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# MJERENJE STAVOVA O RAČUNALU KAO JEDNE DIMENZIJE KVALITETE ŽIVOTA

# MEASURING COMPUTER ATTITUDES AS ONE DIMENSION OF LIFE QUALITY

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**SUMMARY**
*The purpose of this article is to examine "CAS" measuring instrument for measuring computer attitudes in Region of East Croatia. This instrument consists of computer anxiety, computer confidence, computer liking and computer usefulness. Internal consistency, stability and validity of "CAS" measurement instrument were tested. Also, multivariate statistical analyses were applied. Attitudes toward computers were chosen as one dimension of multidimensional "Quality of Life" concept.*

## 1. INTRODUCTION

Since the 1970s, there have been many attempts to measure how environment and growth affect the health and well-being of people, which are generally referred to as the quality of life. Quality of life is a multi-faceted concept. It embraces not only the material aspects of life such as increased wealth and availability of physical infrastructure facilities, but also the less tangible aspects of life.

Many attempts have been made in various disciplines to define what it is that constitutes the quality of life. More than 100 definitions of life quality have been noted in the literature. Some authors use the term interchangeably with other concepts such as subjective well-being, happiness, life satisfaction and the good life [6, 8, 19]. While there is no certainty as to what the quality of life means, it has been defined as the degree of well-being, satisfaction and standard of living [5]. It is also believed that the quality of a person's life is directly related to that person's capability. Capability is defined as the ability or potential to do or be something, or more technically, to achieve a certain level of functioning such as health and education [20]. Survey described in this article was conducted to test the measuring instrument for attitudes towards computers and determine the instrument's adequacy for future surveys of technical literacy, which, being a result of educational activities is also one of the elements of the quality of life. [7].

## 2. LITERATURE REVIEW

Although the concept of attitude towards computers has gained recognition as a critical determinant in the use and acceptance of computer technology [2, 3, 4, 10, 16, 18], there is no single, universally accepted definition of computer attitude construct [21]. As noted by Kay [13], attitude toward computers has been defined in over 14 different ways in the computer research literature. One approach to defining this psychological construct is to draw on contemporary theorizing in the general area of attitudes. The Computer Attitude Measure (CAM), developed by Kay [12] was defined as a person's general evaluation or feeling of favourableness or non-favourableness toward computers and specific computer-related activities. CAM was composed of demographic information, cognitive, affective, and behavioural attitudes. Ajzen and Fishbein [1] argued that a multi-component model should assess the social desirability of a specific behaviour to improve the predictive value of an attitude measure. Thus, the CAM included the behavioural desirability of performing computer-related behaviours. Based on this viewpoint, the CAM referred to affective, cognitive and behavioural attitudes for the same action and target, namely, "use of the computer" [12]. This measure was administered to students and teachers and yielded high internal reliability coefficients for each subscale (cognitive was $\alpha$=0.97, affective was $\alpha$=0.89, and behaviour was $\alpha$=0.94). Kay [13] revised the CAM for assessing pre-service teachers' attitudes toward computers. In the revised study, the total internal reliability coefficient was $\alpha$=0.95.
The Computer Attitude Scale, developed by Loyd and Loyd [15], consists of computer anxiety, computer confidence, computer liking, and computer usefulness. Computer anxiety refers thereby to the fear of computers or a person's tendency of to be uneasy, apprehensive, and phobic towards current or future use of computers [11]. Computer confidence refers to the ability to use or learn about computers [9]. Essentially, computer confidence proved to be closely related to computer anxiety [2, 17]. Computer liking refers to liking or enjoying working with computers [2] and computer usefulness refers to the degree of perceived usefulness of using computers for present and future work [2]. In general, anxiety, confidence and liking represent the affective or feeling part of attitude ,whereas usefulness represents the cognition or belief part of attitude [22]. In the Computer Attitude Scale, many studies [2, 11, 17] suggested that computer anxiety and computer confidence were part of the same continuum. In addition, Woodrow [23] provided the evidence that the three-scale version of the Computer Attitude Scale had two dimensions, affective and behavioural aspects. Moreover, Nash and Moroz [17] also suggested that the attitude toward academic endeavours associated with computer training should be incorporated into the Computer Attitude Scale. This part refers to the learning and training of computer courses or skills. However, in this article, we tried to answer one question: "How appropriate is CAS instrument for measuring computer attitudes in the Region of Eastern Croatia?"

## 3. RESEARCH DESIGN

### 3.1. Instrument

All of the CAS items and computer experience items were measured by seven-point Likert scales (from "no experience" to "high experience"). Except CAS and computer experience items, questionnaire also includes demographics questions.

a) Computer experience

In this component, subjects were asked to indicate whether they have had experience in using computers, using the Internet/WWW, experience with word processors, experience with database packages, and experience with computer programming languages.

b) CAS

In this component the subjects were asked to indicate their perceptions toward computer self-efficacy, liking, usefulness, and intention to use and learn computers. All of these items were measured by seven-point Likert scales (from "strongly disagree" to "strongly agree").

Computer Attitudes Scale (CAS) (1=strongly disagree 7=strongly agree)

1) I feel confident using a personal computer.
2) I feel confident using floppy disk to store my data files.
3) I feel confident using word processors (e.g. Microsoft Word, WordPad).
4) I feel confident learning new computer skills.
5) I like to use computers.
6) I enjoy talking with others about computers.
7) I like to have a computer in my home.
8) I feel comfortable using a computer in my daily life.
9) I believe using computers is necessary in my school life.
10) I believe using computers is worthwhile.
11) I use computers in multiple ways (e.g. doing word processing, using E-mail, surfing the Web) in my daily life.
12) An increased use of computers can enhance my academic performance.
13) The use of computers is helpful for my studying.
14) The use of computers can increase my job possibilities.
15) I believe that computers can serve as learning tools.
16) I believe that it pays to know how to use computers.

c) Demography

The demographic component of the questionnaire covers gender, age, level of education, current working status, number of household members, usage of the Internet and duration period of computer-related experience.

### 3.2. Sample

The sample numbered 275 respondents and the research was carried out in winter 2002. Trained interviewers conducted the fieldwork in the region of East Croatia. The sample descriptions, i.e. the characteristics of respondents are given in Table 1.

Table 1: Demographics characteristics of the sample

| *Variable* | *n* | *%* | *Variable* | *n* | *%* |
|---|---|---|---|---|---|
| Number of respondents | 275 | 100 | Age | | |
| | | | -24 | 64 | 23.3 |
| Gender | | | 25-29 | 69 | 25.1 |
| Female | 142 | 51.6 | 30-39 | 83 | 30.2 |
| Male | 133 | 48.6 | 40 and more | 57 | 20.7 |
| Current working status | | | Refusal | 2 | 0.7 |
| Self-employed | 8 | 2.9 | Members of household | | |
| Employed | 176 | 64.0 | 1 | 24 | 8.7 |
| Unemployed | 24 | 8.8 | 2 | 37 | 13.5 |
| Housewife | 3 | 1.1 | 3 | 73 | 26.5 |
| Students | 64 | 23.3 | 4 | 94 | 34.2 |
| Level of education | | | 5 and more | 46 | 16.7 |
| Primary school | 13 | 4.7 | Refusal | 1 | 0.4 |
| Secondary school | 138 | 50.2 | Internet users | | |
| Graduate degree | 110 | 40.0 | Users | 260 | 94.5 |
| Master’s (and Doctor’s) degree | 14 | 5.1 | None users | 15 | 5.5 |

## 4. RESULTS

The first part of analysis refers to internal consistency. The CAS has 16 items, the mean is 90.99, and standard deviation is 16.88 (Mean and standard deviation for each of CAS items are presented in the Table 2).

Table 2: Means and standard deviation for each of CAS items

| | Mean | Std. Deviation |
|---|---|---|
| I feel confident using a personal computer. | 5.73 | 1.62 |
| I feel confident using floppy disk to store my data files. | 4.60 | 2.14 |
| I feel confident using word processors (e.g. Microsoft Word, WordPad). | 5.75 | 1.60 |
| I feel confident learning new computer skills. | 5.65 | 1.56 |
| I like to use computers. | 5.85 | 1.55 |
| I enjoy talking with others about computers. | 3.61 | 1.86 |
| I like to have a computer in my home. | 6.41 | 1.34 |
| I feel comfortable using computer in my daily life. | 5.60 | 1.64 |
| I believe using computer is necessary in my school life. | 5.95 | 1.44 |
| I believe it pays to use computers. | 6.23 | 1.22 |
| I use computers in multiple ways (e.g. doing word processing, using E-mail, surfing the Web) in my daily life. | 5.82 | 1.69 |
| An increased use of computers can enhance my academic performance. | 5.80 | 1.51 |
| The use of computers is helpful for my studying. | 5.92 | 1.45 |
| The use of computers can increase my job possibilities. | 5.78 | 1.60 |
| I believe that computers can serve as learning tools. | 6.18 | 1.23 |

For the split-half coefficient, the first half includes the first eight items and the second half containes the last eight items. For the first half the mean is 43.14 and standard deviation 9.47. For the second half the mean is 47.76 and standard deviation 8.48. Corrected item–total correlations of the first half are ranged from 0.33 to 0.79 and of the second half from 0.51 to 0.81. The alpha coefficient is 0.85 and 0.87 for the first and second half, respectively. In addition, Cronbach's $\alpha$ of the total instrument is 0.92 and corrected item–total correlations are ranged from 0.33 to 0.81.

The second part of analysis is analysis of relations. Regarding the relations between various computer and Web experiences and the CAS, the categories of: experience in using computers, experience in using the Internet/WWW, experience with word processors, experience with database packages, experience with computer programming languages, and years of computer-related experience all had significant relationship with the CAS ($P<0.01$). The correlation between various computer experiences and the CAS is presented in Table 3.

Table 3: Correlation between various computer experiences and the CAS

| | Exper2 | Exper3 | Exper4 | Exper5 | CAS | Years |
|---|---|---|---|---|---|---|
| Exper1 | 0.75** | 0.67** | 0.38** | 0.29** | 0.44** | 0.48** |
| Exper2 | | 0.59** | 0.43** | 0.37** | 0.57** | 0.34** |
| Exper3 | | | 0.35** | 0.31** | 0.41** | 0.45** |
| Exper4 | | | | 0.64** | 0.22** | 0.19** |
| Exper5 | | | | | 0.14** | 0.15* |
| CAS | | | | | | 0.17** |

a) CAS Computer Attitude Scale
b) Exper1, experience using computers, Exper2, experience using the Internet/WWW; Exper3, experience with word processors; Exper4, experience with database packages; and Exper5, experience with computer programming languages; Years, years of computer-related experience.
c) ** Correlation was significant at the 0.01 level ($P$<0.01, two-tailed).
   * Correlation was significant at the 0.05 level ($P$<0.05, two-tailed).

To check the effect of the computer experience variables on the CAS measurement instrument, in the third part of the analysis, a stepwise regression analysis was performed. The predictor variables were years of computer-related experience, experience using computers, experience with word processors, experience with database packages, experience with computer programming languages, and experience using the Internet/WWW.
The results, presented in Table 4, show that the "Experience using the Internet/World Wide Web (WWW)" and "Experience with word processors" were two predictors on the CAS ($F$(2,255)=36.99, $P$=0.000, $R^2$=0.225).

Table 4: Stepwise regression for computer experiences on the CAS

| Variables | B | β | P |
|---|---|---|---|
| Constant | 67.7 | | |
| Experience using the Internet/World Wide Web (WWW). | 3.92 | 0.38 | 0.000 |
| Experience with word processors. | 1.67 | 0.15 | 0.024 |

The primary concern for the fourth step of the analysis was multicollinearity control, which can be done in the two ways: (1) correlation between independent variables should all be less than 0.8; (2) variance inflation factors (VIF[1]) should be less than 10. In this study, multicollinearity was ruled out because the correlations between independent variables, as Table 3 shown, were all less than 0.8 and the VIFs were all less than 10.

## 5. DISCUSIONS

In this study, CAS instrument was tested for usage in the Region of Eastern Croatia. The Computer Attitude Scale, developed by Loyd and Loyd [15], consisted of computer anxiety, computer confidence, computer liking, and computer usefulness. Furthermore, tested instrument consisted of 16 items, measured on five point Likert scale.
The results show that the "Experience using the Internet/World Wide Web (WWW)" and "Experience with word processors" were two predictors on the Computer Attitude Scale.
Also, results hereby discussed could contribute to improving population's computer literacy and thus help in raising this segment of life quality to a higher level. It can be expected that the predictors of attitudes toward computers will change in accordance with the raising of general computer literacy.

Furthermore, based on high internal consistency, stability and validity, this research has potential for practical application in investigating users' attitudes when applying the Web for daily activities. Also, CAS measurement instrument can be regarded as a successful tool for measuring attitudes toward computers in the specific Region of Eastern Croatia.

[1] Indicator of the effect that the other independent variables have on the standard error of a regression coefficient. The variance inflation factor is directly related to the tolerance value (VIFi=1/TOLi). Large VIF values also indicate ahigh degree of collinearity or multicollinearity among the independent variables.

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