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A Perspective on Quality of Life

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Abstract

In the first part of the paper we approached theoretical notions regarding the quality of life, as a complex feature of the economic, political, social and ideological factors, which determine the human situation in society. The quality of life gives value to the life of a man, shows how and to what extent the conditions of life offer man the possibility of satisfying his many needs, the degree to which life is satisfactory to the individual. In this article, we analysed the data collected through a questionnaire from a sample of 129 students from the Faculty of Economic Sciences. The purpose of the questionnaire was to collect information on several indicators of the student's quality of life (QOL). The indicators considered were measured through the help of some items present in the questionnaire. In the following, we were interested in analysing, from a statistical point of view, the results collected from the questionnaire. For this, we first identified descriptive characteristics of the calculated indicators. Since the values of the characteristics are real numbers, obtained as averages of Likert scores, we considered it appropriate, to apply analysis procedures specific to quantitative statistical variables, numerically (averages, dispersions, correlation analyses). As part of statistical modelling, we intended to check whether the independent variable, introduced as a QOL indicator after proposing the 5 basic types of indicators, is absolutely necessary to be taken from users, or if it is possible that its values are deduced by means of a linear model from the other variables. The conclusion of my study is that the variable is not fully explained by a linear combination of the other variables that shape QOL indicators.

Keywords: *Quality of life; well-being; relationships; social; independence; recreation.*

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1. Introduction

The term "quality of life" came to the United States when President Lyndon Johnson (1964) complained that the achievements of American society could be measured by the quality of life of the native population.

Being approached in many fields, such as: psychology, sociology, literature, philosophy, geography, environmental sciences, medicine, economics, this concept is defined in many ways. This holistic approach is, in the opinion of some authors, correct. For example, I. Mărgineanu and A. Bălașa [8] consider that the attempts to attribute paternity on the evaluative concept of "quality of life" to one discipline or another do nothing but lead to its impoverishment of the meanings that can be given to it and to the restriction of the applicability area, even if certain links can be established, such as those with sociological and psychological studies on happiness, satisfaction, lifestyle, etc."

The quality of human life is inextricably linked to the subjective perception of the individual on his own life [9].

2. Problem Statement

This chapter should include an overview of the scientific literature in the field of the topic researched. The literature review should be synthesized, including the most important references to the topic.

This assessment includes two dimensions: cognitive and affective. The two variables are strongly interrelated, as they represent assessments from different perspectives of the same phenomenon - one's own life.

In Mărgineanu's (2002) [7] conception, the quality of life can be defined by the set of elements that refer to different situations: physical, economic, social, cultural, political, health, etc. where people live. Thus, the constituent elements of the quality of life are extremely varied: the content and nature of the activities they carry out, the characteristics of the relationships and social processes in which they participate, the goods and services they have access to, the consumption patterns adopted, the way and lifestyle, the circumstances and results of the activities that correspond to the expectations of the population, as well as the subjective states of satisfaction/ dissatisfaction, happiness, frustration.

Before presenting the dimensions of quality of life, I considered it necessary to briefly address this indicator in medicine, as the health of the individual significantly influences the quality of life. Thus, the quality of life in medicine means the physical, mental and social well-being, as well as the ability of patients to perform their usual tasks in their daily lives. A more

practical definition was proposed in 1993 by Revicki and Kaplan [3]: quality of life reflects preferences for certain health conditions that allow improvements in morbidity and mortality and are expressed by a single weighted index - standardized life years, depending on quality life.

Figure 1. Dimensions of quality of life.

In this paper, we analysed the data collected through a questionnaire from a sample of 129 students from the Faculty of Economic Sciences. The purpose of the questionnaire was to collect information on several indicators of the student's quality of life (QOL) [1]. The indicators considered were measured through the help of some items present in the questionnaire.

The items consist of statements, and users have completed a level of agreement / disagreement with the respective statements. The answers were on the Likert scale with 7 points [6]. In the questionnaire, the answers of the study participants were collected, after they responded to 16 items.

In the original article in which these indicators were proposed as being specific to the QOL level of individuals [1], 5 specific areas that contribute to QOL were indicated.

Thus, the items in the questionnaire corresponding to a certain category were grouped and we constructed the statistical variables: well-being, relationships, social, development, recreation, whose values were obtained by aggregating as average values of the answers to the grouped items [10], [5].

3. Research Questions/Aims of the research

In the following, we were interested in analysing, from a statistical point of view, the results collected from the questionnaire. For this, we first identified descriptive characteristics of the calculated indicators.

Since the values of the characteristics are real numbers, obtained as averages of Likert scores, we considered it appropriate, according to the reference [4], to apply analysis procedures specific to quantitative statistical variables, numerically (averages, dispersions, correlation analyses) [2]. Analysing the matrix of correlation coefficients, we observed the existence of close correlations between certain variables.

Considering that the independent variable from the data set was proposed, in the literature on QOL, later than the first 5 indicators, we considered it interesting to identify the statistical significance of this variable.

Specifically, we asked ourselves whether the inclusion of an item in the questionnaire on the independence of persons is necessary, or whether independence can somehow be calculated based on the answers to the other items in the questionnaire.

4. Research Methods

Thus, in the paper, we analyse the existence of a linear model that explains the variable independence depending on the other statistical variables in the data set.

Based on the dataset containing 9 variables, of which 3 variables that shape the demographic characteristics of the respondents (e.g. age – numerical, sex – categorical, environment – categorical) and 6 quantitative statistical variables, of numerical type (e.g. well-being, relationships, social, development, recreation, independence), which model QOL, we built a data frame that would contain only the numeric columns, in order to be able to observe the relations between them, by visualizing the scatter chart of the entire data set (see Figure 2).

In the following, we study the distribution of the variables' values, by representing the frequency diagrams (histograms) (see Figure 3 left) and we analyse the distribution of variables according to the sex and environment factor variables (see Figure 3 right).

We analysed whether there are statistically significant differences between the groups defined by the sex*environment combination. we used the factorial ANOVA procedure.

Figure 2. Scatter chart of the entire data set.

Figure 3. Frequency diagram (left) and variables' distribution (right).

Thus, we can observe how the average value of the dependent variable (in our case, *independence*) varies in relation to the pairs of possible values of the factor variables (Figure 4 left).

Figure 4. Differences between the groups defined by the sex*environment combination (left) and R model responses (right).

Because the p values obtained are higher than the 0.05 threshold, we consider that there are no significant differences between the defined groups of sex*average within the welfare variable.

4.1. Identifying the correlations between variables

In the following, we are interested in identifying whether there are correlations between the variables in the questionnaire. For this, we calculate the Pearson correlation coefficients between all the variables, considered pairs, two by two. We calculate the matrix of correlation coefficients (see Figure 5). The number of observations in the sample is 129.

well.being	relationships	social	development	recreation	independence	
well.being	1.00	0.50	0.22	0.41	0.42	0.37
relationships	0.50	1.00	0.53	0.59	0.54	0.50
social	0.22	0.53	1.00	0.56	0.40	0.30
development	0.41	0.59	0.56	1.00	0.65	0.47
recreation	0.42	0.54	0.40	0.65	1.00	0.47
independence	0.37	0.50	0.30	0.47	0.47	1.00

Figure 5. The matrix of correlation coefficients.

The p values associated with the correlation coefficients are less than 0.01 for all pairs, except the pair (welfare, social).

We deduce, from here, that the level of well-being is not linearly correlated with the level of social involvement of the respondents (see Figure 6). Otherwise, all variables are significantly correlated ($p < 0.01$).

well.being	relationships	social	development	recreation	independence
well.being	0.0000	0.0139	0.0000	0.0000	0.0000
relationships	0.0000	0.0000	0.0000	0.0000	0.0000
social	0.0139	0.0000	0.0000	0.0000	0.0006
development	0.0000	0.0000	0.0000	0.0000	0.0000
recreation	0.0000	0.0000	0.0000	0.0000	0.0000
independence	0.0000	0.0000	0.0006	0.0000	0.0000

Figure 5. The matrix of correlation coefficients.

In order to better visualize the correlations, we represent them graphically in Figure 6.

Figure 6. Graphical representation of variables' correlations.

5. Findings

5.1. Independence modelling

In this section, we build a multiple linear regression model that explains the independence variable based on the rest of the indicator variables in the dataset. Thus, based on the obtained variable's coefficients

Coefficients:

(Intercept)	well-being	relationships	social	development	recreation
1.2478	0.1147	0.2951	-0.0278	0.2027	0.2278

the model is

$$\text{independence} = 0.1147 \times \text{well-being} + 0.2951 \times \text{relation} - 0.0278 \times \text{social} + 0.2027 \times \text{development} + 0.2278 \times \text{recreation} + 1.2478$$

From the analysis of the summary of the 5 values (see Figure 7), it results that the residuals have an almost symmetrical distribution.

Figure 7. Graphical representation of the residuals distributions.

We observe that for a level of alpha significance = 0.05, it results that only the coefficient of the relationship variable is statistically significant ($p = 0.0143 < 0.05$), and all the other coefficients are insignificant.

Their coefficients and p values are shown in the Figure 8.

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	1.24776	0.66394	1.879	0.0626 .
Well-being	0.11474	0.11599	0.989	0.3245
relation	0.29507	0.11876	2.485	0.0143 *
social	-0.02780	0.07632	-0.364	0.7163
development	0.20265	0.14023	1.445	0.1510
recreation	0.22781	0.12037	1.893	0.0608 .

Figure 8. The variables' coefficients and their corresponding p values.

5.2. Independence modeling according to relationships and recreation

We chose to model independence based on relationships and recreation, because the value of the correlation coefficients between independence and each two of them is greater than 0.5. Thus, based on the obtained variable's coefficients

Coefficients:
 (Intercept) relation recreation
 1.8331 0.3785 0.3324

the model is

$$\text{independence} = 0.3785 \cdot \text{relation} + 0.3324 \cdot \text{recreation} + 1.8331$$

We notice that the p values of the coefficients are <0.01 , so the coefficients are statistically significant (see Figure 9).

Coefficients:
 Estimate Std. Error t value Pr(>|t|)
 (Intercept) 1.8331 0.5655 3.241 0.001525 **
 relationships 0.3785 0.0992 3.816 0.000212 ***
 recreation 0.3324 0.1033 3.218 0.001647 **

Figure 9. The variables' coefficients and their corresponding p values.

Figure 10. Residuals distributions according to different criteria.

We check the residues for normality and homoscedasticity. From the graphs below, we deduce that the residues are not normally distributed or homoscedastic.

6. Conclusions

In this study we analyzed the results of a questionnaire regarding the sampling of life quality indicators (QOL) for students from the Faculty of Economic Sciences of Ovidius University, Constanta. As part of statistical modeling, we intended to check whether the independent variable, introduced as a QOL indicator after proposing the 5 basic types of indicators, is absolutely necessary to be taken from users, or if it is possible that its values are deduced by means of a linear model from the other variables.

The conclusion of our study is that the variable is not fully explained by a linear combination of the other variables that shape QOL indicators.

Thus, we consider justified the introduction of this variable as a QOL indicator to be present in the questionnaires. As directions for the future, we will try to model independence using classification models, such as a decision tree.

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