programming software, this RStudio is also a statistical software development and data analysis. In RStudio also provides a variety of statistical techniques (linear and non-linear modeling, classical statistical tests, time series analysis, classification, clustering, etc.) and graphics [32].

In making this simple application, the first thing to do is to install a package called 'shiny', which functions from the package is to create a web application framework in RStudio, where the user allows to create an application based on the UI (User Interface) and Server (as data processor input from UI).

library(shiny)

The first syntax used is the library () as above, which is useful for calling the package 'shiny', which in it there are syntaxes to be able to create a web application.

shinyUI(
navbarPage("E-Happiness",

```
tabPanel("E-HAPPINESS Instrument",
h1("E-HAPPINESS",style="font-family:'Script
Mt Bold';
                          font-size:80px;text-
align:center;color:orange"),
h1("Fill in this instrument with the choice '1' for
'YES' and '0' for 'NO'",
                          style="font-family:'Arial;
                          font-size:20px;text-
align:center;color:green" )
```

Then the syntax shinyUI () has a function as a syntax to create a User Interface in which the UI design form contains syntax-syntax as its constituent like navbarPage (), with this syntax the user allows to create a navigation bar, in this navigation bar load tabPanel () This syntax functions as a page tab viewer for user views which is named "E-HAPPINESS APPLICATION".

Syntax h1 ("E-HAPPINESS", ...) functions as the title of the Interface on this first tab, in which there is also the argument style = "..." which has a function as the form of the title of the title we make, the contents can be font-family , font-size, and also color.

```
fluidRow(column(7,offset =3,inputPanel(
h1("LIFE SATISFACTION",style="font-
family:Arial;font-size:20px;line-height=1.1;text-
align:center")
,br(),br(),
selectInput("bil1",label ="Nobody dropped out
of school",0:1),
selectInput("bil2",label ="Some have
participated in skills training",0:1),
selectInput("bil3",label ="No one is
unemployed",0:1),
                . . . . . . . . . . .
selectInput("bil19",label ="Have a purpose in
life",0:1),
selectInput("bil20",label ="Can control
emotions (there is self-acceptance)",0:1),
actionButton("submit","submit")))))
```

The next syntax is fluidRow () which functions to make a row display on the UI, in fluidRow () this user can also specify how many columns there are in the UI with syntax column () and also the user can specify which posts in the column with the syntax offset = ..., then in column () it contains the inputPanel () syntax which functions as a form of input display on the UI, in which there is a selectInput () syntax that functions as inputting the answers to the items we make on the instrument which are then translated into variables. And actionButton () has a function as a button to submit all user input to be processed on the server.

```
tabPanel("Result",
fluidRow(column(4,offset=3,inputPanel(
h1("Your unhappiness score is \n",style="font-
family:Arial Black;font-size:30px ;
       color: orange ; text-align:center"),
verbatimTextOutput("jumlah"),
```

```
h1("Does your score belong to the category 'NOT
HAPPY' \n(> 33.3)",style="font-family:Arial Black;
color:purple ; font-size:20px;text-
align:center")))))
```

On the tabPanel () syntax as the second tab, in the tab syntax it contains almost the same as the tabPanel () syntax that made it different in the tabPanel () this syntax verbatimTextOutput () has a function as the output variable from UI.

```
library(shiny)
shinyServer(
function(input,output){

happy = eventReactive(input$submit,{
bil1 = input$bil1
bil2 = input$bil2
bil3 = input$bil3
bil4 = input$bil4
      . . . . . . .
bil19 = input$bil19
bil20 = input$bil20
```

In server scripts, it starts with syntax shinyServer () as the syntax of the server maker, in which there is a syntax function (input, output) where these inputs are variables that we input into the User Interface (UI), and the output is a variable that we the input on the Interface is then operated in the server which displays the output results in the user interface as a score. In the syntax function () it also contains syntax eventReactive () which is the output syntax that output view when the actionButton button on the UI is pressed, then there is also the syntax bil1 = input $ bil1, which can be interpreted as answering the first question named bil1 then we name it back on the server to be bil1 too, and so on as many as the question item is bil20.

```
jumlah = (1 - ((as.numeric(bil1) + as.numeric(bil2) +
as.numeric(bil3) + as.numeric(bil4) +
       as.numeric(bil5) + as.numeric(bil6) +
as.numeric(bil7) + as.numeric(bil8) + as.numeric(bil9) +
as.numeric(bil10) + as.numeric(bil11))/33 +
(as.numeric(bil12) + as.numeric(bil13) +
       as.numeric(bil14))/9 + (as.numeric(bil15) +
as.numeric(bil16) + as.numeric(bil17) +
       as.numeric(bil18) + as.numeric(bil19) +
       as.numeric(bil20))/18))*100

cat(sprintf("%f",jumlah))
             })
output$jumlah = renderPrint({happy()})  })
```

Then after we give the name bil1 to bil20 for each input on the question item in the User Interface, then we can do the counting operation to display the results of the score of happiness, with the syntax as above, where the number is the result of calculation, which is the result of the operation of each answer to a question item that we must define as a number

First with syntax as.numeric (). Then after experiencing the operation, to display the results we need to create a paint syntax (sprint ("% f", number)), the paint syntax (sprint ()) functions as a printer or viewer of an output that can be either a number or a string or character , in it there is the argument% f which functions to display numbers in decimal, and "number" as the variable that you want to display on the User Interface later. And the last is syntax renderPrint () as the output view syntax in the UI which is then variable into the $ output number. Display of happiness measurements for each dimension of happiness are prersented in the appendix.

III. RESULTS AND DISCUSSION

As a result of the application made "E-HAPPINESS" (Figure 1), if it is run it will display a page like the following, and the instrument is ready to be filled

After all the items on the instrument have been answered, then press the "submit"

button. Then a score will appear from the happiness of the user who filled out the instrument along with the category. That is if the score obtained is < 1/3 then it is categorized as happy, and if > 1/3 it is categorized as unhappy.

For examples in a region there are 4 households A; B; C; and D, where each household has 2 members of the household (including the head of the household); 5 people; 3 people; and 4 people. Then the assessor asks each household head with an alternative answer 1 or 0. Code 1 means that in the household there is one household member that matches the question / statement of an existing indicator, for example the statement "no one dropped out of school "-When if there is only one household member who has dropped out of school, the contents are coded 1 (negative meaning of the statement). While code 0 shows a positive answer. The complete results are as follows:

On column worksheets, weights are filled for each dimension (same for all indicators on that dimension) in the form of weighting namely one divided by the number of indicators in that dimension. For example, in the dimension of life satisfaction there are 11 indicators, then the contents in the weight column for each indicator are the same as (1/11).

The weight for the feeling dimension is the same as (1/3) because there are 3 indicators in that dimension, while the weight for the dimension of life is (1/6) because there are 6 indicators in the dimension. For examples of detection with a worksheet: suppose that in a region as a respondent there are 4 households A, B, C, and D, where (for example) the number of household members (including head of household) for each of these households is 2; 5 people; 3 people; and 4 people. Then the data collector asks for each statement (as an indicator) to the respondent, where code 1 means that one of the household members in the household has experienced or had an incident asked, such as the following results:

Household A: There is one or all of them who states that there is no fixed income per month; Some suffer from chronic diseases; Do not have your own house; The environment is not comfortable and the Self does not develop. Household B: There is one or all of them who states that there is no fixed income per month; family is not harmonious; There is no positive relationship with others; and No (less) can control Emotions (there is self-acceptance). Household C: There is one or all who claim that they have experienced a crime; and;

There is no positive relationship with other people. Household D: There is no one or all of them who experienced being asked in the worksheet, or the contents for all the indicators asked are coded 0 (zero) all

Stage to Calculate Happiness Score (Ci):
Household A = (0,0909)* (*Total dimensi 1 score*) + (0,3333)*(*Total dimensi 2 score*) + (0,1667*(*Total dimensi 3 score*)= (0,0909) * (4) + (0,3333) * (1) + (0,1667) * (1)= 0,5909. Household B= (0,0909)* (*Total dimensi 1 score*) + (0,3333)*(*Total dimensi 2 score*) + (0,1667*(*Total dimensi 3 score*)= (0,0909) * (2) + (0,3333) * (0) + (0,1667) * (2) = 0,1818 + 0 + 0,3334 = 0,3334. Household C = (0,0909)* (*Total dimensi 1 score*) + (0,3333)*(*Total dimensi 2 score*) + (0,1667*(*Total dimensi 3 score*)= (0,0909) * (1) + (0,3333) * (0) + (0,1667) * (1)= 0,0909 + 0 + 0,1667= 0,2576. Household D = (0,0909)* (*Total dimensi 1 score*) + (0,3333)*(*Total dimensi 2 score*) + (0,1667*(*Total dimensi 3 score*)= (0,0909) * (0) + (0,3333) * (0) + (0,1667) * (0)= 0 + 0 + 0=0.

Scoring comparison stages:
Compare the scores of each household with the weight of the three dimensions, namely (1/3). If the score is greater than (1/3), then the household is categorized / detected as a "unhappy" family, and vice versa if it is smaller then it is detected as a "happy" household. Household A = (0.5909)> (1/3), then household A is an unhappy household. Household B=(0,3334) > (1/3), then household B is an unhappy household. Household C=(0,2576) < (1/3), then household C is an happy household, and household D=(0) < (1/3), then household D is a happy household.

IV. CONCLUSION

The measurement of happiness that has been so far is still limited to the happiness index that describes the macro condition of the household or population. This study offers a solution in the form of measuring the happiness score of a household (individually), and namely: e-happiness. e-happiness assisted by the RStudio programming language was designed to help users of the RStudio programming language easily and quickly assess a household's happiness score. the RStudio programming language, which is a programming language commonly used by academics and unpaid, so it is expected that this application can be used by anyone. the results of the assessment of household happiness are around the score 0-100, and the keyword from the happiness score is not possible is 0 or 100.

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