MSc Computer Science & Big Data Analytics

ChatGPT: The advancement of knowledge and incorporation for its users - Results

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# Result Analysis

The objective for this section of research was to present the results from analysis against data collected from survey participant responses. Firstly, a description of results for **RQ1**, **RQ2**, and **RQ3** respectively. Secondly, outcomes from hypotheses tests completed to support claims made in both **RH1** And **RH2**. Furthermore, additional insights were generated regarding the remaining questions gathered from the survey. Over the course of one month, a total of **17** individuals responded to the survey, all of which provided consent to participate. Further detailed results from the analysis are placed in **Appendix B** and **Appendix C** for additional perusal.

## RQ1. Is ChatGPT being used by participants?

In this RQ, the aim was to quantitatively analyse of individuals who have agreed to participate in the study, how many have used ChatGPT previously. The rationale of RQ1 being, to confirm the assumption that ChatGPT was used in the public domain. Fig. 1 represented the distribution of respondents who answered the question “Can you confirm if you have used ChatGPT previously?”. Of those values, 15 of the participants identified to have used ChatGPT, and 2 participants who have not.

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Fig. 1. Distribution of participants who have used ChatGPT.

## RQ2. If ChatGPT is being used by the participant, did the use of it enhance a user’s knowledge?

With RQ2, the focus was to understand, of those 15 participants who have used ChatGPT previously, did the use of it help to enhance their knowledge based on the prompt they entered. The analysis confirmed that all 15 participants said ChatGPT helped to enhance their knowledge.

## RQ3. If ChatGPT did enhance a user's knowledge, has ChatGPT been adopted by the user for routine knowledge acquisition?

The final research question, assessed of those who claim ChatGPT enhanced their knowledge, how many have since used it as an aid toward day-today knowledge enhancement. Of the 15 participants who stated ChatGPT enhanced their knowledge, Fig. 2 showed that 10 of those individuals have then incorporated it into their routine for gaining knowledge.

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Fig. 2. Distribution of participants who have adopted ChatGPT for route knowledge acquisition.

## RH1. The utilisation of ChatGPT increases the likelihood of enhancing a user's knowledge on a specific topic.

For RH1**,** the application of the binomial test was used to support the hypothesis presented and reject the null hypothesis that only 50% of participants or less state the use of ChatGPT is likely to enhance a user’s knowledge, based on the prompt entered and response the user was provided with. Therefore, of the 17 respondents, 15 were used within the test – based on conclusions found in RQ1. The results from this test are documented in Table III.

Table 1 Results of RH1 binomial test.

|  |  |
| --- | --- |
| Element in binomial test | Value |
| Number of observations where RQ1 is Yes | 15 |
| Number of responses who replied Yes to RQ2 | 15 |
| Probability used in binomial test | 0.5 (50%) |
| p-value from binomial hypothesis test | 0.000030517578125 |

## RH2. Users who perceive ChatGPT as enhancing their knowledge are more likely to incorporate ChatGPT into their routine for knowledge acquisition compared to those who do not perceive ChatGPT as enhancing their knowledge.

### Binomial Test

As well as **RH1**, a binomial test was also executed against **RH2**, with the aim to support its claim. Based on the 17 respondents, 15 were used for the test, established from the results of **RQ2**. The outcomes from this test were recorded in Table IV.

Table IV Results from RH2 binomial test

|  |  |
| --- | --- |
| Element in binomial test | Value |
| Number of observations where RQ2 is Yes | 15 |
| Number of responses who replied Yes to RQ3 | 10 |
| Probability used in binomial test | 0.5 (50%) |
| p-value from binomial hypothesis test | 0.15087890624999997 |

### Pearsons Correlation Coefficient

In addition to the binomial test measuring the p-value to confirm the statistical significance, the Pearson correlation was used to evaluate the relationship between users claiming ChatGPT enhanced their knowledge, and if the user has incorporated into routine knowledge acquisition since. Results presented in Fig. 3, documented a Pearson R value of 0.620661, and p-value of less than 0.05.

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Fig. 3. Results from RH2 Pearson Correlation Coefficient.

## Additional Insights

In addition to the results obtained in response to the formulated research questions and hypotheses, supplementary insights emerged from the remaining survey questions and their corresponding data. Although these findings were not the primary focus of this study, they provide valuable additional perspectives on the utilisation of ChatGPT from the users' standpoint, thus justifying further investigation in this domain. All pertinent information is also accessible within **Appendix C**. It is important to note that only the questions deemed relevant and significant will be included here; not all results from the remaining survey will be displayed.

### Rating ChatGPT Response

One set of information captured and analysed related to question four of the survey, stored as variable ‘rating\_response’, where the user was asked to rate the response from being not useful, to being the exact information needed., they received from ChatGPT based on the prompt entered. The most common rating was 4 with 35.3% of the participant population reporting this. This information was also represented in Fig. 4.

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Fig. 4. Distribution of rating the response a user received from ChatGPT.

### Comparing ChatGPT to other tools

An additional set of analyses was conducted concerning question nine in the survey, which was stored as a variable named 'rating\_comparison\_other.' In this question, participants were asked to compare their usage of ChatGPT with other tools, such as a Google search or browsing YouTube, for acquiring knowledge on a particular topic. They were requested to rate, on a scale from 0 to 5, whether ChatGPT facilitated the process of knowledge acquisition compared to other methods. The results of this analysis are illustrated in Fig. 5.

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Fig. 5. Distribution rating ChatGPT to other tools.