

Factors Influencing on Quality of Life: Model Selection by AIC

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Abstract—The purpose of this study was to identify the factors that influenced the Quality of Life. Survey data were collected from 268 respondents living in HCM City, Vietnam. The research model was proposed from the studies of Quality of Life. Cronbach's Alpha evaluated the reliability and validity of the scale. The model selection of AIC showed that Quality of Life was impacted by the six components of the Quality of Life included economic condition, governance, health, housing, participation in culture, leisure and community, and quality of the environment.

Keywords—Vietnam, Quality of Life, Cronbach's Alpha, AIC

I. INTRODUCTION

Vietnam announces the first quality of life measurement [1]. The author indicates that the measurement takes into account many factors such as physical mobility and self-care habits such as washing the body and clothes, as well as engagement in everyday activities such as sports, household chores, and employment. The quality of life measurement is expected to be released to the general public via the Internet to allow Vietnamese citizens to learn more about their well-being. How is understood Quality of Life (QOL)?

Quality of Life (QOL) and improving the quality of people's lives are one of the ultimate targets of the Human Development Strategy. This is also the first objective of the social-economic development strategy of all countries, including Viet Nam. Many states and international organizations have studied and developed methods of measuring QOL as a basis for assessing meaningful change in QOL over time as well as comparing QOL among countries, regions, cities or communities, etc. These studies were developed based on classic works of scholars worldwide. However, in Viet Nam, studies on QOL are still limited and unsystematic. Although the need for improving QOL is often mentioned, what QOL is, what its components are, and how to measure them are still big questions having no adequate answers. Therefore, this paper focuses on discussing one of the most critical aspects of QOL measurement that is the factors of QOL.

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II. LITERATURE REVIEW

What is Quality of Life?

QOL has been studied for a long time in the world. There were three major philosophical approaches to determining QOL [2]. The first approach described characteristics of the good life that were dictated by normative ideas based on religious, philosophical, or other systems. The second approach was based on the satisfaction of preferences. The last was related to the experience of individuals.

There are many different definitions of QOL depending on the level of development, social and cultural notions and traditions of each country or region. However, there is no universally accepted one. It led to continuous debates among researchers worldwide about which approach should QOL reflect: subjective or objective, QOL is a uni-dimensional or multi-dimensional construct, the roles of values, QOL is an absolute or relative concept, etc.

The topic around which researchers debate most is the approach to QOL. The objective approach focuses on measuring objective or social indicators that reflect people's actual circumstances in a given cultural or geographic unit [3]. This includes external life conditions, such as crime rate, unemployment rate, number of doctors per capita, etc. Meanwhile, the subjective approach is the measurement of subjective well-being to assess the individual's cognitive and affective reactions to her or his whole life or specific domains of life [3]. After many debates, most researchers agreed that we should combine both subjective and objective information to assess QOL [4-6]. This agreement was based on the acknowledgment of the strengths and weaknesses of each approach that we could find easily in Diener and Suh [3]. However, the debate continues about the relationship between them and the relative importance of objective versus subjective indicators in measuring QOL.

The second controversial issue on QOL is uni or multi-dimension in the QOL concept. According to Andrasik et al. [7], the uni-dimensional conception of QOL tried to capture the concept in just one value. The oldest basic approach to the QOL assessments came from economics - money was QOL. Therefore, QOL was defined in terms of wealth-related constructs [8]. Moreover, uni-dimensional definitions would be synonymous with health alone [9]. However, these types of definition were a minority. Whereas, as a multidimensional concept, QOL was often conceived as consisting of many dimensions, reflected in one or more scores for each. Nowadays, there is a wide consensus that QOL is a multidimensional construct [10, 11].

It is entirely reasonable because QOL is such a complex concept that it is inconsistent with evaluating based on one factor only. In addition to this consensus, many researchers have searched to identify factors of QOL, but there is no specific number of factors, nor any agreed list for them [12].

Determination of QOL factors in Viet Nam

Determining QOL factors is one of the key contents in researching QOL. This is the basis for calculating the QOL index to assess individual QOL as well as changes in the QOL. Selected dimensions must be consistent not only with

Viet Nam contexts but also with international practices. This paper has referred to international experiences in choosing QOL dimensions in the literature review. The following part of the paper discusses some key points in the context of Vietnam's socio-economic. But first of all, we need to agree on the methodology.

Schalock[13] gave some principles that indicate the QOL, in which two of them related to determining factors of QOL, namely: QOL is made of factors that are important to all people, and QOL is a multidimensional concept that is comprised of subjective and objective aspects.[6] said that QOL dimensions must encompass the totality of life experience, of which, each dimension must include a substantial but discrete portion of the QOL construct and must be measured in both objective and subjective factors. Most scholars have reached a consensus with these views. This has been shown in the literature above.

Alkire[12]stated: "A credible measure of the quality of life is a certain type of evaluative exercise." It includes dimensions that are of special importance to the society or people in question and of social influence ability that focuses on public policy rather than a private good or a capability that cannot be influenced from outside. Alkire[12]also said that researchers and analysts tended to select factors using one or more of the following ways: Group discussion is considered a good idea for choosing dimensions, especially in a supportive and equitable environment. However, in many situations, participation is driven by conflict or inequality or misinformation, or colored by the absence of certain groups; Use of a list that is wide consensus and associated legitimacy such as human rights or some national planning framework. This is particularly useful when the categories are broad or when dimensions must be selected swiftly, without the possibility of consultation; Choosing based on an available theory or (most commonly) the unspecified hunch of the researcher. These are relevant for communities where the theory is widespread approval and is consistent with lists generated by alternative theories; Choosing based on availability of data that is merely a feasibility criterion rather than a substantive process, but is usually necessary to use in combination with one of the previous mechanisms; Generating a list based on empirical information regarding people's behaviors and preferences drawn from psychological studies or surveys. However, this way is rarely used.

Finally, when comparing the lists that are generated by different processes, we can find a striking degree of commonality among them. This approach could be used to select dimensions in measuring QOL in Viet Nam. In Viet Nam, the human development and QOL improvement have been put into the national agenda for several years, including documents of the Party and State. It is said that human is the center of development, goals, and also the dynamics of the development.

To achieve these goals, the Strategy pointed orientation of development, including focusing on economic development; developing cultural and social fields; developing the system of health-care and improving the quality of health services; developing the education and training to improve the quality of human resources; protecting and improving environment quality, actively and effectively deal with climate change, etc. To guarantee the successful implementation of the Strategy, it is necessary to improve the capacity and effectiveness of State management.

With these views, Viet Nam has changed strongly in all aspects of political, economic, and social life during the past

years. The economy has grown fast; the economic structure has been shifted positively. People's physical and spiritual lives have been significantly improved; democracy in society has been continually enhanced. The national defense and security have been strongly maintained, which creates a peaceful and stable environment.

Although we focus on developing the economy with all available resources, the economy has not yet developed sustainably. The quality of growth, productivity, effectiveness, and competitiveness of the economy are still low. Besides, social issues adversely affecting people are growing that include a large and growing disparities among socioeconomic groups and different regions, the poor quality of basic social services such as health care and education, the weak state management and law, systemic corruption, increasing social crime and evils, and heavily polluted natural environment, etc.

In spite of poor investment efficiency of economic growth, Vietnam government tends to give greater weight to ensuring continued rapid economic growth than to improving social and human development. They seem to ignore a key point: though economic growth is an important outcome of the development process, it is not sufficient to ensure happiness and better QOL or more satisfied with the government. Economic growth should be balanced against other development priorities that have the potential to contribute to improved well-being and QOL, including health status and outcomes; educational attainment; political voice and the ability to participate as full citizens; social connectedness and social capital; environmental conditions such as access to clean water and sanitation; personal security and physical integrity; and decent and satisfying work, among others [14].

Besides, in the context of international integration, for many years, Viet Nam has participated in the implementation of the Millennium Development Goals (MDGs) with dimensions of poverty, gender equality, education, health, and environmental sustainability. Viet Nam also has international commitments in the implementation of the Sustainable Development Goals (SDGs) with three main dimensions (economic, social and environmental) presented in 17 goals which related to a wide range of sustainable development issues such as poverty, health, education, disparities, and climate change. The issues related to citizen experiences with the performance of central to local governments in governance, public administration, and public service delivery could be referred to in the Public Administration Performance Index (PAPI). These are valuable experiences when we measure QOL in Vietnam.

Based on the literature review and in consideration of Viet Nam's development goals and social-economic situation as well as international experiences, the paper concludes that QOL is a multidimensional concept reflected different factors related to human life. QOL in Viet Nam is associated with human, economic, cultural development, social justice, and a healthy and safe living environment. Therefore, QOL in Viet Nam should include 8 dimensions as follows: The first dimension is economic condition reflecting the material well-being of the people. As a transitional economy, Viet Nam has a low income per capita; people's life still has many difficulties. The living standards will have a great influence on people's perception of life in particular and QOL in general. Moreover, as a country with a stable political and social situation, the economic situation is the most important factor which guarantees a good life for the people; Government has a very important role in organizing social life for its people.

Therefore, whether people believe in the government or satisfy the government depends entirely on policymaking and the government's implementation. Measuring QOL in Viet Nam must take into account people's satisfaction with the public administrative system and people's participation in political life, especially at the local level. Therefore, governance is the second dimension; The third dimension is health, including physical health and mental health. Health is a factor that increases happiness and satisfaction with life. Besides, those who have good health often work better and actively participating in the activities of social and economic life.

Moreover, it is essential to consider healthcare for the people, especially for the elder and children; Education is the fourth dimension. People must be educated to have the full acknowledgment of life and basic knowledge in science and technology to maintain and improve their QOL. Education is the basic means to convey knowledge and culture among generations. During the last years, Viet Nam has considered education a national policy and given top priority to develop high-quality human resources; The fifth dimension is housing and basic social services. Housing is a necessary social demand to ensure people's safety and stability. In addition to housing conditions, access to basic social services such as water, electricity, and sanitary facilities is also very crucial. They are important to assess the living conditions of households; Family is the nucleus of society. Its function is to meet the needs of each individual's society, economy, and spirit. As an Asian nation that gives great importance to traditions and blood relations, the family has an important role in the community life of the Vietnamese. The family greatly influences the success or failure of each individual. Family's sustainability will help individuals easily overcome difficulties in life and have comfortable psychology to live and develop. This is also the basis for building a stable society. Therefore, the sixth dimension is the sustainability of family relationships; The seventh dimension is participation in activities of culture, leisure, and community. This is a spiritual aspect of QOL. Culture and leisure play an important role in people's life. They are not only life objectives but also a factor promoting development. Community relations are shown in the sense of organization and discipline, observance of general provisions, sense of benefiting for the community, no harm is done to the other's interests or collective interests. This is a community spirit of each individual; Finally, a human being could only develop well when they live in a safe and clean environment. Environment, i.e., natural and social environment, is an external factor directly affecting people's life. Therefore, the last dimension of QOL is the quality of the environment. Quality of natural environment can be assessed through air pollution, water pollution, waste, forest land area, etc. Quality of social environment can be considered through social evils, social crime, public transport, food safety, etc.

In summary, there were many factors in Quality of Life, such as economic condition, health, environment, governance, culture, leisure and community, family relation, housing, and education.

III.METHODOLOGY

The research approach

An overview of the research methods used to collect and analyze the data was briefly discussed. In this research, a survey with a questionnaire was used to collect data. The questionnaire was made in English for literature review from abroad and then translated into Vietnamese because all of the respondents were Vietnamese. The research methodology

was implemented through two steps: qualitative research and quantitative research. Qualitative research was conducted with a sample of 10 people. Quantitative research was carried out as soon as the question was edited from the test results with a sample of 268 people. According to Hair et al.[18,19], the sample size had to be at least $\geq m \times 5$, in which m was the number of observed variables. So, with 30 items observed in this study, the sample size should be at least ≥ 150 . Therefore, 268 people are surveyed by the face-to-face method in Ho Chi Minh City, Vietnam. The questionnaire answered by respondents is the main tool to collect data. The survey was conducted in 2018, 2019. The questionnaire contained questions about the position of the factors that influenced Quality of Life in Vietnam. A Likert-scale type questionnaire was used to detect those factors measured from (1) "strongly disagree" to (7) "strongly agree".

In this paper, we designed an empirical study in the context of Quality of Life in Vietnam to examine factors on Quality of Life as function 1:

$$QOL = \beta_0 + \beta_1 EC + \beta_2 HE + \beta_3 ENV + \beta_4 GOV + \beta_5 CLC + \beta_6 FR + \beta_7 HS + \beta_8 EDU + e$$

Code: EC: Economic condition, HE: Health, ENV: Environment, GOV: Governance, CLC: Culture, leisure, and community, FR: Family relation, HS: Housing, EDU: Education, QOL: Quality of Life. Function 1. The theoretical model.

Blinding

All study personnel and participants were blinded to treatment for the duration of the study. No people had any contact with study participants. Some questions in the questionnaire were private, so the questionnaire was secret. We only use common data for our model.

Datasets

We validate our model on two standard datasets for the Quality of Life in Vietnam: SPSS.sav and R. Dataset has nine variables: eight independent variables and one variable. There are 268 observations and 30 items in a dataset. SPSS.sav was used for descriptive statistics and R for advanced analysis.

Data analysis

Data processing and statistical analysis software are used by SPSS and R software. The reliability of the scale was tested by Cronbach's Alpha. Cronbach's alpha coefficient greater than 0.6 would ensure scale reliability [15-17]. AIC (Akaike's Information Criteria) was used for model selection in the theoretical framework. AIC method can handle many independent variables, even when multicollinearity exists. AIC can be implemented as a regression model, predicting one or more dependent variables from a set of one or more independent.

IV. RESULTS

Reliability

The measurement model analyzed data reliability. The Cronbach criteria had been used to validate internal data reliability. According to Hair Jr et al.[18, 19], Cronbach alpha value should be more than 0.60 for the validation of construct reliability. The result of the construct's reliability can be seen in Table 1.

Table 1: Reliability

Factor	Cronbach's Alpha	Item	Mean	Std. Deviation	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
EC	0.653	EC1	4.49	1.530	0.423	0.611
		EC2	4.50	1.503	0.455	0.569
		EC3	4.41	1.594	0.517	0.481
HE	0.764	HE1	4.36	1.521	0.658	0.611
		HE2	4.50	1.503	0.591	0.688
		HE3	4.41	1.594	0.541	0.745
EDU	0.685	EDU1	4.84	1.606	0.461	0.648
		EDU2	5.24	1.367	0.552	0.536
		EDU3	4.49	1.530	0.496	0.597
GOV	0.854	GOV1	4.36	1.521	0.660	0.830
		GOV2	4.50	1.503	0.817	0.764
		GOV3	4.41	1.594	0.519	0.889
		GOV4	4.50	1.503	0.817	0.764
HS	0.783	HS1	5.57	1.217	0.635	0.694
		HS2	4.94	1.236	0.652	0.676
		HS3	4.96	1.399	0.587	0.753
CLC	0.762	CLC1	5.48	1.418	0.563	0.713
		CLC2	5.15	1.364	0.673	0.596
		CLC3	4.80	1.580	0.554	0.733
FR	0.774	FR1	4.41	1.594	.562	0.728
		FR3	4.73	1.620	.646	0.681
		FR2	4.93	1.482	.634	0.690
		FR4	5.47	1.380	.473	0.769
EVN	0.677	ENV1	4.91	1.610	.480	0.597
		ENV2	3.86	1.783	.517	0.571
		ENV3	4.73	1.473	.497	0.590
		ENV4	4.84	1.606	.353	0.677
QOL	0.858	QOL1	4.71	1.277	.654	0.888
		QOL2	4.56	1.067	.709	0.824
		QOL3	4.64	1.108	.855	0.686

Table 1 showed that Cronbach's alpha from 0.653 to 0.858, testing the results of reliability scales shows that the

scale has good accuracy with Cronbach's alpha coefficient > 0.6 and the correlation coefficients of the total variables of measurement variables meet the allowed standard (> 0.3), the scale will be accepted. The observed variables are used for factor analysis to discover in the next step. This proved that the model was internally consistent. All of the items and Cronbach's Alpha of factors are accepted.

Akaike's Information Criteria (AIC)

Akaike's Information Criteria (AIC) was used on the theoretical framework. AIC method could handle many independent variables, even when multicollinearity exists. AIC could be implemented as a regression model, predicting one or more dependent variables from a set of one or more independent variables, or it could be implemented as a path model.

Table 2: Akaike's Information Criteria

Unit	Model	AIC
1	QOL ~ EC + HE + EDU + GOV + HS + CLC + FR + ENV	-182.73
2	QOL ~ EC + HE + EDU + GOV + HS + CLC + ENV	-184.72
3	QOL ~ EC + HE + GOV + HS + CLC + ENV	-186.67

AIC results in table 3 showed that model 3 was the best. The Quality of Life was affected by six factors. In the AIC analysis in table 3, the variables associated with Quality of Life. The most important factor for Quality of Life was Health aspects with the Beta equals to 0.3578, the others positively associated with Quality of Life with the function as follows.

$$QOL(Y) = 0.8430 + 0.2492EC + 0.3578HE + 0.2326 ENV + 0.2839GOV + 0.1080CLC + 0.1434HS$$

V. CONCLUSION

In Viet Nam, more attention has been paid to QOL. The Vietnamese government states: Economic growth should be combined harmoniously with the cultural development, the implementation of social advance and equality, continuous improvement of people's life quality. However, QOL in Viet Nam seems to be merely evaluated in terms of economics or Human Development Index (HDI), which is not sufficient because there are many aspects of QOL that economic growth or HDI does not cover, such as environment, living conditions, safety, social security, people's perception of the problems associated with life, etc.

Based on qualitative research, the paper concludes that QOL measurement should combine objective indicators with the subjective evaluation of individuals' situations. 8 dimensions in the QOL concept are proposed, namely: economic condition; governance; health; education; housing and basic social services; sustainability of family relationship; participation in culture, leisure and community; and quality of the environment. The results of the best model are 6 factors: Economic condition, Health, Environment, Governance, Culture, leisure, and community, and

Housing. Factors are positively associated with Quality of Life. This research is the first time for the business administration using AIC to choose the best model, so it needs to test in other countries.

However, there are still many questions without answers. With the approach mentioned above, what is the relationship between objective and subjective aspects? Should we consider the role of personal value? Besides, each quality of life dimension is measured via several indicators. Which indicators and how to collect them? How to calculate the synthetic index? Is there weight among dimensions? Therefore, there is a need to conduct more studies on QOL in Viet Nam in the coming time.

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REFERENCES

1. T. Xuan. (2018). *Vietnam announces first quality of life measurement*. Available: <https://tuoitrenews.vn/news/lifestyle/20181129/vietnam-announces-results-of-first-quality-of-life-measurement/47936.html>
2. D. Brock, "Quality of life measures in health care and medical ethics," *The quality of life*, pp. 95-132, 1993.
3. E. Diener and E. Suh, "Measuring quality of life: Economic, social, and subjective indicators," *Social indicators research*, vol. 40, pp. 189-216, 1997.
4. D. Felce and J. Perry, "Quality of life: Its definition and measurement," *Research in developmental disabilities*, vol. 16, pp. 51-74, 1995.
5. R. A. Cummins, "Instruments assessing quality of life," *Assessing adults with intellectual disabilities: A service provider's guide*, pp. 119-137, 2005.
6. M. R. Hagerty, R. Cummins, A. L. Ferriss, K. Land, A. C. Michalos, M. Peterson, *et al.*, "Quality of life indexes for national policy: Review and agenda for research," *Bulletin of Sociological Methodology/Bulletin de Méthodologie Sociologique*, vol. 71, pp. 58-78, 2001.
7. F. Andrasik, J. L. Goodie, and A. L. Peterson, *Biopsychosocial assessment in clinical health psychology*: Guilford Publications, 2015.
8. R. A. Cummins, A. L. Lau, and M. Stokes, "HRQOL and subjective well-being: Noncomplementary forms of outcome measurement," *Expert review of pharmacoeconomics & outcomes research*, vol. 4, pp. 413-420, 2004.
9. S. Executive, "Quality of Life and Well-Being: Measuring the Benefits of Culture and Sport—A Literature Review," ed: Edinburgh: Education Department Research Programme Research Findings, 2006.
10. D. Felce, "Defining and applying the concept of quality of life," *Journal of Intellectual Disability Research*, vol. 41, pp. 126-135, 1997.
11. F. J. Snoek, "Quality of life: a closer look at measuring patients' well-being," *Diabetes spectrum*, vol. 13, pp. 24-28, 2000.
12. S. Alkire, "The capability approach to the quality of life," Oxford Department of International Development
13. Queen Elizabeth House (QEH), University of Oxford, Oxford Poverty & Human Development Initiative (OPHI)2008.
14. R. L. Schalock, "Can the concept of quality of life make a difference," *Quality of life*, vol. 2, pp. 245-267, 1997.
15. UNDP, "Social Services for Human Development Viet Nam: Human Development Report " 2011.
16. J. C. Nunnally and I. Bernstein, "The assessment of reliability," *Psychometric theory*, vol. 3, pp. 248-292, 1994.
17. N. T. Ngan and B. H. Khoi, "Empirical study on intention to use bike-sharing in Vietnam," *IIOAB*, vol. 10, pp. 1-6, 2019.
18. B. H. Khoi and N. T. Ngan, "Factors impacting to smart city in Vietnam with smartpls 3.0 software application," *IIOAB*, vol. 10 pp. 1-8, 2019.
19. J. F. Hair Jr, G. T. M. Hult, C. Ringle, and M. Sarstedt, *A primer on partial least squares structural equation modeling (PLS-SEM)*: Sage Publications, 2016.
20. J. F. Hair, G. T. M. Hult, C. M. Ringle, M. Sarstedt, and K. O. Thiele, "Mirror, mirror on the wall: a comparative evaluation of composite-based structural equation modeling methods," *Journal of the Academy of Marketing Science*, pp. 1-17, 2017.