GENERIC SOCIAL MEDIA STRATEGIES BASED ON THE PROFILES OF THE UK SOCIAL MEDIA USERS

by

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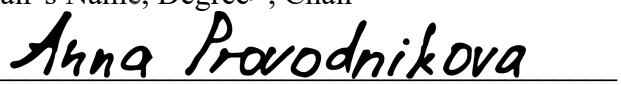

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DEDICATION

Dedicated to my family.

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ABSTRACT

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2022

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As the COVID-19 pandemic has accelerated the great shift to online shopping in the UK, many UK B2C companies are now interested in developing their social media strategy. Unfortunately, there is a research gap in understanding the UK's social media users and generic social media strategies that a UK-oriented B2C company can quickly adapt. Therefore, there is a need for a better understanding of the UK's social media users to develop an effective social media strategy. Hence, this study: i) profiles the UK social media users; ii) provides a guide on the odds of adopting particular social media platforms based on consumers' demographic and behavioral attributes; and iii) proposes a set of generic social media strategies that B2C companies can quickly adopt. This research will help many B2C firms in the UK engage their target customers better on social media.

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CHAPTER I:

INTRODUCTION

1.1 Introduction

In the UK, the COVID-19 pandemic has accelerated the great shift to online shopping. COVID 19 has forced consumers to change the way they prefer to shop (Sharma and Jhamb, 2020). As a result, there is an increased shift in consumer buying behavior from traditional shopping to online shopping (Reddy, 2020). Many UK B2C companies are now interested in engaging customers online via social media and investing in the social media strategy. Google Trend data showed a roughly 700% increase of interest in the topic of "Social Media Strategy" (Google, 2021).

Unfortunately, many companies do not know where to start in social media strategy. Companies know they should do something about social media but do not really understand what they should do, e.g., some firms simply give some junior staff members access to the company's social accounts, dangerously assuming any young people should know all about social media (Geyser, 2021). No wonder a majority of UK's B2C companies found that both Facebook (53%) and Instagram (50%) advertising are only "somewhat effective" in promoting their businesses (Danzinger, 2021).

The author believes that any social media strategy's starting point should be the same as the traditional strategy, i.e., understanding the customers. Yet, too many companies are still approaching the social media strategy without understanding the customers. For example, a recent poll by the Independent suggested that more than half of UK companies did not understand how customers use social media (The Independent, 2021).

This research project will provide an overview of profiles of the UK's social media users. In addition, it will propose a conceptual framework for developing social media strategy based on consumer profiling. As a result, this research will help many

B2C companies in the UK develop an effective social media strategy based on a solid understanding of the consumers.

1.2 Research Problem

The importance of understanding the consumers has long been recognized by academicians. However, numerous companies, especially the smaller ones, still develop social media strategies not based on consumer understanding, which leads to ineffective social media strategies. For example, Danziger (2021) surveyed some 200 luxury goods company executives and found only 34% rated Instagram "very effective," and fewer than 20% rated Facebook "very effective." Similarly, a survey of 4,000 small businesses, of which 60% were independent retailers, conducted by Alignable in 2021 found that the majority rated both Facebook (53%) and Instagram (50%) advertising only "somewhat effective" in promoting their businesses (Danziger, 2021).

Based on the author's observation as a practitioner in the field, there are two main reasons for this phenomenon. First, many companies do not have the necessary resources (in terms of budget, time, expertise, and manpower) to conduct detailed research on the consumers. Second, there is limited research on the profile of social media users, which the companies could leverage on. To the best of the author's knowledge, there is no specific research on the UK's social media users nor a set of generic social media strategies that a UK-oriented B2C company can quickly adapt.

Therefore, there is a need to understand the UK's social media users better to develop an effective social media strategy. This research project will provide an overview of profiles of the UK's social media users. In addition, it will propose a conceptual framework for developing social media strategy based on consumer profiling. As a result, this research will help many B2C companies in the UK create an effective social media strategy based on a solid understanding of the consumers.

1.3 Purpose of Research

The objective of this research is to profile the UK social media users as well as to develop a conceptual framework of generic social media strategies that B2C companies can immediately adopt. To support this primary objective, three sub-objectives have been identified:

1. To review current researches in regards to social media.
2. To profile the UK social media users.
3. To outline a conceptual framework for generic social media strategies based on the profiles.

1.4 Significance of the Study

The result of this research will be valuable for B2C companies in developing more effective social media strategies – even when they do not have the resources to conduct detailed consumer research or an in-depth understanding of the concept of social media strategy.

1.5 Research Questions

In order to address the research purpose outlined in Section 1.3 above, this study will address the following research questions:

- What are the profiles of UK social media users?
- Based on these profiles of UK social media users, what generic social media strategies that B2C companies can adopt to engage their customers effectively?

CHAPTER II:

REVIEW OF LITERATURE

This section provides a brief review of how the fast rise of social media makes understanding the customers more crucial than ever.

2.1 Implications on Marketing

Marketing was used to view customers as the passive receivers, and companies are the sole creator of marketing content (Quach *et al.*, 2020). Yet as the Internet and social media spread, customers have redefined their interactions with companies by actively seeking information and engaging only with content that suits them (Šeric, Gil-Saura and Ozretić-Došen, 2015; Valos *et al.*, 2016). In addition, on social media, customers are sense-making messages from both company-generated and user-generated content (Finne and Grönroos, 2017). When social media is poorly managed, it can evoke strong adverse reactions, such as negative word of mouth or boycotts (Gebauer, Füller and Pezzei, 2013; Tóth *et al.*, 2018).

As a result, in this social media era, it becomes more critical for companies to understand their customers – so that they can improve their marketing communications and better engage their customers (Day, 2011; Luxton, Reid and Mavondo, 2015; Bruhn and Schnebelen, 2017). This is why companies need to shift their marketing approach from "telling and selling" to "listening and learning" (Bruhn and Schnebelen, 2017). Recent researches also revealed that customer-oriented marketing could be central to determining company performance (Luxton, Reid and Mavondo, 2015; van Dieijen *et al.*, 2020). Companies that cannot build customer-oriented marketing capabilities risk going out of business (Vaturi and Varianini, 2000).

2.2 Implications on Strategy

Traditional Strategy literature emphasized the importance of understanding the company's competitive positions in the market and its ability to use its resources to create competitive advantages (Hovell, 1979; Wernerfelt, 1984; Grösnhaug and Falkenberg, 1989; Barney, 1991). While some research recognized that objective assessments of customers' needs, demands, and perceptions are the first step in strategy (Day, 1994; Jüttner and Wehrli, 1994), customer understanding was not the main emphasis of the traditional strategy (Quach *et al.*, 2020).

The rise of social media has changed this view. Social media enables companies to engage customers better and opens up the opportunity to serve them better. At the same time, customers' social media usage has made obtaining and processing market information much easier, so companies started to gather insights on the customers (Blesa and Ripolles, 2008; Kleindorfer, Wind and Gunther, 2009), and strategy scholars began to provide critical theoretical and managerial insights into the importance of customer-understanding (Day and Moorman, 2010; Gulati, 2010; Day, 2011; Grönroos, 2011).

Recent strategy literature has started to place a stronger emphasis on customer understanding. It is now widely acknowledged that companies that understand their customers exhibit a more substantial competitive advantage (Celuch, Kasouf and Peruvemba, 2002). A deeper understanding of the customers enables companies to update their capabilities and flex their resource allocations and management, which promotes competitive advantages (Mu *et al.*, 2018). Researchers found that effective strategy requires customer-oriented value propositions, understanding customer requirements, and developing long-term customer relationships (Fahy and Hooley, 2002); and winning companies deliver superior value by understanding customer needs and coordinating internal activities to meet these needs (Hooley *et al.*, 1999; Celuch, Kasouf and Peruvemba, 2002). In addition, companies that can develop strong relationships with

customers have significantly better performance (Reijonen and Komppula, 2010; Lee *et al.*, 2015; Yang, Jiang and Xie, 2019).

The value of social media is more pronounced in dynamic market conditions. It helps companies proactively respond and seize market opportunities (Srinivasan, Rangaswamy and Lilien, 2005). In addition, a customer-oriented strategy is crucial for the success of new business ventures (La Rocca, Ford and Snehota, 2013), even though new ventures often lack the skills and resources to understand the customers.

2.3 Implication on R&D/Innovation

Social media offers an effective platform for gathering insights from customers and partners, e.g., market trends, feedback on offerings, competitive performance, and ideas for new features and new products (Kiron, 2012). Recent innovation researches indicated that customer understanding strongly determines company innovativeness and new product development performance (Saeed *et al.*, 2015). Understanding the customers allows companies to respond quickly to market changes, innovate to meet the needs of their target audiences, and enjoy long-term growth (Di Benedetto and Song, 2003; Day, 2011). It is especially vital in the turbulent markets with rapid changes in customer preferences, buyer entries/exits, and emerging needs and wants (Hult, Hurley and Knight, 2004; De Luca and Atuahene-Gima, 2007).

Social media is also becoming more crucial as successful new product development begins with recognizing an opportunity outside the organization, in which customers represent critical sources of information (Mohr and Sarin, 2009; Berghman, Matthyssens and Vandenbempt, 2012). With social media, companies can obtain market intelligence, accurately predict market movements, exploit their resources better, and explore more innovation opportunities, and ultimately improve their performance (Li and Cavusgil, 1999; Ferreras-Méndez *et al.*, 2015; Martín-de Castro, 2015; Mu, 2015).

Social media also allows successful innovators to engage customers throughout the design and development processes (Perks, 2000; Kyriakopoulos and Moorman, 2004; Mohr and Sarin, 2009). These customers can be sources of latent needs, request particular innovations, co-develop concepts, and provide ongoing feedback (Coviello and Joseph, 2012; Djelassi and Decoopman, 2013).

2.4 Implications on Sales

It has long been recognized that sales performance tends to be more prominent when the offerings are clearly stipulated, when the target customers and their needs are thoroughly understood (Quach *et al.*, 2020). By understanding the customer, companies can communicate an offer to customers and help them choose the most suitable option (Gilliam and Flaherty, 2015). Furthermore, in the early stages of a product's life cycle, sales also encourage new solutions to buyers' problems, which may require adaptations to the offering, according to customer needs (Terho *et al.*, 2015).

Social media is helpful for sales because practical sales activities require interacting with customers, stepping into customers' shoes, identifying their issues, and modifying the offering (La Rocca *et al.*, 2016). Such a sales approach can enhance the effectiveness of solutions for users (Haas, Snehota and Corsaro, 2012). Similarly, understanding the customer is an essential sales capability (Davis and Mentzer, 2007; Cron *et al.*, 2014; Mariadoss *et al.*, 2014; Bachrach, Mullins and Rapp, 2017) because understanding the customer also increases companies' sales forecasting capabilities and improves sales performance (Hughes, Le Bon and Malshe, 2012; Quach *et al.*, 2020).

2.5 Implications on New Business Expansion

New business expansion (either via new product, new sector, new geography, or new industry) represents complex activities that require transformations of existing

capabilities into new capabilities. Thus, understanding the customers is essential before a company decides on a new area for expansion.

Social media makes it easier for companies to understand the new areas for expansion by providing vehicles for interacting with customers and identifying insights. As a result, companies can develop better ideas and faster solutions and thereby gain competitive advantages (Cavusgil and Cavusgil, 2012). By understanding the new potential customers, companies can acquire information about the new markets and determine suitable strategies (Morgan, Katsikeas and Vorhies, 2012). A company that systematically senses unique needs and explores new possibilities is more likely to succeed (Moini, 1995). In addition, a company with a more robust understanding of customers is better positioned to choose appropriate entry modes, which affects the performance of its new business (Ripollés and Blesa, 2012). Finally, customer understanding facilitates product development and adaptation and supports the creation of targeted solutions in the new business areas (Blesa and Ripolles, 2008; Kayabasi and Mtetwa, 2016).

2.6 Summary: Research Gap

Through the literature review, we can conclude that: (1) understanding the customers is very important for business; (2) social media has provided the companies with more opportunities to understand the customers; and therefore (3) companies can benefit a lot from adopting the social media.

While these conclusions are solid, they still leave companies with some practical implementation questions, i.e., which social media platform to focus on; which customers use which social media. Big companies can solve these questions by launching in-depth market research. However, many smaller companies could not afford the cost of extensive market research – nor have the expertise and time to manage one. Therefore, a

profile of social media users will be tremendously helpful for many smaller companies as it helps them address the practical implementation issues.

Unfortunately, there is limited research on profiling the users of social media. To the best of the author's knowledge, there is no specific research on the UK's social media users. Furthermore, what is missing from the extant literature is a set of generic social media strategies that a UK-oriented B2C company can quickly adapt.

Therefore, there is a need to understand the UK's social media users better to develop an effective social media strategy.

CHAPTER III:

METHODOLOGY

3.1 Overview of the Research Problem

The importance of understanding the consumers has long been recognized by academicians. However, numerous companies, especially the smaller ones, still develop social media strategies not based on consumer understanding, which leads to ineffective social media strategies. Based on the author's observation as a practitioner in the field, there are two main reasons for this phenomenon. First, many companies do not have the necessary resources (in terms of budget, time, expertise, and manpower) to conduct detailed research on consumers. Second, there is limited research on the profile of social media users, which the companies could leverage on. And, to the best of the author's knowledge, there is no specific research on the UK's social media users nor a set of generic social media strategies that a UK-oriented B2C company can quickly adapt.

Therefore, there is a need to understand the UK's social media users better to develop an effective social media strategy. This research project will provide an overview of the profiles of the UK's social media users. In addition, it will propose a conceptual framework for developing social media strategy based on consumer profiling. As a result, this research will help many B2C companies in the UK create an effective social media strategy based on a solid understanding of the consumers.

3.2 Operationalization of Theoretical Constructs

As this study is focused on exploring the profiles of UK social media users, this research is exploratory by nature. Exploratory research is often used to investigate a problem that is not clearly defined better to understand the existing problem (QuestionPro, 2021). Once the exploration has been completed, and the phenomenon has

been better understood – a further, deeper, and more detailed study could be designed and conducted.

3.3 Research Purpose and Questions

The objective of this research is to profile UK social media users as well as to develop a conceptual framework of generic social media strategies that B2C companies can immediately adopt. To support this primary objective, three sub-objectives have been identified:

1. To review current research in regards to social media.
2. To profile the UK social media users.
3. To outline a conceptual framework for generic social media strategies based on the profiles.

In order to address the research purpose above, this study will address the following research questions:

1. What are the profiles of UK social media users? What are the most important attributes that drive social media adoption?
2. Based on these profiles of UK social media users, what generic social media strategies that B2C companies can adopt to engage their customers effectively?

3.4 Research Design, Data Collection, and Analysis

This study will employ two main methods. The first one is a Descriptive Analysis of secondary data derived from the author's previous primary survey. The survey was undertaken in the United Kingdom between 12th and 21st August 2019, using the online panel method. The respondents were screened and weighted to be the UK nationally representative of age, gender, and region. A total of 2,791 respondents aged 16 years and

older completed the survey. The margin of error on the study is +/- 2.7% (as presented in 4.1 Representativeness of the Survey Results).

Quota Sampling is frequently used by market analysts (rather than Stratified Sampling) because it is predominantly cost-effective, easy to conduct, and has the appealing equity of satisfying population reach (Iliyasu and Etikan, 2021). Although quota sampling has drawbacks (e.g., selection and non-coverage biases), it can produce reasonably good estimates if properly conducted (ABS, no date; Zhang *et al.*, 2020). Therefore, when the author conducted the survey, the selection of participants was set as random as possible, and all proper care was taken to avoid introducing a bias.

The dataset contains relevant variables for this study, as shown below. For further details, see 3.7 Instrumentation.

Demographic Profile

- Gender, e.g., Male / Female / etc.
- Age Group, e.g., 16 – 24 /25 – 34 / etc.
- # of People in Household, e.g., 2 / 3 / etc.
- Household income, e.g., under £10,000 / £10,000 - £14,999 / etc.
- Working Status, e.g., Full Time / Part Time / Retired / etc.
- Location in the UK, e.g., London / Southwest / Wales / etc.

Behavioral Profile

- Attitudes to Life (in 1-5 Likert Scale), e.g., I like taking risks / I never seem to have enough money / I think of myself as a confident person / etc.
- Topics of Interest, e.g., Men's lifestyle / Motoring / Music / etc.

- Regular Activities, e.g., Mindfulness, meditation, yoga / Read books, magazines / Rowing, sailing, water sports / etc.

Social Media Engagement

- Social Media Platforms Regularly Used, e.g., Facebook / Instagram / WhatsApp / Twitter / Snapchat / Tumblr / etc.

The reason for these variable selections is practical, i.e., the demographic and behavioral attributes in this survey were designed to mirror the attributes contained in Kantar's TGI database, the UK's largest consumer database with 30,000 households and 90,000 people covered). This mirroring matters because it allows B2C firms to link back the result of this study to the profiles of their target consumers.

The second method is Binomial Logistic Regression which is used to: 1) compute the odds of a certain consumer using a particular social media platform – given a set of demographic and behavioral attributes; and 2) identify the most important attributes in consumers' profile that explain their social media platform of choice. A B2C company then can use the odds to choose the best social media platform to target.

There are many other traditional statistical models as well as modern machine learning algorithms that can be used to predict the probabilities of adopting a social media platform, given a certain set of attributes. However, in this study, we consider the Binomial Logistic Regression as the most appropriate tool for the following five reasons:

1. The binary nature of social media regularly used (1 = Regularly Used; 0 = Not Regularly Used) suits the binomial distribution assumption of Logistic Regression.
2. Logistic Regression, unlike many other predictive models, is not a BlackBox model. It provides a transparent and easy-to-understand

relationship between the dependent (predicted) and independent (predictor) variables, e.g., it can be explained in a single linear formula. As this is an exploratory study, we prefer a transparent model over any BlackBox model.

3. Logistic Regression, in many cases, has good performance – not inferior to many more complex machine learning algorithms. In fact, recent systematic reviews show no performance benefit of machine learning models over logistic regression, i.e., similar performance between logistic regression and other more complex models (Christodoulou *et al.*, 2019; Lynam *et al.*, 2020).
4. Logistic Regression is simple and efficient. It does not require massive computing power nor time to run. The resulting odds can be used by B2C firms without having to run any modeling. For more sophisticated firms, the resulting logit coefficients can be used to generate more exact probabilities of adopting particular social media platforms.
5. Furthermore, Logistic Regression has more flexibility when compared to linear models, i.e., it does not require the assumption of normality, heteroscedasticity, and linearity (Hosmer Jr DW, Lemeshow S, 2013).

Having said these, there are still a few assumptions of logistic regression which we have to satisfy in order to get good predictive power. Below are some actions we undertook to ensure the assumptions required are met.

- **Absence of Near-Zero Variance:** We checked the data and did not find any zero or near-zero variance variables. Therefore, the assumption is satisfied.
- **Absence of extreme outliers:** We checked the data and did not find any outliers in the dataset. This is not unexpected as most of the predictor variables are binary, ordinal, or categorical.
- **No multicollinearity between preditor variables:** We checked the correlation between predictor variables and found that three variables are highly correlated with each other, i.e., "Children should be allowed to express themselves freely"; "I find it difficult to say no to my kids"; and "Do you have child(ren) under 16 years old?" (around 0.90 Pearson correlation). To satisfy the assumption, we remove two variables and keep only "Do you have child(ren) under 16 years old?".
- **No missing values:** There are 158 cases of unknown observations for "What is your annual household income?" as the respondent preferred not to answer (around 5.3% of the observation). In these cases, we imputed the missing values with the mode (the most common value), i.e., "£30,000 - £49,999".
- **Balanced observations between classes:** We found that social media usage is imbalanced, e.g., 70% of UK consumers regularly use Facebook vs. 30% who do not; or 4% of UK consumers regularly use Tumblr vs. 96% who do not. The imbalance cases usually cause poor Sensitivity or Specificity rate (as the model will tend to ignore the minority class). To

mitigate this issue, we introduced a weight penalty vector during the modeling so that the importance of the minority class would equal the importance of the majority class. Hence, the applied weight formula is = 1/Number of class members * 50% for each binary class.

- **Numerical data:** As logistic regression requires numerical data, we converted all non-numeric variables. All categorical variables (i.e., Working Status and Region) are converted into n-1 dummy variables. For example, Region has ten categories and is converted into nine dummy variables such as London (1 or 0), Scotland (1 or 0), Wales (1 or 0), and so on. All ordinal variables (i.e., Age Range and Income Range) are converted into the low point. For example, the age range 25-34 years old is converted to 25. Similarly, the income range of £10,000 - £14,999 is converted to 10,000. Furthermore, for ease of interpretation later, we scale the income variable from £ into £k, e.g., the value of 10,000 to become 10.
- **Relevant predictor variables:** We assume the demographic and behavioral attributes included are relevant from a theoretical point of view and for exploration purposes. As a result, we include all the predictor variables even though the logit coefficients might be statistically insignificant.
- **Linearity between the log-odds of the predicted variable and the predictor variables:** This assumption was checked when the model outputs were reviewed, and the results suggest this assumption is being met.

3.5 Population, Sample, and Participant Selection

The population of this study is the UK's adult consumers (i.e., defined as a person aged 16 years old or more who normally lives in England, Wales, Scotland, or Northern Ireland) – a total population of 54.8 million people in mid-2019 (ONS, 2020).

The ideal sampling methodology for this study would be Stratified Random Sampling. However, due to cost, time, and resource limitations, Stratified Quota Sampling is employed instead. A recent study showed that Stratified Quota Sampling, unlike the Convenience Sampling method, can generate results that approximate high quality probability-based national survey – therefore, it is a viable option for survey researchers seeking to approximate estimates for some populations at significantly lower cost (Zhang *et al.*, 2020)

The sample of this study is 2,791 UK consumers aged 16+, recruited via Toluna online panel with quota controls set on age, gender, and region to ensure a representative sample (quota sampling). Financial incentive was provided to every respondent who completed the survey. Out of 1.8 million panel members, 3,766 respondents responded to the survey (0.21% response rate), and 2,791 completed the survey (completion rate of 74.1%).

3.7 Instrumentation

The questionnaire used to capture the respondents' responses is shown in Appendix A. As a summary, here is the overview of the questions asked:

- Are you... Male/Female/Other
- How old are you?
- What is your annual household income?

- Which of these best describes your working status?
- Where in the UK do you live?
- Do you have child(ren) under 16 years old?
- To what extent do you agree with the following statement...
    - Children should be allowed to express themselves freely
    - I am a sensible down-to-earth person
    - I am often searching for moments to slow down and recharge
    - I am prepared to make lifestyle compromises to benefit the environment
    - I am very happy with my life as it is
    - I enjoy life and don’t worry about the future
    - I enjoy owning good quality things
    - I enjoy spending time with my family
    - I find it difficult to say no to my kids
    - I keep careful control on what my children eat
    - I like taking risks
    - I never seem to have enough money
    - I think of myself as a confident person
    - I try not to take life too seriously, and I just go with the flow
    - I worry a lot about myself
    - I’m very ambitious and always striving to be better
    - It’s important to me to feel part of a group
    - My family is more important than my career

    - My friends are important to me
    - My life revolves around my social life
    - There are not enough hours in the day to do everything
    - There is too much concern with the environment

- Which of these topics do you regularly look up or read about in magazines and websites, or watch on TV?
    - Antiques
    - Arts
    - Business
    - Celebrity gossip
    - Computing, technology
    - Craft
    - Drama (TV, books etc)
    - Entertainment, cinema, film
    - Fashion
    - Food/ Cookery
    - Gardening
    - Health and Fitness
    - Home Interest
    - Legal/police drama/programmes
    - Makeover programmes
    - Medical drama/programmes
    - Men's lifestyle

    - Motoring
    - Music
    - Nature programmes
    - Nature, Wildlife, Pets
    - News, current affairs
    - Photography
    - Puzzle
    - Reality TV
    - Sitcoms
    - Soaps
    - Sports
    - Travel/ Holiday
    - TV and radio listings magazines
    - Women's interest
    - None of these
- Which of these activities do you regularly take part in?
    - Cinema
    - Cycling
    - Dance, clubbing
    - Do a hobby, play an instrument
    - Family days out
    - Fashion, clothes shopping
    - Festivals, gigs, concerts

    - Gym
    - Hiking, walking, climbing
    - Mindfulness, meditation, yoga
    - Read books, magazines
    - Rowing, sailing, water sports
    - Running, jogging, athletics
    - Social media
    - Sponsored events, voluntary work
    - Surf internet, play computer or video games
    - Swimming
    - Team sports (Football, hockey, rugby)
    - Watch TV
    - None of these
- Which social media platforms do you use regularly nowadays?
    - Facebook
    - Instagram
    - Messenger
    - Snapchat
    - Tumblr
    - Twitter
    - WhatsApp
    - YouTube
    - Other (SPECIFY)

- None – I don't use social media

3.8 Research Design Limitations

This study has three limitations, as described below.

1. **Online Panel:** Since the respondents are recruited via the online panel method, people who do not have internet access are not captured in the study. We believe this is not a significant limitation for two reasons. First, 96.6% of UK households have access to the internet (IBIS, 2021). Second, people who do not have internet access do not use social media anyway.
2. **Non-Probabilistic Sampling:** The survey was based on quota sampling, not random sampling. Therefore, it may not represent the population. Again, we believe this is not a significant limitation for three reasons. First, this is an exploratory study that doesn't try to generalize the population. Second, stratified quota sampling can perform as well as proportional random sampling (Zhang *et al.*, 2020). Third, when compared to the known population parameters, the survey errors are relatively small (see 4.1 Representativeness of the Survey Results).
3. **Balanced Accuracy Below 95%:** The balanced accuracy of the models in this study range between 72 and 91%. The predictive accuracy, most likely, could be improved by using an ensemble of machine learning models. While an ensemble of various models would improve the predictive power, it would diminish the explanatory power (an ensemble of various machine learning models would make it very complex to explain the nature of the relationship between variables).

3.9 Conclusion

This chapter outlined the research problem, research purpose, and research design. By using a stratified quota sampling, this study would profile the UK social media users – and based on this profile, the generic social media strategies would be generated. Furthermore, the limitations of the study were stated and analyzed.

CHAPTER IV:

RESULTS

4.1 Representativeness of the Survey Results

Even though the employed sampling method is not randomly probabilistic, the result seems to represent the general UK population quite well. Table 1 - Table 7 below show the comparison between the survey result and the known data of the overall UK population. As shown, the Mean Absolute Deviation (MAD) of the survey result only range between 0.7 and 2.7 percentage point. As a result, we are quite confident about the representativeness of the survey result.

Note: All the population parameter figures in Table 1 - Table 7 are extracted from the UK's Office for National Statistics – Population Estimates for the UK: Mid-2019 (ONS, 2020).

Table 1
UK Consumers by Gender

Gender	Target Quota	Survey Result	Population Parameter	Absolute Deviation
Female	50%	51%	51%	0.9%
Male	50%	48%	49%	1.0%
Other	0%	0%	0%	0.2%
			MAD >>>	**0.7%**

Table 2
UK Consumers by Age Range

Age Range	Target Quota	Survey Result	Population Parameter	Absolute Deviation
16-24	15%	15%	14%	0.5%
25-34	15%	14%	16%	2.8%
35-44	15%	15%	15%	0.4%
45-54	15%	16%	17%	0.9%
55-64	15%	15%	15%	0.4%
65+	25%	26%	23%	3.3%
			MAD >>>	**1.4%**

Table 3
UK Consumers by Household Size

Household Size	Target Quota	Survey Result	Population Parameter	Absolute Deviation
1 person	n/a	23%	28%	5.5%
2 people	n/a	38%	35%	3.0%
3 people	n/a	17%	16%	0.9%
4 people	n/a	15%	14%	0.9%
5 people	n/a	4%	5%	0.5%
6+ people	n/a	3%	2%	1.2%
			MAD >>>	**2.0%**

Table 4
UK Consumers by Annual Household Income

Household Income	Target Quota	Survey Result	Population Parameter*	Absolute Deviation
Under £10,000	n/a	10%	16%	5.7%
£10,000 - £14,999	n/a	12%	9%	2.8%
£15,000 - £19,999	n/a	12%	12%	0.3%
£20,000 - £24,999	n/a	11%	12%	0.7%
£25,000 - £29,999	n/a	11%	10%	0.7%
£30,000 - £39,999	n/a	16%	16%	0.4%
£40,001 - £49,999	n/a	10%	9%	0.6%
£50,000 or more	n/a	17%	16%	1.5%
			MAD >>>	**1.6%**

Table 5
UK Consumers by Working Status

Working Status	Target Quota	Survey Result	Population Parameter	Absolute Deviation
Full-time	n/a	40%	58% (employment)	3.9%
Part-time	n/a	14%		
Unemployed	n/a	6%	5%	1.5%
Full-time education	n/a	3%	16% (economic inactive)	2.4%
Not seeking employment	n/a	11%		
Retired	n/a	26%	23%	3.0%
			MAD >>>	**2.7%**

Note: The percentages are based on the population aged 16+.

Table 6
UK Consumers by Region

Region	Target Quota	Survey Result	Population Parameter	Absolute Deviation
London & South East	25.0%	24%	27%	3.1%
South West	10.0%	9%	8%	1.0%
The East	10.0%	6%	9%	3.5%
Wales	5.0%	5%	5%	0.1%
East & West Midlands	15.0%	18%	16%	1.7%
Yorkshire & Humber	10.0%	11%	8%	2.4%
North West	10.0%	13%	11%	1.8%
North East	5.0%	5%	4%	1.5%
Scotland	7.5%	8%	8%	0.4%
Northern Ireland	2.5%	2%	3%	1.2%
			MAD >>>	**1.7%**

Table 7
UK Consumers by Child Status

Child Status	Target Quota	Survey Result	Population Parameter	Absolute Deviation
Don't have children	n/a	73%	71%	2.4%
Have children	n/a	27%	29%	2.4%
			MAD >>>	**2.4%**

4.2 The Demographic Profiles of UK Social Media Users

In this section, the profiles of UK social media users will be presented. We would start with the demographic profile (4.2 The Demographic Profiles of UK Social Media Users) before moving into the behavioral profile (4.3. The Behavioral Profiles of UK Social Media Users).

4.2.1 Social Media Users in the UK

Our finding estimated that ±46.9 million people, or 87% of the UK adult population, use social media. This data indeed suggests that UK businesses should not ignore social media as the medium to reach consumers.

Table 8
Number of Social Media Users

A user of Social Media	In terms of Proportion	In terms of Million People
Yes	87%	46.9
No	13%	7.2
Total UK	**100%**	**54.1**

Note: The percentages are based on the population aged 16+.

4.2.2 Most Used Social Media Platforms

Table 9 showed which social media platforms are used regularly by UK consumers nowadays. The data shows that Facebook is the most important platform in the UK, where 37.8 million people (70% of the UK adult population) use it regularly. Then it is followed by YouTube with 23.4 million users (45% of the adult population) and WhatsApp with 24.3 million users (43% of the adult population).

Table 9
Number of Social Media Users by Platform

Social Media Platform	Proportion of UK Population	Million People
Facebook	70%	37.8
YouTube	45%	24.3
WhatsApp	43%	23.4
Messenger	41%	22.3
Instagram	34%	18.2
Twitter	30%	16.2
Snapchat	20%	10.7
Tumblr	4%	2.1
Other	1%	0.8

Note: The percentages are based on the population aged 16+.

4.2.3 Multi-platforms usage

UK consumers tend not to limit themselves to a single platform. Instead, most people (64% of the adult population) use more than one platform. This finding is not

surprising because the types of content consumed on these platforms are different. For example, people come to Youtube to watch videos, WhatsApp to chat, Twitter to tweet, and Instagram to post photos. Therefore, a business with a sufficient marketing budget would ideally develop various content for multiple platforms and engage the consumers across multi-platforms.

Table 10
Number of Social Media Platforms Regularly Used by UK Adult Population

Number of platforms used	Proportion of UK Population	Million People
8 or more	1%	0.69
7	6%	3.08
6	8%	4.10
5	12%	6.26
4	12%	6.43
3	12%	6.39
2	14%	7.79
1	23%	12.20
None	13%	7.16

Note: The percentages are based on the population aged 16+.

Having said that, many businesses have limited marketing budgets and resources. It is simply impossible for them to develop much content and manage multiple platforms. Fortunately, this finding also suggests that businesses can focus on a few selected platforms to reach UK consumers. Focusing on selected platforms will reduce marketing engagement costs without sacrificing consumer outreach.

But, which platforms to focus on? Figure 1 shows the relationship between social media platforms in terms of (Pearson) correlation power. For example, we can see Facebook users are also likely to use Messenger (correlation of 0.47 out of 1.00). Similarly, Instagram users are also likely to be Snapchat users (correlation of 0.54 out of 1.00) and Messenger users (correlation of 0.44 out of 1.00). And, interestingly, the users of Instagram are likely to be the users of Snapchat, Messenger, Twitter, and Youtube. On

the other hand, the users of Tumblr are quite isolated (i.e., they are likely to use Tumblr only).

Figure 1
Correlation Between Social Media Platforms Used Regularly

Correlation	*Facebook*	*Correlation*	*YouTube*	*Correlation*	*WhatsApp*
Messenger	47%	Instagram	40%	Messenger	39%
Instagram	24%	Messenger	37%	Instagram	36%
YouTube	20%	SnapChat	34%	YouTube	31%
Twitter	20%	Twitter	33%	SnapChat	31%
SnapChat	16%	WhatsApp	31%	Twitter	21%
WhatsApp	15%	Facebook	20%	Facebook	15%
Tumblr	6%	Tumblr	19%	Tumblr	6%
Correlation	*Twitter*	*Correlation*	*Instagram*	*Correlation*	*SnapChat*
Instagram	41%	SnapChat	54%	Instagram	54%
YouTube	33%	Messenger	44%	Messenger	36%
Messenger	29%	Twitter	41%	YouTube	34%
SnapChat	24%	YouTube	40%	WhatsApp	31%
WhatsApp	21%	WhatsApp	36%	Twitter	24%
Facebook	20%	Facebook	24%	Tumblr	21%
Tumblr	20%	Tumblr	20%	Facebook	16%
Correlation	*Tumblr*	*Correlation*	*Messenger*		
SnapChat	21%	Facebook	47%		
Twitter	20%	Instagram	44%		
Instagram	20%	WhatsApp	39%		
YouTube	19%	YouTube	37%		
Messenger	14%	SnapChat	36%		
Facebook	6%	Twitter	29%		
WhatsApp	6%	Tumblr	14%		

Note: Correlation Score range from -100% to +100%, where: +100% = perfectly, positively correlated; 0% = no correlation; -100% = perfectly and negatively correlated.

Based on these findings, we can generate two simple rules of thumb for businesses who want to engage UK consumers on social media:

- If a business has a limited budget, it should focus on Facebook platform only. It is the largest platform.

- If a business has a bigger budget, it should consider one of these three additional social media platforms with the biggest affinity (i.e., Instagram, Messenger, and YouTube).

4.2.4 Gender and Social Media usage

Table 11 below shows that gender is relatively balanced across social media platforms (i.e., both males and females use the platform regularly) – except for Instagram and Snapchat (which are skewed to Male users). Interestingly, non-users and other smaller platforms are skewed to Female users.

Table 11
Social Media usage by Gender

Platform	Proportion of Users who are Male	Proportion of Users who are Female	Proportion of Users who are Non-Binary	Delta Male vs Female
Facebook	55%	45%	0.2%	9%
YouTube	49%	51%	0.4%	-2%
WhatsApp	57%	43%	0.2%	15%
Twitter	49%	51%	0.5%	-2%
Instagram	62%	37%	0.3%	25%
Snapchat	67%	32%	0.7%	35%
Tumblr	56%	42%	1.7%	14%
Messenger	60%	39%	0.2%	21%
None	39%	61%	0.0%	-22%
Other	40%	56%	4.7%	-16%

4.2.5 Age and social Media usage

Figure 2 below shows that certain social media platforms (i.e., Snapchat, Tumblr, and Instagram) are more popular with younger consumers. Non-users and other social media platforms are highly dominated by older consumers. Facebook is relatively balanced even though it is skewed toward older consumers. On the contrary, YouTube is

relatively balanced with a skew toward younger consumers. Consumers in the age range of 16-24 years old use mainly Snapchat, Tumblr, and Instagram. While the consumers in the age range of 25-34 years old use mainly Snapchat and Instagram. On the other hand, consumers in the age range of 35-44 and 45-54 years old use various platforms except for Snapchat. In contrast, consumers in the age range of 55-64 and 65+ years old are mainly Non-Users or Facebook users. Another interesting observation is that a significant proportion of 65+ years old users use other social media platforms. These are most likely hobby forums (e.g., knitting forums, history forums) or the older, now less popular platforms such as Yahoo News and Viber.

Figure 2
Social Media Platform's User Distribution Heatmap by Age range

Platform	Proportion of Users Who Aged 16-24	Proportion of Users Who Aged 25-34	Proportion of Users Who Aged 35-44	Proportion of Users Who Aged 45-54	Proportion of Users Who Aged 55-64	Proportion of Users Who Aged 65+
Facebook	16%	15%	15%	17%	15%	23%
YouTube	24%	20%	20%	14%	11%	11%
WhatsApp	20%	19%	19%	17%	11%	14%
Twitter	22%	20%	18%	16%	12%	13%
Instagram	34%	24%	18%	12%	6%	6%
SnapChat	53%	26%	8%	10%	2%	1%
Tumblr	48%	17%	12%	13%	3%	6%
Messenger	23%	22%	16%	16%	9%	14%
None	2%	4%	8%	12%	23%	51%
Other	19%	9%	0%	19%	7%	47%

Figure 3 shows the consumer penetration by the social media platform. It shows that Facebook has strong penetration across various age groups. Meanwhile, Youtube and Whatsapp have a higher penetration of consumers below 44 years old. Snapchat, Instagram, and Messenger are mainly penetrating the younger consumers. This data suggests that Facebook is the key social media platform in the UK.

Figure 3
Social Media Penetration Heatmap by Age Range

Platform	Penetration of Users Who Aged 16-24	Penetration of Users Who Aged 25-34	Penetration of Users Who Aged 35-44	Penetration of Users Who Aged 45-54	Penetration of Users Who Aged 55-64	Penetration of Users Who Aged 65+
Facebook	75%	78%	69%	75%	67%	62%
YouTube	72%	67%	60%	40%	32%	19%
WhatsApp	58%	61%	55%	47%	32%	23%
Twitter	45%	44%	36%	30%	23%	15%
Instagram	77%	59%	41%	26%	12%	8%
SnapChat	71%	38%	11%	12%	3%	1%
Tumblr	13%	5%	3%	3%	1%	1%
Messenger	64%	66%	44%	43%	25%	22%
Other	2%	1%	0%	2%	1%	3%

4.2.6 Size of Household and Social Media Usage

The size of the household has a limited effect on social media usage. Figure 4 and Table 12 show that, in general, there is no significant difference in household size across social media platforms. The correlation power is positive across platforms, suggesting that people from bigger households are more likely to be social media users (although the effect is weak). Instagram and Snapchat showed a slightly different pattern due to their users tend to be younger adults.

Figure 4
Social Media Platform's User Distribution Heatmap by Household size

Platform	1 person	2 people	3 people	4 people	5 people	6+ people
Facebook	21%	36%	18%	17%	4%	4%
YouTube	21%	29%	20%	21%	5%	5%
WhatsApp	19%	33%	18%	19%	6%	5%
Twitter	20%	32%	20%	18%	6%	4%
Instagram	15%	28%	22%	22%	7%	5%
SnapChat	14%	22%	24%	25%	9%	7%
Tumblr	17%	22%	26%	22%	12%	2%
Messenger	19%	30%	20%	20%	5%	5%

Table 12
Correlation between Social Media Usage and Household Size

Platform	Correlation Power	Comment
Facebook	9%	Very weak correlation
YouTube	18%	Weak correlation
WhatsApp	16%	Weak correlation
Twitter	11%	Weak correlation
Instagram	24%	Slightly weak correlation
Snapchat	25%	Slightly weak correlation
Tumblr	6%	Very weak correlation
Messenger	18%	Weak correlation

Note: Correlation Score range from -100% to +100%, where: +100% = perfectly, positively correlated; 0% = no correlation; -100% = perfectly and negatively correlated.

4.2.7 Income Level and Social Media

The annual household income level has a limited effect on social media usage. Figure 5 and Table 13 show that there is no significant difference in income levels across social media platforms. The finding suggests that both lower-income and higher-income people use social media in the UK. This is especially true for Facebook (with a near-zero correlation). Most social media platforms – except for Tumblr and Messenger – have a positive correlation (suggesting the higher the income level is, the more likely a person to become the platform user). Tumblr and Messenger have a negative correlation to income – however, these are weak figures.

Figure 5
Social Media Platform's User Distribution Heatmap by Household Income

Platform	Under £10,000	£10,000 - £14,999	£15,000 - £19,999	£20,000 - £24,999	£25,000 - £29,999	£30,000 - £39,999	£40,000 - £49,999	£50,000 - £59,999	£60,000 - £69,999	£70,000 or more
Facebook	10%	13%	12%	11%	12%	15%	10%	7%	4%	6%
YouTube	10%	10%	13%	11%	11%	15%	10%	7%	4%	8%
WhatsApp	9%	10%	11%	11%	13%	15%	11%	8%	5%	8%
Twitter	10%	9%	10%	10%	11%	16%	12%	9%	5%	9%
Instagram	9%	11%	10%	11%	12%	16%	10%	8%	4%	9%
SnapChat	11%	9%	11%	11%	12%	14%	11%	8%	4%	9%
Tumblr	16%	11%	8%	10%	6%	19%	15%	9%	1%	5%
Messenger	11%	11%	12%	11%	11%	15%	11%	7%	4%	7%
None	12%	12%	11%	11%	8%	20%	10%	6%	3%	7%
Other	5%	5%	12%	14%	12%	16%	7%	12%	5%	14%

Table 13
Correlation between Social Media Usage and Household Income Level

Platform	Correlation power	Comment
Facebook	0%	No correlation
YouTube	4%	Very weak correlation
WhatsApp	8%	Very weak correlation
Twitter	9%	Very weak correlation
Instagram	8%	Very weak correlation
Snapchat	4%	Very weak correlation
Tumblr	-3%	Very weak negative correlation
Messenger	-2%	Very weak negative correlation

Note: Correlation Score range from -100% to +100%, where: +100% = perfectly, positively correlated; 0% = no correlation; -100% = perfectly and negatively correlated. For simplicity, we converted the Income Level from ordinal variable into interval variable by using the lower threshold of Income Level, e.g., £10,000 - £14,999 (an ordinal value) is converted into 10,000 (an interval value).

4.2.8 Working Status and Social Media Usage

Most social media users in the UK are people who are working full time (see Figure 6). Interestingly, Snapchat and Tumblr have a higher proportion of students when compared to other platforms, while Facebook has a higher proportion of retired people.

Figure 6
Social Media Platform's User Distribution Heatmap by Working status

Platform	Full-time	Full-time education	Not seeking employment	Part-time	Retired	Unemployed and looking for work
Facebook	43%	3%	12%	13%	23%	6%
YouTube	50%	5%	10%	16%	11%	9%
WhatsApp	50%	3%	11%	17%	13%	6%
Twitter	52%	5%	11%	11%	13%	8%
Instagram	51%	6%	11%	17%	7%	8%
SnapChat	51%	9%	9%	21%	2%	8%
Tumblr	47%	10%	10%	15%	4%	14%
Messenger	47%	4%	13%	14%	14%	7%

In terms of penetration, Facebook has a high penetration across all working statuses. Instagram and YouTube are especially popular among students. Retired people mostly used Facebook.

Figure 7
Social Media Penetration Heatmap by Working Status

Platform	Full-time	Full-time education	Not seeking employment	Part-time	Retired	Unemployed and looking for work
Facebook	74%	68%	75%	68%	62%	70%
YouTube	56%	78%	42%	52%	18%	62%
WhatsApp	53%	54%	42%	52%	22%	40%
Twitter	38%	51%	31%	25%	15%	39%
Instagram	43%	78%	33%	42%	9%	41%
SnapChat	25%	66%	16%	30%	1%	25%
Tumblr	5%	15%	4%	4%	1%	9%
Messenger	48%	66%	50%	43%	22%	46%

4.2.9 Residency Area and Social Media usage

Most social media users in the UK are concentrated in London and the South East as well as the Midlands (following the population distribution). Tumblr users, unlike other social media platforms, are concentrated in the Midlands. See Figure 8 for more details.

Figure 8
Social Media Platform's User Distribution Heatmap by Residency Area

Platform	London or the South East	South West	The East (Norfolk, Suffolk, Cambridgeshire)	Wales	East or West Midlands	Yorkshire & Humberside	North West	North East	Scotland	Northern Ireland
Facebook	23%	10%	5%	5%	17%	11%	13%	5%	8%	2%
YouTube	25%	9%	5%	4%	19%	10%	13%	5%	7%	1%
WhatsApp	26%	8%	5%	4%	19%	11%	13%	5%	6%	2%
Twitter	25%	8%	5%	3%	19%	10%	14%	5%	7%	2%
Instagram	25%	9%	4%	4%	19%	12%	14%	5%	7%	2%
SnapChat	27%	7%	1%	4%	19%	11%	15%	5%	7%	2%
Tumblr	16%	9%	3%	6%	30%	14%	11%	6%	3%	2%
Messenger	24%	11%	5%	3%	16%	13%	13%	6%	7%	2%

In terms of penetration, Facebook has the highest penetration across all areas in the UK. It has especially high penetration in Northern Ireland and Scotland. Tumblr, despite being more popular in the Midlands, only has 7% penetration of the total East or West Midlands users. See Figure 9 for more details.

Figure 9
Social Media Penetration Heatmap by Residency Area

Platform	London or the South East	South West	The East (Norfolk, Suffolk, Cambridgeshire)	Wales	East or West Midlands	Yorkshire & Humberside	North West	North East	Scotland	Northern Ireland
Facebook	68%	74%	66%	70%	68%	72%	72%	70%	69%	83%
YouTube	47%	43%	38%	42%	49%	44%	47%	45%	38%	33%
WhatsApp	47%	35%	41%	39%	46%	45%	44%	38%	36%	50%
Twitter	31%	26%	26%	22%	32%	29%	32%	30%	28%	42%
Instagram	35%	31%	24%	27%	36%	38%	38%	28%	29%	38%
SnapChat	23%	15%	5%	19%	21%	21%	23%	17%	19%	27%
Tumblr	3%	4%	2%	5%	7%	5%	3%	4%	2%	4%
Messenger	41%	46%	33%	31%	38%	50%	42%	46%	36%	46%

4.2.10 Child status and social Media usage

Most social media users in the UK do not have children (see Figure 10). In terms of penetration, even though Facebook dominates, users who have children tend to use also other social media – perhaps because the children introduce the adults to other social media platforms (see Figure 11).

Figure 10
Social Media Platform's User Distribution Heatmap by Child Status

Platform	Don't have children	Have children
Facebook	71%	29%
YouTube	66%	34%
WhatsApp	64%	36%
Twitter	67%	33%
Instagram	60%	40%
SnapChat	57%	43%
Tumblr	69%	31%
Messenger	63%	37%

Figure 11
Social Media Penetration Heatmap by Child Status

Platform	Don't have children	Have children
Facebook	67%	77%
YouTube	41%	57%
WhatsApp	38%	58%
Twitter	27%	37%
Instagram	27%	51%
SnapChat	15%	32%
Tumblr	4%	5%
Messenger	35%	58%

From the positive correlation power in Table 14, we can conclude that having children increases the likelihood of using social media platforms (albeit with weak impact). We can see stronger correlations for Instagram and Messenger, perhaps because the children introduce these platforms to adults.

Table 14
Correlation between Social Media Usage and Child Status

Platform	Correlation power	Comment
Facebook	10%	Weak correlation
YouTube	15%	Weak correlation
WhatsApp	19%	Weak correlation
Twitter	9%	Very weak correlation
Instagram	22%	Slightly weak correlation
Snapchat	18%	Weak correlation
Tumblr	2%	Very weak correlation
Messenger	21%	Slightly weak correlation

Note: Correlation Score range from -100% to +100%, where: +100% = perfectly, positively correlated; 0% = no correlation; -100% = perfectly and negatively correlated.

4.3. The Behavioral Profiles of UK Social Media Users

In this section, we will discuss the behavioral profile (4.3. The Behavioral Profiles of UK Social Media Users) before moving into the specific platform profile (4.4 The Odds of Adopting a Social Media Platform).

4.3.1 Attitude to Life and Social Media Usage

To understand the life attitude of UK consumers, we employed 22 attitude indicators that mirror the indicators available in Kantar's TGI consumer database (it is the UK's most extensive consumer panel with 30,000 households and 90,000 consumers). The reason for mirroring is practicality: as many B2C companies in the UK has Kantar subscription, they can link the result of this study with their own consumer profile within the TGI database. The survey respondent was asked to score each indicator with a five-level Likert scale: 1) Strongly Disagree; 2) Disagree; 3) Neither; 4) Agree; or 5) Strongly Agree.

Table 15 below shows the average score and standard deviation of the UK consumers' attitude to life. For example, UK consumers generally think that family is more important than career (average score 3.6 out of 5.0) and enjoy spending time with their family (3.5 out of 5.0). They also do not think there is too much concern for the environment (2.2 out of 5.0). On the other hand, they are not as happy with their life as it is (2.5 out of 5.0), and they worry about the future (2.4 out of 5.0). Interestingly, despite the high social media adoption, UK consumers do not think social life is that important (2.2 out of 5.0). For further details, please refer to Table 15.

Table 15
Overview of UK Consumers' Attitude to Life

Attribute	Average Score*	Std. Deviation
I am very happy with my life as it is	2.5	1.0
I enjoy life and don't worry about the future	2.4	0.9
I am often searching for moments to slow down and recharge	2.6	1.0
I try not to take life too seriously, and I just go with the flow	2.6	1.0
Children should be allowed to express themselves freely	2.8	1.2
I enjoy spending time with my family	3.5	1.4
I find it difficult to say no to my kids	2.5	1.2
My family is more important than my career	3.6	1.4
I keep careful control on what my children eat	2.7	1.3
I like taking risks	2.3	0.9
I think of myself as a confident person	2.6	1.1
I worry a lot about myself	2.6	1.1
It's important to me to feel part of a group	2.5	0.9
My life revolves around my social life	2.2	0.8
My friends are important to me	2.9	1.3
I'm very ambitious and always striving to be better	2.5	1.1
I am a sensible down-to-earth person	2.9	1.3
I never seem to have enough money	2.8	1.3
I enjoy owning good quality things	2.8	1.2
There are not enough hours in the day to do everything	2.7	1.2
I am prepared to make lifestyle compromises to benefit the environment	2.7	1.1
There is too much concern with the environment	2.2	1.1

Note: Average score on a scale of 1 (strongly disagree) to 5 (strongly agree). We are treating an ordinal variable like an interval variable for simplicity.

When we are looking at the life attitude by social media platforms, as shown in Figure 12, we can see that there is no significant difference in attitude between social media users. Interestingly, the Snapchat and Tumblr users exhibit somewhat slightly different characteristics. For example, Snapchat users exhibit the following characteristics: They are more worried about themselves; They tend to think that children should be allowed to express themselves freely; They put more emphasis on the importance of friends; They tend to think not enough hours in the day to do everything;

and They are less concerned about the environment. On the other hand, Tumblr users exhibit the following characteristics: They are more difficult to say no to kids; They tend to put more importance on career; and They put more emphasis on the importance of friends.

Figure 12
Average Score of UK Consumers' Attitude to Life by Social Media Platform

Attribute - Average Score*	Facebook	YouTube	WhatsApp	Twitter	Instagram	SnapChat	Tumblr	Messenger	Other	None
I am very happy with my life as it is	2.6	2.5	2.5	2.5	2.6	2.6	2.5	2.5	2.6	2.6
I enjoy life and don't worry about the future	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.6	2.5
I am often searching for moments to slow down and recharge	2.6	2.7	2.7	2.7	2.7	2.7	2.6	2.7	2.6	2.4
I try not to take life too seriously, and I just go with the flow	2.6	2.6	2.7	2.6	2.7	2.7	2.5	2.6	2.4	2.6
Children should be allowed to express themselves freely	2.8	2.9	2.9	2.9	2.9	3.2	2.9	3.0	2.7	2.5
I enjoy spending time with my family	3.5	3.5	3.5	3.4	3.5	3.6	3.5	3.5	3.3	3.4
I find it difficult to say no to my kids	2.5	2.5	2.5	2.5	2.5	2.6	3.0	2.6	2.7	2.7
My family is more important than my career	3.6	3.4	3.6	3.5	3.5	3.5	3.3	3.5	3.2	3.6
I keep careful control on what my children eat	2.7	2.7	2.7	2.6	2.7	2.9	2.8	2.7	3.2	2.4
I like taking risks	2.3	2.4	2.4	2.4	2.5	2.6	2.3	2.4	2.4	2.0
I think of myself as a confident person	2.6	2.6	2.6	2.6	2.6	2.7	2.4	2.6	2.7	2.5
I worry a lot about myself	2.6	2.7	2.7	2.7	2.8	3.0	2.9	2.8	2.3	2.3
It's important to me to feel part of a group	2.5	2.6	2.6	2.6	2.6	2.7	2.6	2.6	2.4	2.3
My life revolves around my social life	2.2	2.3	2.3	2.2	2.3	2.4	2.3	2.3	2.2	2.0
My friends are important to me	3.0	2.9	3.0	3.0	3.0	3.2	3.1	3.0	3.2	2.8
I'm very ambitious and always striving to be better	2.6	2.7	2.7	2.7	2.8	3.0	2.8	2.7	2.8	2.3
I am a sensible down-to-earth person	3.0	2.9	3.0	2.9	2.9	2.9	3.0	3.0	2.8	2.9
I never seem to have enough money	2.8	2.9	2.9	2.9	3.0	3.0	3.1	3.0	2.3	2.4
I enjoy owning good quality things	2.8	2.9	2.9	2.9	2.9	3.0	3.0	2.8	2.9	2.8
There are not enough hours in the day to do everything	2.8	2.9	2.9	2.9	3.0	3.2	2.9	2.9	3.2	2.5
I am prepared to make lifestyle compromises to benefit the	2.7	2.7	2.7	2.7	2.8	2.9	2.8	2.8	2.7	2.6
There is too much concern with the environment	2.2	2.3	2.3	2.2	2.3	2.5	2.1	2.2	1.9	2.2

Note: Average score on a scale of 1 (strongly disagree) to 5 (strongly agree).

Figure 13 shows the correlations between the attitudes and the social media platform. Most of the correlations are weak; however, many interesting patterns can be mined here – for example:

- Ambitious people and risk-takers tend to use Instagram and Snapchat. At the same time, Instagram and Snapchat users tend to worry a lot.
- Facebook users tend to care more about the environment but are not prepared to make lifestyle sacrifices, unlike Instagram and Snapchat users.
- Messenger users tend to worry about money and often search for moments to slow down and recharge.

Figure 13
Correlation between Life Attitude and Social Media Platform

Attribute - Correlation Power*	Facebook	YouTube	WhatsApp	Twitter	Instagram	SnapChat	Tumblr	Messenger	Other	None
I am very happy with my life as it is	2%	-2%	-1%	-1%	2%	4%	-1%	0%	1%	1%
I enjoy life and don't worry about the future	-1%	-2%	0%	-1%	-1%	1%	-1%	1%	2%	4%
I am often searching for moments to slow down and recharge	5%	9%	8%	6%	8%	7%	1%	10%	0%	-7%
I try not to take life too seriously, and I just go with the flow	0%	3%	7%	2%	5%	5%	-2%	5%	-2%	-1%
Children should be allowed to express themselves freely	8%	9%	7%	7%	11%	17%	3%	15%	-1%	-9%
I enjoy spending time with my family	4%	-1%	4%	-4%	3%	3%	0%	4%	-1%	-3%
I find it difficult to say no to my kids	9%	13%	16%	8%	20%	17%	4%	19%	-3%	-11%
My family is more important than my career	3%	-9%	-1%	-5%	-4%	-2%	-4%	-2%	-3%	0%
I keep careful control on what my children eat	9%	14%	18%	8%	21%	20%	3%	19%	-2%	-13%
I like taking risks	8%	15%	12%	7%	20%	19%	-1%	13%	1%	-12%
I think of myself as a confident person	1%	0%	3%	1%	5%	7%	-3%	0%	2%	-1%
I worry a lot about myself	4%	12%	7%	9%	15%	17%	6%	14%	-4%	-9%
It's important to me to feel part of a group	7%	7%	7%	5%	12%	13%	3%	8%	-1%	-7%
My life revolves around my social life	8%	9%	9%	4%	12%	11%	2%	11%	0%	-8%
My friends are important to me	5%	0%	6%	4%	7%	9%	3%	5%	3%	-3%
I'm very ambitious and always striving to be better	5%	16%	11%	13%	20%	20%	5%	13%	3%	-9%
I am a sensible down-to-earth person	5%	0%	2%	-1%	0%	0%	1%	3%	-1%	-1%
I never seem to have enough money	8%	7%	10%	7%	11%	11%	6%	16%	-5%	-9%
I enjoy owning good quality things	1%	10%	6%	7%	9%	8%	4%	4%	1%	-1%
There are not enough hours in the day to do everything	5%	14%	10%	10%	18%	18%	2%	14%	4%	-9%
I am prepared to make lifestyle compromises to benefit the	2%	8%	3%	6%	12%	14%	3%	9%	0%	-2%
There is too much concern with the environment	-6%	4%	5%	-3%	5%	10%	-3%	0%	-4%	0%

Note: Correlation Score range from -100% to +100%, where: +100% = perfectly, positively correlated; 0% = no correlation; -100% = perfectly and negatively correlated.

4.3.2 Topic of Interest and Social Media Usage

There are various topics that UK consumers regularly look up/watch on/read about in magazines, websites, and TV. The most popular ones are News, Drama, Entertainment, and Music – in which more than one-third of the UK adults are interested. The least popular topics are Photography, Makeover programs, and Men's Lifestyle – in which less than one-tenth of the UK adults are interested. Table 16 shows the list of topics that UK consumers regularly follow, ranked by their popularity.

Table 16
Most Popular Topic of Interest in the UK

Popularity Rank	Topic of Interest	% of UK Adults Interested	Million People Interested
1	News, current affairs	44%	23.8
2	Drama (TV, books etc)	38%	20.7
3	Entertainment, cinema, film	35%	18.9
4	Music	33%	17.9
5	Food/ Cookery	32%	17.3
6	Nature, Wildlife, Pets	29%	15.9
7	Sports	28%	15.1
8	Travel/ Holiday	26%	13.9
9	Nature programmes	23%	12.3
10	Legal/police drama/programmes	22%	12.0
11	Gardening	21%	11.5
12	Soaps	21%	11.4
13	Puzzle	19%	10.5
14	Computing, technology	19%	10.4
15	Medical drama/programmes	17%	9.1
16	Sitcoms	17%	9.0
17	Celebrity gossip	15%	8.0
18	Home Interest	14%	7.8
19	Reality TV	14%	7.7

Popularity Rank	Topic of Interest	% of UK Adults Interested	Million People Interested
20	Fashion	14%	7.6
21	Antiques	14%	7.5
22	TV and radio listings magazines	14%	7.5
23	Health and Fitness	13%	7.2
24	Craft	13%	7.0
25	Arts	13%	6.9
26	Motoring	12%	6.6
27	Women's interest	11%	5.7
28	Business	10%	5.4
29	Photography	8%	4.6
30	Makeover programmes	8%	4.1
31	Men's lifestyle	5%	2.5
32	Others	9%	5.1

Topics of interest seem to influence social media usage. Figure 14 shows the heatmap penetration by each social media platform. From the heatmap, we can see people interested in Men's Lifestyle are likely to use Facebook, Youtube, Whatsapp, Instagram, and Messenger. However, people interested in Antiques are only likely to use Facebook. In this aspect, Facebook is unique because it has high penetration across topics of interest. Unlike Snapchat, which only has high penetration on particular topics such as Celebrity Gossip and Men's Lifestyle.

Figure 14
Social Media Platform Penetration Heatmap by Interest

Interest	Facebook	YouTube	WhatsApp	Twitter	Instagram	SnapChat	Tumblr	Messenger	Other	None
Antiques	69%	36%	34%	26%	22%	11%	4%	35%	3%	16%
Arts	69%	60%	45%	35%	39%	27%	8%	46%	3%	10%
Business	70%	51%	50%	38%	36%	19%	3%	39%	5%	16%
Celebrity gossip	81%	66%	63%	46%	59%	41%	9%	61%	2%	5%
Computing, technology	75%	65%	49%	45%	38%	24%	8%	46%	3%	7%
Craft	73%	55%	48%	31%	40%	24%	8%	49%	3%	9%
Drama (TV, books etc)	70%	41%	40%	29%	29%	15%	4%	40%	3%	15%
Entertainment, cinema, film	74%	58%	51%	38%	43%	24%	5%	52%	2%	8%
Fashion	76%	61%	54%	41%	56%	37%	8%	55%	2%	7%
Food/ Cookery	74%	51%	50%	33%	38%	20%	4%	50%	3%	10%
Gardening	69%	40%	36%	26%	23%	11%	3%	32%	3%	15%
Health and Fitness	77%	61%	53%	42%	47%	26%	5%	55%	3%	9%
Home Interest	72%	48%	45%	34%	37%	19%	5%	44%	3%	11%
Legal/police drama/programmes	68%	42%	40%	33%	27%	12%	5%	39%	3%	18%
Makeover programmes	80%	51%	51%	38%	48%	33%	6%	58%	2%	8%
Medical drama/programmes	72%	40%	40%	33%	30%	17%	4%	44%	2%	13%
Men's lifestyle	74%	75%	61%	55%	72%	44%	7%	61%	3%	4%
Motoring	67%	51%	43%	38%	29%	17%	4%	37%	3%	15%
Music	77%	61%	52%	41%	43%	26%	6%	52%	3%	8%
Nature, Wildlife, Pets	72%	46%	43%	31%	30%	16%	4%	44%	2%	12%
Nature programmes	71%	42%	42%	31%	27%	14%	4%	40%	2%	14%
News, current affairs	69%	41%	38%	31%	26%	13%	3%	37%	2%	16%
Photography	78%	68%	54%	47%	62%	36%	8%	54%	6%	7%
Puzzle	74%	38%	39%	31%	25%	15%	6%	40%	2%	15%
Reality TV	83%	61%	58%	45%	56%	37%	7%	63%	2%	5%
Sitcoms	73%	53%	40%	40%	38%	19%	7%	48%	2%	12%
Soaps	75%	42%	45%	31%	33%	23%	5%	46%	1%	13%
Sports	71%	50%	45%	37%	32%	16%	4%	39%	2%	13%
Travel/ Holiday	73%	47%	47%	34%	34%	17%	4%	45%	2%	12%
TV and radio listings magazines	71%	44%	38%	34%	26%	15%	6%	36%	4%	14%
Women's interest	73%	48%	49%	37%	43%	23%	5%	48%	2%	10%
Others	69%	40%	38%	22%	33%	25%	5%	38%	0%	19%

The correlation heatmap, as shown in Figure 15, suggests that certain topics are more social media-friendly. For example, people interested in Antiques have negative correlations (i.e., they are more unlikely to use social media). On the other hand, Celebrity Gossip, Reality TV, and Music have positive and relatively stronger correlations (i.e., they are more likely to use social media). Similarly, people who are interested in Computing Technology are more likely to use YouTube than people who are interested in Gardening or News. For further details, see Figure 15 below.

Figure 15
Correlation between Interest and Social Media Platform Regularly Used

Interest	Facebook	YouTube	WhatsApp	Twitter	Instagram	SnapChat	Tumblr	Messenger	Other	None
Antiques	-1%	-7%	-7%	-4%	-10%	-8%	-1%	-5%	5%	4%
Arts	-1%	12%	1%	4%	4%	7%	7%	4%	6%	-4%
Business	0%	4%	4%	6%	2%	-1%	-1%	-1%	10%	3%
Celebrity gossip	10%	17%	17%	15%	22%	22%	11%	17%	1%	-10%
Computing, technology	6%	20%	5%	16%	4%	6%	9%	5%	8%	-9%
Craft	3%	8%	4%	1%	5%	4%	7%	7%	6%	-4%
Drama (TV, books etc)	-1%	-7%	-5%	-1%	-8%	-9%	2%	-3%	9%	4%
Entertainment, cinema, film	7%	20%	12%	13%	15%	7%	5%	16%	6%	-11%
Fashion	5%	13%	9%	10%	19%	18%	9%	11%	1%	-8%
Food/ Cookery	5%	9%	9%	5%	7%	0%	1%	12%	6%	-7%
Gardening	-1%	-5%	-7%	-4%	-11%	-11%	-2%	-9%	6%	2%
Health and Fitness	6%	12%	8%	10%	11%	6%	3%	11%	4%	-5%
Home Interest	2%	2%	1%	4%	3%	-1%	3%	2%	6%	-2%
Legal/police drama/programmes	-3%	-3%	-4%	4%	-8%	-10%	2%	-3%	7%	8%
Makeover programmes	6%	3%	4%	5%	9%	10%	3%	10%	2%	-4%
Medical drama/programmes	2%	-4%	-3%	3%	-4%	-4%	0%	3%	2%	-1%
Men's lifestyle	2%	13%	8%	12%	18%	13%	4%	9%	3%	-6%
Motoring	-2%	4%	0%	7%	-3%	-3%	0%	-3%	4%	2%
Music	11%	23%	12%	18%	14%	12%	8%	16%	7%	-11%
Nature, Wildlife, Pets	3%	2%	-1%	2%	-5%	-6%	-1%	3%	2%	-2%
Nature programmes	1%	-3%	-1%	2%	-8%	-8%	1%	-2%	2%	1%
News, current affairs	-1%	-7%	-9%	2%	-14%	-16%	-4%	-8%	5%	8%
Photography	6%	14%	7%	11%	18%	12%	7%	8%	13%	-5%
Puzzle	5%	-7%	-4%	1%	-9%	-6%	4%	-1%	1%	2%
Reality TV	12%	13%	12%	14%	19%	18%	6%	18%	2%	-10%
Sitcoms	3%	7%	-3%	10%	4%	-1%	7%	6%	3%	-2%
Soaps	5%	-3%	2%	1%	-1%	4%	3%	5%	-3%	-1%
Sports	1%	6%	2%	10%	-3%	-6%	-1%	-3%	2%	0%
Travel/ Holiday	5%	2%	5%	5%	1%	-5%	-1%	5%	4%	-3%
TV and radio listings magazines	1%	-1%	-4%	4%	-6%	-5%	3%	-5%	7%	1%
Women's interest	3%	2%	4%	5%	7%	3%	3%	5%	1%	-3%
Others	-1%	-3%	-4%	-5%	-1%	4%	1%	-2%	-4%	5%

Note: Correlation Score range from -100% to +100%, where: +100% = perfectly, positively correlated; 0% = no correlation; -100% = perfectly and negatively correlated.

4.3.3 Regular Activities and Social Media Usage

There are various activities that UK consumers regularly take part in. The most popular ones are: Watching TV; Read Books/Magazines; Social Media; and Surf Internet, Play Computer/Video Games – in which more than one-third of UK adults are interested. About 72% of UK consumers watch TV regularly, and 44% read books/magazines

regularly. On the other hand, the least popular activities are: Mindfulness, meditation, yoga; Team sports (Football, hockey, rugby); Dance, clubbing; Sponsored events, voluntary work; and Rowing, sailing, water sports – in which less than one-tenth of the UK adults are interested. Table 17 shows the list of activities that UK consumers regularly participate in, ranked by their popularity.

Table 17
Most Popular Activity in the UK

Popularity Rank	Activity	% of UK Adults Interested	Million People Interested
1	Watch TV	72%	38.7
2	Read books, magazines	44%	23.6
3	Social media	39%	21.1
4	Surf internet, play computer or video games	38%	20.4
5	Cinema	31%	17.0
6	Family days out	31%	16.5
7	Hiking, walking, climbing	22%	12.1
8	Fashion, clothes shopping	21%	11.1
9	Swimming	18%	9.7
10	Do a hobby, play an instrument	17%	9.0
11	Gym	14%	7.7
12	Festivals, gigs, concerts	11%	6.0
13	Running, jogging, athletics	10%	5.6
14	Cycling	10%	5.5
15	Mindfulness, meditation, yoga	9%	4.7
16	Team sports (Football, hockey, rugby)	8%	4.4
17	Dance, clubbing	7%	3.9
18	Sponsored events, voluntary work	6%	3.2
19	Rowing, sailing, water sports	2%	1.3
20	Others	5%	2.7

Regular activities seem to influence social media usage. Figure 16 shows the heatmap penetration by each social media platform. From the heatmap, we can see people interested in Dancing/Clubbing are likely to use Facebook, Youtube, Whatsapp, Instagram, Snapchat, and Messenger. However, people interested in Reading are only likely to use Facebook. In this aspect, Facebook is unique because it has high penetration across topics of interest. Unlike Snapchat, which only has high penetration on particular activities such as Dance/Clubbing and Rowing/Sailing/Water Sports.

Figure 16
Social Media Platform Penetration Heatmap by Activity

Activity	Facebook	YouTube	WhatsApp	Twitter	Instagram	SnapChat	Tumblr	Messenger	Other	None
Cinema	75%	59%	56%	41%	49%	30%	6%	51%	2%	6%
Cycling	76%	67%	54%	45%	45%	28%	6%	50%	4%	5%
Dance, clubbing	77%	73%	63%	48%	67%	56%	9%	68%	4%	5%
Do a hobby, play an instrument	68%	53%	47%	33%	38%	23%	7%	44%	5%	12%
Fashion, clothes shopping	73%	58%	56%	37%	52%	34%	5%	53%	2%	8%
Family days out	77%	50%	53%	33%	42%	26%	4%	51%	2%	10%
Festivals, gigs, concerts	83%	60%	59%	46%	48%	35%	6%	61%	2%	3%
Gym	75%	61%	60%	44%	59%	38%	5%	56%	1%	5%
Hiking, walking, climbing	72%	49%	43%	35%	27%	14%	4%	38%	3%	13%
Mindfulness, meditation, yoga	78%	60%	58%	44%	53%	30%	6%	59%	3%	7%
Read books, magazines	69%	39%	36%	26%	25%	11%	3%	37%	2%	17%
Rowing, sailing, water sports	68%	66%	63%	55%	67%	60%	14%	60%	5%	3%
Running, jogging, athletics	79%	68%	59%	49%	56%	35%	6%	57%	2%	4%
Sponsored events, voluntary work	74%	40%	53%	37%	34%	21%	7%	45%	5%	9%
Surf internet, play computer/video games	76%	57%	48%	35%	37%	20%	4%	47%	2%	8%
Swimming	78%	59%	57%	42%	48%	31%	4%	56%	2%	7%
Team sports (Football, hockey, rugby)	74%	67%	60%	52%	48%	32%	5%	53%	2%	8%
Watch TV	69%	44%	43%	30%	31%	17%	4%	40%	1%	14%
Social media	90%	63%	55%	44%	54%	32%	6%	65%	2%	0%
Others	65%	23%	28%	14%	19%	15%	1%	28%	1%	25%

Note: Correlation Score range from -100% to +100%, where: +100% = perfectly, positively correlated; 0% = no correlation; -100% = perfectly and negatively correlated.

The correlation heatmap, as shown in Figure 17, suggests that certain activities are more social media-friendly. For example, people who regularly take part in reading have negative correlations (i.e., they are more unlikely to use social media). On the other hand, people who regularly take part in Cinema, Dancing/Clubbing, and Gym have positive correlations (i.e., they are more likely to use social media). Similarly, people

who regularly go to Cinema are more likely to use YouTube than people who regularly watch TV or go to Sponsored Events/Voluntary Work. For further details, see Figure 17 below.

Figure 17
Correlation between Activity and Social Media Platform Regularly Used

Activity	Facebook	YouTube	WhatsApp	Twitter	Instagram	SnapChat	Tumblr	Messenger	Other	None
Cinema	8%	20%	18%	17%	22%	18%	7%	13%	5%	-15%
Cycling	5%	15%	7%	11%	8%	7%	4%	6%	6%	-9%
Dance, clubbing	5%	16%	11%	11%	19%	26%	8%	15%	5%	-7%
Do a hobby, play an instrument	-1%	7%	3%	3%	4%	4%	6%	3%	13%	-1%
Fashion, clothes shopping	4%	14%	13%	8%	20%	19%	2%	13%	2%	-8%
Family days out	10%	6%	13%	5%	12%	10%	-1%	13%	2%	-7%
Festivals, gigs, concerts	10%	11%	11%	12%	11%	13%	4%	15%	1%	-10%
Gym	5%	14%	14%	13%	22%	19%	2%	12%	-1%	-10%
Hiking, walking, climbing	3%	4%	0%	6%	-7%	-7%	0%	-3%	5%	-1%
Mindfulness, meditation, yoga	6%	9%	9%	9%	13%	8%	3%	11%	4%	-6%
Read books, magazines	-3%	-10%	-12%	-7%	-16%	-18%	-3%	-8%	6%	9%
Rowing, sailing, water sports	-1%	7%	6%	9%	11%	16%	8%	6%	5%	-5%
Running, jogging, athletics	7%	16%	11%	14%	17%	13%	4%	11%	0%	-9%
Sponsored events, voluntary work	2%	-2%	5%	4%	0%	1%	5%	2%	8%	-3%
Surf internet, play computer/video games	10%	19%	8%	9%	5%	2%	2%	9%	6%	-11%
Swimming	8%	13%	13%	12%	15%	13%	1%	14%	2%	-8%
Team sports (Football, hockey, rugby)	2%	13%	10%	14%	9%	9%	2%	7%	1%	-5%
Watch TV	-2%	-2%	-2%	1%	-10%	-11%	-1%	-4%	0%	4%
Social media	36%	29%	19%	25%	35%	25%	9%	39%	1%	-31%
Others	-3%	-10%	-7%	-8%	-7%	-3%	-3%	-6%	0%	8%

4.4 The Odds of Adopting a Social Media Platform

In this section, we will review the most important variables that define a social media platform's users in the UK by employing a statistical model. We conducted logistic regression to explore how demographic and behavioral attributes affect social media platform adoption and which of these attributes influence the adoption the most.

The models developed are quite good in explaining the social Media platform adoption by the users. The Area Under [the Receiver Operating Characteristic] Curve (AUC) measures of the models are presented in Table 18. AUC is an effective way to summarize the overall diagnostic accuracy of the test: It takes values from 0 to 100%, where a value of 0 indicates a perfectly inaccurate test and a value of 100% reflects a

perfectly accurate test (Mandrekar, 2010). For Facebook, the AUC is 79.2%. This suggests a 79% chance that the logistic regression model will correctly distinguish a user from a non-user (and vice versa) based on the predictor variables. The models can explain between 72.3% and 91.3% of the variance of social media. In general, an AUC of 50% suggests no discrimination (i.e., ability to classify social media users and non-users based on the given attributes), around 70% is considered acceptable, about 80% is considered excellent, and more than 90% is deemed to be outstanding (Hosmer Jr DW, Lemeshow S, 2013).

Table 18
Balanced Accuracy of the Logistic Regression Models

Model for…	AUC	Category
Facebook	79.2	Excellent
YouTube	78.6	Excellent
WhatsApp	72.4	Acceptable
Twitter	74.8	Acceptable
Instagram	85.1	Excellent
Snapchat	88.0	Excellent
Tumblr	91.4	Outstanding
Messenger	82.9	Excellent

Note: Area under the ROC curve represents the balanced accuracy (i.e., accuracy in predicting both users and non-users) in the binomial case.

Table 19 shows how the odds- ratio will change due to one unit change of each attribute (measured by the exponent of the logit model's coefficients). For example, it shows that one unit increase in "I am very happy with my life as it is" would change the odds of adopting Facebook to 1.06 (i.e., increase the odds by 6%) and the odds of adopting YouTube to 0.98 (i.e., reduce the odds by 2%). Another example, UK consumers who regularly take part in 'Dance/Clubbing' have an odds ratio of 0.54 for Facebook and 1.35 for YouTube. This means the UK dancers/clubbers have a 46%

reduction in the odds of regularly using Facebook, but a 35% increase in the odds of regularly using YouTube. Perhaps, the dancers are using YouTube's videos to learn new dance moves. The color-coding in Table 19 is as follows: Green represents a positive direction (i.e., odds ratio above one or positive logit coefficient); Red represents a negative direction (i.e., odds ratio below one or negative logit coefficient); and Yellow represents a neutral direction (i.e., odds ratio near one or near zero logit coefficient). Using these odds ratios, B2C firms can determine which social media platform they should target. If we log these odds ratio, we will get the logit regression coefficients. These coefficients may be useful for B2C firms who want to calculate the probabilities of adopting a platform.

Table 19
Increase in Odds Ratio of Using a Social Media Platform Given a Known Attribute

Category	Variable	Face book	You Tube	Whats App	Twitter	Insta gram	Snap chat	Tumblr	Mess enger
Intercept	(Intercept)	0.11	0.26	0.16	0.46	0.16	0.11	0.01	0.01
Life Attitude	I am very happy with my life as it is	1.06	0.98	0.94	0.97	0.97	0.94	0.82	0.95
Life Attitude	I enjoy life and don't worry about the future	0.94	0.87	0.99	1.02	0.86	0.88	1.11	1.04
Life Attitude	I am often searching for moments to slow down & recharge	1.09	1.03	1.00	1.04	0.91	0.86	1.12	1.12
Life Attitude	I try not to take life too seriously, and just go with the flow	0.89	0.99	1.08	1.03	0.97	0.89	1.00	1.03
Life Attitude	Children should be allowed to express themselves freely	1.08	0.97	0.96	1.04	0.88	1.13	1.03	1.21
Life Attitude	I enjoy spending time with my family	1.01	1.08	1.03	0.86	1.07	1.00	1.13	1.02
Life Attitude	My family is more important than my career	1.06	0.91	1.00	1.00	1.04	1.15	0.98	0.93
Life Attitude	I like taking risks	1.14	1.10	1.06	0.90	1.38	1.05	0.49	0.95
Life Attitude	I think of myself as a confident person	0.99	0.94	1.01	1.01	1.09	1.00	0.69	0.93
Life Attitude	I worry a lot about myself	0.89	1.12	0.95	1.05	1.03	1.22	1.05	1.03
Life Attitude	It's important to me to feel part of a group	1.18	1.02	1.05	0.98	1.07	1.15	1.10	0.94
Life Attitude	My life revolves around my social life	1.25	0.99	1.12	0.88	1.16	0.96	1.61	1.15
Life Attitude	My friends are important to me	0.99	0.83	1.02	0.99	0.93	1.13	1.15	0.98
Life Attitude	I'm very ambitious and always striving to be better	0.91	1.09	0.96	1.13	1.01	1.02	0.96	1.09

Category	Variable	Face book	You Tube	Whats App	Twitter	Insta gram	Snap chat	Tumblr	Mess enger
Life Attitude	I am a sensible down-to-earth person	1.12	1.04	1.05	0.99	1.01	1.01	1.40	0.98
Life Attitude	I never seem to have enough money	1.08	0.90	1.09	1.05	0.98	0.92	1.18	1.07
Life Attitude	I enjoy owning good quality things	1.05	1.11	1.02	1.01	0.97	0.96	0.94	0.91
Life Attitude	There are not enough hours in the day to do everything	0.89	1.00	0.94	1.04	1.02	1.09	0.51	1.02
Life Attitude	I make lifestyle compromises to benefit the environment	0.89	1.01	0.89	1.02	1.04	1.00	1.18	1.09
Life Attitude	There is too much concern with the environment	0.85	1.11	1.04	0.87	1.03	1.11	0.51	0.94
Interest	Antiques	1.31	0.77	0.88	0.95	1.05	0.96	0.87	1.20
Interest	Arts	0.70	1.96	0.85	0.99	0.61	0.94	1.92	0.97
Interest	Business	1.04	0.83	1.29	1.08	0.98	0.80	0.64	0.61
Interest	Celebrity gossip	1.23	1.67	1.58	1.24	1.12	1.08	3.74	0.76
Interest	Computing, technology	1.09	1.78	1.03	1.52	0.68	2.17	3.59	0.84
Interest	Craft	1.02	1.81	1.12	0.97	0.92	0.95	2.84	1.19
Interest	Drama (TV, books etc)	0.98	0.71	1.02	0.88	0.98	0.86	0.70	0.93
Interest	Entertainment, cinema, film	0.84	1.53	0.99	0.89	1.34	0.67	1.16	1.55
Interest	Fashion	1.20	0.97	0.66	0.98	1.31	1.20	3.47	0.73
Interest	Food/ Cookery	0.83	1.17	1.21	0.87	1.21	0.95	0.44	1.53
Interest	Gardening	1.10	1.34	0.88	1.01	0.93	1.24	0.87	0.73
Interest	Health and Fitness	0.97	1.13	0.87	0.91	0.82	0.59	1.43	1.35
Interest	Home Interest	0.88	0.89	0.91	0.97	1.28	0.66	1.73	0.83
Interest	Legal/police drama/programmes	0.88	1.36	1.14	1.40	0.89	0.63	1.77	0.90
Interest	Makeover programmes	1.28	0.66	0.97	0.81	0.84	1.32	0.35	1.25
Interest	Medical drama/programmes	0.89	0.92	0.78	1.24	1.02	1.39	0.49	1.58
Interest	Men's lifestyle	0.86	1.19	0.69	0.86	4.35	1.43	0.43	1.76
Interest	Motoring	0.85	1.04	1.06	1.31	0.76	1.23	1.08	0.86
Interest	Music	1.16	1.65	1.00	1.26	0.85	0.97	1.48	0.99
Interest	Nature, Wildlife, Pets	1.02	1.24	0.90	0.94	0.93	1.22	0.24	1.37
Interest	Nature programmes	0.82	0.99	1.37	1.14	1.06	1.18	1.26	0.80
Interest	News, current affairs	1.02	0.90	0.77	1.11	0.87	1.34	0.47	0.86
Interest	Photography	1.35	0.88	0.86	0.87	3.36	0.89	2.55	0.62
Interest	Puzzle	1.19	0.72	0.95	1.15	0.59	1.62	6.02	0.99
Interest	Reality TV	1.43	1.12	1.01	1.28	1.00	0.82	0.24	1.21
Interest	Sitcoms	0.86	1.06	0.54	1.28	1.41	0.56	0.95	1.13
Interest	Soaps	1.21	0.73	1.10	0.88	0.63	2.05	2.13	1.00
Interest	Sports	1.14	1.06	1.24	1.28	1.01	1.13	1.75	0.83
Interest	Travel/ Holiday	1.07	1.02	1.25	1.04	0.95	0.74	1.13	1.45
Interest	TV and radio listings magazines	1.08	1.01	0.95	1.09	0.63	1.96	2.74	0.71
Interest	Women's interest	0.86	1.10	1.16	1.32	1.16	0.96	0.28	0.67

Category	Variable	Face book	You Tube	Whats App	Twitter	Insta gram	Snap chat	Tumblr	Mess enger
Regular Activity	Cinema	1.02	1.06	1.37	1.03	1.39	1.12	0.55	0.71
Regular Activity	Cycling	1.19	1.45	1.01	1.08	0.74	0.93	1.60	0.95
Regular Activity	Dance, clubbing	0.54	1.35	0.83	0.96	1.00	1.44	1.23	1.35
Regular Activity	Do a hobby, play an instrument	0.72	1.12	1.15	0.81	1.38	1.02	1.12	1.22
Regular Activity	Fashion, clothes shopping	0.53	1.16	1.08	0.93	1.03	1.16	0.25	0.96
Regular Activity	Family days out	0.91	0.77	1.23	0.90	0.91	1.11	1.15	1.02
Regular Activity	Festivals, gigs, concerts	1.29	0.73	1.05	1.29	0.57	1.52	1.29	1.39
Regular Activity	Gym	0.87	0.82	1.21	0.91	1.77	1.04	0.65	1.12
Regular Activity	Hiking, walking, climbing	1.20	1.59	1.00	1.34	0.69	1.32	0.83	0.75
Regular Activity	Mindfulness, meditation, yoga	1.07	0.96	1.39	1.10	1.71	1.16	0.88	1.24
Regular Activity	Read books, magazines	0.89	0.90	0.69	0.77	0.84	0.50	1.28	1.11
Regular Activity	Rowing, sailing, water sports	0.59	0.53	0.77	1.08	1.57	2.31	11.99	1.86
Regular Activity	Running, jogging, athletics	1.49	1.16	0.98	1.09	1.43	0.70	0.89	0.96
Regular Activity	Sponsored events, voluntary work	1.16	0.44	1.59	1.32	0.60	0.52	1.06	0.95
Regular Activity	Surf internet, play computer/video games	1.44	1.86	1.17	0.91	0.89	0.77	0.50	0.95
Regular Activity	Swimming	0.85	1.19	1.03	1.23	1.00	1.43	0.30	1.29
Regular Activity	Team sports (Football, hockey, rugby)	0.78	1.00	1.20	1.64	0.73	0.96	0.51	0.96
Regular Activity	Watch TV	0.81	0.86	1.09	0.99	0.65	1.04	3.76	0.86
Regular Activity	Social media	5.84	1.44	0.91	1.28	2.40	1.19	0.33	2.00
Demographic	male	0.62	2.04	0.72	1.22	0.61	0.84	1.64	0.75
Demographic	age	1.04	0.98	1.01	1.01	0.97	0.91	0.97	0.99
Demographic	household	1.00	1.05	0.97	0.99	1.00	1.10	0.90	0.99
Demographic	income	1.00	1.00	1.00	1.01	1.00	0.99	1.01	0.98
Demographic	child	1.25	0.76	1.18	0.85	1.07	0.86	1.37	1.61
Demographic	statusFull-time	0.89	0.50	1.85	0.70	1.21	2.23	0.76	1.24
Demographic	statusFull-time education	0.24	0.60	0.87	0.88	1.33	3.40	2.46	1.63
Demographic	statusNot seeking employment	0.80	0.33	1.31	0.76	1.14	1.01	0.33	1.49
Demographic	statusPart-time	0.70	0.64	1.77	0.40	1.36	4.55	0.74	0.83
Demographic	statusRetired	0.52	0.34	0.94	0.44	1.69	3.77	0.32	1.45
Demographic	areaLondon or the South East	0.37	2.35	1.05	0.46	1.32	1.71	4.16	1.37
Demographic	areaSouth West	0.39	1.99	0.62	0.39	1.56	1.00	14.01	2.19
Demographic	areaThe East	0.48	2.08	1.10	0.55	1.57	0.16	5.21	1.15
Demographic	areaWales	0.54	2.31	0.97	0.31	1.13	2.98	41.63	0.74

Category	Variable	Face book	You Tube	Whats App	Twitter	Insta gram	Snap chat	Tumblr	Mess enger
Demographic	areaEast or West Midlands	0.38	2.44	1.18	0.46	1.49	1.20	30.38	0.77
Demographic	areaYorkshire & Humberside	0.38	1.78	1.00	0.40	1.40	1.87	46.21	2.02
Demographic	areaNorth West	0.50	1.88	0.83	0.48	1.47	2.25	7.28	1.11
Demographic	areaNorth East	0.33	1.99	0.81	0.47	0.67	1.12	31.37	2.25
Demographic	areaScotland	0.36	1.71	0.68	0.46	1.38	5.15	5.00	1.49
Social Media	Facebook	N/A	1.38	0.68	1.53	1.65	1.45	0.40	19.88
Social Media	YouTube	1.43	N/A	1.75	1.76	1.51	1.69	15.19	2.07
Social Media	WhatsApp	0.67	1.76	N/A	1.18	1.98	2.73	0.52	3.85
Social Media	Twitter	1.26	1.76	1.18	N/A	5.24	0.89	3.86	1.51
Social Media	Instagram	1.35	1.53	1.73	4.42	N/A	5.62	7.56	1.81
Social Media	Snapchat	1.22	1.49	1.82	0.88	5.25	N/A	3.77	1.84
Social Media	Tumblr	0.83	6.78	0.61	3.16	3.92	2.60	N/A	1.72
Social Media	Messenger	20.01	1.99	3.57	1.42	1.87	2.35	1.81	N/A

Note: Odds ratio is defined as (P/(1-P)), where P = probability of regularly use the social media platform. It can be converted into logit coefficient, i.e., B_i = log(odds ratio). The overall probability can calculated as sumproduct of logit coefficients (B_i) with the independent variables (X_i), i.e., P = exp(Y)/(1 + exp(Y)), where $Y = B_0 + B_1.X_1 + B_2.X_2 + B_3.X_3 + \ldots + B_n.X_n$.

4.4.1 Most Important Attributes of Facebook Users

From Figure 18, we can see the most important variables for predicting Facebook usage are:

- Whether the consumer regularly uses Messenger or WhatsApp.
- Age of the consumer (older consumers are more likely to use Facebook).
- The consumer's region (people in bigger cities/regions are less likely to use Facebook).
- Whether the consumer regularly does clothes shopping.

- Gender of the consumer (female consumers are more likely to use Facebook).
- Whether the consumer is a student (people in full-time education are less likely to use Facebook).

Figure 18
Most Important Variables in Predicting the Likelihood of Facebook User

Rank	Category	Variable	Importance Score (Standardized Beta)	Direction
1	Social Media	Messenger	1.47	Positive
2	Regular Activity	Social media	0.86	Positive
3	Demographic	age	0.65	Positive
4	Demographic	areaLondon or the South East	0.43	Negative
5	Demographic	areaEast or West Midlands	0.37	Negative
6	Demographic	areaYorkshire & Humberside	0.30	Negative
7	Demographic	statusRetired	0.29	Negative
8	Demographic	areaSouth West	0.28	Negative
9	Demographic	areaScotland	0.27	Negative
10	Regular Activity	Fashion, clothes shopping	0.25	Negative
11	Demographic	areaNorth East	0.25	Negative
12	Demographic	male	0.24	Negative
13	Demographic	areaNorth West	0.23	Negative
14	Demographic	statusFull-time education	0.23	Negative
15	Social Media	WhatsApp	0.20	Negative

Note: Importance based on Standardized Beta. A standardized beta shows the logit coefficient where all the predictor variables are uniformly scaled based on their standard deviation. For example, beta = 0.5 means a change of X by one standard deviation will change Y by 0.5 standard deviations.

4.4.2 Most Important Attributes of YouTube Users

From Figure 19, we can see the most important variables for predicting YouTube usage are:

- Whether the consumer regularly uses Tumblr, Messenger, Twitter, or Instagram.
- The consumer's region (people in bigger cities/regions are more likely to use YouTube).
- Gender of the consumer (male consumers are more likely to use YouTube).
- Whether the consumer regularly plays video games or is interested in computing, technology.
- Whether the consumer is interested in music, arts, entertainment, cinema, or film.

Figure 19
Most Important Variables in Predicting the Likelihood of YouTube User

Rank	Category	Variable	Importance Score (Standardized Beta)	Direction
1	Social Media	Tumblr	0.37	Positive
2	Demographic	areaLondon or the South East	0.36	Positive
3	Demographic	male	0.36	Positive
4	Demographic	areaEast or West Midlands	0.34	Positive
5	Social Media	Messenger	0.34	Positive
6	Regular Activity	Surf internet, play computer/video games	0.30	Positive
7	Social Media	WhatsApp	0.28	Positive
8	Social Media	Twitter	0.26	Positive
9	Interest	Music	0.24	Positive
10	Interest	Computing, technology	0.23	Positive
11	Interest	Arts	0.22	Positive
12	Demographic	areaNorth West	0.21	Positive
13	Demographic	areaSouth West	0.20	Positive
14	Interest	Entertainment, cinema, film	0.20	Positive
15	Social Media	Instagram	0.20	Positive

Note: Importance based on Standardized Beta. A standardized beta shows the logit coefficient where all the predictor variables are uniformly scaled based on their standard deviation. For example, beta = 0.5 means a change of X by one standard deviation will change Y by 0.5 standard deviations.

4.4.3 Most Important Attributes of WhatsApp Users

From Figure 20, we can see the most important variables for predicting WhatsApp usage are:

- Whether the consumer regularly uses Messenger, Instagram, Snapchat, or Facebook.
- Whether the consumer is working, either full-time or part-time.
- Whether the consumer is interested in Sitcoms, Reading, Celebrity Gossip, Fashion, or Nature programs.
- Gender of the consumer (female consumers are more likely to use).

Figure 20
Most Important Variables in Predicting the Likelihood of WhatsApp User

Rank	Category	Variable	Importance Score (Standardized Beta)	Direction
1	Social Media	Messenger	0.63	Positive
2	Demographic	statusFull-time	0.30	Positive
3	Social Media	YouTube	0.28	Positive
4	Social Media	Instagram	0.26	Positive
5	Social Media	SnapChat	0.24	Positive
6	Interest	Sitcoms	0.23	Negative
7	Demographic	statusPart-time	0.20	Positive
8	Regular Activity	Read books, magazines	0.18	Negative
9	Social Media	Facebook	0.18	Negative
10	Demographic	male	0.17	Negative
11	Interest	Celebrity gossip	0.16	Positive
12	Regular Activity	Cinema	0.15	Positive
13	Interest	Fashion	0.14	Negative
14	Demographic	areaSouth West	0.14	Negative
15	Interest	Nature programmes	0.13	Positive

Note: Importance based on Standardized Beta. A standardized beta shows the logit coefficient where all the predictor variables are uniformly scaled based on their standard deviation. For example, beta = 0.5 means a change of X by one standard deviation will change Y by 0.5 standard deviations.

4.4.4 Most Important Attributes of Twitter Users

From Figure 21, we can see the most important variables for predicting Twitter usage are:

- Whether the consumer regularly uses Instagram, YouTube, Tumblr, or Facebook.
- Whether the consumer is retired or enjoys spending time with family (retired or family-oriented people are less likely to use Twitter).
- The consumer's region (people in bigger cities/regions are less likely to use Twitter).
- Income level of the consumer (higher-income people are more likely to use Twitter).

Figure 21
Most Important Variables in Predicting the Likelihood of Twitter User

Rank	Category	Variable	Importance Score (Standardized Beta)	Direction
1	Social Media	Instagram	0.70	Positive
2	Demographic	statusRetired	0.36	Negative
3	Demographic	areaLondon or the South East	0.34	Negative
4	Demographic	statusPart-time	0.32	Negative
5	Demographic	areaEast or West Midlands	0.30	Negative
6	Demographic	areaYorkshire & Humberside	0.29	Negative
7	Social Media	YouTube	0.28	Positive
8	Demographic	areaSouth West	0.28	Negative
9	Demographic	areaNorth West	0.25	Negative
10	Demographic	areaWales	0.24	Negative
11	Social Media	Tumblr	0.22	Positive
12	Life Attitude	I enjoy spending time with my family	0.22	Negative
13	Demographic	areaScotland	0.21	Negative
14	Demographic	income	0.20	Positive
15	Social Media	Facebook	0.19	Positive

Note: Importance based on Standardized Beta. A standardized beta shows the logit coefficient where all the predictor variables are uniformly scaled based on their standard deviation. For example, beta = 0.5 means a change of X by one standard deviation will change Y by 0.5 standard deviations.

4.4.5 Most Important Attributes of Instagram Users

From Figure 22, we can see the most important variables for predicting Instagram usage are:

- Whether the consumer regularly uses Twitter, Snapchat, YouTube, WhatsApp, Messenger, Facebook, or YouTube.
- Age of the consumer (younger consumers are more likely to use).
- Whether the consumer is interested in photography or men's lifestyle (more likely to use).
- Whether the consumer likes to take risks or already retired (risk-takers and retirees are more likely to use Instagram).

Figure 22
Most Important Variables in Predicting the Likelihood of Instagram User

Rank	Category	Variable	Importance Score (Standardized Beta)	Direction
1	Social Media	Twitter	0.76	Positive
2	Social Media	SnapChat	0.66	Positive
3	Demographic	age	0.60	Negative
4	Regular Activity	Social media	0.43	Positive
5	Social Media	WhatsApp	0.34	Positive
6	Interest	Photography	0.34	Positive
7	Interest	Men's lifestyle	0.31	Positive
8	Social Media	Messenger	0.31	Positive
9	Life Attitude	I like taking risks	0.29	Positive
10	Social Media	Tumblr	0.26	Positive
11	Demographic	male	0.25	Negative
12	Social Media	Facebook	0.23	Positive
13	Demographic	statusRetired	0.23	Positive
14	Interest	Puzzle	0.21	Negative
15	Social Media	YouTube	0.20	Positive

Note: Importance based on Standardized Beta. A standardized beta shows the logit coefficient where all the predictor variables are uniformly scaled based on their standard deviation. For example, beta = 0.5 means a change of X by one standard deviation will change Y by 0.5 standard deviations.

4.4.6 Most Important Attributes of Snapchat Users

From Figure 23, we can see the most important variables for predicting Snapchat usage are:

- Age of the consumer (younger consumers are more likely to use).
- Whether the consumer regularly uses Instagram, WhatsApp, Messenger, and YouTube.
- Working status of the consumer, e.g., Retired, Part-Time, or Full-Time.
- The consumer's region (people in smaller regions are more likely to use).
- Whether the consumer is interested in reading, computing and technology, and TV and radio listing magazines.

Figure 23
Most Important Variables in Predicting the Likelihood of Snapchat User

Rank	Category	Variable	Importance Score (Standardized Beta)	Direction
1	Demographic	age	1.69	Negative
2	Social Media	Instagram	0.82	Positive
3	Demographic	statusRetired	0.58	Positive
4	Demographic	statusPart-time	0.52	Positive
5	Social Media	WhatsApp	0.50	Positive
6	Demographic	areaScotland	0.44	Positive
7	Demographic	areaThe East	0.43	Negative
8	Social Media	Messenger	0.42	Positive
9	Demographic	statusFull-time	0.39	Positive
10	Regular Activity	Read books, magazines	0.34	Negative
11	Interest	Computing, technology	0.31	Positive
12	Interest	Soaps	0.29	Positive
13	Demographic	areaNorth West	0.27	Positive
14	Social Media	YouTube	0.26	Positive
15	Interest	TV and radio listings magazines	0.23	Positive

Note: Importance based on Standardized Beta. A standardized beta shows the logit coefficient where all the predictor variables are uniformly scaled based on their standard deviation. For example, beta = 0.5 means a change of X by one standard deviation will change Y by 0.5 standard deviations.

4.4.7 Most Important Attributes of Tumblr Users

From Figure 24, we can see the most important variables for predicting Tumblr usage are:

- Whether the consumer regularly uses YouTube, Instagram, or Twitter.
- Region of the consumer (people in the Midlands, North, and Wales are more likely to use Tumblr).
- Whether the consumer is time-pressured (busy people are less likely to use).
- Whether the consumer is interested in puzzle (more likely to use).
- Whether the consumer likes to take risks or is interested in wildlife and pets (risk-takers and animal-lovers are less likely to use Tumblr).

Figure 24
Most Important Variables in Predicting the Likelihood of Tumblr User

Rank	Category	Variable	Importance Score (Standardized Beta)	Direction
1	Social Media	YouTube	1.35	Positive
2	Demographic	areaEast or West Midlands	1.31	Positive
3	Demographic	areaYorkshire & Humberside	1.18	Positive
4	Social Media	Instagram	0.96	Positive
5	Life Attitude	There are not enough hours in the day to do ever	0.83	Negative
6	Demographic	areaNorth East	0.78	Positive
7	Demographic	areaWales	0.78	Positive
8	Demographic	areaSouth West	0.77	Positive
9	Life Attitude	There is too much concern with the environment	0.73	Negative
10	Interest	Puzzle	0.71	Positive
11	Demographic	areaNorth West	0.66	Positive
12	Life Attitude	I like taking risks	0.65	Negative
13	Interest	Nature, Wildlife, Pets	0.65	Negative
14	Social Media	Twitter	0.62	Positive
15	Demographic	areaLondon or the South East	0.61	Positive

Note: Importance based on Standardized Beta. A standardized beta shows the logit coefficient where all the predictor variables are uniformly scaled based on their standard deviation. For example, beta = 0.5 means a change of X by one standard deviation will change Y by 0.5 standard deviations.

4.4.8 Most Important Attributes of Messenger Users

Fro Figure 25, we can see the most important variables for predicting Messenger usage are:

- Whether the consumer regularly uses Facebook, WhatsApp, YouTube, Instagram, Snapchat, or Twitter.
- Income level of the consumer (higher-income people are less likely to use Messenger).
- Whether the consumer have children or believe that children should be allowed to express themselves freely.
- Region of the consumer (people in South West, Yorkshire, or North East are more likely to use Messenger).
- Whether the consumer is interested in entertainment, cinema, film or food/cookery (more likely to use).

Figure 25
Most Important Variables in Predicting the Likelihood of Messenger User

Rank	Category	Variable	Importance Score (Standardized Beta)	Direction
1	Social Media	Facebook	1.37	Positive
2	Social Media	WhatsApp	0.67	Positive
3	Social Media	YouTube	0.36	Positive
4	Regular Activity	Social media	0.34	Positive
5	Demographic	income	0.29	Negative
6	Social Media	Instagram	0.28	Positive
7	Social Media	SnapChat	0.24	Positive
8	Demographic	areaSouth West	0.23	Positive
9	Life Attitude	Children should be allowed to express themselve	0.22	Positive
10	Demographic	areaYorkshire & Humberside	0.22	Positive
11	Demographic	child	0.21	Positive
12	Interest	Entertainment, cinema, film	0.21	Positive
13	Interest	Food/ Cookery	0.20	Positive
14	Social Media	Twitter	0.19	Positive
15	Demographic	areaNorth East	0.18	Positive

Note: Importance based on Standardized Beta. A standardized beta shows the logit coefficient where all the predictor variables are uniformly scaled based on their

standard deviation. For example, beta = 0.5 means a change of X by one standard deviation will change Y by 0.5 standard deviations.

4.5 Summary of Findings

In this section, the profiles of UK social media users are resented. We started with the demographic profile (4.2 The Demographic Profiles of UK Social Media Users), before moving into the behavioral profile (4.3. The Behavioral Profiles of UK Social Media Users) and identifying the most important attributes of the social media platform users (4.4 The Odds of Adopting a Social Media Platform). Later, a generic strategy based on the profiles would be discussed in Chapter V: DISCUSSION.

CHAPTER V:

DISCUSSION

5.1 Discussion of Results

From the results presented in Chapter IV: RESULTS, we can draw several practical implications for B2C firms who are targeting UK consumers:

- **Key Finding:** 87% of UK adults regularly use social media.
    - **Main Implication:** B2C firms targetting UK consumers cannot ignore social media as the medium to reach their target customers.
- **Key Finding:** 70% of UK adults regularly use Facebook. In fact, Facebook is the most popular social media in the UK, followed by YouTube (the second most popular social media), which is used by 45% of UK adults.
    - **Main Implication:** If a B2C firm does not know which social media it should leverage to engage its target customers, it cannot go wrong with Facebook.
- **Key Finding:** 64% of UK adults regularly use multiple social media platforms. This means that three-quarters of UK social media users are not exclusive to a single platform.
    - **Main Implications: 1)** B2C firms can engage their target customers across multiple social media platforms to deepen the interaction and relationship built; **2)** At the same time, B2C firms

can also opt to focus on certain platforms only, without worrying whether or not they will be able to reach the customers.

- **Key Finding:** Certain social media platforms are commonly used together. We found that these three social media platforms tend to be regularly used together with other social media platforms: Instagram, Messenger, and YouTube.
    - **Main Implication:** UK B2C firms can limit the number of social media platforms they target by leveraging Instagram, Messenger, and YouTube.
- **Key Finding:** Particular demographic and behavioral attributes can explain which social media platforms are likely to be regularly used by a specific UK consumer, e.g., Snapchat is skewed toward younger adults (Figure 2); YouTube is popular for consumers who are interested in music (Figure 15); Instagram has many users who regularly go to the gym (see Figure 17).
    - **Main Implication:** By considering their target customers' demographic and behavioral attributes, UK B2C firms can identify which social media platform they should invest in more.

Based on these implications, we can develop several generic strategies regarding social media for UK B2C firms. We will discuss this on 5.3 Discussion of Research Question Two. But before that, we would like to summarize the different profiles of social media users in the UK.

5.2 Discussion of Research Question One

What are the profiles of UK social media users? In essence, different social media platforms have different profiles of users. Therefore, UK B2C firms need to consider these profiles when selecting which social media platform to target. Table 20 summarizes these profiles.

Table 20
Key Profiles UK's Social Media Platform Users

Platform	Key Profiles
Facebook	• They regularly use Messenger or WhatsApp. • They are relatively older consumers but not yet retired nor in full-time education. • Although there are many male users, females are more likely to use Facebook. • They do not regularly go fashion/clothes shopping or dancing/clubbing. • If they are in Northern Ireland, they are more likely to use Facebook.
YouTube	• They regularly use Tumblr, Messenger, Twitter, or Instagram. • They are concentrated in London/South East, The East, and Wales. • Although there are many female users, males are more likely to use Facebook. • They regularly play video games or is interested in computing and technology. • They are interested in music, arts, entertainment, cinema, or film.

Platform	Key Profiles
WhatsApp	• They regularly use Messenger, Instagram, Snapchat, or Facebook. • They are working, either full-time or part-time. • They are not interested in Sitcoms, Reading, Fashion, or Nature programs – but are interested in Celebrity Gossip and Cinema. • Although there are many male users, females are more likely to use WhatsApp.
Twitter	• They regularly use Instagram, YouTube, Tumblr, or Facebook. • They are not retired or family-oriented. • They have relatively higher incomes. • If they are in Northern Ireland, they are more likely to use Twitter.
Instagram	• They regularly use Twitter, Snapchat, YouTube, WhatsApp, Messenger, Facebook, or YouTube. • They are relatively younger consumers. • They are interested in Photography or Men's lifestyle. • They like to take risks. • If they are already retired, they are more likely to use Instagram.
Snapchat	• They are relatively younger consumers. • They regularly use Instagram, WhatsApp, Messenger, and YouTube. • They usually have these working statuses: Retired, Part-Time, or Full-Time. • If they are located in Wales, North West, and Scotland, they are more likely to be a Snapchat user. • They are interested in reading, computing and technology, and TV and radio listing magazines.

Platform	Key Profiles
Tumblr	• They regularly use YouTube, Instagram, or Twitter. • If they are located in Midlands, North, and Wales, they are more likely to be users. • They are not time-pressured/busy. And they are risk-averse. • They are not interested in Nature, Wildlife, and Pets. They are interested in puzzles.
Messenger	• They regularly use Facebook, WhatsApp, YouTube, Instagram, Snapchat, or Twitter. • They have relatively higher incomes. • They have children and believe that children should be allowed to express themselves freely. • If they are located in South West, Yorkshire, and North East, they are more likely to be users. • They are interested in entertainment, cinema, film, or food/cookery.

5.3 Discussion of Research Question Two

Based on these profiles of UK social media users, what generic social media strategies that B2C companies can adopt to engage their customers effectively? Based on the discussions in 4.4 The Odds of Adopting a Social Media Platform and 5.2 Discussion of Research Question One, we can outline the following generic strategies for B2C UK firms (as illustrated by Figure 26):

1. If a Firm has limited marketing resources and limited knowledge of its target customers, then the Firm should focus on Facebook only. This is

because Facebook is the most popular social media in the UK, used by 70% of UK adults regularly. If a B2C firm does not know which social media it should leverage to engage its target customers, it cannot go wrong with Facebook. We can call this strategy the **Facebook Strategy**.

2. If a Firm has more extensive marketing resources but limited knowledge of its target customers, then the Firm should leverage Instagram, YouTube, and Messenger (in addition to Facebook). This is because we found that these three social media platforms tend to be regularly used together with other social media platforms. We can call this strategy the **Top Basket Strategy**.
3. If a Firm has limited marketing resources but deep knowledge of its target customers, then the Firm should focus on a single platform with the highest adoption odds for its target customers. This is because particular demographic and behavioral attributes can explain which social media platforms are likely to be regularly used by a specific UK consumer. Table 19 provides the detailed odds ratio. We can call this strategy the ***Best* Platform Basket Strategy**.
4. If a Firm has more extensive marketing resources and deep knowledge of its target customers, then the Firm should be on 2-3 platforms with the highest adoption odds for its target customers. This is because: i) three-quarters of UK social media users are not exclusive to a single platform; and ii) by considering its target customers' demographic and behavioral attributes, a firm can better identify which social media platforms are

regularly used by their customers. Table 19 provides the detailed odds ratio. We can call this strategy the **Targeted Basket Strategy**.

Figure 26
Generic Social Media Strategies for UK B2C Firms

If…	**…the Firm has limited marketing resources**	**…the Firm has more extensive marketing resources**
…the Firm has limited knowledge of its target customers	**Facebook Strategy:** The Firm should focus on Facebook only.	**Top-Basket Strategy:** The Firm should leverage Facebook, Instagram, YouTube, and Messenger.
…the Firm has deep knowledge of its target customers	**Best Platform Strategy:** The Firm should focus on a single platform with the highest adoption odds for its target customers.	**Targeted-Basket Strategy:** The Firm should be on 2-3 platforms with the highest adoption odds for its target customers.

Let us consider an illustrative example of how to use these generic strategies. Assume that John is an owner of a start-up that sells fashionable childrenswear. John knows that his target customers have the following characteristics (but he does not know the target customers' other characteristics beyond the characteristics mentioned below):

1. They have children.
2. They are interested in fashion.
3. They live in London.

4. They regularly do fashion and clothes shopping.
5. They enjoy owning good quality things.
6. They are active in social media.

John wants to use social media marketing to engage more prospective customers and grow his business. However, he has a limited marketing budget and does not have much time to run many marketing campaigns. So, what is the best strategy for John? Since John has some knowledge of his target customers and a limited resources, based on Figure 26, we can recommend that John adopt the Best Platform Strategy.

But which social media platform is the best for John? Table 19 can help in this regard. From the table, we can get the odds of adopting the platforms for each known attribute of the target customers. To get the overall odds, we can simply multiply these odds to obtain the total product – this gives John the best platform. Table 21 provides the illustrative calculation. As we can see, the best odds for John to engage his target customers are on Instagram (total odds ratio of 4.44, assuming all other unknown attributes ceteris paribus).

If he has more resources later, John should also consider YouTube (with a total odds of 3.21). He should avoid investing resources in Twitter, WhatsApp, or Tumblr. From the table, we also see the benefit of knowing some attributes of your customers. For example, the total odds of Instagram is 4.44 versus Facebook's total odds of 1.80. We can therefore say, in this case, the Best Platform Strategy has 4.44/1.80 = 2.46 times better odds versus the Facebook Strategy.

As we can see from this illustrative example, the generic strategies are helpful for UK B2C firms – even when they do not have complete data on their target customers. For the bigger B2C firms that have access to Kantar's consumer database, they can create deeper customer profiles and use Table 19 to calculate the more accurate odds to improve their social media marketing performance.

Table 21
Illustrative Example of Estimating the Best Platform

Row	Category	Variable	Face book	You Tube	Whats App	Twitter	Insta gram	Snap chat	Tumblr	Mess enger
1	Demographic	child	1.25	0.76	1.18	0.85	1.07	0.86	1.37	1.61
2	Interest	Fashion	1.20	0.97	0.66	0.98	1.31	1.20	3.47	0.73
3	Demographic	areaLondon or the South East	0.37	2.35	1.05	0.46	1.32	1.71	4.16	1.37
4	Regular Activity	Fashion, clothes shopping	0.53	1.16	1.08	0.93	1.03	1.16	0.25	0.96
5	Life Attitude	I enjoy owning good quality things	1.05	1.11	1.02	1.01	0.97	0.96	0.94	0.91
6	Regular Activity	Social media	5.84	1.44	0.91	1.28	2.40	1.19	0.33	2.00
Overall Odds (I.e., the total product of rows 1-6)			**1.80**	**3.21**	**0.82**	**0.46**	**4.44**	**2.34**	**1.53**	**2.81**

CHAPTER VI:

SUMMARY, IMPLICATIONS, AND RECOMMENDATIONS

6.1 Summary

The author believes that any social media strategy's starting point should be the same as the traditional strategy, i.e., understanding the customers. Yet, too many companies are still approaching the social media strategy without understanding the customers.

Furthermore, there is limited research on the profile of social media users, which the companies could leverage on. There is much literature dedicated to the importance of social media for business and how companies can benefit from adopting social media as a tool to engage target customers. However, there are some practical implementation questions not yet addressed in current literature, namely:

- Which social media platform to focus on in the UK?
- Which UK customers use which social media?
- What generic social media strategies can the UK companies adopt?

To the best of the author's knowledge, there is no specific research on the UK's social media users nor a set of generic social media strategies that a UK-oriented B2C company can quickly adapt. Therefore, there is a need to understand the UK's social media users better to develop an effective social media strategy.

This is exactly what this research project has addressed. This research project provides an overview of profiles of the UK's social media users (see 5.2 Discussion of Research Question One). In addition, it proposes a generic social media strategy based on consumer profiling (see 5.3 Discussion of Research Question Two). As a result, this

research can help many B2C companies in the UK develop an effective social media strategy based on a solid understanding of the consumers.

6.2 Implications

The implications of this study are described below.

6.2.1 Theoretical Implications

The research is essentially an application of the extant academic view to address the practical problems faced by the UK B2C firms:

- Understanding the customers should be the main emphasis of companies' strategy in the era of social media – given that firms now can gather customers' data easier from customers' social media usage. This view is of the Outside-In Strategy school.
- Customers' demographic profile (e.g., Gender, Age, Income, Size of Household, Area of Residency, Working Status, Child Status) and behavioral profile (e.g., Life Attitude, Interest followed, and Regular Activity/Hobby) influence which social media platform that the UK consumers regularly use.

6.2.2 Methodological Implications

There are two main tools used in this project, i.e.,

- Descriptive Analysis, summarizing the demographic and behavioral profiles of the UK social media users. This tool is mainly used in 4.2 The

Demographic Profiles of UK Social Media Users and 4.3. The Behavioral Profiles of UK Social Media Users.

- Binomial Logistic Regression, exploring the most important attributes driving the social media platform adoption in the UK. This tool is mainly used in 4.4 The Odds of Adopting a Social Media Platform.

At the same time, this research demonstrates how advanced statistical modeling can generate a simple and easy-to-follow guide for B2C firms as well as derive a set of generic strategies.

6.2.3 Practical Implications

The novelty of this research is two-fold. First, it provides a detailed view of how specific customers' attributes (e.g., his/her interest, hobby, age, etc.) increase the odds of him/her adopting various social media platforms. This will provide a guide for B2C firms in selecting which social media platform to target in the UK. Furthermore, this guide considers the customers' life attitudes, interests, and regular activities/hobbies, which is not available elsewhere to my best knowledge.

Second, it provides a set of generic social media strategies that B2C firms can adopt – depending on their marketing resources and their understanding of their target customers. These strategies will be very useful, especially for the smaller firms which do not have the resources to conduct thorough market research.

6.3 Recommendations for Future Research

With reference to the previous section about the limitation of the study, several further pieces of research can be considered:

- **Probabilistic Sampling:** This research was based on quota sampling, not a random sampling, with the respondents are recruited via the online panel method. Therefore, it may not represent the population. Future research may want to consider probabilistic sampling and beyond online panels in order to obtain more generalized and robust results.
- **Machine Learning Modeling:** The balanced accuracy of the models in this study ranged between 72 and 91%. If the main objective is not explanatory, but achieving the highest predictive power, then a further study should consider various modern machine learning models, including their ensembles of them.
- **Other countries:** This study is focused on UK consumers. The findings may not be relevant for other countries. Future studies can explore other countries.
- **More social media platforms:** This study focused on UK's most popular social media platforms only. Future studies may be interested in smaller, less popular, niche platforms.
- **Study on how to best engage the customers:** Due to data availability, this study does not explore how to engage the customers best. Future studies may want to explore this as, from the practical business point of view, the benefits are tremendous.

6.4 Conclusion

The result of this research is valuable for B2C companies in developing more effective social media strategies – even when they do not have the resources to conduct detailed consumer research or an in-depth understanding of the concept of social media strategy.

APPENDIX A

SURVEY QUESTIONNAIRE

The questionnaire used in the survey is shown in the tables below.

A.1 Demographic Questions

Table 22
Gender Question

Thanks for clicking through to our survey, which we hope you will find interesting. First of all, some questions about you. Are you...				Single
18	QUESTION	a_i		1 to 3
		1	Male	
		2	Female	
		3	Other	

Table 23
Age Question

How old are you?				Single
19	QUESTION	a_j		1 to 6
		1	16 - 24	
		2	25 - 34	
		3	35 - 44	
		4	45 - 54	
		5	55 - 64	
		6	65+	

Table 24
Income Question

What is your annual household income?				Single
2054	QUESTION	a_1rh		1 to 11
		1	Under £10,000	
		2	£10,000 - £14,999	
		3	£15,000 - £19,999	
		4	£20,000 - £24,999	
		5	£25,000 - £29,999	
		6	£30,000 - £39,999	
		7	£40,001 - £49,999	

What is your annual household income?		Single
8	£50,000 - £59,999	
9	£60,000 - £69,999	
10	£70,000 or more	
11	Not sure/ Prefer not to say	

Table 25
Working Status Question

Which of these best describes your working status?			Single
2055	QUESTION a_1ri		1 to 6
1	Full-time		
2	Part-time		
3	Unemployed and looking for work		
4	Full-time education		
5	Retired		
6	Not seeking employment		

Table 26
Location Question

Where in the UK do you live?		Single
2056	QUESTION a_1rj	1 to 10
1	London or the South East	
2	South West	
3	The East (Norfolk, Suffolk, Cambridgeshire)	
4	Wales	
5	East or West Midlands	
6	Yorkshire & Humberside	
7	North West	
8	North East	
9	Scotland	
10	Northern Ireland	

Table 27
Child Status Question

Do you have child(ren) under 16 years old?			Single
2062	QUESTION ChildStatus		0 to 1
1	Have children		
0	Don’t have children		

A.2 Attitudes to Life Questions

Table 28
Attitude Question

To what extent do you agree...				Matrix
154	QUESTION	a_4g	**I am very happy with my life as it is**	1 to 5
		1	Strongly agree	
		2	Agree	
		3	Neither	
		4	Disagree	
		5	Strongly disagree	
		a_4h	**I enjoy life and don't worry about the future**	1 to 5
		1	Strongly agree	
		2	Agree	
		3	Neither	
		4	Disagree	
		5	Strongly disagree	
		a_4i	**I am often searching for moments to slow down and recharge**	1 to 5
		1	Strongly agree	
		2	Agree	
		3	Neither	
		4	Disagree	
		5	Strongly disagree	
		a_4j	**I try not to take life too seriously, and I just go with the flow**	1 to 5
		1	Strongly agree	
		2	Agree	
		3	Neither	
		4	Disagree	
		5	Strongly disagree	
		a_4k	**Children should be allowed to express themselves freely**	1 to 5
		1	Strongly agree	
		2	Agree	
		3	Neither	
		4	Disagree	
		5	Strongly disagree	
		a_4l	**I enjoy spending time with my family**	1 to 5
		1	Strongly agree	
		2	Agree	
		3	Neither	

To what extent do you agree...		Matrix
4	Disagree	
5	Strongly disagree	
a_4m	**I find it difficult to say no to my kids**	1 to 5
1	Strongly agree	
2	Agree	
3	Neither	
4	Disagree	
5	Strongly disagree	
a_4n	**My family is more important than my career**	1 to 5
1	Strongly agree	
2	Agree	
3	Neither	
4	Disagree	
5	Strongly disagree	
a_4o	**I keep careful control on what my children eat**	1 to 5
1	Strongly agree	
2	Agree	
3	Neither	
4	Disagree	
5	Strongly disagree	
a_4p	**I like taking risks**	1 to 5
1	Strongly agree	
2	Agree	
3	Neither	
4	Disagree	
5	Strongly disagree	
a_4q	**I think of myself as a confident person**	1 to 5
1	Strongly agree	
2	Agree	
3	Neither	
4	Disagree	
5	Strongly disagree	
a_4r	**I worry a lot about myself**	1 to 5
1	Strongly agree	
2	Agree	
3	Neither	
4	Disagree	
5	Strongly disagree	
a_4s	**It's important to me to feel part of a group**	1 to 5
1	Strongly agree	
2	Agree	
3	Neither	

To what extent do you agree...		Matrix
4	Disagree	
5	Strongly disagree	
a_4t	**My life revolves around my social life**	1 to 5
1	Strongly agree	
2	Agree	
3	Neither	
4	Disagree	
5	Strongly disagree	
a_4u	**My friends are important to me**	1 to 5
1	Strongly agree	
2	Agree	
3	Neither	
4	Disagree	
5	Strongly disagree	
a_4v	**I'm very ambitious and always striving to be better**	1 to 5
1	Strongly agree	
2	Agree	
3	Neither	
4	Disagree	
5	Strongly disagree	
a_4w	**I am a sensible down-to-earth person**	1 to 5
1	Strongly agree	
2	Agree	
3	Neither	
4	Disagree	
5	Strongly disagree	
a_4x	**I never seem to have enough money**	1 to 5
1	Strongly agree	
2	Agree	
3	Neither	
4	Disagree	
5	Strongly disagree	
a_4y	**I enjoy owning good quality things**	1 to 5
1	Strongly agree	
2	Agree	
3	Neither	
4	Disagree	
5	Strongly disagree	
a_4z	**There are not enough hours in the day to do everything**	1 to 5
1	Strongly agree	
2	Agree	

To what extent do you agree...		Matrix
3	Neither	
4	Disagree	
5	Strongly disagree	
a_50	**I am prepared to make lifestyle compromises to benefit the environment**	1 to 5
1	Strongly agree	
2	Agree	
3	Neither	
4	Disagree	
5	Strongly disagree	
a_51	**There is too much concern with the environment**	1 to 5
1	Strongly agree	
2	Agree	
3	Neither	
4	Disagree	
5	Strongly disagree	

Note: During the analysis, I reversed the scoring so that they are easier to be interpreted, i.e., scores of 1 becomes Strongly Disagree, 2 Disagree, 3 Neither, 4 Agree, and 5 Strongly Agree.

A.3 Interest Questions

Table 29
Interest Question

Which of these topics do you regularly look up or read about in magazines and websites, or watch on TV? Select all that apply				Single
1990	QUESTION	a_1pp		0 to 1
		1	Antiques	1 to 1
1991	QUESTION	a_1pq		0 to 1
		1	Arts	1 to 1
1992	QUESTION	a_1pr		0 to 1
		1	Business	1 to 1
1993	QUESTION	a_1ps		0 to 1
		1	Celebrity gossip	1 to 1
1994	QUESTION	a_1pt		0 to 1
		1	Computing, technology	1 to 1
1995	QUESTION	a_1pu		0 to 1
		1	Craft	1 to 1
1996	QUESTION	a_1pv		0 to 1

Which of these topics do you regularly look up or read about in magazines and websites, or watch on TV? Select all that apply				Single
		1	Drama (TV, books etc)	1 to 1
1997	QUESTION	a_1pw		0 to 1
		1	Entertainment, cinema, film	1 to 1
1998	QUESTION	a_1px		0 to 1
		1	Fashion	1 to 1
1999	QUESTION	a_1py		0 to 1
		1	Food/ Cookery	1 to 1
2000	QUESTION	a_1pz		0 to 1
		1	Gardening	1 to 1
2001	QUESTION	a_1q0		0 to 1
		1	Health and Fitness	1 to 1
2002	QUESTION	a_1q1		0 to 1
		1	Home Interest	1 to 1
2003	QUESTION	a_1q2		0 to 1
		1	Legal/police drama/programmes	1 to 1
2004	QUESTION	a_1q3		0 to 1
		1	Makeover programmes	1 to 1
2005	QUESTION	a_1q4		0 to 1
		1	Medical drama/programmes	1 to 1
2006	QUESTION	a_1q5		0 to 1
		1	Men's lifestyle	1 to 1
2007	QUESTION	a_1q6		0 to 1
		1	Motoring	1 to 1
2008	QUESTION	a_1q7		0 to 1
		1	Music	1 to 1
2009	QUESTION	a_1q8		0 to 1
		1	Nature, Wildlife, Pets	1 to 1
2010	QUESTION	a_1q9		0 to 1
		1	Nature programmes	1 to 1
2011	QUESTION	a_1qa		0 to 1
		1	News, current affairs	1 to 1
2012	QUESTION	a_1qb		0 to 1
		1	Photography	1 to 1
2013	QUESTION	a_1qc		0 to 1
		1	Puzzle	1 to 1
2014	QUESTION	a_1qd		0 to 1
		1	Reality TV	1 to 1
2015	QUESTION	a_1qe		0 to 1
		1	Sitcoms	1 to 1
2016	QUESTION	a_1qf		0 to 1
		1	Soaps	1 to 1

Which of these topics do you regularly look up or read about in magazines and websites, or watch on TV? Select all that apply				Single
2017	QUESTION	a_1qg		0 to 1
		1	Sports	1 to 1
2018	QUESTION	a_1qh		0 to 1
		1	Travel/ Holiday	1 to 1
2019	QUESTION	a_1qi		0 to 1
		1	TV and radio listings magazines	1 to 1
2020	QUESTION	a_1qj		0 to 1
		1	Women's interest	1 to 1
2021	QUESTION	a_1qk		0 to 1
		1	None of these	1 to 1

A.4 Regular Activities Questions

Table 30
Activity Question

Which of these activities do you regularly take part in? Select all that apply				Single
2022	QUESTION	a_1ql		0 to 1
		1	Cinema	1 to 1
2023	QUESTION	a_1qm		0 to 1
		1	Cycling	1 to 1
2024	QUESTION	a_1qn		0 to 1
		1	Dance, clubbing	1 to 1
2025	QUESTION	a_1qo		0 to 1
		1	Do a hobby, play an instrument	1 to 1
2026	QUESTION	a_1qp		0 to 1
		1	Fashion, clothes shopping	1 to 1
2027	QUESTION	a_1qq		0 to 1
		1	Family days out	1 to 1
2028	QUESTION	a_1qr		0 to 1
		1	Festivals, gigs, concerts	1 to 1
2029	QUESTION	a_1qs		0 to 1
		1	Gym	1 to 1
2030	QUESTION	a_1qt		0 to 1
		1	Hiking, walking, climbing	1 to 1
2031	QUESTION	a_1qu		0 to 1
		1	Mindfulness, meditation, yoga	1 to 1
2032	QUESTION	a_1qv		0 to 1
		1	Read books, magazines	1 to 1

Which of these activities do you regularly take part in? Select all that apply				Single
2033	QUESTION	a_1qw		0 to 1
		1	Rowing, sailing, water sports	1 to 1
2034	QUESTION	a_1qx		0 to 1
		1	Running, jogging, athletics	1 to 1
2035	QUESTION	a_1qy		0 to 1
		1	Sponsored events, voluntary work	1 to 1
2036	QUESTION	a_1qz		0 to 1
		1	Surf internet, play computer or video games	1 to 1
2037	QUESTION	a_1r0		0 to 1
		1	Swimming	1 to 1
2038	QUESTION	a_1r1		0 to 1
		1	Team sports (Football, hockey, rugby)	1 to 1
2039	QUESTION	a_1r2		0 to 1
		1	Watch TV	1 to 1
2040	QUESTION	a_1r3		0 to 1
		1	Social media	1 to 1
2041	QUESTION	a_1r4		0 to 1
		1	None of these	1 to 1

A.5 Social Media Usage Questions

Table 31
Social Media Question

Which social media platforms do you use regularly nowadays? - Selected Choice				Single
2043	QUESTION	a_1r6		0 to 1
		1	Facebook	1 to 1
2044	QUESTION	a_1r7		0 to 1
		1	YouTube	1 to 1
2045	QUESTION	a_1r8		0 to 1
		1	WhatsApp	1 to 1
2046	QUESTION	a_1r9		0 to 1
		1	Twitter	1 to 1
2047	QUESTION	a_1ra		0 to 1
		1	Instagram	1 to 1
2048	QUESTION	a_1rb		0 to 1
		1	Snapchat	1 to 1
2049	QUESTION	a_1rc		0 to 1
		1	Tumblr	1 to 1
2050	QUESTION	a_1rd		0 to 1

Which social media platforms do you use regularly nowadays? - Selected Choice				Single
		1	Messenger	1 to 1
2051	QUESTION	a_1re		0 to 1
		1	Other (SPECIFY)	1 to 1
2052	QUESTION	a_1rf		0 to 1
		1	None – I don’t use social media	1 to 1
Which social media platforms do you use regularly nowadays? - Other (SPECIFY) - Text				Open
2053	QUESTION	Q198_9_TEXT	open-ended verbatim	

APPENDIX B

R SCRIPT FOR LOGISTIC REGRESSION MODELING

```
#############################################################
### Social Media Platform Usage Exploration Model          ###
### Purpose: Exploring the drivers of adoption             ###
### Project: SSBM DBA Thesis - Marvilano M                 ###
### Model: Binomial Log(Odd) Logistic Regression           ###
### First created by Marvilano M on 03-03-2022             ###
### Last updated by Marvilano M on 31-03-2022              ###
#############################################################


### Import Data to R ###
library(readr)
Data <- read_csv("C:/Users/Lenovo User/Desktop/Data.csv",
            col_types = cols(male = col_integer(),
                             age = col_integer(),
                             household = col_integer(),
                             status = col_factor(levels = c(
                                      "Unemployed and looking for work",
                                      "Full-time",
                                      "Full-time education",
                                      "Not seeking employment",
                                      "Part-time",
                                      "Retired"
                                      )),
                             area = col_factor(levels = c(
                                      "Northern Ireland",
                                      "London or the South East",
                                      "South West",
                                      "The East (Norfolk, Suffolk, Cambridgeshire)",
                                      "Wales",
                                      "East or West Midlands",
                                      "Yorkshire & Humberside",
                                      "North West",
                                      "North East",
                                      "Scotland"
                                      )),
                             child = col_integer()
                             ))

View(Data)


### Rescale the Income Variables ###
Data$income <- Data$income/1000
```

```
### To handle the imbalance problem with penalty weight ###
WFB <- ifelse(Data$Facebook  == 1, (50/100 * 1/sum(Data$Facebook )), (50/100 * 1/(2971 -
sum(Data$Facebook ))))
WYT <- ifelse(Data$YouTube   == 1, (50/100 * 1/sum(Data$YouTube  )), (50/100 * 1/(2971 -
sum(Data$YouTube  ))))
WWA <- ifelse(Data$WhatsApp  == 1, (50/100 * 1/sum(Data$WhatsApp )), (50/100 * 1/(2971 -
sum(Data$WhatsApp ))))
WMS <- ifelse(Data$Messenger == 1, (50/100 * 1/sum(Data$Messenger)), (50/100 * 1/(2971 -
sum(Data$Messenger))))
WIG <- ifelse(Data$Instagram == 1, (50/100 * 1/sum(Data$Instagram)), (50/100 * 1/(2971 -
sum(Data$Instagram))))
WTW <- ifelse(Data$Twitter   == 1, (50/100 * 1/sum(Data$Twitter  )), (50/100 * 1/(2971 -
sum(Data$Twitter  ))))
WSC <- ifelse(Data$SnapChat  == 1, (50/100 * 1/sum(Data$SnapChat )), (50/100 * 1/(2971 -
sum(Data$SnapChat ))))
WTB <- ifelse(Data$Tumblr    == 1, (50/100 * 1/sum(Data$Tumblr   )), (50/100 * 1/(2971 -
sum(Data$Tumblr   ))))


### Build Logistic Regression Models ###
FB <- glm(Facebook ~ A1 + A2 + A3 + A4 + A5 + A6 + A8 + A10 + A11 +
            A12 + A13 + A14 + A15 + A16 + A17 + A18 + A19 + A20 + A21 + A22 +
            I1 + I2 + I3 + I4 + I5 + I6 + I7 + I8 + I9 + I10 + I11 + I12 +
            I13 + I14 + I15 + I16 + I17 + I18 + I19 + I20 + I21 + I22 + I23 +
            I24 + I25 + I26 + I27 + I28 + I29 + I30 + I31 + I32 +
            H1 + H2 + H3 + H4 + H5 + H6 + H7 + H8 + H9 + H10 + H11 + H12 +
            H13 + H14 + H15 + H16 + H17 + H18 + H19 + H20 +
            male + age + household + income + child + status + area
            + YouTube + WhatsApp + Twitter + Instagram + SnapChat + Tumblr + Messenger,
          family = "binomial", data=Data, weights = WFB)


YT <- glm(YouTube ~ A1 + A2 + A3 + A4 + A5 + A6 + A8 + A10 + A11 +
            A12 + A13 + A14 + A15 + A16 + A17 + A18 + A19 + A20 + A21 + A22 +
            I1 + I2 + I3 + I4 + I5 + I6 + I7 + I8 + I9 + I10 + I11 + I12 +
            I13 + I14 + I15 + I16 + I17 + I18 + I19 + I20 + I21 + I22 + I23 +
            I24 + I25 + I26 + I27 + I28 + I29 + I30 + I31 + I32 +
            H1 + H2 + H3 + H4 + H5 + H6 + H7 + H8 + H9 + H10 + H11 + H12 +
            H13 + H14 + H15 + H16 + H17 + H18 + H19 + H20 +
            male + age + household + income + child + status + area
           + Facebook + WhatsApp + Twitter + Instagram + SnapChat + Tumblr + Messenger,
         family = "binomial", data=Data, weights = WYT)

WA <- glm(WhatsApp ~ A1 + A2 + A3 + A4 + A5 + A6 + A8 + A10 + A11 +
            A12 + A13 + A14 + A15 + A16 + A17 + A18 + A19 + A20 + A21 + A22 +
            I1 + I2 + I3 + I4 + I5 + I6 + I7 + I8 + I9 + I10 + I11 + I12 +
            I13 + I14 + I15 + I16 + I17 + I18 + I19 + I20 + I21 + I22 + I23 +
            I24 + I25 + I26 + I27 + I28 + I29 + I30 + I31 + I32 +
            H1 + H2 + H3 + H4 + H5 + H6 + H7 + H8 + H9 + H10 + H11 + H12 +
            H13 + H14 + H15 + H16 + H17 + H18 + H19 + H20 +
            male + age + household + income + child + status + area
```

```
  + YouTube + Facebook + Twitter + Instagram + SnapChat + Tumblr + Messenger,
 family = "binomial", data=Data, weights = WWA)


TW <- glm(Twitter ~ A1 + A2 + A3 + A4 + A5 + A6 + A8 + A10 + A11 +
           A12 + A13 + A14 + A15 + A16 + A17 + A18 + A19 + A20 + A21 + A22 +
           I1 + I2 + I3 + I4 + I5 + I6 + I7 + I8 + I9 + I10 + I11 + I12 +
           I13 + I14 + I15 + I16 + I17 + I18 + I19 + I20 + I21 + I22 + I23 +
           I24 + I25 + I26 + I27 + I28 + I29 + I30 + I31 + I32 +
           H1 + H2 + H3 + H4 + H5 + H6 + H7 + H8 + H9 + H10 + H11 + H12 +
           H13 + H14 + H15 + H16 + H17 + H18 + H19 + H20 +
           male + age + household + income + child + status + area
           + YouTube + WhatsApp + Facebook + Instagram + SnapChat + Tumblr + Messenger,
         family = "binomial", data=Data, weights = WTW)


IG <- glm(Instagram ~ A1 + A2 + A3 + A4 + A5 + A6 + A8 + A10 + A11 +
           A12 + A13 + A14 + A15 + A16 + A17 + A18 + A19 + A20 + A21 + A22 +
           I1 + I2 + I3 + I4 + I5 + I6 + I7 + I8 + I9 + I10 + I11 + I12 +
           I13 + I14 + I15 + I16 + I17 + I18 + I19 + I20 + I21 + I22 + I23 +
           I24 + I25 + I26 + I27 + I28 + I29 + I30 + I31 + I32 +
           H1 + H2 + H3 + H4 + H5 + H6 + H7 + H8 + H9 + H10 + H11 + H12 +
           H13 + H14 + H15 + H16 + H17 + H18 + H19 + H20 +
           male + age + household + income + child + status + area
          + YouTube + WhatsApp + Twitter + Facebook + SnapChat + Tumblr + Messenger,
         family = "binomial", data=Data, weights = WIG)


SC <- glm(SnapChat ~ A1 + A2 + A3 + A4 + A5 + A6 + A8 + A10 + A11 +
           A12 + A13 + A14 + A15 + A16 + A17 + A18 + A19 + A20 + A21 + A22 +
           I1 + I2 + I3 + I4 + I5 + I6 + I7 + I8 + I9 + I10 + I11 + I12 +
           I13 + I14 + I15 + I16 + I17 + I18 + I19 + I20 + I21 + I22 + I23 +
           I24 + I25 + I26 + I27 + I28 + I29 + I30 + I31 + I32 +
           H1 + H2 + H3 + H4 + H5 + H6 + H7 + H8 + H9 + H10 + H11 + H12 +
           H13 + H14 + H15 + H16 + H17 + H18 + H19 + H20 +
           male + age + household + income + child + status + area
          + YouTube + WhatsApp + Twitter + Instagram + Facebook + Tumblr + Messenger,
         family = "binomial", data=Data, weights = WSC)

TB <- glm(Tumblr ~ A1 + A2 + A3 + A4 + A5 + A6 + A8 + A10 + A11 +
           A12 + A13 + A14 + A15 + A16 + A17 + A18 + A19 + A20 + A21 + A22 +
           I1 + I2 + I3 + I4 + I5 + I6 + I7 + I8 + I9 + I10 + I11 + I12 +
           I13 + I14 + I15 + I16 + I17 + I18 + I19 + I20 + I21 + I22 + I23 +
           I24 + I25 + I26 + I27 + I28 + I29 + I30 + I31 + I32 +
           H1 + H2 + H3 + H4 + H5 + H6 + H7 + H8 + H9 + H10 + H11 + H12 +
           H13 + H14 + H15 + H16 + H17 + H18 + H19 + H20 +
           male + age + household + income + child + status + area
          + YouTube + WhatsApp + Twitter + Instagram + SnapChat + Facebook + Messenger,
         family = "binomial", data=Data, weights = WTB)
```

```
MS <- glm(Messenger ~ A1 + A2 + A3 + A4 + A5 + A6 + A8 + A10 + A11 +
            A12 + A13 + A14 + A15 + A16 + A17 + A18 + A19 + A20 + A21 + A22 +
            I1 + I2 + I3 + I4 + I5 + I6 + I7 + I8 + I9 + I10 + I11 + I12 +
            I13 + I14 + I15 + I16 + I17 + I18 + I19 + I20 + I21 + I22 + I23 +
            I24 + I25 + I26 + I27 + I28 + I29 + I30 + I31 + I32 +
            H1 + H2 + H3 + H4 + H5 + H6 + H7 + H8 + H9 + H10 + H11 + H12 +
            H13 + H14 + H15 + H16 + H17 + H18 + H19 + H20 +
            male + age + household + income + child + status + area
            + YouTube + WhatsApp + Twitter + Instagram + SnapChat + Tumblr +Facebook,
          family = "binomial", data=Data, weights = WMS)

## Note: because we introduce weight vector, the standard p-values become misleading as they are influenced by df. However, all the point estimates are still accurate.


### Look at the results ###
summary(FB)
summary(YT)
summary(WA)
summary(TW)
summary(IG)
summary(SC)
summary(TB)
summary(MS)


### Calculate the probabilities ###
PFB <- predict(FB, newdata = Data, type = "response")
PYT <- predict(YT, newdata = Data, type = "response")
PWA <- predict(WA, newdata = Data, type = "response")
PTW <- predict(TW, newdata = Data, type = "response")
PIG <- predict(IG, newdata = Data, type = "response")
PSC <- predict(SC, newdata = Data, type = "response")
PTB <- predict(TB, newdata = Data, type = "response")
PMS <- predict(MS, newdata = Data, type = "response")
## Note: The formulas produce log-odd ie log(p/(1-p)). Convert to probabilities = exp(y)/(1+exp(y)). Using type = "response" do the automatic conversion to prob.


### Convert the probabilities to 1 and 0 ###
PFB <- ifelse(PFB>=0.5,1,0)
PYT <- ifelse(PYT>=0.5,1,0)
PWA <- ifelse(PWA>=0.5,1,0)
PTW <- ifelse(PTW>=0.5,1,0)
PIG <- ifelse(PIG>=0.5,1,0)
PSC <- ifelse(PSC>=0.5,1,0)
PTB <- ifelse(PTB>=0.5,1,0)
PMS <- ifelse(PMS>=0.5,1,0)
## Note: Assuming 50:50 cut-off. Can be changed but will affect the AUC.
```

```
### Get the actual figures ###
AFB <- Data$Facebook
AYT <- Data$YouTube
AWA <- Data$WhatsApp
ATW <- Data$Twitter
AIG <- Data$Instagram
ASC <- Data$SnapChat
ATB <- Data$Tumblr
AMS <- Data$Messenger


### To see area under ROC curve ###
library(pROC)
RFB <- roc(AFB ~ PFB)
RYT <- roc(AYT ~ PYT)
RWA <- roc(AWA ~ PWA)
RTW <- roc(ATW ~ PTW)
RIG <- roc(AIG ~ PIG)
RSC <- roc(ASC ~ PSC)
RTB <- roc(ATB ~ PTB)
RMS <- roc(AMS ~ PMS)

ROC <- as.data.frame(rbind(RFB[9], RYT[9], RWA[9], RTW[9], RIG[9], RSC[9], RTB[9],
RMS[9]), col.names="AUC")

## Note: Balanced Accuracy is the same as Area under ROC Curve (AUC)


### To see the Lift Curve ###
plot(RFB)
plot(RYT)
plot(RWA)
plot(RTW)
plot(RIG)
plot(RSC)
plot(RTB)
plot(RMS)


### To see the F1 score ###
ROC$F1       <- 0        # create blank variable
ROC$User     <- 0        # create blank variable
ROC$Non.User <- 0        # create blank variable

library(caret)
ROC[1,2] <- confusionMatrix(table(PFB, AFB))[["byClass"]][["F1"]]
ROC[2,2] <- confusionMatrix(table(PYT, AYT))[["byClass"]][["F1"]]
ROC[3,2] <- confusionMatrix(table(PWA, AWA))[["byClass"]][["F1"]]
ROC[4,2] <- confusionMatrix(table(PTW, ATW))[["byClass"]][["F1"]]
ROC[5,2] <- confusionMatrix(table(PIG, AIG))[["byClass"]][["F1"]]
ROC[6,2] <- confusionMatrix(table(PSC, ASC))[["byClass"]][["F1"]]
```

```
ROC[7,2] <- confusionMatrix(table(PTB, ATB))[["byClass"]][["F1"]]
ROC[8,2] <- confusionMatrix(table(PMS, AMS))[["byClass"]][["F1"]]

### To see the Specificity score ###
ROC[1,3] <- confusionMatrix(table(PFB, AFB))[["byClass"]][["Specificity"]]
ROC[2,3] <- confusionMatrix(table(PYT, AYT))[["byClass"]][["Specificity"]]
ROC[3,3] <- confusionMatrix(table(PWA, AWA))[["byClass"]][["Specificity"]]
ROC[4,3] <- confusionMatrix(table(PTW, ATW))[["byClass"]][["Specificity"]]
ROC[5,3] <- confusionMatrix(table(PIG, AIG))[["byClass"]][["Specificity"]]
ROC[6,3] <- confusionMatrix(table(PSC, ASC))[["byClass"]][["Specificity"]]
ROC[7,3] <- confusionMatrix(table(PTB, ATB))[["byClass"]][["Specificity"]]
ROC[8,3] <- confusionMatrix(table(PMS, AMS))[["byClass"]][["Specificity"]]
## Note: R treated the positive class as '0' instead of '1', so Specificity is to predict the users


### To see the Specifity score ###
ROC[1,4] <- confusionMatrix(table(PFB, AFB))[["byClass"]][["Sensitivity"]]
ROC[2,4] <- confusionMatrix(table(PYT, AYT))[["byClass"]][["Sensitivity"]]
ROC[3,4] <- confusionMatrix(table(PWA, AWA))[["byClass"]][["Sensitivity"]]
ROC[4,4] <- confusionMatrix(table(PTW, ATW))[["byClass"]][["Sensitivity"]]
ROC[5,4] <- confusionMatrix(table(PIG, AIG))[["byClass"]][["Sensitivity"]]
ROC[6,4] <- confusionMatrix(table(PSC, ASC))[["byClass"]][["Sensitivity"]]
ROC[7,4] <- confusionMatrix(table(PTB, ATB))[["byClass"]][["Sensitivity"]]
ROC[8,4] <- confusionMatrix(table(PMS, AMS))[["byClass"]][["Sensitivity"]]

## Note: R treated the positive class as '0' instead of '1', so sensitivity is to predict the non-users


### To clean up the environment ###
rm(RFB, RYT, RWA, RTW, RIG, RSC, RTB, RMS)
rm(PFB, PYT, PWA, PTW, PIG, PSC, PTB, PMS)
rm(AFB, AYT, AWA, ATW, AIG, ASC,ATB, AMS)
rm(WFB, WYT, WWA, WTW, WIG, WSC, WTB, WMS)


### To get odds ratio and confidence interval ###
OFB <- as.data.frame(exp(cbind(odds.ratio = coef(FB), confint.default(FB))))
OYT <- as.data.frame(exp(cbind(odds.ratio = coef(YT), confint.default(YT))))
OWA <- as.data.frame(exp(cbind(odds.ratio = coef(WA), confint.default(WA))))
OTW <- as.data.frame(exp(cbind(odds.ratio = coef(TW), confint.default(TW))))
OIG <- as.data.frame(exp(cbind(odds.ratio = coef(IG), confint.default(IG))))
OSC <- as.data.frame(exp(cbind(odds.ratio = coef(SC), confint.default(SC))))
OTB <- as.data.frame(exp(cbind(odds.ratio = coef(TB), confint.default(TB))))
OMS <- as.data.frame(exp(cbind(odds.ratio = coef(MS), confint.default(MS))))


### To get the logit coefficients ###
OFB$Coef <- coef(FB)
OYT$Coef <- coef(YT)
OWA$Coef <- coef(WA)
OTW$Coef <- coef(TW)
```

```
OIG$Coef <- coef(IG)
OSC$Coef <- coef(SC)
OTB$Coef <- coef(TB)
OMS$Coef <- coef(MS)


### To get standardized beta ###
library(reghelper)
OFB$Beta <- coef(beta(FB, x = T, y=F))
OYT$Beta <- coef(beta(YT, x = T, y=F))
OWA$Beta <- coef(beta(WA, x = T, y=F))
OTW$Beta <- coef(beta(TW, x = T, y=F))
OIG$Beta <- coef(beta(IG, x = T, y=F))
OSC$Beta <- coef(beta(SC, x = T, y=F))
OTB$Beta <- coef(beta(TB, x = T, y=F))
OMS$Beta <- coef(beta(MS, x = T, y=F))

## Note: Use of standardized beta to measure variable importance, assuming the x's have same distribution profile ie similar std dev. As alternative, we will compare with importance using AUC


### Review the most important variables ###
library(caret)
IFB <- as.data.frame(varImp(FB, scale=TRUE))
IYT <- as.data.frame(varImp(YT, scale=TRUE))
IWA <- as.data.frame(varImp(WA, scale=TRUE))
ITW <- as.data.frame(varImp(TW, scale=TRUE))
IIG <- as.data.frame(varImp(IG, scale=TRUE))
ISC <- as.data.frame(varImp(SC, scale=TRUE))
ITB <- as.data.frame(varImp(TB, scale=TRUE))
IMS <- as.data.frame(varImp(MS, scale=TRUE))


### Save files to excel ###
write.csv(OFB,"C:/Users/Lenovo User/Desktop/Output/OFB.csv")
write.csv(OYT,"C:/Users/Lenovo User/Desktop/Output/OYT.csv")
write.csv(OWA,"C:/Users/Lenovo User/Desktop/Output/OWA.csv")
write.csv(OTW,"C:/Users/Lenovo User/Desktop/Output/OTW.csv")
write.csv(OIG,"C:/Users/Lenovo User/Desktop/Output/OIG.csv")
write.csv(OSC,"C:/Users/Lenovo User/Desktop/Output/OSC.csv")
write.csv(OTB,"C:/Users/Lenovo User/Desktop/Output/OTB.csv")
write.csv(OMS,"C:/Users/Lenovo User/Desktop/Output/OMS.csv")

write.csv(ROC,"C:/Users/Lenovo User/Desktop/Output/ROC.csv")

write.csv(IFB,"C:/Users/Lenovo User/Desktop/Output/IFB.csv")
write.csv(IYT,"C:/Users/Lenovo User/Desktop/Output/IYT.csv")
write.csv(IWA,"C:/Users/Lenovo User/Desktop/Output/IWA.csv")
write.csv(ITW,"C:/Users/Lenovo User/Desktop/Output/ITW.csv")
write.csv(IIG,"C:/Users/Lenovo User/Desktop/Output/IIG.csv")
```

```
write.csv(ISC,"C:/Users/Lenovo User/Desktop/Output/ISC.csv")
write.csv(ITB,"C:/Users/Lenovo User/Desktop/Output/ITB.csv")
write.csv(IMS,"C:/Users/Lenovo User/Desktop/Output/IMS.csv")


### Save a copy of the R Project ###
save.image("C:/Users/Lenovo User/Desktop/Output/Environment.RData")
```

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