



Statistical Analysis on Mobile Phone

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Abstract:

Background and Aim: As a result of technological advancements, the world has shrunk to the size of a single Nation. One cannot picture a day without a cell phone as they have become such an essential component of daily life. Using a descriptive analysis and a chi square test to verify the attributes' independence, this study aims to provide a detailed understanding of the relationship between age and the number of downloaded apps. Questionnaires were used to gather the data.

Keywords: Correlation, hypothesis, chi-square, observed frequency, expected frequency.

Note: This analysis is based on the assumption that all respondents have answered the questions honestly.

1. INTRODUCTION:

In today's world, technology has become a necessary tool for survival, and smartphone usage is increasing throughout all spheres of society. In the blink of an eye, users can instantly send text, audio, video, and SMS messages to one another. Despite its many drawbacks, its proper application would facilitate communication and information collecting.

2. METHODOLOGIES:

The act of compiling all the information pertaining to a specific topic that is being studied is referred to as data collection. Data is a common term used to describe these facts and numbers. Any situation can require data in order to make decisions. Any statistical investigation's likelihood of success or failure is determined by the quality and dependability of the data at hand. As a result, gathering data is seen as the first step in the decision-making process.

Methods:

There are two methods of collecting the data. They are

1. Primary Data
2. Secondary Data

Primary Data

It refers to the information gathered in accordance with the goals, challenges, and conclusions of the researcher's investigation. It is first-hand information gathered through enumerator research and tests or interviews. For example, the government's National Census data.

Secondary Data

Sometimes a party's primary data serves as that party's secondary data. It is second-hand data that the company has gathered for any other reason. There are several places to look for secondary data. They are 1. Published Sources 2. Un published Sources.

Published source includes government publications, semi government publications, newspapers, journals etc.
Unpublished source includes diaries, research works, literature reviews and systematic review



3. STATISTICAL METHODS USED:

- **Column Chart:**

A Column chart uses statistical approach to represents categorical data. It is mainly used for comparison purpose. Bars can be horizontal or vertical.

To draw column chart in MS-EXCEL: Select the data to use for chart in spreadsheet. Click insert Bar chart option and choose chart option of your choice

- **Pie Chart:**

A pie chart display data in the circular graph, which is in form of slices. Each slice shows numerical proportions of given data. It can be 2D or 3D pie chart.

To draw pie chart in MS-EXCEL: Select the data to use for pie chart in spreadsheet. Click Insert pie chart option and choose chart option based on your requirement.

- **Correlation:**

Correlation analysis in research is a statistical method used to measure the strength of the linear relationship between two variables and compute their association.

To compute correlation in MS-EXCEL: =CORREL (array1, array2)

4. CHI-SQUARE FOR INDEPENDENCE OF ATTRIBUTES:

It is a statistical test that determines if two categorical variables are significantly related. It tells whether two principles of classification are significantly related or not?

Steps:

- Calculate the expected frequencies.
- Calculate chi-square.
- Find the critical chi-square value.
- Compare the chi-square value to the critical value.
- Decide whether to reject the null hypothesis.
- MS EXCEL: =CHISQ.TEST (actual range, expected range).

Topic for study: Statistical analysis of Mobile phone

Sample questions: 13

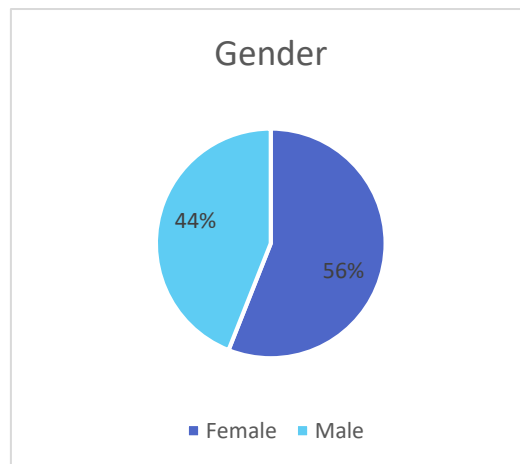
Sample units: 100

Statistical methods used: Bar diagram, Pie chart, Chi-square test for independence, Correlation.

5. ANALYSIS AND INTERPRETATION:

Table 1 shows the percentages of gender of the respondent.

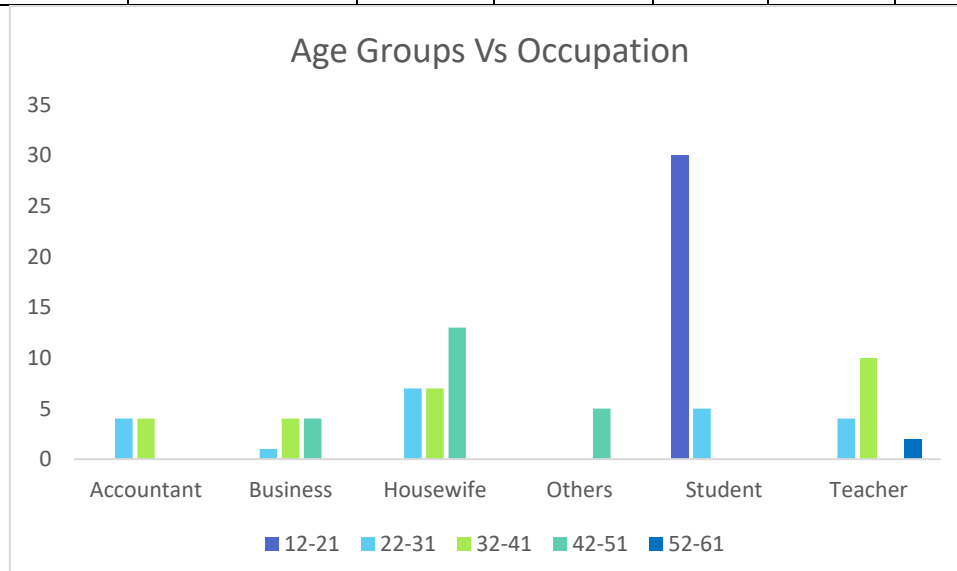
GENDER	FREQUENCY
Female	56
Male	44
Grand Total	100



From the above, we can conclude that the maximum respondents was male with 56%.

Table 2 shows the Age Groups and the occupation of the respondents.

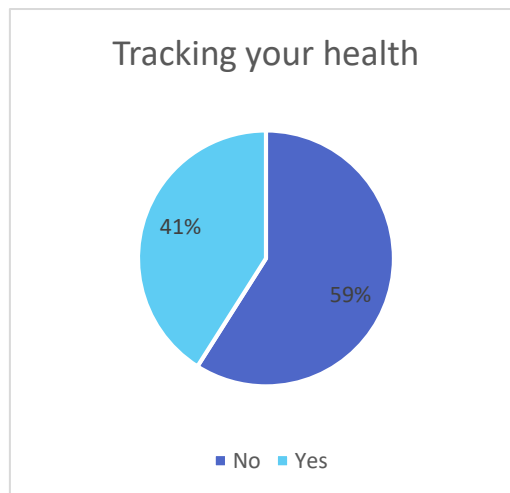
Age Groups	Accountant	Business	Housewife	Others	Student	Teacher	Grand Total
12-21	0	0	0	0	30	0	30
22-31	4	1	7	0	5	4	21
32-41	4	4	7	0	0	10	25
42-51	0	4	13	5	0	0	22
52-61	0	0	0	0	0	2	2
Grand Total	8	9	27	5	35	16	100



From the table, we can say that the maximum of our respondents was students in the Age Group 12-21.

Table 3 represents the percentage of respondents who uses their phones to track their health.

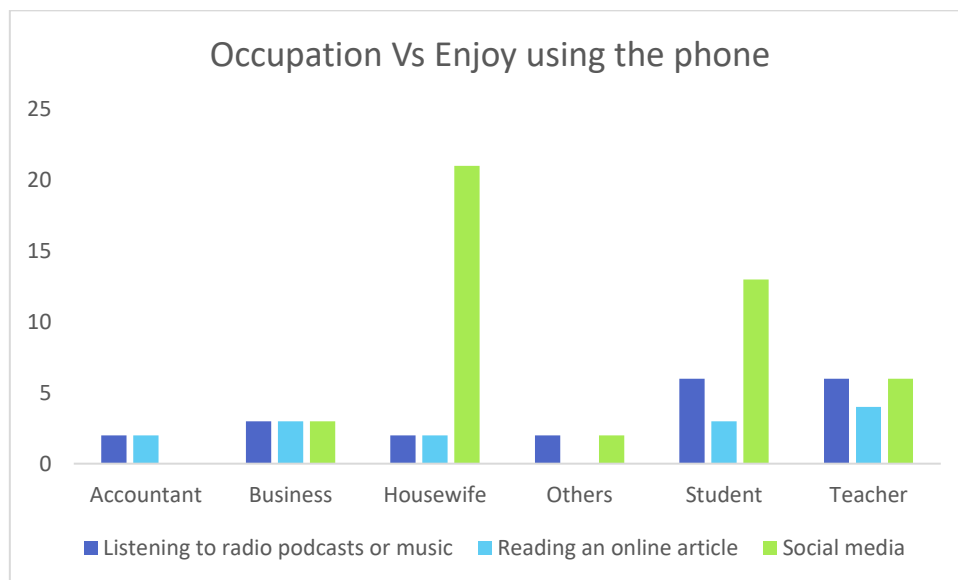
Tracking your health	Percentage
No	59%
Yes	41%
Grand Total	100



From the above figure, we can say that 41% of respondents use the smartphones to track their health.

Table 4 represents do the various occupations enjoy using the phone.

Enjoy using phone	Accountant	Business	Housewife	Others	Student	Teacher	Grand Total
Listening to radio podcasts or music	2	3	2	2	6	6	21
Reading an online article	2	3	2	0	3	4	14
Social media		3	21	2	13	6	45
Grand Total	8	9	27	5	35	16	100



From the above bar diagram, it has been noticed that the housewife and students enjoy using social media on their phones.

Table 5 describe the important aspects of mobile phones according to the people.

	Battery charger	Camera	Memory	Touchscreen	Grand Total
Count of Important aspects	20%	39%	23%	18%	100

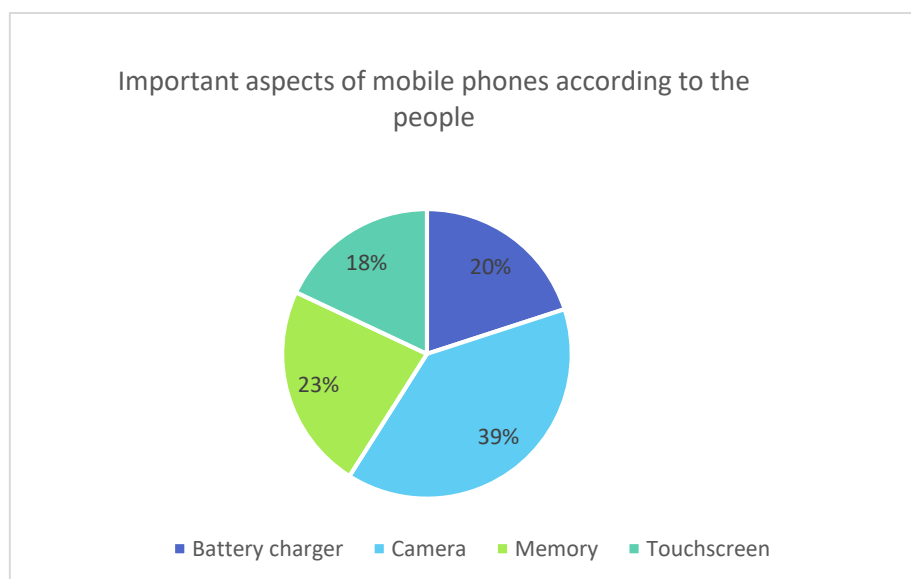
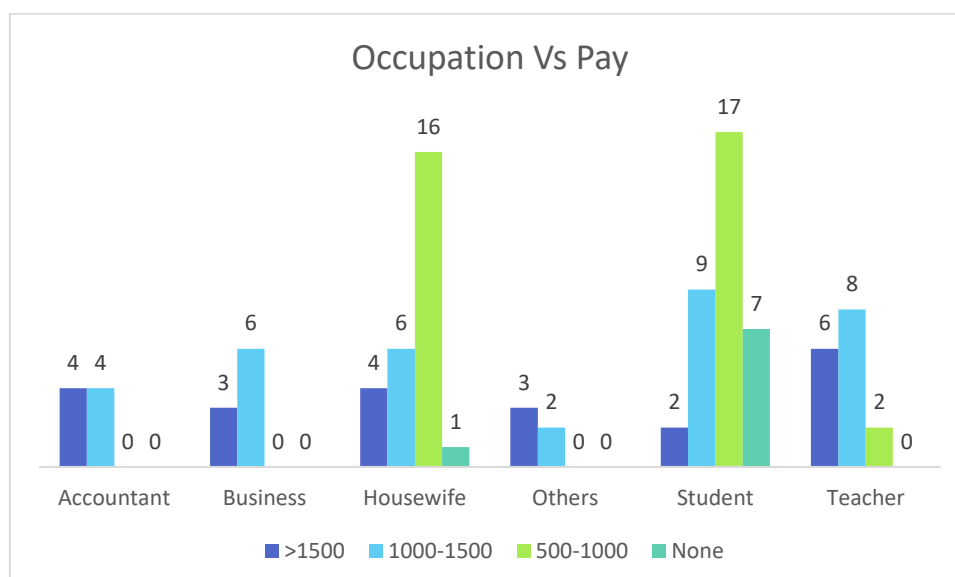


Table 6 gives details of payments among the peoples.

Occupation	>1500	1000-1500	500-1000	None	Grand Total
Accountant	4	4	0	0	8
Business	3	6	0	0	9
Housewife	4	6	16	1	27
Others	3	2	0	0	5
Student	2	9	17	7	35
Teacher	6	8	2	0	16
Grand Total	22	35	35	8	100



From the above table, we can conclude that, the students spends around Rs500/-Rs1000/- for the recharge and the Rs1500/- and above is mostly recharged by the professionals.

Table 7 shows the correlation between the age and the number of apps downloaded in their phones.

	<i>Column 1</i>	<i>Column 2</i>
Column 1	1	
Column 2	-0.13056	1



It is clear that there exists a negative correlation between the age and the number of apps downloaded in their phones.

Chi-square test for independence of attributes:

Null Hypothesis (Ho): The gender of the respondents and the mobile they like the most are independent.

Alternative Hypothesis: The gender of the respondents and the mobile they like the most are not independent.

Under Ho, the test statistics is

$$\chi^2 = \sum \frac{(O_i - E_i)^2}{E_i}$$

Calculation:

Table 8 showing the observed frequencies

Mobile you like most	Female	Male	Grand Total
Iphone	10	20	30
Oneplus	12	12	24
Oppo	7	7	14
Samsung	27	5	32
Grand Total	56	44	100

Table 9 showing the expected frequencies

Mobile you like most	Female	Male	Grand Total
Iphone	16.8	13.2	30
Oneplus	13.44	10.56	24
Oppo	7.84	6.16	14
Samsung	17.92	14.08	32
Grand Total	56	44	100

p= 0.00062

Level of significance $\alpha=0.05$

Conclusion: Since $p < 0.05$, we fail to accept Ho.

Therefore, the two attributes gender and the mobile they like the most are not independent.

6. CONCLUSION:

Finally, this study offers a thorough statistical analysis of usage trends for mobile phones, taking into account differences in demographics, usage patterns, preferences, and habits. It highlights a rising reliance on mobile devices for communication, entertainment, and productivity tasks, particularly evident in the usage of social media and messaging apps. It identifies notable variances among age groups, genders, occupations, and locales. Researchers, politicians, and industry stakeholders are informed by these insights, which direct the creation of user-centric technologies and solutions to address new issues like digital inequality and technology addiction.

In conclusion, this study provides thorough statistical analysis that expands our knowledge of mobile phone usage by illuminating subtle differences in usage trends, demographic dynamics, and behavioural tendencies. By combining these data, the study highlights the significance of using a multidisciplinary approach to successfully navigate the complicated terrain of mobile technology in modern society. Stakeholders can benefit from the practical insights provided, which can help them create more successful interventions and user-friendly digital age interfaces.

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These references encompass a mix of academic papers, reports, and statistical data sources relevant to the study of mobile phone usage patterns and demographics. They provide a foundation for the research and support the analysis and findings presented in the paper.