

Adaptation of Chatbot Confirmation and Usage Continuance Scale into Turkish

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Abstract – It is noteworthy that there is a gap in the literature on measuring the sustainability of students' experiences with chatbot technology. In this study, based on the framework proposed by Li, Lee, Emokpae, and Yang, (2021) for measuring the sustainability of students' experiences with chatbot technology, we adapted it for the context of this study. The scale has six factors (confirmation, understandability, reliability, responsiveness, assurance/trust, interactivity) and 18 items. The scale has a 7-point Likert scale. First of all, permission to adapt the scale into Turkish was obtained from the responsible author via e-mail. The scale was translated into Turkish by language experts. The translated scale was examined by two experts in the field of computer and instructional technologies. For the validity and reliability study of the scale, data were collected from university students. As a result of the application, construct validity was tested with confirmatory factor analysis. In this context, factor loadings were evaluated. Cronbach's alpha internal consistency coefficients were calculated. Data analysis was carried out using Lisrel 8.7 program. In the context of the results obtained, it can be said that sufficient evidence regarding the validity and reliability of the scale has been reached and a scale has been introduced to the national literature.

Keywords – Chatbot, Chatbot Technology, Chatbot Usage, Scale Adaption, Chatbot Confirmation, Chatbot Usage Continuance

I. INTRODUCTION

Acceptance and usage intentions are very important for the continuation of the use of new systems [1]. Chatbot technology is a tool that enables human communication and interaction, and the focus is on improving the interaction and feedback of chatbots so that they can be preferred over human interaction [2], [3], [4]. These features are essential for system usage sustainability.

Chatbot technologies are used in many fields. The widespread use of this technology is due to its integration with social media environments and instant messaging applications [5], [6]. Therefore, chatbots are widely used in different fields with different features. In this context, although there are similar studies in this sense (e.g. [7]), there is a need

for diversification of scale studies to evaluate the validation and sustainability of chatbots in parallel with their widespread use.

II. MATERIALS AND METHOD

A. Participants

In this study, the participants were university students between the ages of 18-30 studying at a state university in Turkey.

B. Tools

Personal information form: This form is related to gender, age and grade level.

Chatbot Confirmation and Use Continuance Scale: This scale was adapted for the context of this study based on the framework proposed by Li, Lee, Emokpae, and Yang, (2021). The scale is a 7-point Likert scale. The sub-dimensions of this scale are "confirmation, understandability, reliability, responsiveness, assurance/trust, interactivity".

C. Data analysis

Construct validity and item analysis were conducted for the adaptation study of the scale. LISREL 8.72 software was used to analyze the data.

III. RESULTS

The mean, standard deviation, skewness and kurtosis values of the items in this scale adapted into Turkish are given in Table 1.

Table 1. Descriptive values of the scale items

Item s	Mea n	Standard Deviatio n	Skewnes s	Kurtosi s
Item1	4,78	1,836	-0,444	-0,954
Item 2	4,76	1,767	-0,409	-0,927
Item 3	4,77	1,738	-0,402	-0,898
Item 4	4,75	1,700	-0,353	-0,885
Item 5	4,75	1,695	-0,439	-0,736
Item 6	4,76	1,708	-0,372	-0,905
Item 7	4,56	1,752	-0,235	-0,953
Item 8	4,65	1,763	-0,289	-1,002
Item 9	4,67	1,740	-0,265	-1,036
Item 10	4,92	1,730	-0,512	-0,833

Item 11	4,95	1,750	-0,460	-0,966
Item 12	4,94	1,758	-0,526	-0,868
Item 13	4,69	1,739	-0,325	-0,965
Item 14	4,50	1,781	-0,205	-1,070
Item 15	4,88	1,712	-0,471	-0,838
Item 16	4,87	1,702	-0,515	-0,743
Item 17	4,91	1,663	-0,487	-0,757
Item 18	4,90	1,706	-0,490	-0,760

According to Table 1, the mean scores of the items ranged between 4.50-4.95 and the standard deviations between 1.66 and 1.78. Skewness and kurtosis values were found to be between +1.5 and -1.5. These findings related to skewness and kurtosis show that the scores obtained from the items are normally distributed.

Confirmatory Factor Analysis

For the factorial validity of this scale, confirmatory factor analysis was applied for the model consisting of six factors and 18 items. As a result of the analysis, the fit indices were [$\chi^2(120)=871.50$, RMSEA= 0.076, GFI= 0.91, NFI= 0.99, NNFI=0.99, CFI=0.99, IFI=0.99]. These values indicate that the model shows acceptable fit and/or excellent fit. Since the fit indices were within the recommended range and all of the estimated factor loadings were below one, no item was removed from the scale. The standardized factor loadings and item structure parameters as a result of confirmatory factor analysis are presented in Figure 1.

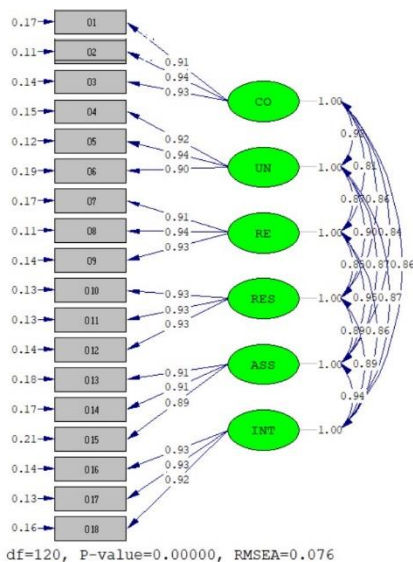


Figure 1. Confirmatory factor analysis results

According to Figure 1, the factor loadings are between 0.89 and 0.94. According to the t-test findings, all connections are statistically significant. These findings indicate that there is sufficient evidence for factorial validity.

Internal Consistency Analysis

The reliability of this scale was tested in terms of internal consistency with Cronbach α coefficient. The Cronbach α internal consistency coefficient of the twenty-four items in the scale was calculated as 0.983. Cronbach's α internal consistency coefficient was 0.949 for the approval factor, 0.941 for understandability, 0.948 for reliability, 0.950 for answerability, 0.929 for trust, and 0.947 for interaction. These values being higher than 0.70 indicate that reliability is ensured.

Item total score correlations

It was determined that the item-total score correlation values ranged between 0.845 and 0.904 and had a significant relationship. Item-total score correlations of 0.30 and higher indicate that the items are discriminative in terms of the measured feature.

IV. DISCUSSION

This study aims to adapt the Chatbot Approval and Sustainability of Use Scale into Turkish. In this context, validity and reliability studies of the scale were conducted in the adaptation study.

The developed scale aims to evaluate the sustainability of the use of chatbot technology. In

the context of this study, the scale whose framework was developed by Li, Lee, Emokpae, and Yang, (2021) was adapted into Turkish.

In the process of translating the scale into Turkish, the opinions of language experts were taken. Then, two experts in the field of Computer Education and Instructional Technologies were consulted for the suitability of the scale items.

Confirmatory factor analysis of the scale was conducted. For reliability, Cronbach's Alpha internal consistency coefficients were analyzed. An 18-item 7-point Likert-type scale with six factors was introduced to the literature.

V. CONCLUSION

As a result of this study, a scale was adapted into Turkish to assess the sustainability of the use of chatbot technology.

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