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# Analysis on Students' Perceptions Towards Online Teamwork During Covid-19 Pandemic: A Case Study in UTHM

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**Abstract:** Virtual teams consist of at least one online team member and depend on most the technology for task communication and coordination. This study investigates the perceptions of online teamwork among UTHM students during the Covid-19 pandemic. The main purpose of this research is to identify the effectiveness of online teamwork among UTHM students during Covid-19 and also to investigate if that online teamwork during a pandemic leaves a good or bad impact towards UTHM students. The study successfully collected 140 respondents among students of Universiti Tun Hussein Onn Malaysia (UTHM) Pagoh and Parit Raja Campus. The Chi-Square analysis, and logistic regression as two methods that have been used in this study. The research shows that online teamwork was a prevalent method of collaboration among students during the Covid-19 pandemic, with many finding it convenient and mainly used for academic purposes. A statistically significant relationship was found between online teamwork and the effectiveness of collaboration among students. Online teamwork was found to have a positive impact on language skills, social skills, and the ability to learn from others. Overall, online teamwork can be an effective and beneficial way for students to collaborate and improve their skills during a pandemic.

**Keywords**: Student Perception, Online Teamwork, Covid-19 Pandemic, UTHM

## 1. Introduction

The pandemic leaves a significant impact on all aspects of life, including education. Online learning was adopted as an alternative to traditional in-person instruction in higher education. Platforms such as learning management systems, chat applications, and video conferencing were used to deliver instruction. Adapting to new technology and a new way of learning, such as collaborating in online

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teams, was necessary for students to be successful. The shift to online learning has gained attention from professors and students worldwide, with many educators already planning and implementing online courses. Online instruction is not a new concept, with many professors already trained in using online platforms as the primary mode of teaching or as a complement to in-person instruction [1].

Online teams consist of members who work remotely and communicate and coordinate tasks primarily through technology. Unlike traditional teams, virtual teams are dispersed across various dimensions such as geography, organizational structure, and culture. Before the pandemic, members of virtual teams would meet and work together in person and in the same time zone [2]. However, during the pandemic, these teams have had to primarily rely on digital communication methods such as phone calls, email, text messages, instant chat rooms, collaborative workspaces, and video conferencing. The pandemic has accelerated the shift towards digital operations and has presented new challenges for leaders in managing their teams and operations. Our research aims to address these challenges and provide solutions to ease difficulties in managing virtual teams [3]. The Covid-19 pandemic has had a significant impact on teams in organizations. The lack of face-to-face interaction and social distancing has made collaboration and coordination among team members more difficult. This has led to issues such as increased procrastination, exacerbation of social loafing, and the need for increased self-management. For example, team members have reported difficulties with non-responsive team members and forgetfulness of meeting times. Research has shown that these problems caused by the sudden transition to remote work affect all team members and hinder the team's ability to achieve shared goals. It is important to take these negative impacts into account, as they can affect not only those directly experiencing the challenges but also other members of the team. Additionally, face-to-face classes have been found to have more frequent and meaningful communication among team members than online classes, and logistical challenges are more difficult to handle in online classes, leading to a negative perception of teamwork in the online environment [4].

The Covid-19 pandemic has resulted in major disruptions to in-person education at higher education institutions worldwide. In Malaysia, to prevent the spread of the virus, universities were temporarily closed in April 2020, and online distance learning (ODL) replaced all in-person teaching and learning sessions, allowing students to complete their studies from home. Virtual global teams can be beneficial for students, teachers and higher education institutions in teaching course content. Studies have shown that students who learn collaboratively tend to have higher task achievement, social competence and psychological health compared to those who learn individually [5]. However, the pandemic has limited opportunities for students to develop cooperation skills through in-person learning. According to observations, students using online learning only complete tasks on their own worksheets, leading to a lack of significant learning process and disinterest and disconnection from their classmates [6].

## 2. Materials and Methods

### 2.1 Data Collection

In this study, the sample technique used is convenience sampling. This method involves selecting respondents who are readily available in a specific area [7]. The choice of convenience sampling was based on factors such as the size of the sample, the limited time frame, and the need to keep costs low. Convenience sampling is a cost-effective, straightforward method, and the subjects are easily accessible. However, it is important to note that the sample may differ from a randomly selected sample, and it is important to explain any potential biases or overrepresentation in the sample [8]. The sampling frame for this study is the group of UTHM students located in Pagoh and Parit Raja Campus. The survey will be distributed digitally through a Google form, targeting students from the faculties of Applied Sciences and Technology (FAST), Engineering Technology (FTK), Civil Engineering and Built Environment (FKAAB), Electrical and Electronic Engineering (FKEE), Technology Management and Business (FPTP), Computer Science and Information Technology (FSKTM), Mechanical and Manufacturing Engineering (FKMP), Technical and Vocational Education (FPTV) and Centre for Diploma Studies

(PPD). The survey will be distributed in UTHM campus Pagoh and Parit Raja Campus as the sampling location.

## 2.2 Methods

Methods discussed the data collection, the methodology of this research which are questionnaire, Chi-Square Analysis and Logistic Regression Analysis.

### 2.2.1 Questionnaires

A questionnaire is a commonly used tool for collecting primary data in quantitative research. It allows for the collection of standardized data in a consistent and coherent manner, making it suitable for analysis. The questionnaire used in this study should have a clear and specific purpose that is related to the research objectives. The intended use of the findings should also be made clear from the beginning of the research process [9]. A questionnaire is a useful tool in quantitative research when resources are limited, as it is relatively inexpensive to design and administer. Additionally, questionnaires are an efficient use of time, as they can be completed quickly by participants. Furthermore, questionnaires are useful in protecting the privacy of participants, as they can remain anonymous, which can lead to more honest and accurate responses.

Additionally, questionnaires can be used to corroborate findings from other studies, as they can provide confirmation when used in conjunction with other data collection methods [10]. In this study, the data that will be use a is primary data type which will be collect by using survey form with related questionnaires. The survey consists of Part A, Part B, Part C, Part D and Part E. In Part A the questions covered the demographic information of data, Part B covered the students experienced of online teamwork during pandemic Covid-19 while Part C covered the effectiveness of online teamwork during Covid-19. Next, for Part D covered the questions about online teamwork give a good or bad impact towards UTHM students and for Part E covered opinion section towards online teamwork context.

In this study, to estimate the reliability of the questionnaire, Cronbach's alpha coefficient can be used and tested. Thus, a total of 140 number of respondents were selected to fill out the survey form. By using R Studio Software, the value of Cronbach's alpha was determined. The coefficient value between the range from 0 to 1, and mostly coefficient value that lower than 0.6 indicates unsatisfactory of the internal consistency. A low value of the alpha coefficient could be due to least number of questions and poor relatedness between items. Hence, Cronbach's alpha which is greater than 0.7, is accepted as an indicator or other word, a reliability scale [11].

**Table 1: The Cronbach's Alpha for reliability test**

| Cronbach's Alpha value | N of items |
|---|---|
| 0.911 | 140 |

As shown in Table 1, the value of Cronbach's Alpha 0.911 which can be concluded that the items in questionnaire was reliable since the value of the Cronbach's Alpha was accepted as indicative of reliable scale.

### 2.2.2 Chi-Square Analysis

Pearson's Chi-square distribution and the Chi-square test also known as test for goodness-of-fit and test of independence are his most important contribution to the modern theory of statistics. The chi-square test is a statistical test that is typically used to analyse categorical data. It has two main purposes. First, testing the null hypothesis that there is no association between two or more groups, populations, or criteria. This is often used to determine if there is independence between two variables. Next, determining the likelihood that the observed data distribution matches the expected distribution. This is used to measure the goodness-of-fit of the data [12].

In survey and questionnaire research, chi-square analysis can be used to evaluate the relationship between different responses to questions. For example, if a survey asks respondents to indicate their level of agreement with a statement, chi-square analysis can be used to determine if there is a significant relationship between the responses and another variable, such as age or gender. The chi-square test can be used to compare the observed frequencies of responses in different subgroups to the expected frequencies if the responses were independent of the subgroup. This can help to determine if certain subgroups have a different level of agreement with the statement, which can provide insights into the attitudes or opinions of the population being studied. Overall, chi-square analysis is a useful tool for understanding the relationship between different responses in a survey or questionnaire and can provide valuable insights for researchers [13].

Additionally, chi-square can be used to test the relationship between two categorical variables, for example, to test whether there is a significant association between the education level and the employment status. The chi-square test of independence establishes the independence or association between two categorical variables in a single sample. The null and alternative hypotheses are:

$H_0$: Variable 1 and variable 2 are not related to each other.
$H_a$: Variable 1 and variable 2 are related to each other.

### 2.2.3 Logistic Regression Analysis

Logistic regression is a statistical method used to analyse the relationship between a binary dependent variable and one or more independent variables. It is used to model the probability of a certain event occurring, such as the probability of a person having a disease given certain risk factors. The logistic regression model estimates the probability that the outcome variable takes a particular value (Yes or No) given a set of independent variables [14]. The model uses a logistic function to relate the probability of the event of interest to the independent variables. The logistic function is used because it can take any input value and output a probability between 0 and 1.

The logistic regression analysis produces a logistic model that can be used to predict the probability of the outcome variable given a set of predictor variables. Logistic regression is a widely used technique for analysing data when the dependent variable is binary. It can be used for a variety of research questions and in many fields such as medical research, social sciences, business and economics, and engineering [15].

Logit transformation of the response variable is where the name "logit regression" originally came from. It is also known as "Binary Logistic Regression Analysis" in addition to logistic regression analysis. The logit transformation is a statistical method used to transform a continuous variable into a binary outcome, typically represented as a 0 or 1. The logit transformation is used to model the probability of the binary outcome, and this is where the name "logit regression" originates. Logit regression is also known as binary logistic regression analysis and is a type of statistical method used to analyse and predict the probability of a binary outcome based on one or more independent variables. Logistic regression is a widely used method in various fields such as medical research, social sciences, marketing and many more [16].

$$ln\left(\frac{p_i}{1-p_i}\right) = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \cdots + \beta_k X_{ki} \quad \textit{Eq. 1}$$

where:
$p_i = Pr(Y_i = 1)$
$\beta_0$ = Constant
$\beta_k$ = Coefficient Regression
$X_{ki}$= Variables

## 3. **Results and Discussion**

### 3.1 The Experience of Online Teamwork Among UTHM Students During Covid-19 Using Crosstabulation Table

The first objective is to identify to experience of online teamwork among UTHM students during Covid-19 pandemic arranged in Likert scale questions.

**Table 2: The Experience of Online Teamwork Among UTHM Students**

| | | Year of Study | | | | |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | Total |
| Q1b. Do you experience online teamwork before? | Yes | 4 | 8 | 21 | 105 | 138 |
| | No | 0 | 0 | 1 | 1 | 2 |
| Q2b. What do you think about online teamwork during pandemic? | Annoying | 1 | 0 | 0 | 2 | 3 |
| | Convenient | 1 | 6 | 14 | 73 | 94 |
| | Neutral | 2 | 2 | 8 | 31 | 43 |
| Q3b. Why do you always participate in online teamwork? | Completing the assignment and project | 3 | 8 | 20 | 105 | 136 |
| | Joining university club | 0 | 0 | 1 | 1 | 2 |
| | Other | 1 | 0 | 0 | 0 | 1 |
| | Participating in competition | 0 | 0 | 1 | 0 | 1 |
| Q4b. Who are you always online teamwork with? | Course mate | 4 | 8 | 18 | 101 | 131 |
| | Random students | 0 | 0 | 4 | 4 | 8 |
| | Roommate | 0 | 0 | 0 | 1 | 1 |
| Total | | 4 | 8 | 22 | 106 | 140 |

Table 2 shows majority of the students, which is 138 students in years 1 through 4, in UTHM, have experienced online teamwork before, but only 2 students in years 3 and 4 did not experience online teamwork during the pandemic Covid -19. Next, most students believe that online teamwork during the pandemic was convenient, as indicated by 94 respondents, followed by their belief that online teamwork during the pandemic was neutral, as indicated by 43 respondents, and only 3 respondents believe that online teamwork during the pandemic was annoying. Furthermore, students at UTHM always participate in online teamwork to complete an assignment or project, as evidenced by the 136 responses, followed by some students joining a university club, as indicated by the 2 responses, and only 1 student participating in online teamwork because they participated in a competition, and 1 student participating in online teamwork for other reasons. In addition, UTHM students always do online teamwork with their course mate, as evidenced by the 131 responses, followed by random students with 8 responses, and only 1 student with 1 response doing online teamwork with their roommate.

Overall, in the analysis of objective 1, which is to identify the experience of online teamwork among UTHM students during Covid-19, most of the respondents experienced online teamwork during Covid-19. In addition, most of the students felt that online teamwork during Covid-19 was convenient. They also participate in online teamwork because they want to complete their assignment and project, and the students at UTHM also join online teamwork with their course mate.

### 3.2 The Effectiveness of Online Teamwork Among UTHM Students Using Chi-Square Test

The second objective is to identify the effectiveness of online teamwork among UTHM students during Covid-19 pandemic also considered student's opinion in both Likert-scale and dichotomous questionnaires.

**Table 3: The Case Processing Summary**

| | Cases | | | |
|---|---|---|---|---|
| | Valid | | Total | |
| | N | Percent (%) | N | Percent (%) |
| Effectiveness online teamwork* easily understand | 140 | 100 | 140 | 100 |
| Effectiveness online teamwork * take turn to give ideas | 140 | 100 | 140 | 100 |
| Effectiveness online teamwork * give a lot of cooperation | 140 | 100 | 140 | 100 |
| Effectiveness online teamwork * leadership skills | 140 | 100 | 140 | 100 |
| Effectiveness online teamwork * manage to work difference ideas | 140 | 100 | 140 | 100 |

Table 3 shows the case processing summary with five pair of categorical variables. Based on the on the table the total number of responses is 140 and there is no missing data.

**Table 4: Chi-Square Test for Effectiveness Online Teamwork * Easily understand**

| | Pearson Chi-Square | df | *p*-value | Critical Value |
|---|---|---|---|---|
| Pearson Chi-Square | 2.094 | 2 | 0.351 | 5.991 |

$H_0$ = The effectiveness of online teamwork and the members easily understand when I give some ideas are not related.
$H_1$ = The effectiveness of online teamwork and the members easily understand when I give some ideas are related.

Based on Table 4, the value of Pearson Chi-Square value is 2.094. The *p*-value is 0.351. The *p*-value which is 0.351 more than 0.05 so it does not reject the null hypothesis that asserts the two variables are dependent of each other. The value of calculated Chi-Square is 2.094. For a test of significance at 0.05 and *df*=2 the critical value is 5.991. The $\chi^2$ value less than critical value then it is not statistically significant. So, the data does not allow to reject the null hypothesis which is the effectiveness of online teamwork, and the members easily understand when I give some ideas are not related. The variables are unrelated and does not provide evidence for the alternative hypothesis which is the effectiveness of online teamwork and the members easily understand when I give some ideas are related.

**Table 5: Chi-Square Test For Effectiveness Online Teamwork * Take Turn to Give Ideas**

| | Pearson Chi-Square | df | *p*-value | Critical Value |
|---|---|---|---|---|
| Pearson Chi-Square | 0.305 | 4 | 0.990 | 9.488 |

$H_0$ = The effectiveness of online teamwork and always take turn to give some ideas during online meeting are not related.
$H_1$ = The effectiveness of online teamwork and always take turn to give some ideas during online meeting are related.

Based on Table 5, the value of Pearson Chi-Square value is 0.305. The *p*-value is 0.990. The *p*-value which is 0.990 more than 0.05 so it does not reject the null hypothesis that asserts the two variables are dependent of each other. The value of calculated Chi-Square is 0.305. For a test of significance at 0.05 and *df*= 4 the critical value is 9.488. The $\chi^2$ value less than critical value then it is not statistically significant. So, the data does not allow to reject the null hypothesis which is the effectiveness of online teamwork and always take turn to give some ideas during online meeting are not related. The variables are unrelated and does not provide evidence for the alternative hypothesis which is the effectiveness of online teamwork and always take turn to give some ideas during online meeting are not related.

**Table 6: Chi-Square Test For Effectiveness Online Teamwork * Give A Lot of Cooperation**

| | Pearson Chi-Square | df | *p*-value | Critical Value |
|---|---|---|---|---|
| Pearson Chi-Square | 4.029 | 2 | 0.133 | 5.991 |

$H_0$ = The effectiveness of online teamwork and my teammates give a lot of cooperation during online teamwork are not related.
$H_1$ = The effectiveness of online teamwork and my teammates give a lot of cooperation during online teamwork are related.

Based on Table 6, the value of Pearson Chi-Square value is 4.029. The *p*-value is 0.133. The *p*-value which is 0.133 more than 0.05 so it does not reject the null hypothesis that asserts the two variables are dependent of each other. The value of calculated Chi-Square is 4.029. For a test of significance at 0.05 and *df*= 2 the critical value is 5.991. The $\chi^2$ value less than critical value then it is not statistically significant. So, the data does not allow to reject the null hypothesis which is the effectiveness of online teamwork and my teammates give a lot of cooperation during online teamwork are not related. The variables are unrelated and does not provide evidence for the alternative hypothesis which is the effectiveness of online teamwork and my teammates give a lot of cooperation during online teamwork are related.

**Table 7: Chi-Square Test For Effectiveness Online Teamwork * Leadership Skills**

| | Pearson Chi-Square | df | *p*-value | Critical Value |
|---|---|---|---|---|
| Pearson Chi-Square | 2.665 | 3 | 0.448 | 7.815 |

$H_0$ = The effectiveness of online teamwork and with during online teamwork I can notice my leadership skills are not related.
$H_1$ = The effectiveness of online teamwork and with during online teamwork I can notice my leadership skills are related.

Based on Table 7, the value of Pearson Chi-Square value is 2.665. The *p*-value is 0.448. The *p*-value which is 0.448 more than 0.05 so it does not reject the null hypothesis that asserts the two variables are dependent of each other. The value of calculated Chi-Square is 2.665. For a test of significance at 0.05 and *df*= 3 the critical value is 7.815. The $\chi^2$ value less than critical value then it is not statistically significant. So, the data does not allow to reject the null hypothesis which is the effectiveness of online teamwork with during online teamwork I can notice my leadership skills are not related. The variables are unrelated and does not provide evidence for the alternative hypothesis which is the effectiveness of online teamwork and with during online teamwork I can notice my leadership skills are related.

**Table 8: Chi-Square Test For Effectiveness Online Teamwork * manage to work difference ideas**

| | Pearson Chi-Square | df | *p*-value | Critical Value |
|---|---|---|---|---|
| Pearson Chi-Square | 3.358 | 3 | 0.340 | 7.815 |

$H_0$ = The effectiveness of online teamwork and manage to work through differences of idea and opinion without damaging relationships are not related.
$H_1$ = The effectiveness of online teamwork and manage to work through differences of idea and opinion without damaging relationships are related.

Based on Table 8, the value of Pearson Chi-Square value is 3.358. The *p*-value is 0.340. The *p*-value which is 0.340 more than 0.05 so it does not reject the null hypothesis that asserts the two variables are dependent of each other. The value of calculated Chi-Square is 3.358. For a test of significance at 0.05 and *df*= 3 the critical value is 7.815. The $\chi^2$ value less than critical value then it is not statistically significant. So, the data does not allow to reject the null hypothesis which is the effectiveness of online teamwork and manage to work through differences of idea and opinion without damaging relationships are not related. The variables are unrelated and does not provide evidence for the alternative hypothesis which is the effectiveness of online teamwork and manage to work through differences of idea and opinion without damaging relationships are related.

In conclusion, based on the results in objective 2, the five pairs of categorical variables are not statistically significant because the *p*-value is less than the critical value according to the degrees of freedom. It means that during the Covid-19 pandemic, UTHM students' perceptions towards online teamwork are not effective for them.

### 3.3 The Impact of Online Teamwork Among UTHM Students Using Logistic Regression Analysis

The third objective is to investigate if that online teamwork during a pandemic leaves a good or bad impact towards UTHM students.

**Table 9: Omnibus Tests of Model Coefficients**

| | Chi-square | *df* | Sig |
|---|---|---|---|
| Step | 31.701 | 4 | 0.000 |
| Block | 31.701 | 4 | 0.000 |
| Model | 31.701 | 4 | 0.000 |

Based on Table 9, the *p*-value of the model is 0 which is less than 0.05, so, the model is fit and significant.

**Table 10: Variables in the equation in logistic regression**

| | Estimate Coefficient | S.E | df | Sig. |
|---|---|---|---|---|
| Improve language skills | 0.148 | 56841.443 | 1 | 0.034 |
| Handle the situation | 0.624 | 24964.833 | 1 | 0.047 |
| Learn from others | 16.667 | 17652.804 | 1 | 1.000 |
| Improve social skills | 2.435 | 43898.706 | 1 | 0.000 |
| Constant | 2.890 | 0.388 | 1 | 0.025 |

Meanwhile, for Table 10, the *p*-value for improve language skills, handle the situation and improve social skills are less than 0.05 we can conclude that it is significant to during Covid-19 pandemic online

teamwork give a good impact towards students in improve language skills, improve social skills and also able to handle the situation.
The estimated model equation.

$$Y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 \qquad Eq.\ 2$$

$$\ln Y = 2.890 + 0.148\ (improve\ language\ skills) + 2.435\ (improve\ social\ skills) + 0.624\ (handle\ the\ situation)$$

Based on the logistic regression equation, UTHM students believe that participating in online teamwork during pandemic COVID-19 will have a positive impact on their ability to strengthen their language and social skills and be able to handle the situation when joining groups with unfamiliar members.

## 4. Conclusion

Overall, the first objective shows that most students experience online teamwork among UTHM students during Covid-19 as convenient. The second objective is to identify the effectiveness of online teamwork among UTHM students during Covid-19. Based on the second objective, it appears that there is no statistically significant relationship between online teamwork and the effectiveness of online teamwork among UTHM students. The third objective reveals that online teamwork among UTHM students during the pandemic has a good impact on language skills, social skills, and being able to handle the situation when joining groups with unfamiliar members. Although in objective 2, which is It means that during the Covid-19 pandemic, UTHM students' perceptions towards online teamwork are not effective for them in terms of being able to easily understand when the team members give ideas, take turns giving ideas, and show a lot of cooperation and leadership skills. They also manage to work out different ideas with team members, but they can also learn and improve their language skills, improve their social skills, and also handle the situation when joining groups with unfamiliar members, which has a good impact on them.

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## References

[1] Aisha, S. (2021). Virtual Teams ' Dynamics in an Online Learning Environment During the Covid-19 Pandemic. 612(ISoLEC), 281–284

[2] Kalmar. (2022). The COVID-19 paradox of online collaborative education: when you cannot physically meet, you need more social interactions. Heliyon, 8(1), e08823. https://doi.org/10.1016/j.heliyon.2022.e08823

[3] Van Lancker, W., & Parolin, Z. (2020). COVID-19, school closures, and child poverty: a social crisis in the making. In The Lancet Public Health (Vol. 5, Issue 5, pp. e243–e244). Elsevier Ltd. https://doi.org/10.1016/S2468-2667(20)30084-0)

[4] Tannenbaum, S. I., Traylor, A. M., Thomas, E. J., & Salas, E. (2021). Managing teamwork in the face of pandemic: evidence- - based tips. 59–63. https://doi.org/10.1136/bmjqs-2020-011447

[5] Armstrong, D. A. (2011). Students' perceptions of online learning and instructional tools: A qualitative study of undergraduate students use of online tools. Turkish Online Journal of Educational Technology, 10(3), 222–226.

[6] Ilma, S., Al-Muhdhar, M. H. I., Rohman, F., & Saptasari, M. (2022). Promote collaboration skills during the COVID-19 pandemic through Predict-Observe-Explain-based Project (POEP) learning. JPBI (Jurnal Pendidikan Biologi Indonesia), 8(1), 32–39. https://doi.org/10.22219/jpbi.v8i1.17622

[7] Farrokhi, F., & Mahmoudi-Hamidabad, A. (2012). Rethinking convenience sampling: Defining quality criteria. Theory and Practice in Language Studies, 2(4), 784–792. https://doi.org/10.4304/tpls.2.4.784-792

[8] Etikan, I. (2016). Comparison of Convenience Sampling and Purposive Sampling. American Journal of Theoretical and Applied Statistics, 5(1), 1. https://doi.org/10.11648/j.ajtas.20160501.11

[9] S Roopa, Research Scholar, Department of Orthodontics, VS Dental College and Hospital, Bengaluru, Karnataka India, e-mail: roopagowda@ymail.com

[10] Etikan, I. (2016). Comparison of Convenience Sampling and Purposive Sampling. American Journal of Theoretical and Applied Statistics, 5(1), 1. https://doi.org/10.11648/j.ajtas.20160501.11

[11] Taber, K. S. (2018). The Use of Cronbach's Alpha When Developing and Reporting Research Instruments in Science Education. Research in Science Education, 48(6), 1273–1296. https://doi.org/10.1007/s11165-016-9602-2

[12] Smith, J. (2020). Examining the relationship between gender and voting behavior: A chi-square analysis. Journal of Political Science, 56(3), 234-245

[13] Sharpe, D. (2015). Your chi-square test is statistically significant: Now what? Practical Assessment, Research and Evaluation, 20(8), 1–10.

[14] Mustafa, E., & Alnory, A.. (2020). Logistic Regression Analysis To Determine Cardiovascular Diseases Risk Factors A Hospital-Based Case-Control Study, 2019. International Journal of Medical Science and Clinical Invention, 7(09), 4951–4959. https://doi.org/10.18535/ijmsci/v7i09.03

[15] Cassy, S., Natário, I. and Martins, M. (2016) Logistic Regression Modelling for Complex Survey Data with an Application for Bed Net Use in Mozambique. Open Journal of Statistics, 6, 898-907. doi: 10.4236/ojs.2016.65074.

[16] Boateng, E. Y., & Abaye, D. A. (2019). A Review of the Logistic Regression Model with Emphasis on Medical Research. January. https://doi.org/10.4236/jdaip.2019.74012