

WORKSHOP ON STATISTICAL ANALYSIS

COURSE CODE: MGN - 909

CA - 1



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SUBMITTED BY:

GAURI JINDAL

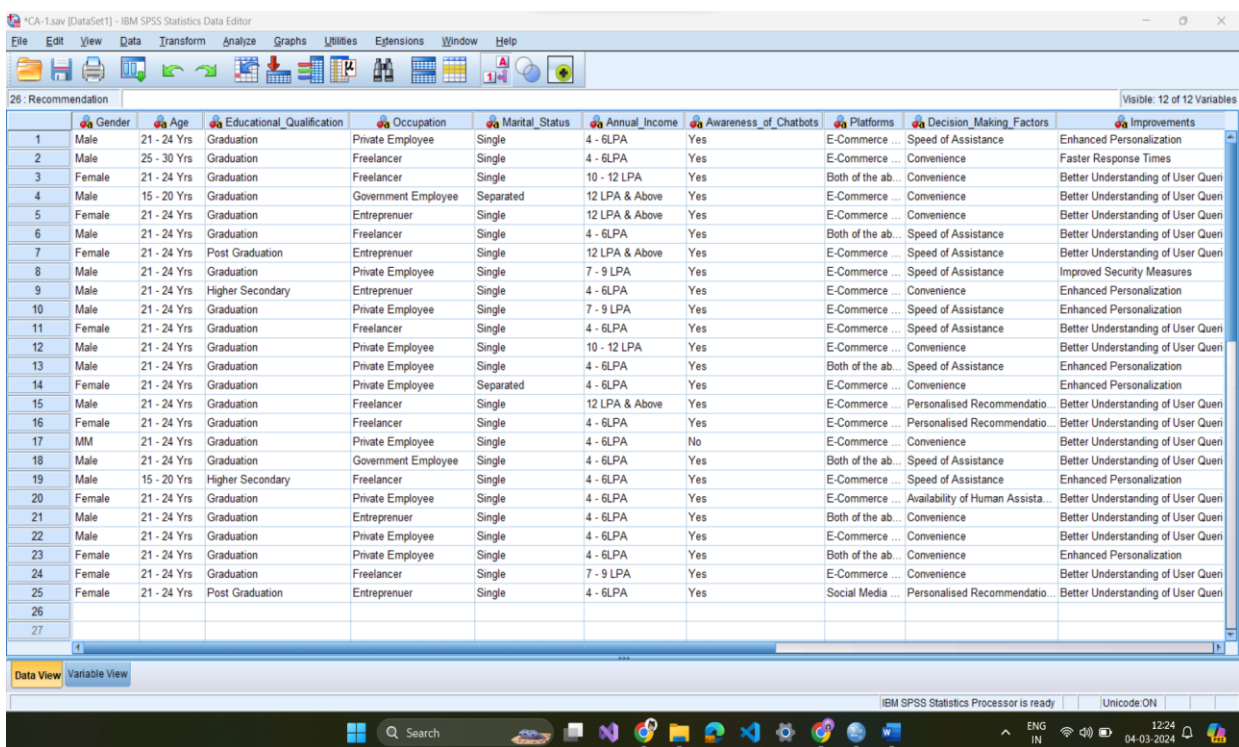
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SUBMITTED TO:

DR. NIKHIL DOGRA

Overview of the Dataset

The dataset consists of responses from a survey investigating the impact of chatbots on e-commerce purchasing decisions. It includes demographic data such as gender, age, education, occupation, and marital status. Additionally, it captures insights on awareness of chatbots, preferred online shopping platforms, factors influencing chatbot use, suggested improvements, and satisfaction levels. Visualizations include pie charts for awareness and online platforms, a bar graph for factors influencing chatbot use and improvements, and a histogram for satisfaction levels.



26: Recommendation

Visible: 12 of 12 Variables

	Gender	Age	Educational_Qualification	Occupation	Marital_Status	Annual_Income	Awareness_of_Chatbots	Platforms	Decision_Making_Factors	Improvements
1	Male	21 - 24 Yrs	Graduation	Private Employee	Single	4 - 6LPA	Yes	E-Commerce ...	Speed of Assistance	Enhanced Personalization
2	Male	25 - 30 Yrs	Graduation	Freelancer	Single	4 - 6LPA	Yes	E-Commerce ...	Convenience	Faster Response Times
3	Female	21 - 24 Yrs	Graduation	Freelancer	Single	10 - 12 LPA	Yes	Both of the ab...	Convenience	Better Understanding of User Queri
4	Male	15 - 20 Yrs	Graduation	Government Employee	Separated	12 LPA & Above	Yes	E-Commerce ...	Convenience	Better Understanding of User Queri
5	Female	21 - 24 Yrs	Graduation	Entrepreneur	Single	12 LPA & Above	Yes	E-Commerce ...	Convenience	Better Understanding of User Queri
6	Male	21 - 24 Yrs	Graduation	Freelancer	Single	4 - 6LPA	Yes	Both of the ab...	Speed of Assistance	Better Understanding of User Queri
7	Female	21 - 24 Yrs	Post Graduation	Entrepreneur	Single	12 LPA & Above	Yes	E-Commerce ...	Speed of Assistance	Better Understanding of User Queri
8	Male	21 - 24 Yrs	Graduation	Private Employee	Single	7 - 9 LPA	Yes	E-Commerce ...	Speed of Assistance	Improved Security Measures
9	Male	21 - 24 Yrs	Higher Secondary	Entrepreneur	Single	4 - 6LPA	Yes	E-Commerce ...	Convenience	Enhanced Personalization
10	Male	21 - 24 Yrs	Graduation	Private Employee	Single	7 - 9 LPA	Yes	E-Commerce ...	Speed of Assistance	Enhanced Personalization
11	Female	21 - 24 Yrs	Graduation	Freelancer	Single	4 - 6LPA	Yes	E-Commerce ...	Speed of Assistance	Better Understanding of User Queri
12	Male	21 - 24 Yrs	Graduation	Private Employee	Single	10 - 12 LPA	Yes	E-Commerce ...	Convenience	Better Understanding of User Queri
13	Male	21 - 24 Yrs	Graduation	Private Employee	Single	4 - 6LPA	Yes	Both of the ab...	Speed of Assistance	Enhanced Personalization
14	Female	21 - 24 Yrs	Graduation	Private Employee	Separated	4 - 6LPA	Yes	E-Commerce ...	Convenience	Enhanced Personalization
15	Male	21 - 24 Yrs	Graduation	Freelancer	Single	12 LPA & Above	Yes	E-Commerce ...	Personalised Recommendation	Better Understanding of User Queri
16	Female	21 - 24 Yrs	Graduation	Freelancer	Single	4 - 6LPA	Yes	E-Commerce ...	Personalised Recommendation	Better Understanding of User Queri
17	MM	21 - 24 Yrs	Graduation	Private Employee	Single	4 - 6LPA	No	E-Commerce ...	Convenience	Better Understanding of User Queri
18	Male	21 - 24 Yrs	Graduation	Government Employee	Single	4 - 6LPA	Yes	Both of the ab...	Speed of Assistance	Better Understanding of User Queri
19	Male	15 - 20 Yrs	Higher Secondary	Freelancer	Single	4 - 6LPA	Yes	E-Commerce ...	Speed of Assistance	Enhanced Personalization
20	Female	21 - 24 Yrs	Graduation	Private Employee	Single	4 - 6LPA	Yes	E-Commerce ...	Availability of Human Assista...	Better Understanding of User Queri
21	Male	21 - 24 Yrs	Graduation	Entrepreneur	Single	4 - 6LPA	Yes	Both of the ab...	Convenience	Better Understanding of User Queri
22	Male	21 - 24 Yrs	Graduation	Private Employee	Single	4 - 6LPA	Yes	E-Commerce ...	Convenience	Better Understanding of User Queri
23	Female	21 - 24 Yrs	Graduation	Private Employee	Single	4 - 6LPA	Yes	Both of the ab...	Convenience	Enhanced Personalization
24	Female	21 - 24 Yrs	Graduation	Freelancer	Single	7 - 9 LPA	Yes	E-Commerce ...	Convenience	Better Understanding of User Queri
25	Female	21 - 24 Yrs	Post Graduation	Entrepreneur	Single	4 - 6LPA	Yes	Social Media ...	Personalised Recommendation	Better Understanding of User Queri
26										
27										

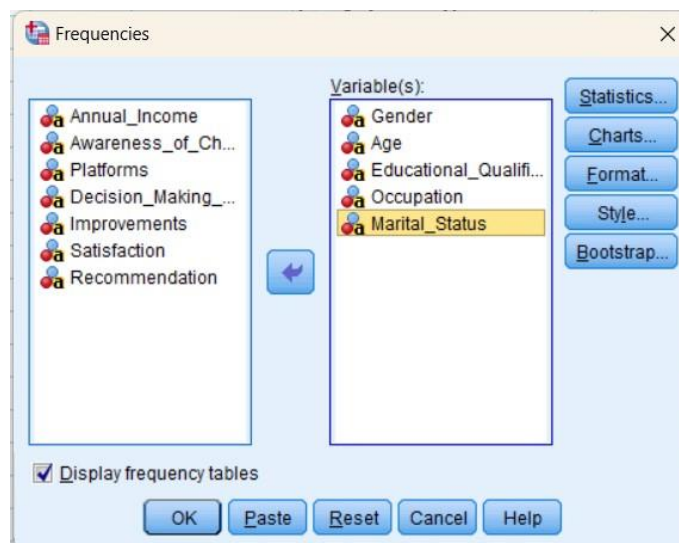
Data View Variable View

IBM SPSS Statistics Processor is ready Unicode ON

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Create frequency tables taking five heads/variables

- Launch SPSS and make sure the dataset is loaded.
- In the menu bar at the top of the screen, click on "Analyze".
- From the drop-down menu, select "Descriptive Statistics".
- Click on "Frequencies" to open the Frequencies dialog box.
- In the Frequencies dialog box, we will see a list of variables from our dataset on the left. Locate and select the variables for which frequency tables needs to be created.



- Use the arrow button to move these variables to the Variable(s) list on the right.
- Once we selected our variables and any additional options, click on the "OK" button. SPSS will generate frequency tables for each of the variables we selected and display them in the Output Viewer.

- The Output Viewer will show tables indicating the frequency, percentage, valid percentage, and cumulative percentage for each category within our variables.

Statistics

		Gender	Age	Educational Qualification	Occupation	Marital Status
N	Valid	26	26	26	26	26
	Missing	0	0	0	0	0

I've made the Frequency Tables for the following 5 Variables:

		Gender			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		1	3.8	3.8	3.8
	Female	10	38.5	38.5	42.3
	Male	14	53.8	53.8	96.2
	MM	1	3.8	3.8	100.0
	Total	26	100.0	100.0	

Among the respondents, 14 out of 26 identified as male, constituting 53.8% of the sample. 10 respondents (38.5%) identified as female, while 1 respondent (3.8%) preferred not to disclose their gender. This indicates that the sample consisted of a slightly higher proportion of male respondents compared to female respondents.

Age

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	3.8	3.8	3.8
15 - 20 Yrs	2	7.7	7.7	11.5
21 - 24 Yrs	22	84.6	84.6	96.2
25 - 30 Yrs	1	3.8	3.8	100.0
Total	26	100.0	100.0	

The majority of respondents, 22 out of 26 (84.6%), fell within the age range of 21 to 24 years. Only 2 respondents (7.7%) were aged between 15 to 20 years, while there was only 1 respondent (3.8%) in the age range of 25 to 30 years. This suggests that the majority of respondents were relatively young, with a significant proportion falling within the 21 to 24 years age group.

Educational_Qualification

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	3.8	3.8	3.8
Graduation	21	80.8	80.8	84.6
Higher Secondary	2	7.7	7.7	92.3
Post Graduation	2	7.7	7.7	100.0
Total	26	100.0	100.0	

Most respondents, 21 out of 26 (80.8%), had attained a graduation degree. Only 2 respondents (7.7%) had completed post-graduation degrees or qualifications, and similarly, 2 respondents (7.7%) had a higher secondary education. This indicates that the majority of respondents had attained higher levels of education, with graduation being the most common qualification.

Occupation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		1	3.8	3.8	3.8
	Entrepreneur	5	19.2	19.2	23.1
	Freelancer	8	30.8	30.8	53.8
	Government Employee	2	7.7	7.7	61.5
	Private Employee	10	38.5	38.5	100.0
	Total	26	100.0	100.0	

The largest group of respondents were private employees, with 10 out of 26 respondents (38.5%) engaged in this occupation. Freelancers accounted for 8 respondents (30.8%), entrepreneurs for 5 respondents (19.2%), and government employees for 2 respondents (7.7%). This indicates a diverse occupational distribution among the respondents, with a significant proportion engaged in private employment or freelancing.

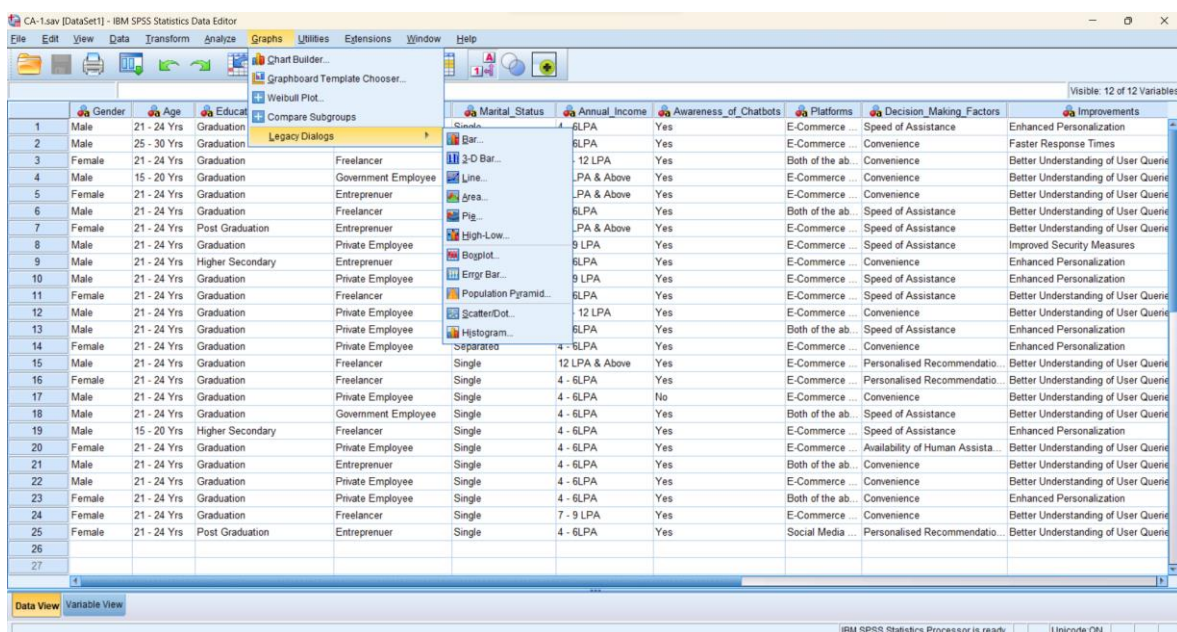
Marital_Status

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		1	3.8	3.8	3.8
	Single	23	88.5	88.5	92.3
	Separated	2	7.7	7.7	100.0
	Total	26	100.0	100.0	

The majority of respondents, 23 out of 26 (88.5%), were single. 2 respondents (7.7%) indicated that they were separated. This suggests that the majority of respondents were unmarried, with a smaller portion indicating marital separation.

Create bar diagrams, pie charts and histograms for five heads/variables

- For all graphs, navigate to Graphs > Legacy Dialogs to start creating our visualizations.
- Utilize Element Properties for detailed customization like adding data labels or adjusting the display.

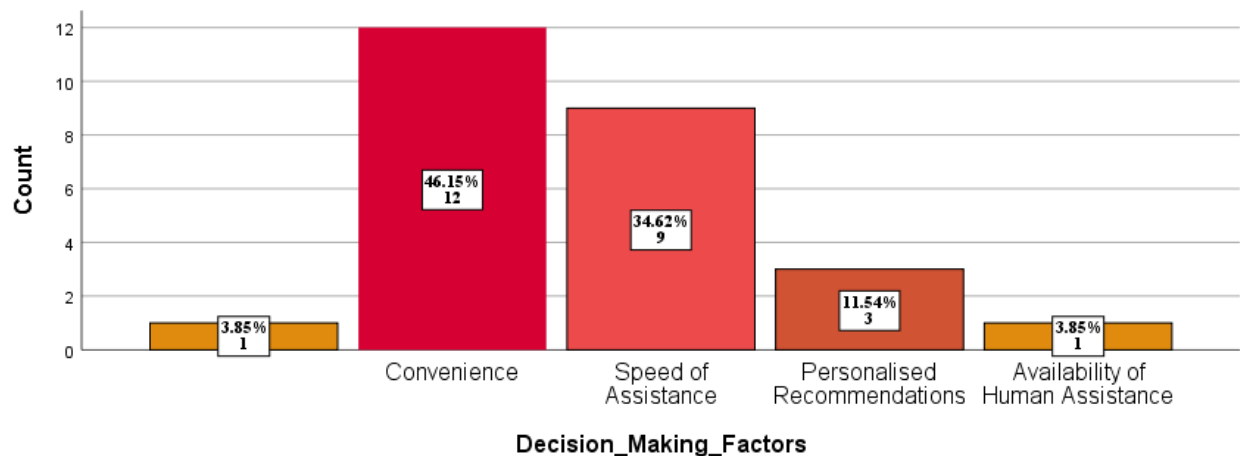


Bar Graph:

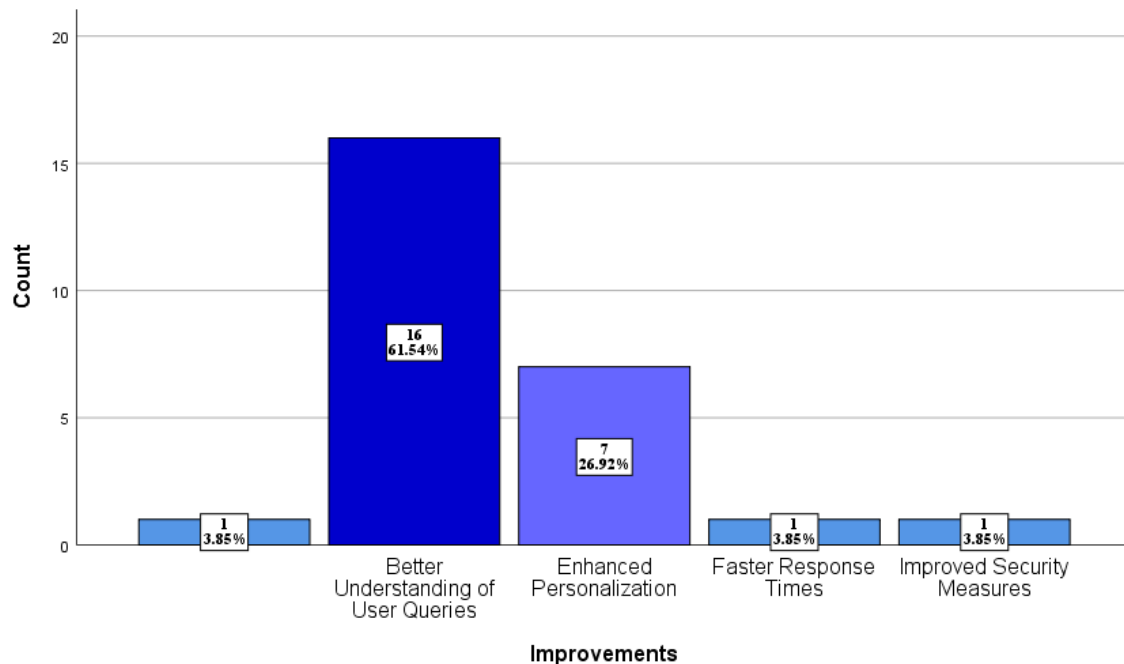
I've followed the following steps to obtain the Bar Graph for the variables – **Decision Making Factors** and **Improvements needed** in the Chatbot:

- Go to the "Graphs" menu.
- Select "Legacy Dialogs" from the drop-down menu.
- Choose "Bar" from the options.
- Select "Simple" and click "Define".
- Move the variable you want to represent on the x-axis into the "Category Axis" box.

- Move the variable representing the frequencies or counts into the "Define clusters by" box.
- Customize the graph by clicking on "Options" and adjusting settings as needed.
- Click "OK" to generate the bar graph.
- The graph will appear in the output window where we can further customize, export, or save it as desired.



The data reveals that convenience was the most frequently cited factor influencing chatbot use, mentioned 11 times, followed by speed of assistance with 9 occurrences. Personalized recommendations were mentioned twice, while availability of human assistance was mentioned once. This suggests a strong preference for convenience and efficient assistance among users when engaging with chatbots in online shopping scenarios.



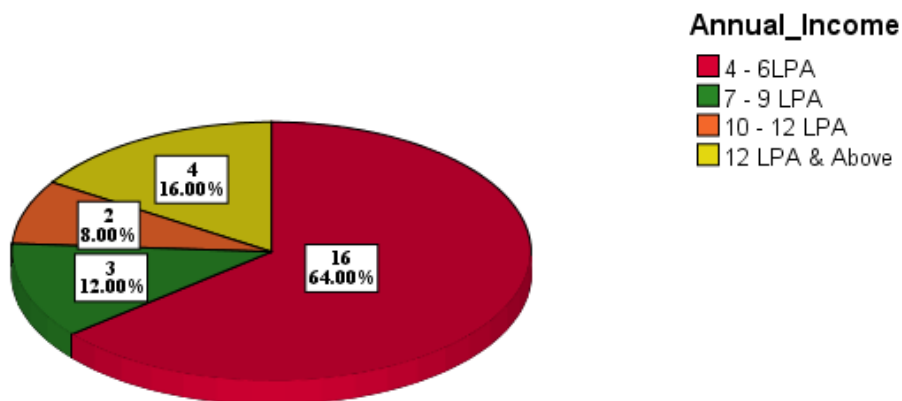
Among the 26 respondents, the data reveals that better understanding of user queries was the most frequently desired improvement for chatbots, mentioned by 12 respondents (46.2%). Enhanced personalization followed closely behind, with 8 mentions (30.8%). Faster response times and improved security measures were each mentioned once (3.8% each). This indicates a strong emphasis on enhancing chatbots' ability to understand user queries effectively and provide personalized experiences in online shopping contexts.

Pie Charts:

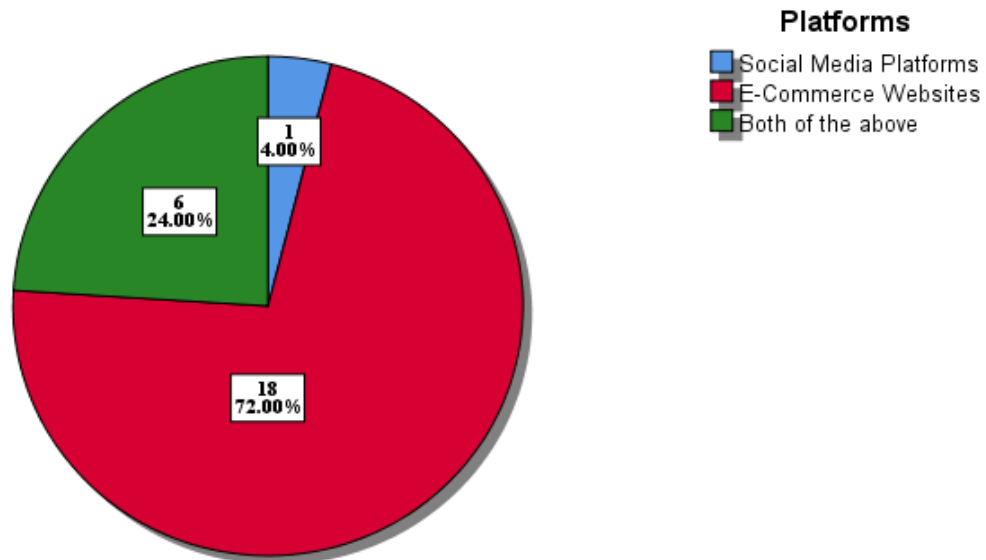
I've followed the steps mentioned below to obtain the Pie Chart of the variables - **Annual Income** and **Platforms Preferred**:

- Go to the "Graphs" menu.
- Select "Legacy Dialogs" from the drop-down menu.
- Choose "Pie" from the options.

- Select "Simple" and click "Define".
- Move the variable you want to represent in the pie chart into the "Slice Size" box.
- Customize the chart by clicking on "Options" and adjusting settings such as colors, labels, and titles.
- Click "OK" to generate the pie chart.
- The pie chart will appear in the output window where we can further customize, export, or save it as desired.



The pie chart illustrates the distribution of respondents' annual incomes, with the majority (62.5%) reporting earnings within the 4 - 6 LPA bracket. Notably, a significant portion (16.67%) indicated an income of 12 LPA & Above, reflecting the presence of higher income brackets among the respondents. Conversely, smaller percentages were observed in the 7 - 9 LPA (12.5%) and 10 - 12 LPA (8.33%) brackets. This visual representation underscores the prevalence of lower income ranges among the respondents, with a notable presence of higher income brackets. Overall, the pie chart effectively communicates the income distribution among the surveyed individuals, offering insights into the varying income levels within the sample.



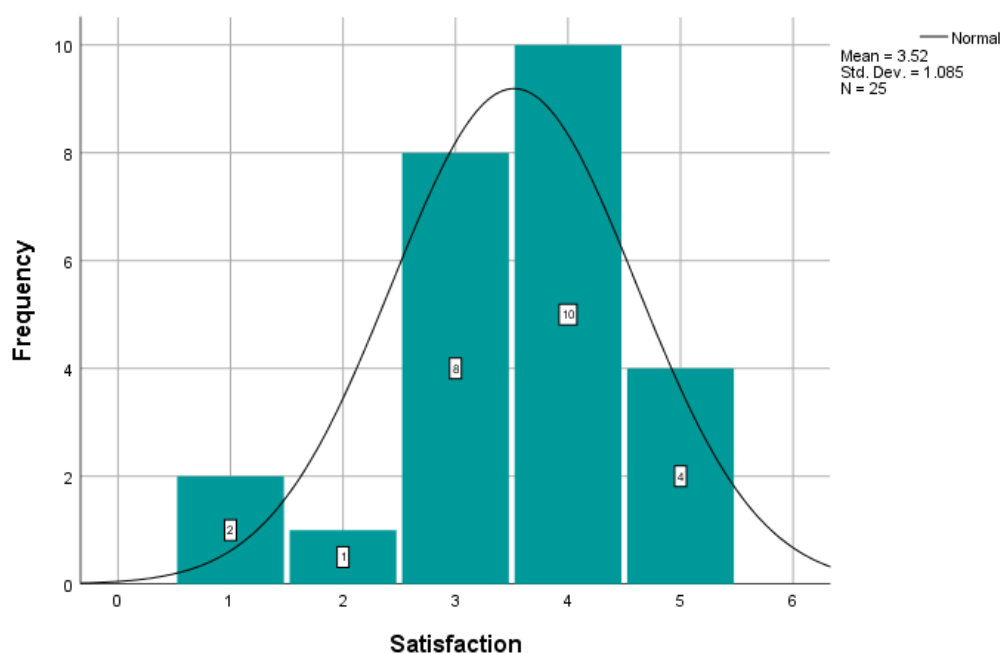
Based on the provided data, it is evident that the majority of respondents (19 out of 23, or 82.61%) primarily use E-Commerce Websites for their online shopping activities. Additionally, 3 respondents (13.04%) indicated that they use both E-Commerce Websites and Social Media Platforms for shopping. Only 1 respondent (4.35%) reported using Social Media Platforms exclusively for online shopping. This data underscores the significant preference for E-Commerce Websites among the surveyed individuals, with a smaller portion utilizing a combination of E-Commerce Websites and Social Media Platforms.

Histograms with Normal Curve:

I've followed the following steps to obtain the Histogram with the Normal Curve of the variables – **Satisfaction** and **Recommendation**:

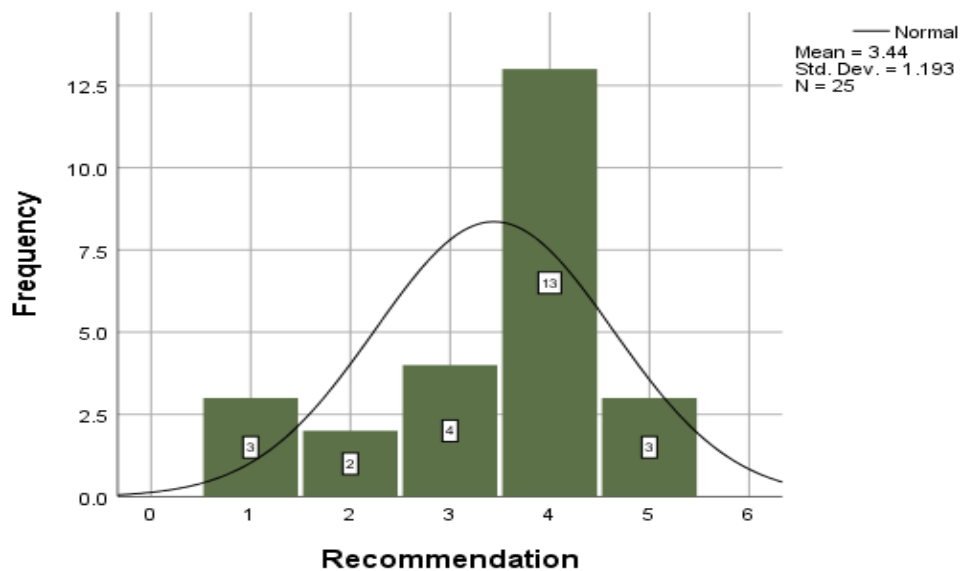
- Go to the "Graphs" menu.
- Choose "Legacy Dialogs."
- Select "Histogram."

- Specify the variable you want to visualize.
- Click "OK" to generate the histogram.
- Once the histogram appears in the output window, right-click on it and select "Chart Editor."
- In the Chart Editor window, click on the histogram to select it.
- Go to the "Elements" menu.
- From the drop-down menu, select "Normal Density."
- Click "Apply" and then "Close" to exit the Chart Editor.
- The histogram with the normal curve overlay is now ready, we can further customize it or export it as needed.



The histogram with a normal curve depicts the distribution of satisfaction levels among respondents based on exact data. It reveals that 6 occurrences (25%) reported a Neutral satisfaction level, followed by 9 occurrences (37.5%) expressing satisfaction. Additionally, 5 occurrences (20.83%) reported being Highly Satisfied, while 2 occurrences (8.33%) indicated being Highly Dissatisfied, and 1 occurrence

(4.17%) expressed Dissatisfaction. This distribution suggests a slightly positively skewed pattern, with the majority falling within the Neutral to Satisfied range, although variability exists across satisfaction levels.



The histogram with a normal curve illustrates the likelihood of recommendation distribution among respondents. It indicates that 13 occurrences (54.17%) reported being Likely to recommend, followed by 5 occurrences (20.83%) expressing neutrality. Additionally, 4 occurrences (16.67%) were Highly Unlikely to recommend, while 2 occurrences (8.33%) indicated Unlikeliness. This distribution suggests a positively skewed pattern, with a majority leaning towards the "Likely" end, fewer occurrences of unlikeliness, and a moderate number of respondents expressing neutrality.