SCHOOL OF COMPUTING
Faculty of Engineering

SECI2143-01 KEBARANGKALIAN STATISTIK & ANALISIS DATA (PROBABILITY & STATISTICAL DATA ANALYSIS)

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SEMESTER 2 PROJECT 2
Submitted to:

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Introduction

"Outward appearances are the most significant assets," modern culture says. Many people today invest extensively on their external appearance. Some of them made sacrifices, such as going on a strict diet and eating only one meal per day, in order to achieve their ideal body type, based on stereotypes that overweight people are ugly. Skin care plays a crucial role in our lives since it maintains our faces glowing and radiant. Skin care is the most significant factor in improving our appearance and boosting our confidence. After the puberty phase,there's still people mostly having trouble with major skin problems such as psoriasis , acne, and rosacea. In fact, up to 7% of our Malaysian population suffer from psoriasis which is a common skin condition (Rahim, 2017) which creates a burden on emotionally unprepared individuals. Girls and boys are subjected to great pressures from the media that portray unattainable youth models. Especially students, the teenagers are a complex mix of youngsters who are determined, vulnerable, influential, and inventive. Many groups of advertising consultants have focused on the youths to define their attitudes, behavior, and expectations of one's appearance and skin health. Especially during teenage years, most people become more preoccupied by their appearance as a communication of identity and attractiveness to others. If a lady believes her attractiveness isn't up to standard, she might alter her appearance with the help of makeup and clothes. (Jeon & Lee, 2005). In other words, the purpose of this poll is to assess how many teenagers are aware of the importance of utilizing skin care as part of their daily regimen. In this research, we are using respondents aged 16 to 35 years old as our samples. We'd like to know how often they buy skin care, as we know that it's an important part of everyday lives. Our questionnaire also included male participants. As a result, we'd like to know what percentage of males are concerned about their facial appearance.

Data Collection

Methodology

In order to begin the data collection process, we have created a web-based survey questionnaire - Google Form. This questionnaire will be the lead for us to conduct a primary online survey and to collect data for our study regarding the skin care routine among university students. There are 8 questions in total and the contents in this questionnaire consist of respondents' personal information such as their age and the gender and some questions related to skin care. For instance, respondents' skin type, their frequency of purchasing skin care products, elements that influence them to purchase skin care questions, their tendency in buying skin care products after watching skin care ads, their source of money to buy skin care products and lastly their preferred store for buying skin care products. The data collected was then extracted in Google Sheets and imported into Microsoft Excel. The usage of Microsoft Excel is to analyze, summarize and present the data collected in a graphical representation which consist of pie chart, bar chart, boxplot, histogram, frequency distribution, stem-and-leaf plot and scatter plot. Throughout this survey, the data input type includes multiple-choice selection and checkboxes.

The following list are the nominal scale variables that were used in our data analysis:
1. Gender : Male or Female
2. Skin Type: Oily, Dry, Combination, Sensitive, Normal
3. Elements that influence students to purchase skin care products: Family, Peer group, Work place, Advertisement and Others
4. The source of money to buy skin care products: Self earned, Parents, Scholarship funds, Government's zakat and Student's allowance
5. Preferred store to buy skin care products: Online store & Physical in store

The following list are the ordinal scale variables that were used in our data analysis:
1. Tendency to buy skincare products after watching advertisements: Yes, No and Maybe
2. Purchase frequency: How frequently do students buy skin care products (Rarely, Frequently and Do not shop)

The following list is the ratio scale variable used in our data analysis:
1. Age: The age of respondents

Sample Selection

The sample we have chosen to be our respondents to this web-based survey were university students from the age 16 to 35 in Malaysia. In this study, we targeted 60 respondents as our sample. Thankfully, after distributing the Google From link to several social media platforms such as Telegram, Whatsapp, Instagram and Twitter we managed to collect data from 73 respondents as our sample size.

The Parameters and Variables

| Variables	Data Type	Measurement Level	Parameter
Personal information (Age)	Quantitative	Ratio	Mean
Personal information (Gender)	Qualitative	Nominal	Mode
Skin Type	Qualitative	Nominal	Mode
Tendency to buy skin care products after watching advertisements	Qualitative	Ordinal	Mode
Purchase frequency of skin care products	Qualitative	Ordinal	Mode
Prefered store to buy skin care products	Qualitative	Nominal	Mode
Source of money to buy skin care products	Qualitative	Nominal	Mode
Elements that influence students to purchase skin care products	Qualitative	Nominal	Mode

Data Analysis
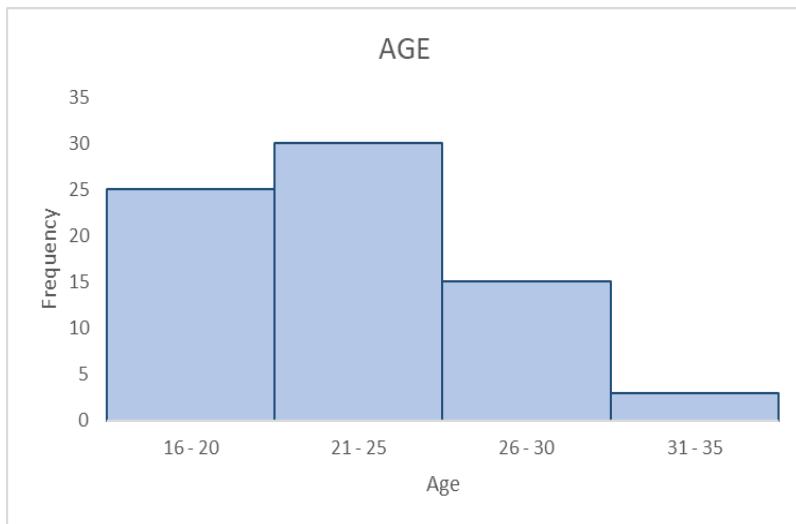
The histogram shows the age of the students who participated in our survey. The age of the highest count of respondents is between 21 - 25 years with a frequency of 30 followed by the age range between 16 - 20 years with a total of 25 respondents. The second lowest count of respondents is the age range between 26 - 30 years with a frequency of 15 and the lowest count of respondents is aged between 30 - 35 with a frequency of 3. This data has the mean of 22.73, median of 22.03 and mode of 21.5. This shows that the probability distribution function of the normal distribution is symmetric as the mean, median and mode are within the same class.
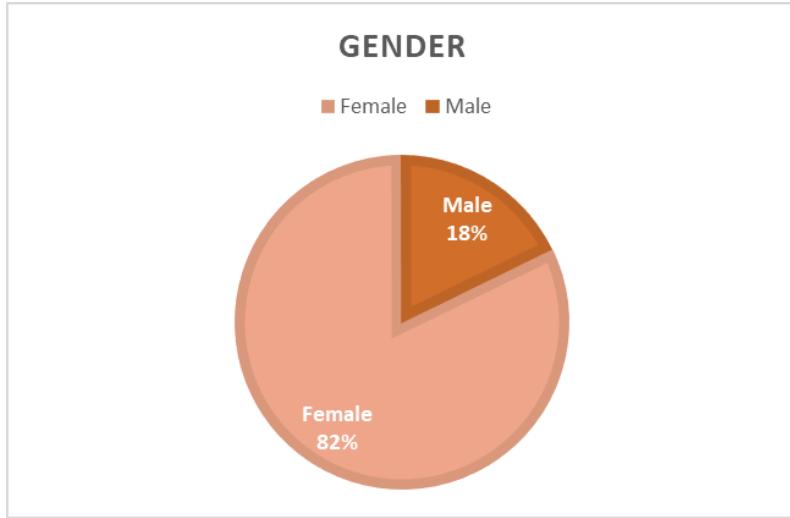
This pie chart shows the genders of the students who participated in our survey. As shown in the pie chart, the majority of students who participated in this survey were females who took up a percentage of 82% (60 respondents) while the rest were males with a percentage of 18% (13 respondents).
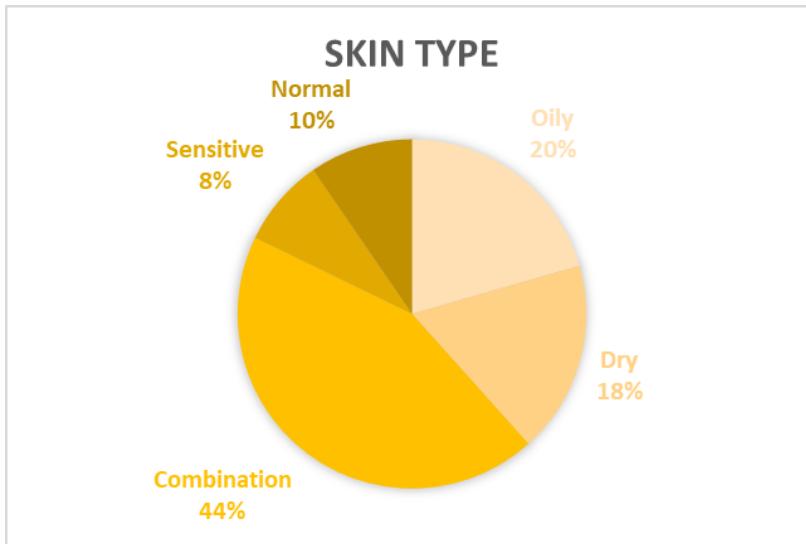
This pie chart shows the skin type of each participating respondent. The skin type with the highest number of respondents was the 'Combination' with a percentage of 44% (32 respondents). The second highest is 'Oily' by a percentage of 20% (15 respondents), followed by 'Dry' which is 18% (13 respondents). The second lowest count is 'Normal' with a percentage of 10% (7 respondents) followed by the lowest count of respondents which is 'Sensitive' with a percentage of 8% (6 respondents).

PURCHASE FREQUENCY
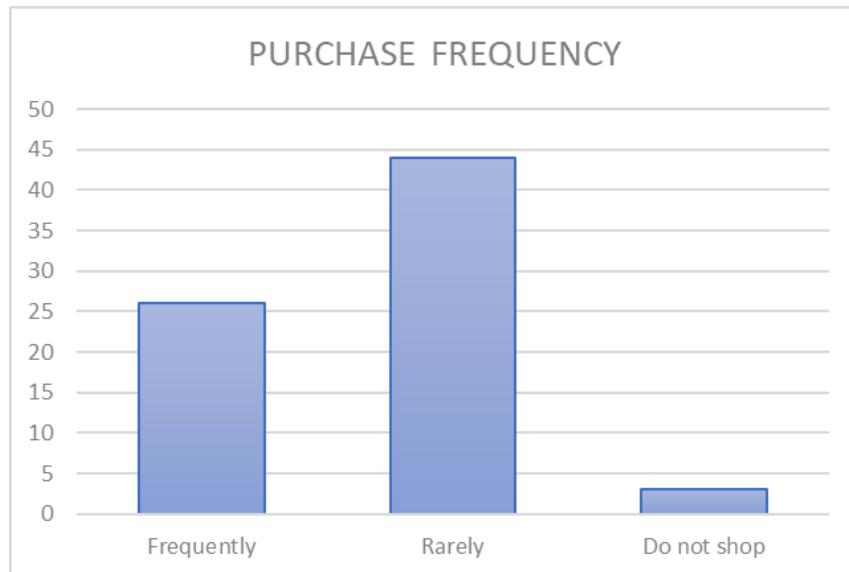
This bar chart shows the frequency of purchases of skin care products by each respondent. The highest frequency of purchases is 'Rarely' with a count of 44 respondents followed by 'Frequently' with a count of 26 respondents and the lowest count of respondents is 'Do not shop' with a count of 3.

ELEMENTS THAT INFLUENCE STUDENTS TO BUY SKIN CARE PRODUCTS
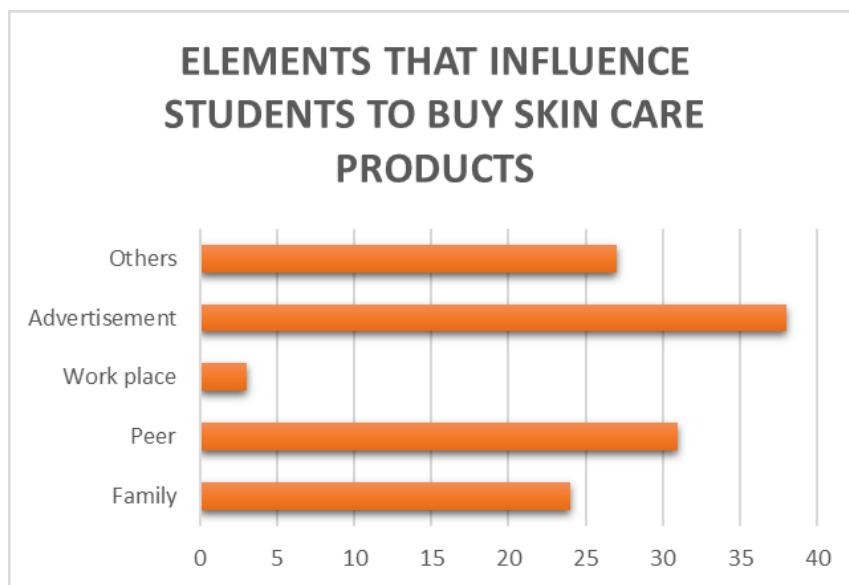
The horizontal bar graph shows the elements that influenced respondents to buy skin care products. The highest element influencing respondents to buy skin care products was 'Advertisement' with a total of 38 respondents. The second highest element is 'Peer' which is 31 respondents, followed by 'Others' with a total of 27 respondents. The second lowest element is 'Family' with a total of 24 respondents and the last is 'Workplace' which is 3 respondents.

TENDENCY TO BUY SKINCARE PRODUCTS AFTER WATCHING ADVERTISEMENT

31%   18%   51%

■ Yes   ■ Maybe   ■ No
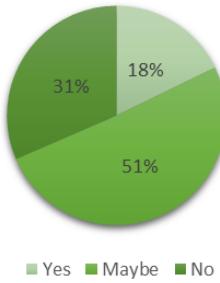
This pie chart shows the purchase of skin care products after watching an ad. More than half of the respondents, 51% (37 respondents) answered 'Maybe', meaning they might buy the product after watching the ad. The second highest answer is 31% (23 respondents) which is 'No' meaning they will not buy the product after watching the advertisement and the least number of respondents answered 'Yes' which is 18% (13 respondents).

THE SOURCE OF MONEY TO BUY SKIN CARE PRODUCTS

49   47   11   1   31

Self-earned   Parents   Scholarship funds   Government's zakat   Student's allowance
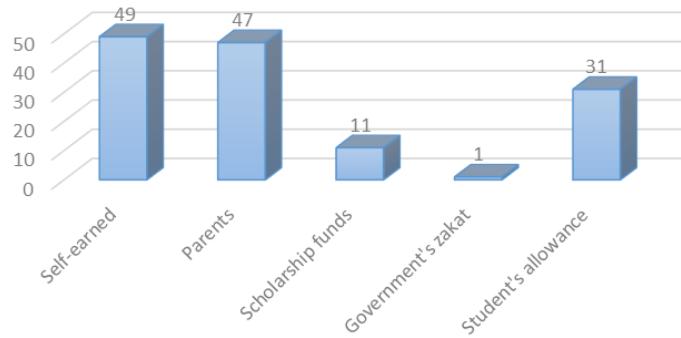
This is a bar graph showing the source of money used by the students to purchase the skin care product. The highest number of respondents answered 'Self-earned' with a total count of 49. The second highest source of money was from 'Parents' with a count of 47 respondents, followed by 'Student allowance' with 31 respondents. The second lowest source of money obtained answered by the respondents was from the 'Scholarship funds' with a total of 11 respondents and only one respondent answered 'Government's zakat'.

THE PREFERRED METHOD OF PURCHASING SKIN CARE PRODUCTS

Online
29%
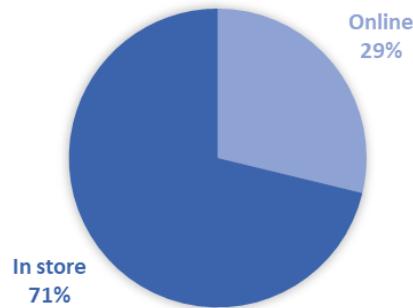
In store
71%

The last pie chart shows the students' preferred store to purchase skin care products. The majority of respondents answered that they prefer to buy skin care products in stores with a percentage of 71% (52 respondents) while the rest of the respondents answered that they prefer to buy skin care products in online stores with a percentage of 29% (21 respondents).

Conclusion

In conclusion, the population mostly comes from 21-25 years of age, followed by teenagers from 16-20 years of age. Hence the outcome of this survey is most valid for individuals from these two age groups. The purchase frequency shows that most people in the population rarely purchase any skincare products, which is understandable because generally individuals from these two age groups either don't have a stable source of income yet or have their older family members purchase for the family. While there are quite a few respondents stating that they purchase skincare products frequently, it is also expected as individuals from the major age group, which is 21-25 years old, are in the year of having their internship period, freshly graduated, or have part-time jobs. Interestingly, the survey shows that advertising plays a major role in the skincare market. Therefore, in another way around, if a skincare company wants to penetrate the 16-25 age group market, it is advisable to invest in the advertisement as the main marketing strategy, and would be better to have a physical store first to win over the first time customers, with online store in a later stage to give returning customers more convenience and flexibility. This study found that teenagers and young adults are becoming rising consumers in the cosmetics industry. Therefore, we suggest that dermatologists should provide teenagers & young adults with appropriate education and management on cosmetics use. Mathematically, from this project, we get to have hands-on experience to understand how to collect and handle data. For instance, identifying data parameters and variables in real-world settings makes us realize the importance of data description and how it can support us in data analysis. Technologically, we have implemented the do's and don'ts when creating questionnaires to gather the data that we want in Google Forms, and implemented the data handling processes, data analysis, and the proper way of displaying the data in Google Sheet and Microsoft Excel to make the data presentable and the useful information understandable. Other than that, we have also been able to have a great team working and effective communication and collaboration throughout this report-making journey. Thus, in summary, the team has agreed that the objective of Project 1 has been achieved.

Appendix

Google Form for survey of skincare routine among university students
:https://forms.gle/DpPmTGZ2DEnsemUA9

Google Sheet for data collection from the survey of skincare routine among university students
:https://docs.google.com/spreadsheets/d/1MfRuTicsV3jeBnJpryuhs8G1Mf4O83P0bQHFHjrKE_c/edit?resourcekey#gid=1527967678