



Vol 2 Issue 2 (Jan-March 2025)

ISSN (Online): 3006-4740

ISSN (Print): 3006-4732

Attitudes and Trust in Ai-Language Learning Tools among Adult ESL Learners

Muhammad Asif Nadeem

Lecturer English, Baba Guru Nanak University, Nankana Sahib, Pakistan
sameerasif42@gmail.com

Dr. Irfan Abbas

Assistant professor University of Central Punjab, Lahore, Pakistan, irfan.abbas@ucp.edu.pk

Arooj Fatima

Assistant Professor of English, Govt. Graduate College for Women, Gulberg Lahore
aroorfatima3549@gmail.com

Abstract

This study investigates the attitudes and trust of adult English as a Second Language (ESL) learner towards AI-powered language learning tools. Using a mixed-methods approach, the research collected data from 121 adult ESL learners in Punjab province through surveys and interviews. The study found generally positive attitudes towards AI language tools, with learners recognizing their potential to enhance language acquisition. However, trust levels varied, influenced by factors such as perceived effectiveness, quality of AI applications, and the balance between AI assistance and independent learning. Notably, learners did not view AI tools as a threat to human instructors, instead seeing them as complementary resources. The study revealed no significant gender differences in attitudes or trust levels. Challenges identified include the need for more interactive engagement, contextual nuances in language learning, and addressing privacy concerns. The findings highlight the importance of developing high-quality, reliable AI tools and integrating them thoughtfully into ESL curricula to maximize their potential benefits while maintaining learner autonomy and trust.

Key words: Attitude, Trust, ESL, tools, AI, Effectiveness



1. Introduction

By incorporating intelligent operations into automated systems, artificial intelligence (AI) is transforming a number of industries (Chen et al., 2020). According to new research, artificial intelligence (AI) can significantly improve students' mental health, second language (L2) learning abilities, and information acquisition in educational contexts (Bicknell et al., 2023; Liu & Ma, 2024). A variety of technologies, including intelligent chatbots, automated essay grading, machine translation, and natural language processing, are responsible for the success of AI in this field (Asher & Zweigenbaum, 2020; Jiang, 2022; Son et al., 2023).

In this age of AI, the use of Artificial Intelligence in learning language has become more popular with AI-powered applications becoming increasingly popular among English learners of all ages (Smith et al., 2024). Understanding the attitudes and trust factors of adult ESL learners towards AI language learning tools is crucial for developing effective AI-assisted language learning strategies and improving the overall learning experience for this population. (Woithe & Filipec, 2023)

The lack of comprehensive understanding regarding adult ESL learners' attitudes and trust towards AI language learning tools represents a significant gap in the existing literature.

This study intends to address the knowledge gap while analyzing the attitude and trust in Artificial Intelligence learning tools among adult ESL learners.

The study focusses to give a thorough understanding of adult ESL learners' attitudes and trust factors involving AI language learning technologies. Hypothesis: It is hypothesized that adult ESL learners' attitudes and trust towards AI language learning tools are influenced by factors such as the perceived effectiveness of the tools, the level of human interaction provided, and the learners' prior experiences with technology.

The AI- based language learning apps have become more well-known, yet there is a lack of comprehensive understanding regarding adult ESL learners' attitudes and trust towards AI language learning tools. While studies have shown positive perceptions among students using AI-powered applications for English learning (Moulieswaran & NS, 2023), there is limited research on the specific factors influencing adult learners' trust and attitudes towards these tools. This gap is particularly significant given the unique challenges and motivations of adult ESL learners (Hussain et al., 2020). This research aims to analyze the attitudes and trust in AI language learning tools among adult ESL learners. Developing successful AI-assisted language learning methodologies and enhancing the entire learning experience for adult ESL students require an understanding of these attitudes and trust elements.

2. Literature Review

2.1. Artificial Intelligence (AI) and Language Acquisition

Artificial intelligence (AI) and language acquisition have received a lot of attention recently, especially when it comes to adult ESL learners who learn English as a second language. In a

research on secondary school students' perceptions of AI in ESL acquisition revealed that students generally view AI-powered tools positively for both English learning and daily tasks (Rodrigues et al., 2024). The research indicates that the quality and reliability of AI tools significantly impact learners' trust and attitudes towards them. This literature review examines this current research "attitudes and trust towards AI language learning tools among adult ESL learners, highlighting key findings, contradictions, and areas for future research. Specifying perspective on AI-assisted L2 learning The term "attitude" originated with Spencer (Spencer, 1900). coined the word "attitude," which Ajzen and Fishbein (Ajzen & Fishbein, 1977) have since expanded upon to describe an evaluative orientation affecting people's propensities toward actions. Similar views are maintained in modern psychology discourse, which defines attitude as people's evaluative position toward other people, issues, or things (Reid & Ali, 2020). Although it can sometimes involve inconsistency, this assessment usually falls between positive and negative.

2.2. Positive Attitude Toward AI Language Learning Tools

Attitudes towards AI language learning tools among adult ESL learners have generally been positive, with several studies reporting favorable perceptions of these technologies. A study conducted on pre-university ESL learners in Malaysia found that students had positive attitudes towards mobile learning for ESL purposes (Hashim et al., 2016). This suggests that adult learners are open to incorporating new technologies into their language learning process.

Similarly, a study focusing on engineering students revealed that most participants have favorable feelings about leveraging AI-powered tools. for English language learning (Moulieswaran & NS, 2023). These findings indicate a growing acceptance of AI technologies among adult ESL learners. The efficacy of AI-driven tools in refining various aspects of language learning has been demonstrated in several studies. A systematic review of literature showed that AI applications have been effective in enhancing vocabulary competence, cultural knowledge, productive and receptive skills of EFL and ESL learners (AITwijri & Alghizzi, 2024). This effectiveness likely contributes to the positive attitudes observed among learners. Furthermore, AI-powered Language learning platforms provide interactive modules that are customized to meet the needs of each individual learner, resulting in a productive and engaging learning setting (Konyrova, 2024). The personalized and adaptive nature of these tools appears to be a significant factor in shaping learners' attitudes. However, the potential of AI technology to enhance affective aspects in EFL learners is working still in early phase and it needs more exploration. A research highlights the importance of considering learners' attitudes when implementing AI-powered language learning tools. Interestingly, adult ESL learners with emergent literacy levels have shown the ability to engage in metalinguistic reflection despite their limited English oracy and literacy skills (Gonzalves, 2021). This affirms that AI tools designed to support metalinguistic awareness could be beneficial for adult learners at various proficiency levels. The motivation of adult ESL learners plays a crucial role in their attitudes towards AI language learning tools. Studies have shown that adult ESL learners generally exhibit a positive attitude towards AI-driven language learning apps. However, it is important

to note that the use of AI technology in EFL conditions is still in progress, and more study is needed to determine how AI-integrated classes effect students' affective aspects including motivation, engagement, and attitude ((AITwijri & Alghizzi, 2024). This suggests that while initial attitudes are positive, long-term studies are required to completely comprehend how AI tools affect learners' attitudes over time.

In a study conducted on Korean university students, participants expressed positive perceptions of AI-based writing tools, such as generative AI tools like Grammarly and machine learning-guided apps like Google Translate and Naver Papago ((Lee et al., 2024). The students noted that these tools could improve their English writing skills, the error-checking features of generative AI and the availability of translation machine learning. Nevertheless, the same study also revealed potential drawbacks of excessive reliance on AI-based writing tools. Interview data suggested that overuse of these apps may have an interference in the writing process of ELL (Lee et al., 2024). This finding underscores the importance of striking a balance between utilizing AI tools and developing independent language skills.

2.3. Trust in AI Language Tools

Trust in AI language learning tools is a critical factor that influences their adoption and effective use. The study on university students found that one of the major problems faced by learners was the substandard quality of smartphone language-learning apps driven by AI (Moulieswaran & NS, 2023). This highlights the importance of developing high-quality, reliable AI tools to build and maintain learners' trust. Additionally, the research focusses the want for skilled language instructors to successfully implement AI-powered tools in their classes, which can help establish best practices and increase learners' trust in these tools (Moulieswaran & NS, 2023). Interestingly, adult ESL learners do not perceive AI tools as a threat to the role of human teachers. A study conducted in Portugal revealed that students do not see AI as compromising the teacher's role, recognizing the exceptional significance of empathy and human connection in the process of learning (Rodrigues et al., 2024). This finding suggests that learners trust AI tools as complementary resources rather than replacements for human instruction, which may contribute to their enhanced trust towards these technologies.

2.4. Readability and Accessibility

The readability of AI-related learning materials is an important factor that can influence adult ESL learners' attitudes and trust in AI language learning tools. Cultural and contextual factors also play a role in shaping attitudes and trust towards AI-based tools of learning language. According to a study on the readability of online self-coaching materials on artificial intelligence for ESL students, 10% of online course texts could be read by intermediate-level ESL students (Ehara, 2022). This finding suggests that the difficulty level of AI-related materials may impact learners' trust and willingness to engage with these tools. This problem raises concerns about learners' trust in these tools and emphasizes the need for AI-based language learning apps to be continuously improved.

2.5. Cultural and Contextual Influences on Attitudes and Motivation

Cultural and contextual factors also play a role in shaping learners' attitudes and trust in AI language learning tools. A comparative study of EFL learners in Saudi Arabia and ESL learners in Pakistan revealed, while both groups demonstrated high intrinsic motivation, their extrinsic motivation varied according to contextual factors, such as social expectations and approval (Hussain et al., 2020). These insights suggest that developers and educators need to account for intrinsic and extrinsic motivational factors in AI design to enhance its acceptance across diverse cultural backgrounds.

2.6. Challenges and Future Directions

By offering individualized and flexible learning experiences, integrating the application of AI into ESL instruction holds the potential to completely transform language education (Konyrova, 2024). artificial intelligence-powered language learning systems provide interactive modules that are customized to meet the needs of each learner, resulting in a productive and engaging learning environment. Real-time feedback and assessment are made possible by the application of Machine-learning (ML) algorithms and natural language processing (NLP), enabling students to independently advance their language proficiency. These features can contribute to building trust and positive attitudes among adult ESL learners towards AI language learning tools. Nevertheless, this is significant to consider the restrictions and intricacies allied to AI language learning tools. While they offer numerous advantages, including reduced learning time and personalized experiences, there is a requirement for more interactive participation and consideration of circumstantial distinctions in learning language (De la Vall & Araya, 2023). Additionally, the dependency on the extensive volume of information for equipping AI systems may raise concerns about privacy and data security among learners. To foster positive attitudes and trust in AI language learning tools among adult ESL learners, it is crucial to address these challenges and limitations. Future advancements in AI language learning technologies, such as aligning virtual reality (VR) and augmented reality (AR), improving natural language processing algorithms, and fostering more advanced adaptive learning algorithms, may help overcome some of these obstacles (De la Vall & Araya, 2023).

2.7. Conclusion

. The integration of AI in ESL instruction has shown promise in enhancing language learning outcomes. This personalized approach may contribute to positive attitudes and increased trust in AI tools among adult ESL learners. In summary, the integration of AI in language learning for adult ESL learners has shown promising potential, as reflected in positive attitudes and growing trust. However, challenges related to quality, accessibility, and reliability of AI tools remain, and long-term studies are needed to comprehend the effects of AI on learners' affective factors. By addressing these issues and continually enhancing AI capabilities, language educators and developers can help ensure that AI tools are beneficial, trustworthy, and widely accepted.

3. Methodology

Research Design: This study's research design included quantitative and qualitative data collection techniques in a mixed-methods approach.

Research Method: This study employed an online survey questionnaire (google form) to get quantitative data and in-depth interviews to gather qualitative data.

Literature study: To determine the body of research on adult ESL learners' attitudes and trust in AI-language learning devices, a study of the literature was carried out.

Study Participants: The study participants were 121 adult ESL learners from different public and private universities in Punjab province.

Inclusion Criteria: The inclusion criteria for this study were adult ESL learners who were currently studying or teaching in a university program and had experience using AI-language learning tools.

Exclusion Criteria: The exclusion criteria for this study were adult ESL learners who were not currently studying or teaching in a university program or did not have experience using AI-language learning tools.

Data Collection: An online survey questionnaire and in-depth video conference and in-person semi-structured interviews were the methods utilized to acquire data for this study.

Data Analysis: For this study, thematic analysis was employed for the qualitative data and descriptive statistics for the quantitative data.

Statistical Analysis: Cronbach test for reliability of data, Anova, Descriptive, Frequency distributions and inferential statistics like multiple regression analysis and chi-square tests were the statistical analysis techniques employed in this research.

Approval/Ethics Statement:

Participants gave their informed consent after being made aware of the study's objectives, the fact that participation was voluntary, and that their answers would be kept private. Additionally, they were made aware of their freedom to leave the research program at any moment and without repercussions.

4. Data Analysis

4.1 Quantitative Data

Reliability Statistics

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|------------------|--|------------|
| .987 | .987 | 53 |

The reliability analysis of the scale, with a Cronbach's alpha value of **0.987**, demonstrates excellent internal consistency, indicating that the 53 items in the survey are highly reliable and effectively measure the same underlying construct. This high alpha value suggests that the items are closely related and provide consistent results across respondents, which is essential for ensuring the robustness of the scale in capturing the intended dimensions of the construct. The consistency across standardized and unstandardized alpha values further supports the reliability of the scale, confirming that the items are well-aligned in their measurement. Given this strong internal consistency, the scale can be considered highly dependable for further analysis, and the results are expected to be reliable in capturing the targeted data.

ANOVA with Cochran's Test

| | Sum Squares | df | Mean Square | Cochran's Q | Sig |
|----------------|-------------|------|-------------|-------------|------|
| Between People | 5899.184 | 98 | 60.196 | | |
| Within People | | | | | |
| Between Items | 244.555 | 52 | 4.703 | 304.897 | .000 |
| Residual | 3884.614 | 5096 | .762 | | |
| Total | 4129.170 | 5148 | .802 | | |
| Total | 10028.353 | 5246 | 1.912 | | |

Grand Mean = 3.19

The results of the ANOVA with Cochran's Q test revealed significant differences between items in the study. The analysis showed that the variability between participants (Sum of Squares =

5899.184, $df = 98$, Mean Square = 60.196) was substantially larger than the variability between items (Sum of Squares = 244.555, $df = 52$, Mean Square = 4.703). Cochran's Q statistic was highly significant ($Q = 304.897$, $p < .001$), indicating that the differences between items were statistically significant. This suggests that the items or conditions being tested had a meaningful impact on the outcomes measured in the study. The residual variance (Mean Square = 0.762) was relatively low, indicating that the model explained a substantial portion of the variability in the data. Overall, the results suggest that there are notable differences across the items, and the model provided a good fit, capturing most of the variability with minimal unexplained error. The grand mean for the data was 3.19, representing the overall average across all participants and items.

Case Processing Summary

| | | Cases | | | | | |
|-----------------|--------|-------|---------|---------|---------|-------|---------|
| | | Valid | | Missing | | Total | |
| 2. Gender: ___ | | N | Percent | N | Percent | N | Percent |
| Attitude | Male | 41 | 82.0% | 9 | 18.0% | 50 | 100.0% |
| | Female | 62 | 87.3% | 9 | 12.7% | 71 | 100.0% |
| Trust | Male | 41 | 82.0% | 9 | 18.0% | 50 | 100.0% |
| | Female | 62 | 87.3% | 9 | 12.7% | 71 | 100.0% |

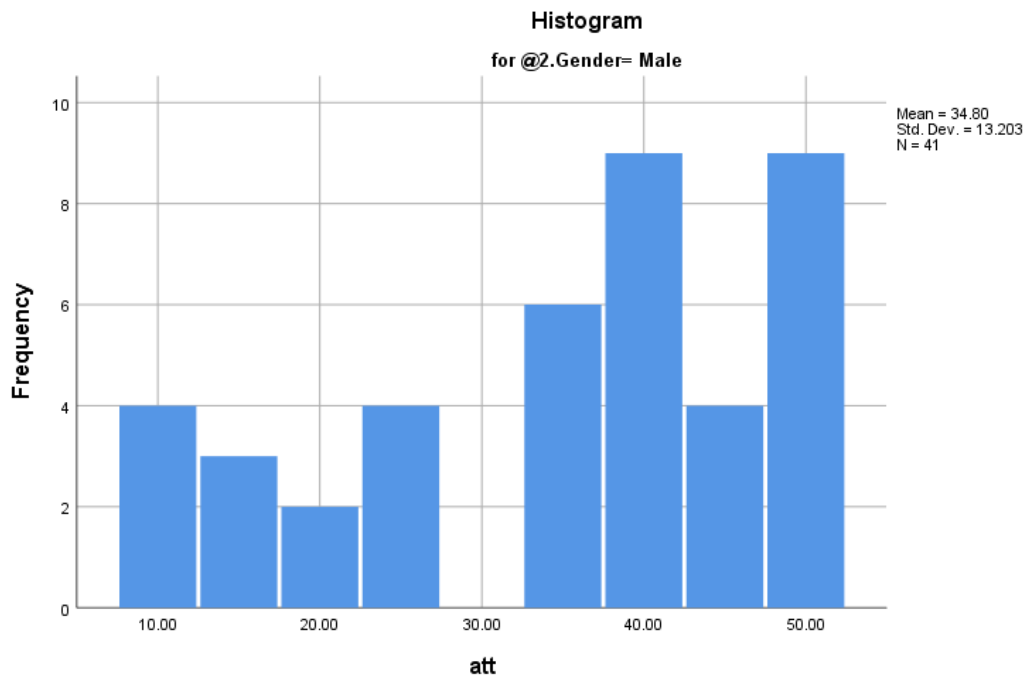
Descriptives

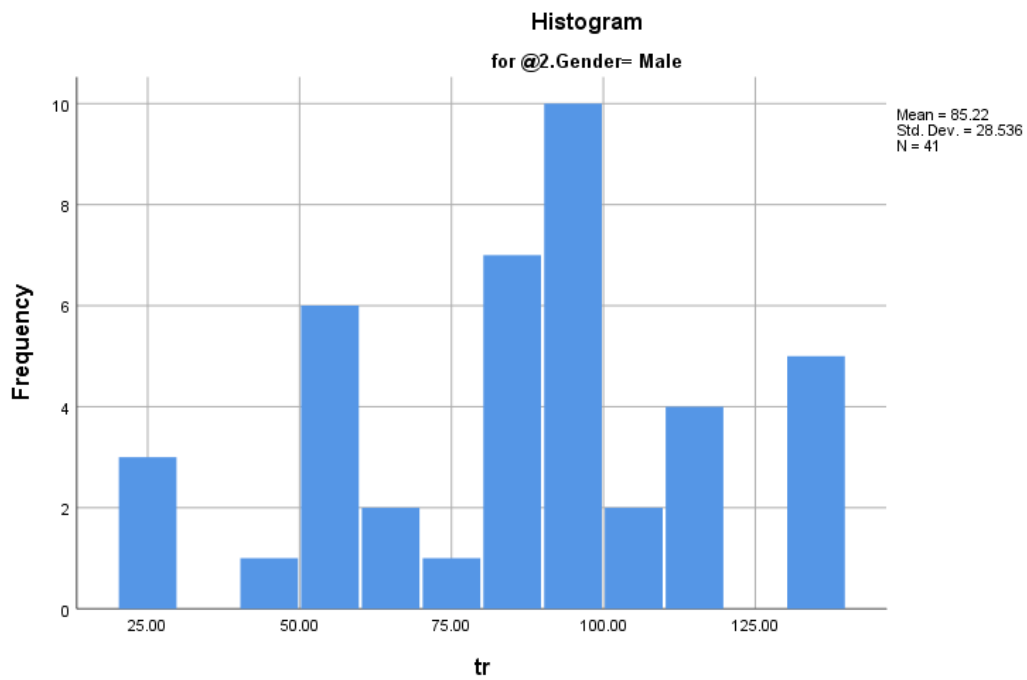
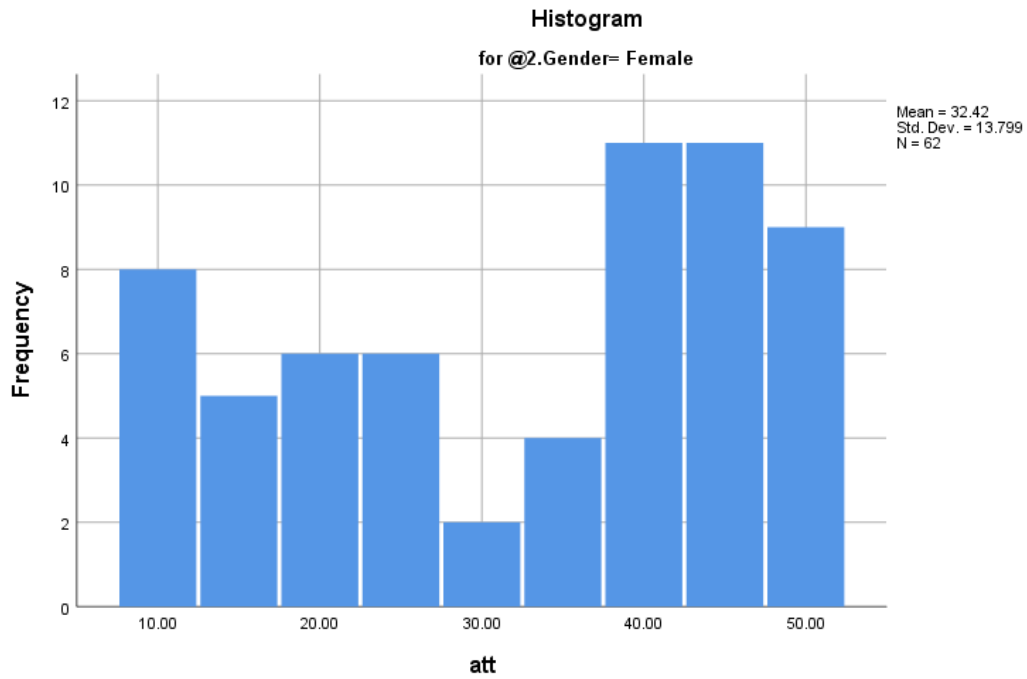
| | | 2. Gender: ___ | | Statistic | Std. Error |
|-----------------|----------|----------------------------------|-------------|-----------|------------|
| Attitude | Male | Mean | | 34.8049 | 2.06191 |
| | | 95% Confidence Interval for Mean | | | |
| | | | Lower Bound | 30.6376 | |
| | | | Upper Bound | 38.9722 | |
| | | 5% Trimmed Mean | | 35.3388 | |
| | | Median | | 38.0000 | |
| | Variance | | 174.311 | | |

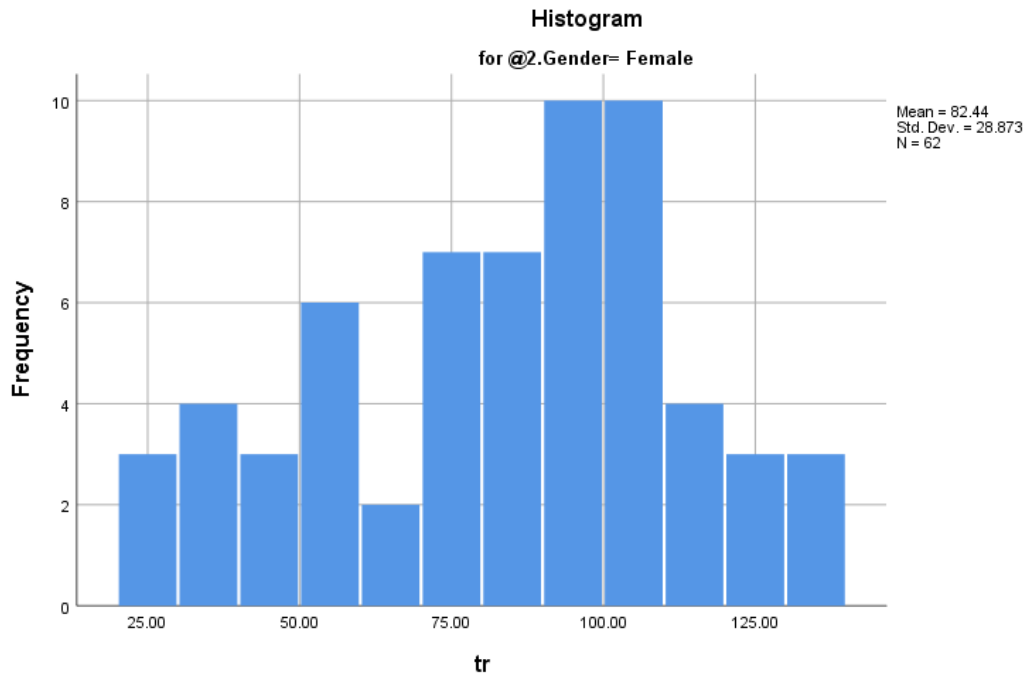
| | | | | |
|--------|------|----------------------------------|----------|---------|
| | | Std. Deviation | 13.20269 | |
| | | Minimum | 10.00 | |
| | | Maximum | 50.00 | |
| | | Range | 40.00 | |
| | | Interquartile Range | 20.50 | |
| | | Skewness | -.636 | .369 |
| | | Kurtosis | -.873 | .724 |
| Female | | Mean | 32.4194 | 1.75247 |
| | | 95% Confidence Interval for Mean | | |
| | | Lower Bound | 28.9151 | |
| | | Upper Bound | 35.9236 | |
| | | 5% Trimmed Mean | 32.6846 | |
| | | Median | 37.5000 | |
| | | Variance | 190.411 | |
| | | Std. Deviation | 13.79896 | |
| | | Minimum | 10.00 | |
| | | Maximum | 50.00 | |
| | | Range | 40.00 | |
| | | Interquartile Range | 23.25 | |
| | | Skewness | -.332 | .304 |
| | | Kurtosis | -1.370 | .599 |
| Trust | Male | Mean | 85.2195 | 4.45650 |

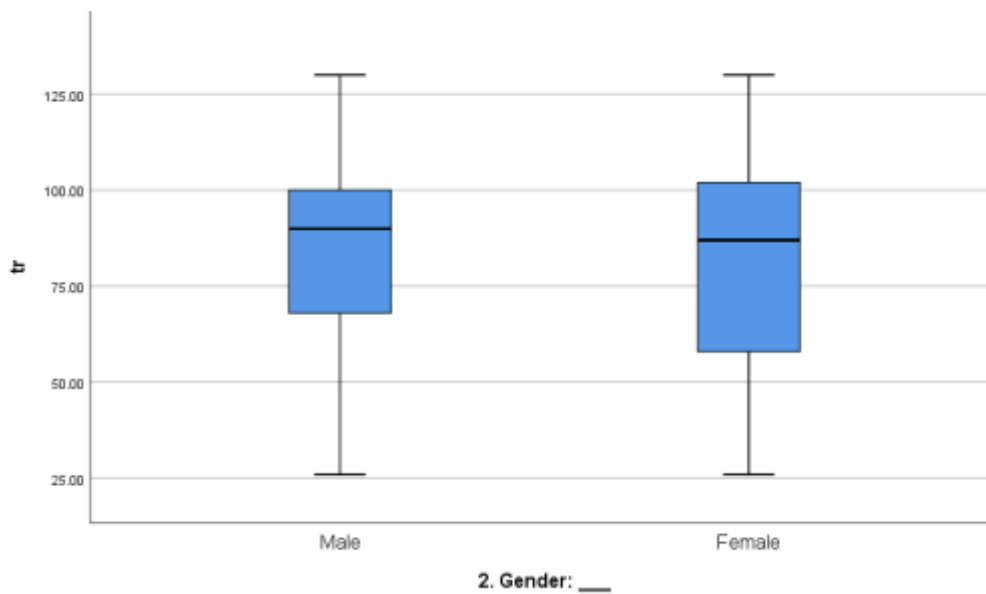
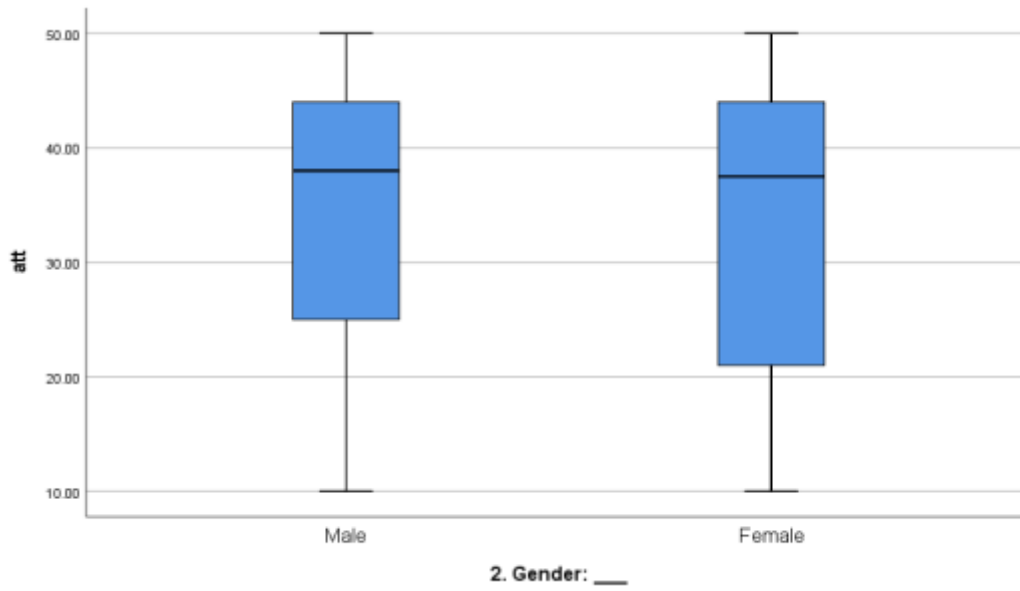
| | | | | |
|--------|----------------------------------|-------------|----------|---------|
| | 95% Confidence Interval for Mean | Lower Bound | 76.2126 | |
| | | Upper Bound | 94.2264 | |
| | 5% Trimmed Mean | | 86.0217 | |
| | Median | | 90.0000 | |
| | Variance | | 814.276 | |
| | Std. Deviation | | 28.53551 | |
| | Minimum | | 26.00 | |
| | Maximum | | 130.00 | |
| | Range | | 104.00 | |
| | Interquartile Range | | 37.00 | |
| | Skewness | | -.312 | .369 |
| | Kurtosis | | -.313 | .724 |
| Female | Mean | | 82.4355 | 3.66690 |
| | 95% Confidence Interval for Mean | Lower Bound | 75.1031 | |
| | | Upper Bound | 89.7679 | |
| | 5% Trimmed Mean | | 82.8853 | |
| | Median | | 87.0000 | |
| | Variance | | 833.660 | |
| | Std. Deviation | | 28.87317 | |
| | Minimum | | 26.00 | |
| | Maximum | | 130.00 | |
| | Range | | 104.00 | |
| | Interquartile Range | | 45.00 | |

| | | |
|----------|-------|------|
| Skewness | -.376 | .304 |
| Kurtosis | -.671 | .599 |









The descriptive statistics for the variables **attitude (att)** and **trust (tr)** were analyzed separately for male and female participants. For attitude, males had a slightly higher mean score ($M=34.80, SD=13.20$ $M = 34.80, SD = 13.20$) compared to females ($M=32.42, SD=13.80$ $M = 32.42, SD = 13.80$), with overlapping 95% confidence intervals ($[30.64, 38.97]$ $[30.64, 38.97]$ for males and $[28.92, 35.92]$ $[28.92, 35.92]$ for females), suggesting no strong evidence of a significant difference. Both groups exhibited moderate variability, as indicated by their standard deviations and ranges ($Range=40$ $Range = 40$). The distributions for attitude scores were slightly left-skewed and flatter than normal, with skewness and kurtosis values of -0.636 - 0.636 and -0.873 - 0.873 for males, and -0.332 - 0.332 and -1.370 - 1.370 for females, respectively. Similarly, for trust, males reported a higher mean score ($M=85.22, SD=28.54$ $M = 85.22, SD = 28.54$) than females ($M=82.44, SD=28.87$ $M = 82.44, SD = 28.87$), with overlapping 95% confidence intervals ($[76.21, 94.23]$ $[76.21, 94.23]$ for males and $[75.10, 89.77]$ $[75.10, 89.77]$ for females). The variability and range of trust scores were also comparable between genders ($Range=104$ $Range = 104$), with distributions showing slight negative skewness and relatively flat kurtosis. Overall, while small differences in means were observed between males and females for both variables, the overlapping confidence intervals and similar variability suggest that these differences may not be statistically significant.

Chi-Square Tests

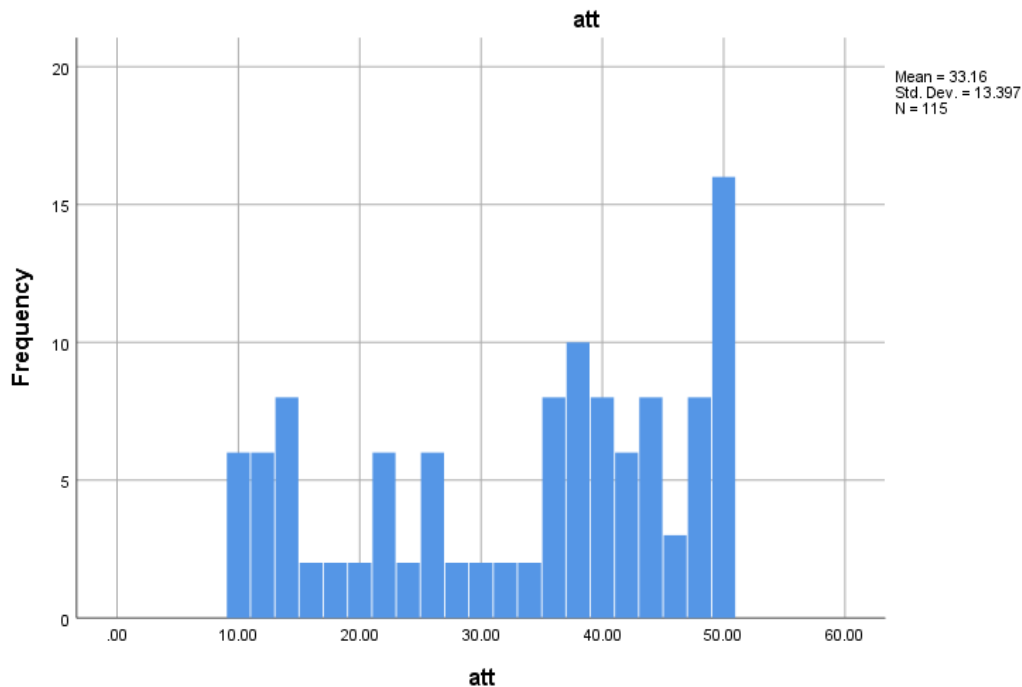
| | Value | df | Asymptotic Significance (2-sided) | (2-Exact Sig. (2-sided) |
|---------------------|---------------------|----|-----------------------------------|-------------------------|
| Pearson Chi-Square | 61.439 ^a | 39 | .012 | .001 |
| Likelihood Ratio | 81.804 | 39 | .000 | .001 |
| Fisher's Exact Test | 51.854 | | | .003 |
| N of Valid Cases | 103 | | | |

a. 80 cells (100.0%) have expected count less than 5. The minimum expected count is .40.

The Chi-Square tests conducted in this analysis reveal a significant association between the categorical variables. The Pearson Chi-Square test ($\chi^2 = 61.439, df = 39, p = 0.012$), Likelihood Ratio test ($\chi^2 = 81.804, df = 39, p < 0.001$), and Fisher's Exact Test ($p = 0.003$) all indicate strong statistical significance, supporting the hypothesis that a meaningful relationship exists between the variables under study. The consistency of these results across different statistical tests—each yielding significant p-values—reinforces the robustness of the findings. These results suggest that the observed association is not due to chance and provides compelling evidence for the relationship between the categorical variables, highlighting its relevance to the research question.

Statistics

| | | 2. Gender: ___ | att |
|--------------------|---------|----------------|----------|
| N | Valid | 121 | 115 |
| | Missing | 0 | 6 |
| Mean | | 1.59 | 33.1565 |
| Std. Error of Mean | | .045 | 1.24923 |
| Median | | 2.00 | 37.0000 |
| Mode | | 2 | 50.00 |
| Std. Deviation | | .494 | 13.39651 |
| Variance | | .244 | 179.467 |
| Range | | 1 | 40.00 |
| Minimum | | 1 | 10.00 |
| Maximum | | 2 | 50.00 |
| Sum | | 192 | 3813.00 |

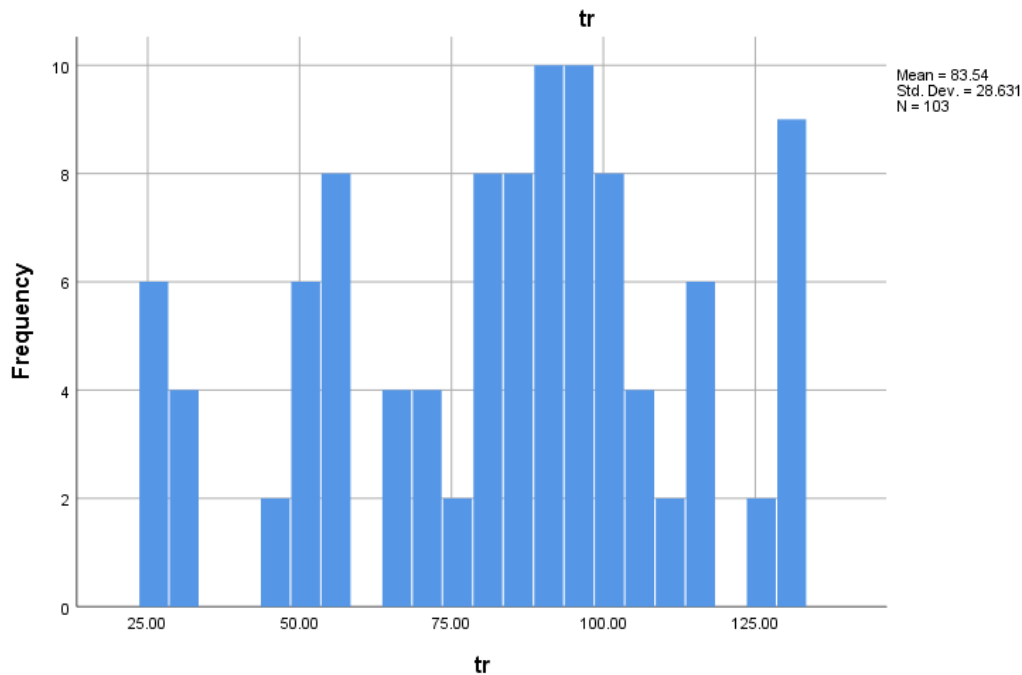


The analysis of the variables **gender** and **attitude (att)** reveals important patterns in the sample. Gender, coded as a binary variable, showed that the majority of respondents were female, with the mean value of 1.59, median of 2, and mode of 2, indicating a higher number of females in the sample. The low standard deviation (0.494) and variance (0.244) suggest little variation in gender distribution. In contrast, the **attitude (att)** variable displayed more diversity, with a mean score of 33.16 and a median of 37, indicating that participants had a generally moderate attitude. The range of 40 between the minimum score of 10 and maximum score of 50, along with a standard deviation of 13.40, highlights significant variability in attitude responses. The mode of 50 suggests that many participants rated their attitude highly. Overall, while gender distribution is predominantly female and consistent, attitude scores vary widely, reflecting a broad spectrum of responses among participants. This variability in attitudes may provide valuable insights into the diverse perspectives of the sample.

Statistics

| | | 2. Gender: ____ | |
|------|---------|-----------------|---------|
| N | Valid | 121 | 103 |
| | Missing | 0 | 18 |
| Mean | | 1.59 | 83.5437 |

| | | |
|--------------------|------|----------|
| Std. Error of Mean | .045 | 2.82114 |
| Median | 2.00 | 87.0000 |
| Mode | 2 | 130.00 |
| Std. Deviation | .494 | 28.63146 |
| Variance | .244 | 819.760 |
| Range | 1 | 104.00 |
| Minimum | 1 | 26.00 |
| Maximum | 2 | 130.00 |
| Sum | 192 | 8605.00 |



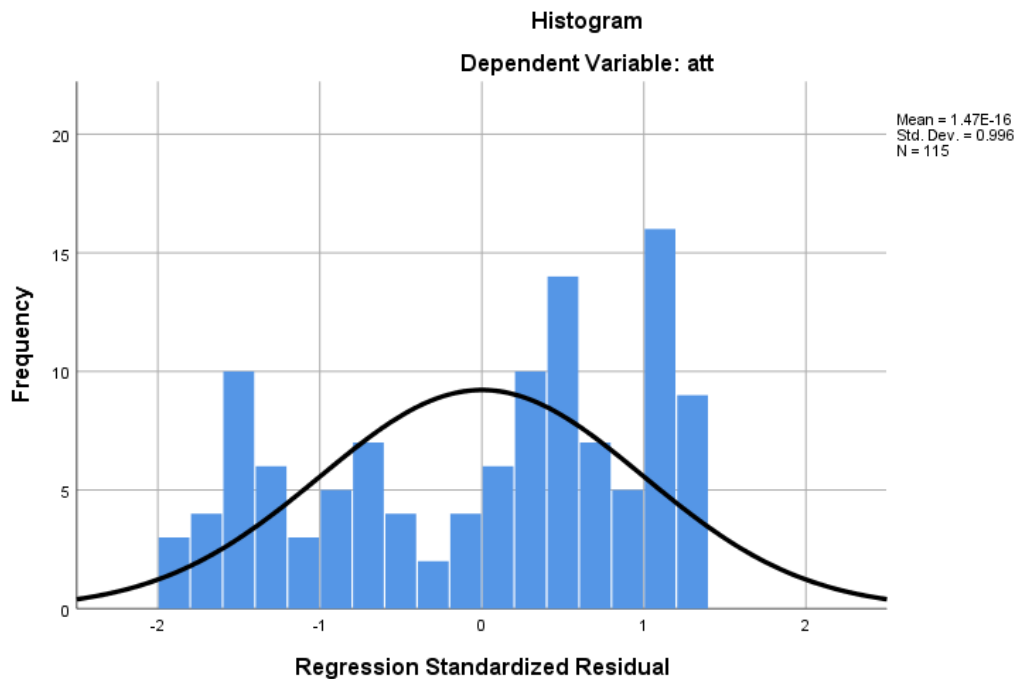
The analysis of the **gender** and **trust (tr)** variables reveals distinct patterns in the sample. Gender, coded as a binary variable (1 for male and 2 for female), showed a slight majority of female respondents, with a mean of 1.59, a median of 2, and a mode of 2, confirming that most participants were female. The low standard deviation (0.494) and variance (0.244) indicate

minimal variability in gender, suggesting a relatively homogenous gender distribution across the sample. In contrast, the **trust** variable displayed significant variability, with a mean trust score of 83.54 and a median of 87, indicating that most participants reported high levels of trust. The wide range of trust scores (26 to 130) and the high standard deviation of 28.63 reflect considerable diversity in the level of trust expressed by participants. The mode of 130 suggests that a significant portion of the sample rated trust at the highest levels. Overall, while the gender distribution is predominantly female with little variation, trust levels exhibit substantial variation, with many participants demonstrating extremely high trust scores, indicating a wide spectrum of trust perceptions within the sample.

Residuals Statistics^a

| | Minimum | Maximum | Mean | Std. Deviation | N |
|-----------------------------------|-----------|----------|---------|----------------|-----|
| Predicted Value | 32.3939 | 34.1837 | 33.1565 | .88891 | 115 |
| Std. Predicted Value | -.858 | 1.156 | .000 | 1.000 | 115 |
| Standard Error of Predicted Value | 1.653 | 1.918 | 1.766 | .132 | 115 |
| Adjusted Predicted Value | 32.1231 | 34.6875 | 33.1565 | .91943 | 115 |
| Residual | -24.18367 | 17.60606 | .00000 | 13.36699 | 115 |
| Std. Residual | -1.801 | 1.311 | .000 | .996 | 115 |
| Stud. Residual | -1.820 | 1.321 | .000 | 1.004 | 115 |
| Deleted Residual | -24.68750 | 17.87692 | .00000 | 13.59934 | 115 |
| Stud. Deleted Residual | -1.839 | 1.326 | -.002 | 1.008 | 115 |
| Mahal. Distance | .736 | 1.335 | .991 | .298 | 115 |
| Cook's Distance | .000 | .035 | .009 | .008 | 115 |
| Centered Leverage Value | .006 | .012 | .009 | .003 | 115 |

a. Dependent Variable: att



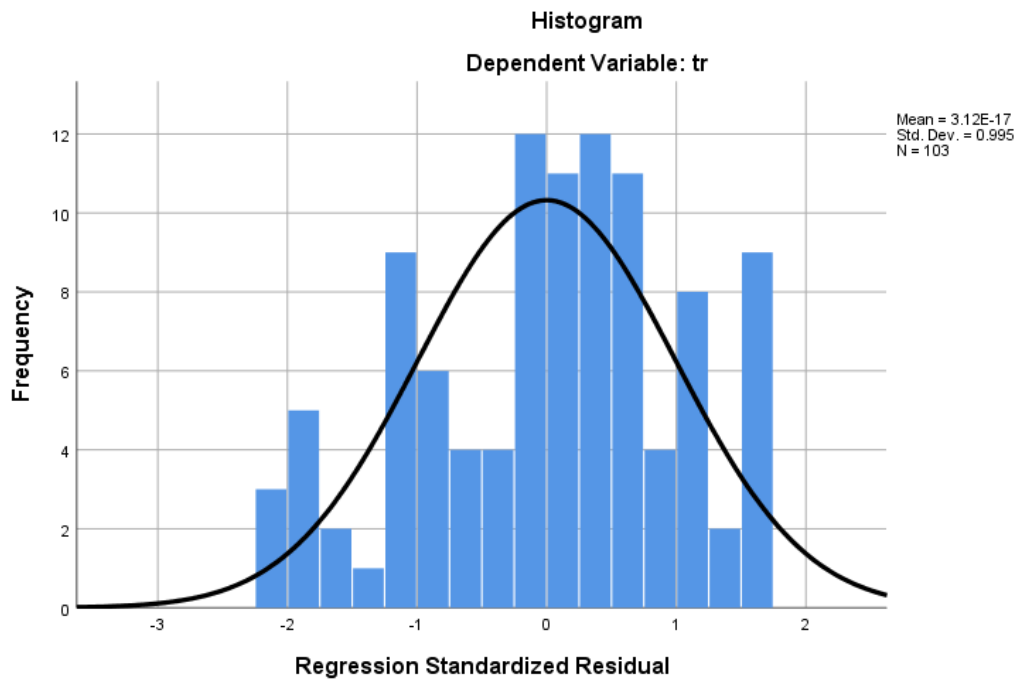
The residuals statistics indicate that the regression model predicts the dependent variable (att) with reasonable accuracy, as reflected by a balanced mean residual of 0 and standardized residuals mostly within ± 2 standard deviations. Predicted values show low variability (SD = 0.88891), and the standard errors of prediction are consistent across cases. No significant outliers or influential points were identified, as evidenced by low Cook's distances (max = 0.035) and leverage values (max = 0.012). However, the residuals exhibit some variability (SD = 13.36699), suggesting room for improvement in predictive precision. Overall, the model is robust and not disproportionately influenced by individual data points.

Residuals Statistics^a

| | Minimum | Maximum | Mean | Std. Deviation | N |
|-----------------------------------|---------|---------|---------|----------------|-----|
| Predicted Value | 82.4355 | 85.2195 | 83.5437 | 1.36944 | 103 |
| Std. Predicted Value | -.809 | 1.224 | .000 | 1.000 | 103 |
| Standard Error of Predicted Value | 3.650 | 4.488 | 3.984 | .412 | 103 |
| Adjusted Predicted Value | 81.6557 | 86.7000 | 83.5437 | 1.48625 | 103 |

| | | | | | |
|-------------------------|-----------|----------|--------|----------|-----|
| Residual | -59.21951 | 47.56452 | .00000 | 28.59869 | 103 |
| Std. Residual | -2.061 | 1.655 | .000 | .995 | 103 |
| Stud. Residual | -2.086 | 1.669 | .000 | 1.005 | 103 |
| Deleted Residual | -60.70000 | 48.34426 | .00000 | 29.16386 | 103 |
| Stud. Deleted Residual | -2.122 | 1.684 | -.002 | 1.012 | 103 |
| Mahal. Distance | .655 | 1.498 | .990 | .414 | 103 |
| Cook's Distance | .000 | .054 | .010 | .012 | 103 |
| Centered Leverage Value | .006 | .015 | .010 | .004 | 103 |

a. Dependent Variable: tr



The residuals statistics indicate that the regression model predicts the dependent variable (tr) with balanced residuals (mean = 0) and no significant outliers, as standardized residuals mostly fall within ± 2 standard deviations. Predicted values show limited variability (SD = 1.36944), and no undue influence from individual data points was observed, as evidenced by low Cook's distances (max = 0.054) and leverage values (max = 0.015). However, the residuals exhibit considerable variability (SD = 28.59869), reflecting notable prediction errors in some cases. Overall, the model demonstrates robustness and balance, though improvements in predictive precision are needed to reduce residual variability.

4.2 Qualitative Data

The central themes that emerged from the qualitative data were participants' attitudes about and trust in AI-powered language learning tools. These themes give us a better understanding of the perceptions and experiences of university students in Punjab, Pakistan.

In general, participants held positive attitudes toward AI tools, considering them to be helpful, convenient resources for English learning. As an example, Participant from (BGNU) stated, "I find AI tools very useful for learning English. Apps like Grammarly and ChatGPT have made it easier for me to write essays and assignments." This could be seen as a general appreciation of the tools for enhancing academic performance, but another Participant from (BGNU) went further when she said, "AI tools are very helpful for practicing English, especially grammar. I use Duolingo and ChatGPT regularly." It is not clear from either of these statements whether the participants have thoughts about the limitations of these tools, but there are a couple of different mixed feelings expressed in this area. For instance, Participant from (UCP) said, "They are helpful for quick learning, but the lack of personalized feedback is a disadvantage."

Theme 2: Trust in AI Tools

Participants displayed a trust that was anything but effusive toward AI tools, and for tasks like correcting grammar or enhancing vocabulary, they were certainly trusted somewhat. Participant from (BGNU) stated:

"I trust the tools for grammar and spelling, but I'm not sure if they always understand the context of what I want to say."

Her comment reflects a widespread worry that these tools lack the ability to interpret the context in which a writer has used them. Bilal (Superior University) noted a "to a certain extent" way of trusting the tools when he said:

"I trust the tools to a certain extent, but sometimes they provide generic suggestions that don't fit my needs."

The data show that participants generally have a positive attitude toward AI tools, especially appreciating their accessibility and usefulness for enhancing grammar and vocabulary.

Their confidence in the tools they use is still cautious, especially when it comes to contexts that demand subtleties and cultural knowledge.

Although AI tools are considered effective supplements for language learning, the lack of personalization and true interactivity currently limits their potential. These two aspects—essential for any language learner—are the major sticking points regarding the use of AI in this context.

5. Discussion/Interpretation of Results

5.1 Reliability Analysis:

The reliability analysis of the scale measuring attitudes and trust in AI-language learning tools among adult ESL learners revealed a Cronbach's alpha of 0.987, indicating exceptional internal consistency across the 53 items. This high reliability ensures robust and dependable data for analyzing participants' perceptions.

5.2 ANOVA with Cochran's Test:

ANOVA with Cochran's Q test showed significant differences between items ($Q = 304.897$, $p < .001$), demonstrating the scale's ability to differentiate responses effectively. High variability between participants (Sum of Squares = 5899.184, Mean Square = 60.196) suggests diverse attitudes and trust levels among adult ESL learners. The low residual variance (Mean Square = 0.762) indicates the model's effectiveness in capturing data variability. The grand mean of 3.19 reflects a moderate overall response, suggesting neither strong trust nor distrust in AI tools, nor extreme attitudes. This middle-ground stance may indicate a growing familiarity and cautious optimism toward AI in language learning, balanced with some reservations.

5.3 Descriptive Statistics (Gender Differences in Attitude and Trust):

Attitudes toward AI-Language Learning Tools:

The analysis revealed that male participants exhibited a marginally higher average attitude score ($M = 34.80$, $SD = 13.20$) in comparison to their female counterparts ($M = 32.42$, $SD = 13.80$). Nevertheless, the overlapping confidence intervals for both groups indicate that there is no statistically significant difference in attitudes based on gender. The scores displayed considerable variability (Range = 40), suggesting that participants' attitudes spanned a wide spectrum, potentially influenced by various factors such as previous experience with AI tools, perceived utility, or technological comfort. The skewness and kurtosis values point to a slightly left-skewed distribution, implying that a larger proportion of participants tended towards more positive attitudes.

5.4 Trust in AI-Language Learning Tools:

Regarding trust in AI-Language Learning Tools, males once again showed a slightly elevated mean trust score ($M = 85.22$, $SD = 28.54$) compared to females ($M = 82.44$, $SD = 28.87$). However, the overlapping confidence intervals ([76.21, 94.23] for males and [75.10, 89.77] for females) suggest that these differences lack statistical significance. The extensive range of trust scores (26 to 130) underscores substantial variability in participants' trust levels, indicating that while some adult ESL learners express high confidence in AI tools, others maintain a more cautious stance. The negative skewness and flat kurtosis observed in the data suggest a tendency towards higher trust levels among participants, although these are not uniformly distributed across the sample.

5.5 Chi-Square Tests:

The categorical variables pertaining to attitudes and trust in AI-language learning tools were found to be significantly correlated by the Chi-Square tests ($\chi^2 = 61.439$, $df = 39$, $p = 0.012$). Several tests, such as the Fisher's Exact Test and the Likelihood Ratio, verified the association's robustness. These results imply that there is a significant relationship between participants' attitudes and trust, with their opinions about AI technologies probably affecting their levels of trust and vice versa.

5.6 Multiple Regression Tests:

The regression model's residuals analysis shows that it is capable of accurately predicting the dependent variable, which is attitude regarding AI-language learning tools. The model does not exhibit major prediction errors, as evidenced by the standardized residuals primarily falling within the permissible range of ± 2 standard deviations and the mean residual being balanced at 0. The model's stability is further supported by the anticipated values' low variability ($SD = 0.88891$) and the standard errors of prediction that hold true across situations. Low leverage values (highest = 0.012) and Cook's distances (maximum = 0.035) suggested that there were no notable outliers or influential points.

5.7 Gender and Variable Analysis:

The sample's gender distribution, which reflected a wider demographic representation of adult ESL learners, leaned somewhat toward female participants (mean = 1.59). Although there were no discernible gender variations in attitude or trust, the descriptive data point to complex viewpoints that demand more research. The variation in attitude and trust answers suggests that a complex interaction between personal experiences, gender roles, and potentially cultural or technological exposure shapes how adult ESL learners view AI tools.

5.8 Interpretation in Context of Research Title:

These results are consistent with the study's goal of investigating "Attitudes and Trust in AI-Language Learning Tools among Adult ESL Learners." According to the statistics, adult ESL learners often have moderate opinions about and trust AI-based solutions, with some having more positive views. This illustrates the potential and difficulties of incorporating AI into language acquisition.

The scale's strong reliability highlights the data's validity in capturing complex viewpoints, and the notable item variances highlight how multifaceted attitudes and trust are. These constructs are probably influenced by learners' prior experiences with AI, their opinions about the tools' effectiveness, and contextual or cultural elements that affect their level of trust in technology.

Although not statistically significant, gender disparities point to minor variances that may guide focused tactics to improve AI tool engagement. For instance, attending to particular issues or preferences of female students may enhance their confidence and perceptions of these resources.

The study's overall findings emphasize how critical it is to manage learner perception diversity in order to promote increased adoption and efficient usage of AI-language learning tools. Although learners acknowledge the potential of AI, it is still necessary to enhance user experience, transparency, and cultural relevance in order to foster greater trust and more favorable attitudes among this diverse group, as indicated by the modest levels of attitude and trust that were found.

The Qualitative analysis shows that the university students of Punjab have a positive attitude toward AI language learning tools. Largely, they showed trust in these tools. The participants seem to appreciate the convenience and effectiveness of the tools for grammar and vocabulary improvement. But they are concerned about the "understanding context" business, which is related to our next point. It seems that AI tools are perceived as valuable supplements but not as valuable as human instructors. Enhancing personalization, cultural relevance, and the interactive features of AI languages learning tools could strengthen both attitudes toward and trust in these university-level language learning companions.

5.9 Findings:

The findings of this study provide valuable insights into the attitudes and trust levels of adult ESL learners towards AI-powered language learning tools. The research reveals generally positive attitudes towards these technologies, with learners recognizing their potential to enhance language acquisition. However, trust levels varied, influenced by factors such as perceived effectiveness, quality of AI applications, and the balance between AI assistance and independent learning.

Key findings include:

1. Positive overall attitudes towards AI language tools, with learners viewing them as complementary resources rather than threats to human instructors.

2. No significant gender differences in attitudes or trust levels, suggesting broad acceptance across demographic groups.
3. Trust in AI tools is closely linked to their perceived effectiveness and reliability, highlighting the importance of developing high-quality applications.
4. Challenges identified include the need for more interactive engagement, addressing contextual nuances in language learning, and privacy concerns.
5. The importance of striking a balance between utilizing AI tools and developing independent language skills.

These findings have important implications for the development and implementation of AI-powered language learning tools in ESL curricula. To maximize the potential benefits of these technologies, it is crucial to:

1. Focus on developing high-quality, reliable AI tools that address the specific needs of adult ESL learners.
2. Integrate AI tools thoughtfully into ESL curricula, ensuring they complement rather than replace traditional teaching methods.
3. Address privacy concerns and maintain transparency in data usage to build trust among learners.
4. Provide adequate training for both learners and instructors to effectively utilize AI tools in language learning contexts.
5. Continuously evaluate and refine AI applications based on user feedback and emerging research in the field.

5.10 Conclusion:

In conclusion, while AI-powered language learning tools show promise in enhancing adult ESL education, their successful implementation requires careful consideration of learner attitudes, trust factors, and the need to maintain a balance between technological assistance and learner autonomy. Future research should focus on long-term studies to fully understand the impact of AI tools on language acquisition and learner engagement over time.

References:

- Ajzen, I., & Fishbein, M. (1977). Attitude-behavior relations: A theoretical analysis and review of empirical research. *Psychological bulletin*, 84(5), 888.

- AlTwijri, L., & Alghizzi, T. M. (2024). Investigating the integration of artificial intelligence in English as foreign language classes for enhancing learners' affective factors: A systematic review. *Heliyon*.
- Asher, N., & Zweigenbaum, P. (2020). Artificial Intelligence and Language. *A Guided Tour of Artificial Intelligence Research: Volume III: Interfaces and Applications of Artificial Intelligence*, 117-145.
- Bicknell, K., Brust, C., & Settles, B. (2023). How Duolingo's AI Learns what you Need to Learn: The language-learning app tries to emulate a great human tutor. *IEEE Spectrum*, 60(3), 28-33.
- Chen, X., Xie, H., & Hwang, G.-J. (2020). A multi-perspective study on artificial intelligence in education: Grants, conferences, journals, software tools, institutions, and researchers. *Computers and Education: Artificial Intelligence*, 1, 100005.
- De la Vall, R. R. F., & Araya, F. G. (2023). Exploring the benefits and challenges of AI-language learning tools. *International Journal of Social Sciences and Humanities Invention*, 10(01), 7569-7576.
- Ehara, Y. (2022). Assessing Readability of Learning Materials on Artificial Intelligence in English for Second Language Learners. International Conference on Artificial Intelligence in Education,
- Gonzalves, L. (2021). Development and demonstration of metalinguistic awareness in adult ESL learners with emergent literacy. *Language awareness*, 30(2), 134-151.
- Hashim, K., Al-Sharqi, L., & Kutbi, I. (2016). Perceptions of Social Media Impact on Social Behavior of Students:: A Comparison between Students and Faculty. *International Journal of Virtual Communities and Social Networking*, 8, 1-11. <https://doi.org/10.4018/IJVCSN.2016040101>
- Hussain, M. S., Salam, A., & Farid, A. (2020). Students' motivation in English language learning (ELL): An exploratory study of motivation-al factors for EFL and ESL adult learners. *International Journal of Applied Linguistics and English Literature*, 9(4), 15-28.
- Jiang, R. (2022). How does artificial intelligence empower EFL teaching and learning nowadays? A review on artificial intelligence in the EFL context. *Frontiers in Psychology*, 13, 1049401.
- Konyrova, L. (2024). The Evolution of Language Learning: Exploring AI's Impact on Teaching English as a Second Language. *Eurasian Science Review An International peer-reviewed multidisciplinary journal*, 2(2), 133-138.
- Lee, Y.-J., Davis, R. O., & Lee, S. O. (2024). University students' perceptions of artificial intelligence-based tools for English writing courses. *Online Journal of Communication and Media Technologies*, 14(1), e202412.
- Liu, G., & Ma, C. (2024). Measuring EFL learners' use of ChatGPT in informal digital learning of English based on the technology acceptance model. *Innovation in Language Learning and Teaching*, 18(2), 125-138.

- Moulieswaran, N., & NS, P. K. (2023). Investigating ESL Learners' Perception and Problem towards Artificial Intelligence (AI)-Assisted English Language Learning and Teaching. *World Journal of English Language*, 13(5), 290-290.
- Reid, N., & Ali, A. A. (2020). *Making sense of learning*. Springer.
- Rodrigues, L., Pereira, F. D., Cabral, L., Gašević, D., Ramalho, G., & Mello, R. F. (2024). Assessing the quality of automatic-generated short answers using GPT-4. *Computers and Education: Artificial Intelligence*, 7, 100248.
- Smith, A., Higgs, J., Lizárraga, J. R., & Watson, V. W. (2024). Guest editorial: Artificial intelligence and composing just education futures. *English Teaching: Practice & Critique*, 23(1), 1-5.
- Son, J.-B., Ružić, N. K., & Philpott, A. (2023). Artificial intelligence technologies and applications for language learning and teaching. *Journal of China Computer-Assisted Language Learning*(0).
- Spencer, H. (1900). *First Principles: By Herbert Spencer*. Williams and Norgate.
- Woithe, J., & Filipec, O. (2023). Understanding the adoption, perception, and learning impact of ChatGPT in higher education: A qualitative exploratory case study analyzing students' perspectives and experiences with the AI-based large language model. In.