

# Data 606 – Statistical Methods in Data Science - Project Proposal

## The Influence of Social Media Usage on Consumer Purchasing Decisions

### Team Members

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### Introduction

In today's digital age, social media has become an integral part of our daily lives, influencing how we communicate, consume information, and make purchasing decisions. With platforms like Instagram, TikTok, and Facebook serving as hubs for product discovery, advertisements, and influencer endorsements, understanding the role of social media in shaping consumer behaviour is more critical than ever. This project, titled "The Influence of Social Media Usage on Consumer Purchasing Decisions," aims to explore how social media impacts buying behaviour across different age groups. By analysing factors such as advertisement exposure, influencer recommendations, and peer influence, we seek to uncover key trends that drive consumer decisions. The insights gathered from this research will not only help businesses and marketers optimize their strategies but also provide a deeper understanding of how social media shapes modern consumerism.

We have created a survey to understand how different age demographics engage with these platforms and how that engagement translates into buying behaviour. By focusing on how social media content, advertisements, and influencer endorsements affect purchasing choices, we aim to uncover key trends and insights. The findings of this survey will provide valuable information for businesses, marketers, and content creators looking to optimize their strategies based on consumer behaviour. Understanding how social media impacts purchasing decisions across age groups will allow for more targeted and effective marketing approaches. Your participation will contribute to this important research, helping to shape the future of social media-driven consumer behaviour.

### About Data Set:

The dataset was collected through a [survey](#) using Google Forms. The responses have been compiled into a CSV file. The column names and their descriptions are provided in the table below.

Columns	Description
age_group	The age group of the respondent.
gender	The gender of the respondent.
social_media_hours_per_day	The average number of hours the respondent spends on social media daily.
most_frequent_platform	The social media platform the respondent uses most frequently.
platform_usage_frequency	How often the respondent uses their most frequent social media platform.
ad_frequency_on_social_media	How often the respondent sees product advertisements on social media.
influencer_promotions_frequency	How often the respondent encounters promotions by influencers on social media.
purchased_after_seeing_on_social_media	How many times in the past month the respondent has purchased a product after seeing it on social media.
unplanned_purchases_after_social_media	How often the respondent makes unplanned purchases after seeing a product on social media.
regret_impulsive_purchases	Whether the respondent regrets purchases made impulsively due to social media influence.

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content_type_influences_purchasing	The type of content that most influences the respondent's purchasing decisions on social media.
limited_time_offer_purchases	How often the respondent purchases a product based on a limited time offer on social media.
product_comparison_before_purchasing	Whether the respondent usually compares products on other websites/apps before buying something seen on social media.
comparison_factor	The most crucial factor in the respondent's decision-making process when comparing products (if applicable).
purchased_to_fit_in_with_trends	Whether the respondent has ever purchased a product to fit in with trends seen on social media.
peer_influence_on_purchasing	How often peers or social trends influence the respondent's purchasing decisions on social media.
social_media_increases_spending	Whether the respondent feels that social media increases their spending on products.
payment_method	The typical payment method the respondent uses for purchases influenced by social media.
exceed_budget_due_to_social_media	How often the respondent exceeds their budget because of products seen on social media.
loan_for_social_media_purchases	Whether the respondent has ever taken a loan or gone into debt to purchase a product advertised on social media.
trustworthiness_of_social_media_ads	How trustworthy the respondent finds social media advertisements.
influencer_vs_brand_ads_trust	Whether the respondent is more likely to trust ads promoted by influencers or official brand accounts.

## **Project Objectives:**

The objective of this project is to investigate the impact of social media on consumer purchasing behavior using statistical methods, including regression and predictive analysis. Specifically, we aim to analyse the correlation between the frequency of seeing advertisements on social media and the likelihood of making a purchase, examine the influence of encountering influencer promotions on impulsive purchasing behavior, and identify the age group most likely to make purchasing decisions based on social media usage.

Additionally, we will assess the impact of the perceived trustworthiness of social media advertisements on the likelihood of purchasing, explore the relationship between social media usage frequency and overspending or budget exceedance, and evaluate the effect of comparing products on other platforms on the likelihood of impulsive purchases. By addressing these questions and applying statistical methods, including regression and prediction, the project aims to provide actionable insights into how social media influences consumer behavior, which can inform marketing strategies and consumer education efforts.

## **Guiding Questions:**

Following are the guiding questions will be answered during this project:

1. What factor influence the chance of purchasing a product after encountering it on social media?
2. Are influencer promotions more effective than brand advertisements in influencing purchases?
3. How accurately can we predict overspending, or budget exceedance based on social media usage patterns?
4. Can the perceived trustworthiness of social media advertisements predict the likelihood of making a purchase?

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## **Methodology:**

Firstly, we will collect data through surveys, preprocess and clean the data, and perform exploratory data analysis (EDA). We will then apply correlation and predictive analysis on the data. Additionally, we will conduct hypothesis testing to determine the significance of our findings. The models will be evaluated using metrics like R-squared, Mean Absolute Error (MAE), Mean Squared Error (MSE), and accuracy.

We will also incorporate distribution models such as the Poisson distribution to model the count of purchases, the Binomial distribution to model the probability of making a purchase, and the Likelihood Ratio Test (LRT) to compare the goodness-of-fit of different models. These distribution models will help us understand the underlying patterns and relationships in the data. The results will be interpreted to provide actionable insights into consumer behaviour influenced by social media, which can inform marketing strategies and consumer education efforts. Visualization tools will be used to create clear and informative charts and graphs that summarize the findings, and a comprehensive report will be prepared to include the methodology, analysis, results, and recommendations.

## **References:**

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