

# Are Economic and Objective Indicators Sufficient to Determine Life Satisfaction? An Empirical Investigation



Zubair Arif Shah

**Abstract:** Human values and experiences have generally been ignored in determining the life satisfaction of citizens. This paper empirically tests the relationship between the dependent variable of life satisfaction with explanatory variables like income, health, educational level, religiosity, and democratic values. The data is taken from the World Value Survey with a sufficiently large sample size. The analyses of descriptive statistics and Spearman's rank-order correlation is followed by the main analysis within the framework of the Ordered Logistic Regression model. The results reassert the importance of values and human experiences in policymaking.

**Keywords:** Life Satisfaction, Human Values, Policy Making, World Value Survey, Ordered Logistic Regression, Human Experiences

## I. INTRODUCTION

Life Satisfaction has increasingly become a critical indicator in policymaking. It can be used to evaluate Quality of Life, monitor Social Progress, Identify conditions for Good Life, and policy evaluation. Life-Satisfaction is a subjective aspect thus measuring it is challenging. Being a subjective aspect one of the critical elements of Well-Being is Life Satisfaction [1]. The first surveys which used Life satisfaction were done in America and they emphasized Mental Health, its popularity grew after it as more literature and methodologies were formulated. [2] This paper will attempt to examine Life Satisfaction across countries of varying cultures and development Indexes by taking data from the 7<sup>th</sup> wave of the World Value Survey (WVS7, 2020). Life Satisfaction is a complex concept, this paper tries to measure subjective Well Being by focusing on Life Satisfaction not only in relation to financial and basic health indexes which are subjective and don't necessarily qualify as appropriate indexes of Life Satisfaction, but adds other details/variables to it for better understanding [3]. Well-Being can be measured in Objective and Subjective ways. Objective methods include economic and broad social indicators while subjective methods include emotions and experiences i.e. through ordinal mechanisms [4]. GDP has been traditionally (and is still) used as a mark of Well-being based on the hypothesis that it encompasses all major indicators of life.

However, it doesn't encompass psychological and even other objective measures of life such as non-market activities. To overcome its limitations other methods were introduced, as they measure other social objective markers of human life such as education, health, etc. [5]. These methods include the Physical Quality of Life Index (PQLI), Human Development Index, etc. However, these methods even then don't fall short of criticism because of the methodologies involved and the reduction of complex concepts into simple scales. And most importantly by emphasizing empirical quantities they fail to include the other important marker of life: human values and human experiences. That is when Subjective measures come into existence. Subjective measures of Well-being is a multidimensional approach that uses subjective methods and is becoming popular as eminent economists have taken quite an interest in it. According to McGillivray and Clarke, "subjective well-being involves a multidimensional evaluation of life, including cognitive judgments of life satisfaction and affective evaluations of emotions and moods" [6]. The reason for its popularity is that it focuses on individual preferences thus providing better information compared to the previous methods. So how do we measure subjective Well-Being? Subjective Well-being is often confused with happiness; however, happiness is a much narrower concept when compared to Well-being as pointed out by Bruni and Porta. According to the "Psychologists distinguish among 1) life satisfaction which is a cognitive element 2) affection, the affective element and 3) subjective well being (SWB), as a state of wellbeing, synthetic of long duration which includes both the affective and cognitive component." [7] "Life satisfaction reflects individuals' perceived distance from their aspirations while happiness results from a balance between positive and negative effects" (Bandura, 2008). So, the best measure is to rely on people and how they relate to it as is done in World Value Surveys. Subjective Well-Being measures however also have their limits primarily because we can't compare the different value systems of various countries thus making it impossible to compare the responses of one country with another. This paper will use a multidimensional approach consisting of empirical and subjective values that determine or affect Life Satisfaction. It combines economic and non-economic, objective and subjective determinants of Life-Satisfaction. Starting with income which forms one of the critical aspects of life measurement and has been used historically as a measure.

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However, it is important to remember that relative income (and consumption) form a more meaningful relationship as compared to absolute income [8] and certain regions have been an exception to this analysis e.g. China (Bandura, 2008). Another critical aspect is the Norms and Values which influence utility function i.e. religion, ethics, principles, and doing 'the right thing' are several of the factors that make a person perform a particular utility function. This is shown by George Akerl of in his analysis of how the "incorporation of norms in utility analysis affects the standard macroeconomic results" [9]. There are several other non-economic determinants such as Age, Gender, and Marital status which don't have an economic value but are critical to satisfaction and should be included in regression analysis to avoid biases in estimation [10]. Health is also one of the critical variables, as it has been found people who are generally healthy are happier and more satisfied with life and adverse health changes hurt Life-Satisfaction. [11]. It can be extended to family values, friends, levels of trust, and political values also (Frey, 2000).

This paper tries to get the evidence in support of measures of Life Satisfaction and tries to empirically measure the determinants from World Value Surveys. Life Satisfaction is one of the key concepts as it explains the other decisions a person is going to take in his/her life [12]. Using Subjective questions as the basis generates higher response rates as people can relate to them. The paper presumes that the inclusion of these indicators will work in favor of the results from the regression model(s) as we are set to test these considerations. The data to be analyzed comes from Wave 7 of the World Value Survey and will consist of respondents from 80 countries.

## II. DATA AND METHODOLOGY

In this study WVS Wave 7 survey is used for analysis [13]. The overall survey is based on an international research program and measures the Social, Political, Economic, Religious, and Cultural Values of people across the world. World Value Survey in collaboration with EVS (European Values Study) has been conducting surveys since 1981 in various countries taking sufficient sample size with collection methods and data analysis from it is largely consistent compared to other available data sources.

In our study, we are focusing on Life-Satisfaction regarding different spheres of life. It includes questions related to Overall Satisfaction with life, demographic questions, economic, educational and health, etc. Our dependent variable here is the Life satisfaction question which corresponds to the following "All things considered, how satisfied are you with your life as a whole these days?" the answer is given on a 10-level Likert scale where 1 indicates completely dissatisfied and 10 indicates completely satisfied.

The Paper will start with analyzing descriptive statistics and Spearman's rank-order correlation [14] and after that Ordered logistic regression model will be presented for the main analysis. The dependent variable in this model is "Overall satisfaction with life" and its ordinal- values are ordered. It makes sense to operationalize the 10-level Likert scale values into simplified categories while preserving the

order required for Ordered Logistic Regression with the help of dummy variables i.e. to restrict the number of groups. Therefore, values of 1,2, and 3 on the Likert scale are categorized as Low-Level satisfaction, whereas 4,5,6,7 as Mid-Level satisfaction, and 8,9,10 as High-level satisfaction. The categorization into three simple categories makes the whole model easier to comprehend- both the coefficients from the model (statistically significant ones) and rho values from the measurement of association.

Coming to Independent variables in the Ordered Logistic Regression model all of which, except Age, are categorical variables (nominal and ordinal). The independent variables are a) demographic variables: age, education, and sex. b) Status, Health, and income-related variables: job category (what kind of job are you doing?), Income :(which income group do you belong to on a scale of 1 (low) -10(high)), Happiness (How Happy are you with your life?) and health (how satisfied are you with your health?). c) Value-based components including the Importance of God in Life, Importance of being governed democratically are included. It makes sense to operationalize the 10 scale ordinal values into simplified categories while preserving the order that is making a 3-statement ordinal scale out of 10 Likert scales. E.g. In the question of how important is God in your life on a scale of 1-10 (1 denoting Not at all important and 10 including Very Important). It makes complete sense for the sake of clear understanding and simplification to operationalize it into 3 categories where 1,2,3 indicates Low significance, 4,5,6,7 indicates somewhat significance and 8,9,10 indicates most significance. Similar categorization has been applied to Education level, subjective Health, Importance of democratic rule, and income.

While formulating groups for education level I have clubbed Undergraduate degrees under mid-education level and have allotted only master's and PhD for higher education because it makes sense in current times with higher rates of participation in College education due to the importance given to it. Similarly, while categorizing jobs, the categorization was based on the common perception of value and income levels, people who have never had a job separately are also included for better analysis.

I will be presenting some important<sup>1</sup> tabulations of our predicted (dependent) variable with other important predictor variables so that before doing our analysis the reader has some idea about the descriptive stats of our question. Also, Spearman rank-order correlation will be presented: firstly, the pairwise correlation will be given for important associations which will then be supplemented by a complete table showing measures of association of all the variables included. Also, important to mention here is that variable values will be flipped i.e. a shift of scale from one direction to another so that there is no confusion while interpreting spearman rho(s). Finally, the Ordered Logistic Regression model will be presented and interpreted for statistical significance along with coefficients of individual

<sup>1</sup> importance being subjective comes from our assumption of impact due to predictor variables of question

elements which are statistically significant. The presentation will also include pairwise measures of association between dependent variables and other independent variables along with tabulations.

### III. RESULTS AND DISCUSSION

As given in the previous studies, Life satisfaction has been measured across various objective and subjective aspects of life e.g. income, Happiness, health, education, etc (Easterlin, Does Economic Growth Improve the Human Lot? Some, 1974). Descriptive statistics from the analysis confirm the same, however, it seems interesting to cross-tabulate the data with our predictor variables of interest to arrive at better conclusions with which we are proceeding for regression analysis. (see table 1&2). Here we are trying to understand descriptive statistics i.e. overall Life satisfaction (lifsat) with other parameters such as belonging to a particular Income group ( in range 1 to 3 where 1 represents low and 3 represents high-income group), religiosity (1 to 3 where 1 represents lower importance to God & 3 higher importance) educational level (classified as 1 to 3 with 1 as low education and 3 as high) and democratic values (where 1 represents lower importance to democratic rule and 3 represents higher importance).

**Table 1. Life satisfaction levels with respect to Income (%)**

Lifsat	Income			Total
	1	2	3	
1	55.75	40.10	4.14	100
2	25.92	68.69	5.39	100
3	23.04	64.23	12.73	100
Total	26.84	64.36	8.80	100

**Table 2. Life satisfaction levels with respect to education level (%)**

Lifsat	Education level			Total
	1	2	3	
1	71.47	23.99	4.53	100
2	60.58	32.90	6.51	100
3	60.02	32.67	7.31	100
Total	61.14	32.11	6.75	100

**Table 3. Life satisfaction levels with respect to democratic values (%)**

Lifsat	Respect for Democratic norms			Total
	1	2	3	
1	7.20	22.43	70.37	100
2	3.51	29.97	66.51	100
3	3.52	16.31	80.17	100
Total	3.80	22.86	73.35	100

**Table 4. Life satisfaction levels with respect to Importance to God (%)**

Lifsat	Importance to God			Total
	1	2	3	
1	14.61	15.56	69.83	100
2	15.25	27.10	57.65	100
3	14.92	15.38	69.70	100
Total	15.04	20.57	64.39	100

Source (of all Tables): World Value Survey Wave 7

The stats offer interesting interpretations, in the income table, there seems to be a direct relation to some extent as explained in the literature (Bandura, 2008) after which it fails to explain the assumed linear relationship between Life satisfaction and increased Income. Importance to God seems to explain higher satisfaction with life, e.g. there are only 14.92% of people who are highly satisfied in life without having any importance to God/religion in their lives, at the same time there are more than 69.70% of people who

believe in the role of God and are heavily satisfied in their lives. It is in support of popular literature about the role of faith in life satisfaction [15]. A similar trend is found with respect to Democratic norms while an opposite trend is found in the role of Education level on Life Satisfaction. In Table 5, Spearman Correlation coefficients present the association between life satisfaction and income, life satisfaction and religious values, life satisfaction and democratic norms, etc.

Table 5 Source: World Value Survey Wave 7

Variable 1	Variable 2	Rho value	P value
Life sat. (Q49)	Income	0.1735	0.0000
Life sat. (Q49)	Group(Q288)	0.2712	0.0000
Life sat. (Q49)	Health	0.1137	0.0000
Life sat. (Q49)	(q47(flipped values))	0.0366	0.0000
Life sat. (Q49)	Imp. Of God (Q164)	-0.0055	0.0000
Life sat. (Q49)	Education (Q275)	0.4301	0.0000
	Job. Level (Q281)		
	Happiness (q46 (flipped))		

Spearman's Correlation Coefficients

While interpreting the coefficients, for most of these, the measurements of the association are weak however at the same time they are statistically significant. Column 2 (Table 5) contains most of the important predictor variables from which analysis is to be done. If we look at the correlation between Q49 (Life satisfaction) and Income Group the results appear to be weak but positively correlated with high statistical significance i.e. the income growth is related to (but doesn't cause a) increase in overall life satisfaction. This is in favor of the literature (Easterlin, Does Economic Growth Improve the Human Lot? Some, 1974). A similar trend appears in the importance of God and Health variables. However, one of the key relations is shown by the happiness coefficient which indicates that overall happiness and life satisfaction are positively and moderately correlated, this again is in sync with the findings from UNDP. (Bandura, 2008). The education and Job category seem not to be related to the overall well-being of a person, this is an interesting stat because we often assume that Education and working in a particular sector hold the key to life satisfaction [12]. This requires further analysis in the form of a regression model. Table 6 shows how different parameters have affected overall life satisfaction when measured on a scale of 1-10 (1 being low and 10 being highest ) using ordered regression model analysis with dependent variable Life satisfaction of the people from data given by WVS 7<sup>th</sup> wave. In addition, rho values re-evaluate the magnitude and direction of correlation between these means to check our assumed hypothesis. Our model is overall highly significant with Pseudo R2 = 0.0515 and a p-value at 0.000. Let's check the impact of parameters on the predicted variable one by one. If we start with income, we can see that compared to people in the "high-income category", people in the low-income category have lower log odds of being highly satisfied with life by -.77, when all other variables are kept constant and the result is statistically significant.



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This confirms our assumed view that income and life satisfaction are directly related and an increase of one leads to an increase in the other (Easterlin, Does Economic Growth Improve the Human Lot? Some, 1974). Similarly, can be said for the middle-income group but with a decrease in log odds i.e. it doesn't vary as quickly as in the low-income group.

**Table-6 Measuring Overall life satisfaction from world Value Survey Wave 7(2017-20), Ordered Logistic Regression**

Dependent Variable: Overall satisfaction with life (Q49, scale 1-10 1—low, 10-high)	
<i>Regression Coefficients with P-value</i>	
<b>Income (High Income-ref)</b>	
Lowinc	-.7788489(0.000) ***
MidInc	-.5075124(0.000) ***
<b>Importance of Democratic Values (High Importance-ref)</b>	
LowImpDemoc	-.2020673(0.000) ***
somewhatImp	-.4954476(0.000) ***
<b>Education Level (High level-ref)</b>	
Lowedu	.0296725(0.273)
Midedu	-.0163174 (0.541)
<b>Importance of God (High Importance -ref)</b>	
lowImpGod	-.2444448(0.000) ***
somewhatImpGod	-.4671142(0.000) ***
<b>Health (Good health-ref)</b>	
Poorhealth	-1.175104(0.000) ***
Fairhealth	-.4968796(0.000) ***
<b>Happiness (happy -ref)</b>	
nothapp	-1.705753(0.000) ***
<b>Job Category (highleveljob -ref)</b>	
Neverhadjob	-.1552685(0.000) ***
Lowjob	.0640126(0.002) **
Midleveljob	-.0131451(0.473)
<b>Age</b>	
Age(sq.)	<b>-.0205581(0.000) ***</b> .0002846(0.000) ***
<b>Q260-Sex (Male- ref)</b>	
Female	.0957118(0.000) ***
/cut1	-5.427323
/cut2	-4.980202
/cut3	-4.322204
/cut4	-3.708967
/cut5	-2.714415
/cut6	-2.076499
/cut7	-1.296515
/cut8	-.3530748
/cut9	.264913
Number of obs.	70,272
LR chi2(17)	15038.12
Prob > chi2	0.0000
Pseudo R2	0.0515
Log likelihood	-138619.63

source: WVS7

Interestingly democratic values also have an impact on overall life satisfaction, as given in the analysis, compared to those who value democracy highly, those who don't value it have lower log odds of being highly satisfied with life by -.20 when all other variables are kept constant and the result is statistically significant. This sits in line with the fact that people who believe in democratic practices would value other freedoms and are overall satisfied with their lives. As given in the model, education doesn't seem to be the key determinant of one's life satisfaction as the results are not statistically significant. This indicates people are dependent more on other factors like job satisfaction, and job category compared to having a certain education level.

As expected in our model, Health seems to be a mover of life satisfaction compared to every other variable with high statistical significance and high log odds. This confirms our study from the literature. (McGillivray, 2006) While interpreting jobs we can see that low-level and high-level jobs have an impact on life satisfaction while this isn't the case for mid-level jobs. This is because jobs at an extreme scale in terms of public perception will impact one's overall satisfaction with life.





Religion is the key factor here (Singh, 2019), with people who tend to have low faith in God compared to those who have high faith, we have statistically significantly decreased -0.2 in log odds of high life satisfaction when other variables are kept constant. In Gender, our analysis suggests that women compared to men have high satisfaction with life when other variables are kept constant.

#### IV. CONCLUSION

The paper has explored the issues related to the measurement of subjective life satisfaction based on data from the World Value Survey. It analyzes well-being by doing descriptive and inferential statistics and the results are in line with the literature we have explored. We concluded that Health, religion, income, and gender highly impact life satisfaction compared to other variables like Education and Jobs. Also, correlation coefficients from the model and spearman rank order are highly consistent and predict life satisfaction effectively. Empirical estimates of predictors of well-being are highly effective given the number of sample sizes. However, we shouldn't forget that we have done these analyses on data from various economic, social, and cultural backgrounds where subjective well-being won't necessarily relate to the proper western notion. Alternatively, likely, some of the differences are simply due to measurement errors due to the small sample size for each country. To conclude evaluating Life satisfaction is a key issue for policymakers as it leads to an understanding of other various factors that affect our lives. It can be used to evaluate Quality of Life, monitor social progress, Identifies conditions for Good life, and policy evaluation.

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