

SOCIAL MEDIA DATA MINING: A STUDY OF PUBLIC AWARENESS



Author: Kaylee Joseph – [REDACTED]

Supervisor: Donna Bernhardi

Subject: RESM 8419

Bachelor of Arts: Honours in Strategic Brand Communication Degree

Declaration:

I declare that this thesis is my own work and has not been submitted in any form for another degree or other diploma at any university or other institution of tertiary education. Information derived from the published or unpublished work of others has been acknowledged in the text and a list of references given.

Word Count: 9 688

ABSTRACT

Digital communications have become an essential part of life, whether it be staying in touch with loved ones via social media, purchasing groceries and other retail essentials or completing online qualifications and improving your skill set as a resource. Marketing in the digital realm has therefore become more significant than ever before and in turn so has data mining and the monetisation of transactional data insights. This research therefore presents a qualitative study with the intention of ascertaining the awareness levels of female social media users over the age of 35 to the understanding of data mining on social media platforms and its uses. Of which the results show that South African females specifically over the age 40 have a lack of understanding of who owns social media transactional data and how social media platforms generate revenue impacting their overall awareness levels of social media data mining as well as targeted social media marketing. These results have a thought-provoking impact on the ethics of social media marketing regarding the human rights to freedom of choice versus the benefits of businesses bottom line revenue and to what degree marketers need to be wary of their actions regarding crossing the ethical parameters through the pursuit of successful digital marketing campaigns.

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INTRODUCTION:

With many of the world's borders closed due to the COVID-19 pandemic it has become increasingly evident how powerful digital communication has become. This firstly from the obvious perspective of keeping people in touch with one another while social distancing. Secondly from the perspective of the impact that online communities have, to drive change. Particularly seen in the revived, international black lives matter movement which flourished due to injustices which were brought to light via various viral video's which would have gone otherwise unnoticed and all this coming to fruition during a worldwide pandemic induced lockdown.

The inconvenient truth around digital communication is that businesses have as much, and probably more power than the individual users who make use of their digital presence for good. If this is unclear how, the answer lies in the power of big data.

All individual digital transactions, every single digital click on your computer and mobile phone is stored, mined, modelled, and monetised. This means that users digital interaction data is purchased by businesses on mass scale in order for data scientists to model the information with the intention of providing consumer behavioural insights which will be useful in driving business strategies through intricate digital targeting. This user data comes at a very high price, as stated by the Great Hack (2019) to have out traded oil in the trading year 2018 / 2019.

RATIONALE:

Why would this be a problem?

It has been proven that using consumer online data to target consumers digitally based on who their data portrays them to be is a very successful marketing tool when assessing how to "enhance activities in the areas of pricing, churn prevention, cross-and upselling, and promotion optimization to drive growth." (Hurtgen & Niko:2018). The problem however, is how aware are online users of how powerful their transactional digital data is from a marketing perspective and if users are ignorant to the uses of their transactional data is it not fair to question if their human rights to

freedom of choice is being infringed upon through proven high response driving personalised digital targeting. Based on this, it was therefore necessary to conduct the following research to gauge the awareness levels of social media users and in turn ascertain the degree to which social media users are at risk due to unfamiliarity regarding social media data and its uses.

PROBLEM STATEMENT:

The problem was therefore how aware are online users of the uses of their social media user data and do they make any attempts at protecting themselves from data scientists who are out to profile online users through finding similarities in different pockets of people in online communities. Specifically, those who did not necessarily grow up in the internet era and have low awareness to its full functionality of online targeting, zooming in on female South Africans aged 35 and older who frequently use social media platforms. This is identified as a highly sought-after market due to their buying power who were potentially at higher risk due to ignorance regarding data mining and the uses there of.

RESEARCH GOAL:

The purpose of this study was to ascertain how aware are South African females between the ages of 35 to 60+ are to social media data mining?

RESEARCH OBJECTIVES:

1. Are social media users aware that all their online activity is stored and belongs to the platform?
2. How aware are social media users about invasive data collection methods on social media ie. sentiment analysis?
3. Are users aware that their transactional data is traded?
4. Are users aware of the uses of algorithms?

THEORETICAL FOUNDATION:

The study sought to gain knowledge into online communications, particularly those of a social media nature. What was focused on was how social media data is used to target users with significant market buying power - which for the purpose of this study we had isolated as South African females over the age of 35 and how at risk these users were due to ignorance of how digital targeting works through the use of social media data.

The theories consulted therefore looked at the positives of and the negatives of social media data mining, positives being the impact that the use of data has on the ability to drive business revenue through increased demand and in turn increased supply as a result of providing an impressive 360 degree customer experience through personalisation and brand resonance to customers by using the data they share on their online profiles. The negative however being the ethical implications when analysing the use of behavioural sciences in online targeting through using users online data to tailor communications in such a way as to appeal to a part of the brain which will drive instinctive reactions instead of well-considered actions. Therefore, infringing on their human rights from the perspective of freedom of choice.

Alfred Marshall's theory regarding demand and supply was consulted, "which examines how price changes affect demand." (investopedia:2019). How this connects to our study is that personalisation through use of data and data mining has been proven to increase demand hence making it so popular and so lucrative. The second theory is by A. Belden Fields – human rights theory. The theme's in this published academic journal focus on three aspects of human rights being, just a theory. This being because" human rights are a derivative of a concept that is socially and politically toxic" (Fields:2009). When that statement is unpacked it reveals that, the fact that people need protection of their human rights is to assume that there is a natural social and political order that is purposely trying to harm people causing them to need rights / protection against their humanity. This ties in with our research problem in that it can be argued that people's ignorance regarding how data is used leaves them exposed to businesses taking advantage of their ignorance.

LITERATURE REVIEW

As the digital landscape changes, with smartphone penetration and internet accessibility increasing in South Africa, in turn so does the usage of social networking platforms. In 2019 Business Tech (2019) reported that in South Africa 31 million people in our country are online, this representing more than half the total population. The report goes on to include that there were 5 million new social media users reported in South Africa, bringing the total active social media users to 40% of the total South African population at 23 million active users. The change of the digital landscape not only impacts individuals and how we interact with one another on digital and social media platforms but also impacts businesses, in how they transact and interact with consumers.

Being connected to one another is important, however it is not necessarily considered that all our digital transactions are traceable, they do not disappear into an internet void. Our digital / online interactions are stored against all our various accounts and profiles across the internet, across all our different connected devices. These digital interactions have the potential to create quite an intricate view of who we are as individuals from a mobile as well as desktop perspective. These intricacies include

1. what we relate to through what we like, share and comment on, on SM
2. Our personal views through the statuses we put up
3. The places we visit through geo-tagging on networks, photos, and check in's
4. How we spend our money through our online purchases

Furthermore, a full spectrum of who we are is built and cross referenced against 4 elements mentioned above as well as is tracked against everyone who we choose to connect and associate with online.

With the monetization of big data, businesses see value in consumer insights. There are in turn are certain realities that have need to be addressed with consumers on how they are targeted by businesses using the intricacies of their digital footprint. The aim of this study is therefore to determine how aware social media users are regarding the usage of their online data which is collected through sign-up and frequency of usage and determine who is most at risk due to ignorance.

In attempts to ascertain who is most at risk there is a need to determine the level of awareness of social media communities to the realities of data mining and monetization of online data. Qualitative research methods will be used to collect data around personal opinions pertaining to how respondents feel about their online

backend profiles being used against them in the form of consumerist targeting disguised as good customer service or personalisation. This therefore means that responses will be subjective which is what is needed in this case because the unique view of individuals will be invaluable to gauging the awareness levels. According to Maree(2016) this would be considered an interpretivism study due to the fact that, what is valued in the data collection is the fact that “reality is fluid and subjective and is created by human interaction” (Maree, 2016: 75). The type of questions which will be asked to the targeted group will be around:

1. Their awareness levels to what happens to all transactions which are completed online
2. What is their understanding of algorithms and personalisation.
3. Do they know how SM platforms make money?

The need for this research to be conducted is the consideration that: On a person-to-person level, getting to know someone is an intermit endeavour. It is one that we opt into based on decisions made about the person we have chosen to invite into our mental and physical space. Digital interactions are getting to know the intimate mental intricacies of people’s personalities through their online behaviour; however, this should be consensual. To ascertain whether this is indeed consensual this study is needed to find out the awareness levels of people around the data collected from their online activity specifically on social media platforms.

The theories consulted for this this research revolve around the positive aspect of what the use of data has the ability to do in terms of driving business revenue through increased demand and in turn increased supply as a result of providing an impressive 360 degree customer experience through personalisation and brand resonance to customers. The negative aspect is the ethical side of the story in asking whether online users privacy rights are being infringed upon due to the internet being relatively ungoverned which is clearly addressed by a BBC article from early 2020 in which BBC News (2020) share that social media platforms are self-governed and this is mainly with the intention of protecting users form terrorism and violence in content however businesses and their targeting measures are not considered threatening and therefore the ignorance of the social media user data is being used to the advantage of businesses.

The theory consulted regarding demand and supply is Alfred Marshall's theory "which examines how price changes affect demand." (investopedia:2019). How this connects to our study is how personalisation through use of data and data mining has the potential to affect demand. The second theory is by A. Belden Fields – human rights theory. This is a published academic journal which centres around three aspects of human rights being, just a theory. This being because "human rights are a derivative of a concept that is socially and politically toxic" (Fields:2009). She goes on to unpack the statement in saying that, the fact that people need protection of their human rights is to assume that there is a natural social and political order that is purposely trying to harm people causing them to need rights against their humanity. This ties in with our research problem in that it can be argued that people's ignorance regarding how data is used leaves them exposed to businesses taking advantage of their ignorance.

KEY SOURCES / LITERATURE REVIEW

The first source consulted on this topic is the Netflix documentary titled: *The Great Hack*. It centres around a British political consulting firm – Cambridge Analytica - and their data mining capabilities which were applied to various large global political events in 2016. The first being the USA presidential election and the first Brexit vote. This controversial documentary supports the proposed argument that businesses are using people's broad-spectrum digital data across all online activity including social media data for intricate personalised targeting. To be specific the Cambridge Analytica data modelling was so accurate because they had 5000 data points across 30 million people in the USA alone. One of their data sources including Facebook data, which was said to have been recalled and was not to be used in their modelling however turned out to be uncovered as a lie in that the Facebook data was never recalled. Why this was so controversial is because in reflecting on how people's data was modelled and how people were subsequently targeted with personalised messaging, this was deemed digital propaganda and was unethical considering democratic principles. The way they targeted people with personalised messaging on social media was purposeful with the intention to cause doubt and fear of the opposition and to promote the Donald Trump campaign. This was deemed to be going against the laws of democracy due to the efficacy of the targeting of the campaign and the accuracy of the assumptions which were a product of the modelled Facebook data.

The high-level breakdown of how targeting was done was first to identify people online who did not appear to have any affinity (through their online interactions) to either the republican or democrat candidates. These people were labelled “the persuadables”. They then targeted these specific users on Facebook painting a view of the world that was a negative view of the opposition and a positive view of their candidate which would then motivate the targeted individual to go and vote for their preferred candidate in the election which due to the digital priming would likely be the democrat candidate. Priming by definition according to the journal frontier in psychology where it is stated that “Behavioral priming refers to the notion that exposing people to an external stimulus (e.g., a list of words describing old people) activates a mental construct associated with this stimulus (e.g., “being old”), which may in turn affect overt behavior without the actor necessarily being aware of this influence (e.g., Bargh et al., 1996)” (Krpan, 2017) .

This is an example of a way in which people’s online data is weaponised and used against them. The main concern is around the fact that nothing lawfully prevents brands and businesses using data to personalise experiences and to create targeted messaging that will drive resonance with consumers. This form of data usage is not considered unconstitutional as it is not in the political realm and therefore in the case of businesses and brands they are free to propagate the internet with targeted personalised messaging to the most responsive consumers because the internet is not policed for this type of engagement. Which shows how it is linked to the proposed research problem. Specifically regarding the human rights argument because this means that targeting of this nature is infringing on an individual’s freedom of choice because these brands are using an individual’s data containing their personal sentiments on certain topics expressed online to tailor a message regurgitating the individuals own sentiments as the brands, which the brand knows will resonate with the individual and therefore drive the desired response which is to create brand loyalty and increase businesses revenue. Therefore, the proposed research is needed in order to ascertain who is at risk of these intricate targeting tactics by brands and businesses. There is however a flip side to the coin which we need to consider, which is the benefits which could come from the advancement in data mining which is discussed in the second source consulted in this literature review by Yuval Noah Harari.

The book: *21 lessons for the 21st century* by historian Yuval Noah Harari is a book written with the intention to spark interest in readers regarding the current state of the world. With as little bias as is usually seen in this type of academic writing Harari (2018) states that his primary intention is to provoke the reader to reassess the state of liberalism and democracy in the modern world and questions its relevancy. To provide context on this book it is important to understand that Harari has 3 books, his first: *Sapiens* which centres around the history of how homo sapiens came to claim superiority of the animal kingdom including: evolution, systems and technology. His second book *Homo Deus* which investigates the future and what the technological and digital revolution has in store for us and our purpose as a resource. Which brings us to his third and latest book which is commentary / an assessment of where we are currently in the process on route to *Homo Deus*.

Why this book is an important contribution to the problem regarding data mining of digital and social media activity is because it provides a counter argument to the contribution of the Great Hack. This being because in Harari (2018) commentary around big data in a chapter titled "listen to the algorithm" (Harari, 2018:46) he addresses the history of authority. Stating that "Just as divine authority was legitimised by religious mythologies, and human authority was justified by the liberal story, so the coming technological revolution might establish the authority of big data" (Harari: 2018). He supports this by giving a number of examples: one being the technical advances being made in medicine, and that soon there will be devices made available to the public to detect early indicators of illnesses and possible ailments before pain receptors detect issues and will allow these to be remedied before they become notable issues. His second example is around young high school graduates being expected to choose a career at the age of 18 / 19 and that algorithms assessing their online data might better be able to guide their choices with sophisticated technology versus trusting their human computing skills of just 18 years of consciousness during a period of life filled with considerable confusion and external influence. These examples show the altruistic benefits and possibility's which are derived from the usage of digital online transactional data across the internet and social media and opens the door for further research to be done around awareness level's in connection with the individual benefits which could arise, with consent. This is why the proposed research is necessary, in order to ascertain the public level of awareness because

while there are potential benefits to data mining, the question around where the producers of that data are consensual in the mining of that data remains unanswered. Are online users aware that they are producers of data are they also aware that the platforms they are engaging on are the owners of that data not them, the producers. The following 3 sources will introduce the different ways social media data is mined and a few of the scientific specialisations which there are in the data mining sciences. This beginning with the Gupta (2016) article broadly entitled: Social Media Mining.

The 3rd source considered for a notable contribution to the subject is the academic journal by Gupta (2016) entitled *Social Media Mining*. This journal makes a more straight-forward contribution to the argument, in that the intention of the authors was to create a “systematic presentation of the body of knowledge in the growing field of social media mining ” (Gupta, 2016 : 58). Simply put, the journal acknowledges there are great contributions that social media is making to data sources and that because of social media there has been a significant shift in power, in favour of the consumer. This making the digital communications space considerably competitive creating a need for sophisticated technological advancements being made to cut through the noise on social media platforms which Gupta (2016) states as being a benefit of social media mining.

How this links to the problem is to show that there is significant technological advancement being made in understanding social media data for the benefit of businesses driving profit margins as is unpacked in a Forbes article stating that “the web has become a dystopian surveillance state in which companies stalk their unsuspecting victims across the web, extracting maximal profit from removing any shred of privacy” (Leetaru:2018). Furthermore it also highlights the need for the proposed research because while the journal provides a comprehensive view of social media mining as a science, the starting point of the framework doesn't include any related information regarding the particulars of the source of the data. The users of social media platforms. The gap in the journal therefore highlights that there is a potential disregard for the human rights or data collection being consensual with a primary focus being driving increased demand and supply. This creates an opportunity for further research to be done into the humanitarian aspect to be considered to close the loop on the framework. The proposed research is therefore needed to ascertain the awareness levels of social media users of the tools used by businesses to

understand the insights around the actions of online activity. The next source looks at one such tool which is used to perform the purpose of what is referred to as social listening which Maben & Gearheart (2018) unpack.

The 4th source and 2nd sourced centred around uses of social media mining is an academic journal entitled: *organizational social media accounts: moving toward listening competency*. The study by Maben & Gearheart (2018) is centred around online listening. Simply put “Social listening gives brands an opportunity to track, analyse, and respond to conversations about them on social media” (hootsuite : 2020). The study looks at the connection between verbal listening and what is considered good verbal listening skills and made recommendations for businesses to apply these practices of what is considered good listening on their digital platforms in order to achieve a certain online perception of who they would like the consumer to believe that they are as a brand and business. A study was run to ascertain what their targeted audience deemed good communication and mirrored that online, to provide a certain experience portraying good listening. Intricate analysis of how to achieve “active-empathic listening—pertinent responses, elaboration, offering advice and opinions, and answering and asking questions—into their social media profiles” (Maben & Gearheart : 2018) this all done with the intention of achieving two-way communication / engagement online.

How this links to the problem is that what is not said regarding the way that brands and businesses perform online listening is actually very invasive in that tools are purchased and set up to monitor the internet in general for any mention of a brand, not only comments made directly to the brand through @mentions. Why this is invasive is because an @mention means that the social media platform user intended for the brand to see their comment. When a brand is not tagged this means there might not be the intention for a brand to see the comment and therefore there is a lack of consent. This shows yet another way that businesses and brands are finding ways to infiltrate social media users’ personal space.

It therefore shows why there is a need for the proposed research to be conducted, in order to ascertain peoples level of awareness of the technological advances that have been made to monitor social media activity and in turn how exposed their thoughts are on social media because these listening tools do not ask users permission to monitor online conversations. The last source takes social media data mining one step further

in showing that science has built formula's using social media data to ascertain sentiments around the brand without making any contact with any individuals.

The last source consulted by Rachid (2018) entitled: *sentiment analysis approaches based on granularity levels* highlights is how the digital landscape has changed the way people now seek recommendations. Moving away from word-of-mouth which is experienced in a face-to-face way from friends, family, and associates. To, looking online for reviews from designated opinion sources. With all the personal views being expressed "analysis of this huge volume of opinionated data are thus needed" (Rachid:2018). The article then goes on the share that sentiment analysis, through data on social media has now become a specialised field through which opinions are mined unpacking that "opinion mining, is the field of study that analyses people's opinions, sentiments, evaluations, appraisals, attitudes, and emotions towards entities such as products, services, organizations, individuals, issues, events, topics, and their attributes as mentioned in (Liu, 2012). The article breaks down the process of sentiment analysis from a coarse grained to fine grained level and the different types with in the different granular levels. It is also highlighted that the development of data mining from various digital media collection has led to businesses wanting to extract this valuable information which has led to new scientific specialisations. This links to the problem in that the development of new scientific specializations is with the intention for businesses to be able to use this information to drive their communications strategies and in turn drive their sales and bottom-line profit margins. This connects to Maben & Gearheart as well as Gupta in that at no stage in either of their academic writings was there a consideration for the source of the data nor the invasive nature of the insights from a human rights – right to privacy perspective. This is yet another example of why the proposed research is needed because awareness levels need to be established so we know the severity to which people are ignorant to how exposed they are by interacting on the internet as there could be a need to drive an online awareness movement.

SUMMARY

The above reviewed secondary sources make it evident that there is a need for the proposed research around the public awareness regarding social media data and data

mining to be done. This point is made in the reviewing of the documentary: The Great Hack, where the power of data and data mining is really made alarming clear showing how human rights can be infringed on through modelling of social media data. The counter argument is the commentary from Harari (2018) on the altruistic benefits which could come from welcoming the domination of algorithms in the form of the technology revolution. This commentary however identifies gaps in needing to ascertain if people would be open to this type of advancement controlling their decisions going forward. The great hack and 21 lessons for the 21st century both show the power of data mining albeit that one was used for a negative outcome which went against the laws of democracy. Lastly, of the consulted sources the last 3 sources demonstrated the breath of the social media mining science showing the different ways peoples data is exposed online and also showed that in all 3 academic journals, none of the writers included a consideration for the human rights element of the data collection process and only considered the benefits to a business's supply and demand. This clearly indicates the need to proceed with the proposed study which is liking to make a significant contribution to the conversations around data mining and user awareness around data mining sciences.

CONCEPTUALISATION

The focus area for the research primarily centres around digital transactional record keeping which includes all online data. The emphasis is on data mining, data trading as well as the use of social media data on customer targeting through data modelling to derive consumer insights with the intention of tailoring communications in a data centric personalised manner. How this connects to the study is, that the sample population who are – South African women over the age of 35 have a significant buying power these women also primarily make the buying decisions in the house holds as stated by Neilson (2019) that the purchasing power of working females consumer is irrefutable as they consist of 31% of the total South African population of which 71% making the purchasing decisions around groceries and 60% makes the purchasing decisions in the house hold. Where the concern lies in – is in the fact that they did not grow up in the digital era and therefore potentially have low awareness for the intricacies around the degree to which digital transactions are tracked. These women therefore run the risk of being vulnerable to being influenced by digital communications

through the practice of personalised targeting on social media platforms which according to McKinsey, businesses are aware that “firms that put data at the core of their marketing and sales decisions achieve 15% to 20% higher ROI” (McKinsey : 2019). Further to this additional concepts which are considered are privacy and human rights elements which no one is questioning regarding violations of any sort as social media users are not aware that their information is being traded in malice to drive corporate sales strategies and that the usage of internet data is not policed.

RESEARCH PARADIGM

The selected paradigm of this study is Interpretivism as the intention is to “understand and describe meaningful social action and experiences” (du Plooy-Cilliers, Davis and Bezuidenhout, 2019, p22). This involves uncovering a deeper truth around what people are aware of regarding their social media interactions as well as collating various subjective experiences of individuals. With this paradigm applied to the study the focus is: How do they feel? What is looked at here is the reasons which this group use social media, this to understand the frame of mind that they are in when they are interacting on these platforms. Ascertaining the users frame of mind when using social media platforms will give good insights into how suspecting they are of the transactions that go on between the owners of social media data and the businesses who are hungry to get a hold of this data.

Shifting the focus to the core customer sample of the study and the fact that they are high risk due to their higher purchasing power as well as the fact that they primarily make household purchasing decisions. This indicates that this customer group are therefore at risk due to their age and in turn generational ignorance as they did not grow up in the prime of the digital age. They therefore had to learn or are still familiarizing themselves with these realities of some of the basic functionalities and fundamentals of these platforms. This not even considering understanding the level of understanding about what they are opting into when agreeing to the basics of just the terms and conditions, which is where these platforms cover their responsibility to transparency to users. The secondary objective and strength of this study is to educate and enlighten society about the topic. A weakness however lies in the sample size not being large enough, causing difficulty around making clear distinctions and

connections between similarities in the data and therefore definitely needing additional more intricate research to be done.

RESEARCH DESIGN

The research was therefore qualitative which lends itself to interpretivism and focuses on two data collection methods. The first being online survey's which had none-leading, open-ended questions and the second which were telephonic interviews which had participants who did not answer the survey and had to answer none-leading, open-ended questions structured to flow in such a way as not to lead the respondents thinking with the intention of receiving unbiased answers on the topic to really gauge true awareness levels. Both sets of questions in each data collection method were limited as the more time respondents had to think about the questions the more biased their answers became. The online survey kept to 11 questions in total please see annexure B with qualifying questions included upfront to ensure that the correct sample population is answering the questions as well as to make sure that they agree to their answers being used for the purpose of the academic study. The interview questions did not exceed 5 questions and were more conversational and personal, so the respondents were relaxed when sharing their views and thoughts. There was also be no overlap in participants for each data collection methods, this was because the online survey was launched first and because of the degree of overlap of all questions in the 2 data collection methods, once a participant took part in the online survey they would have already been too aware of the subject matter to answer the interview questions in an unbiased fashion. It was for this reason that having no overlap in the respondents of both data collection methods was of the utmost importance.

POPULATION

Target Population:

The target population was South African females over the age of 35 who regularly interact on social media. Looking at the South African household and who primarily makes the purchasing decisions in the South African households as stated by Nielsen (2019) as well as isolating a population which one might assume two things: 1. that due to age and when social media advertising took off as a core marketing tool could

2. This population could potentially be ignorant to the realities around the uses of their data as well as online targeting. This age group also has considerable buying power and is a very powerful revenue generator should they resonate and proclaim loyalty to a brand, no matter what shopping category or industry this is applied to. This draws an obvious picture around why brands would want to aggressively target this population.

Accessible Population:

The accessible population primarily had to do with respondents having the time to set aside to participate, they also needed access to a phone and a space in which to talk openly for 5 to 10 minutes. For those answering the survey they needed access to the internet via their mobile device or laptop / desktop computers and time to answer the questions presented in the online survey in which they needed to have the patience to type their answers in their own words.

SAMPLING

Non-probability sampling was used as the preferred sampling method for this study. This is because as per du Plooy-Cilliers, Davis and Bezuidenhout, 2019 we will carefully select our sample from an accessible population and through those who can recommend the other possible participants. What the Research Matters textbook goes on to state which applies to this study is that the sample will still fall into the limitations of the study however, the sample will be chosen using the “researchers judgement and the participants will therefore not be randomly selected. (du Plooy-Cilliers, Davis and Bezuidenhout, 2019, p143). Non-probability sampling was used to draw insight into our sample population as it is a qualitative study.

Two types of non-probability sampling were used namely convenience and snowball sampling. Convenience sampling because the study approached people from the identified demographic group who were easily accessible on social media platforms through mutual connections of the study, however it has been purposefully avoided asking those who work in the same industry as the study for example those who worked in digital marketing / brand advertising as the subject of the study is one which they would have probably come across during their time working in their industry. How

snowball sampling was implemented in this study was by asking those who had been approached to refer others who fit into the criteria to increase the sample size and have those participants to provide suggestions of others who fit the sample parameters. All these participants were invited to participate via social media channel direct messaging, WhatsApp as well as phone calls.

For each data collection method, the following number of respondents are expected:

- Online survey: 50 – 75 SM users
- Interviews: 10 – 15 SM users

The online survey ran for roughly 2 weeks or for the length needed to obtain sufficient results. While the interview process took place over a weekend period and was dependant on the participants availability.

DATA COLLECTION METHODS

The data collection methods which were used in the study were an online survey's as well as in-depth interviews.

For the online survey's the research questions were loaded on the google forms platform and the link was sent out to those within various social media networks who fit the 35 and above South African women social media users' criteria. Qualifier questions were used in the set of research questions to ensure that the responses captured from all participants were consensual as well as to ensure that all respondents fit within the criteria of the desired sample. The most important qualifiers were age, gender and were users of social media platforms as well as making sure that they were happy for their answers being used in the study. The online survey's then went into the use of open-ended questions which then urge participants to use their own words regarding how they feel regarding the underlying idea of the topic being, the different aspects of data collection and data usage on social media platforms including the ownership of this data and knowledge of how these social media platforms generate revenue. The sequence of the questions was very important as the intention of the questions was to be as unintimidating as possible and not to lead respondents in anyway. Lastly what was very important regarding the sequence of the questions was not to have respondents over think their responses due to the

language used in the way in which questions are proposed. The research questions specifically avoided using the words data, data collection and segmentation or any technical buzz words surrounding this topic.

Due to the fact that there was intentionally no overlap of respondents between the online survey and the in-depth interviews, the same questions were to be used for the interviews with the exception of one additional question which sought to understand if the participant understood how adverts appear on their social media timelines. The answers to this question showed the degree of understanding around social media audience segmentation as well as showed the understanding of how social media platforms generate income. These interviews will be conducted telephonically subject to the participants availability.

Please see example of both sets of questions in annexure B. The first three questions ensure that the respondents fall into the desired sample. The fourth and fifth ensure that they are active on social media, to what extent and why they use social media. The last six questions then go on to ascertain their awareness level of if they are aware data is collected, who owns the data, where they notice patterns on their timeline, if they understand how social media platforms make their money and lastly how advertising ends up on their timelines.

DATA ANALYSIS METHODS

Following the 8-step process of qualitative data analysis shared in du Plooy-Cilliers, Davis and Bezuidenhout: 2019 Research Matters was implemented once enough responses had been recorded via the online survey's as well as in the in-depth interviews. Each set of answers was individually analysed to make sure that the qualifying criteria was met by all participants and filtering out any responses which were shared by males or those younger than the age of 35 and that everyone agreed to consenting that their responses are to be used in the analysis of the results of the study. Once this filtering was successful it was then confirmed that the data was then be ready to be sorted. The research questions were then lined up and transcribed into a separate spreadsheet where line-by-line coding was then performed with the intention of identifying code words which identify the level of understanding to the

primary concepts of the research, namely: are users aware that their transactions are recorded, who owns that transactional data, how do the platforms make money and how does advertising show up on the timeline / social media feeds. The code words were then sorted into categories to show the similarities between the answers. It was then ensured that each response was accounted for to ascertain the proportion of those who have clear a understanding and to see if the shift in the degree of clarity changes as age increases in the test group and at which age group were the test group the most at risk due to ignorance. Checks and balances were implemented to ensure that there was consistency in how the data was analysed and that there are no biases bestowed on the information which was collected. Once consistency was finalised and confirmed, conclusions were then drafted from the coded data and a report was generated revealing the methods as well as findings of the study which can be found on page 22.

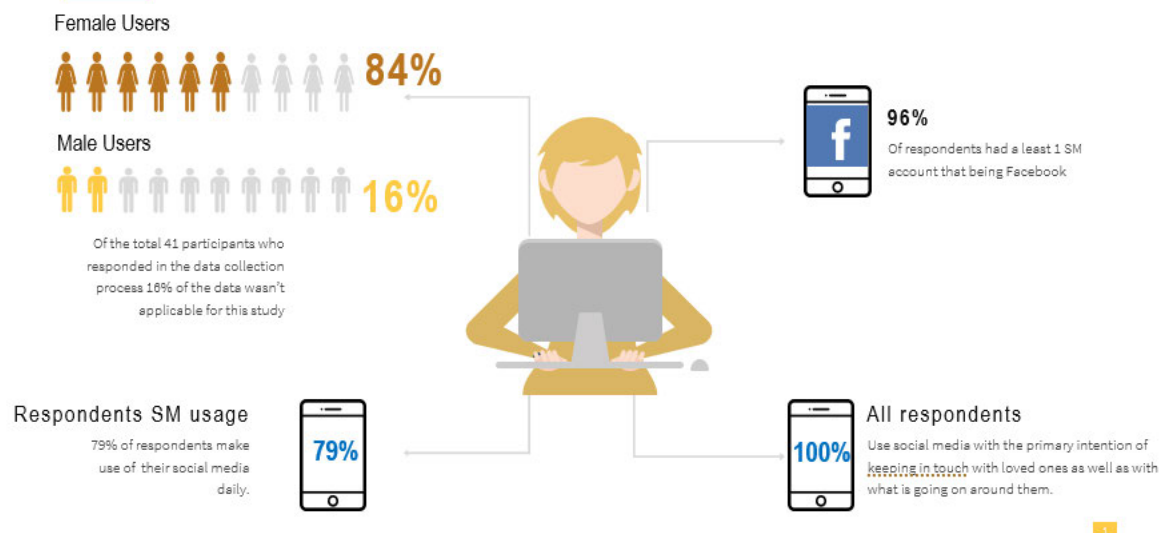
TRUSTWORTHINESS

To ensure that the study was conducted in a trustworthy manner, it was of the utmost importance that the data collected was reliable. How this was achieved is through conducting two data collection methods as mentioned earlier, the first being online surveys as well as in-dept telephonic interviews. This was important to the validation of the study as it made it possible to see the similarity of the data collected in the different methods to ensure that any contributions made to the subject are valid. As this was a qualitative study the fact that all questions outside of the qualifying questions were open-ended ensured that participants were free to emotively contribute their feelings and opinions toward the subject to the level which they felt comfortable with. The flow and use of language used to pose the questions was done in such a way that was none threatening and in a none -leading way so as to ensure no answers are pre-emptive. Certain topics and buzz words like data mining and data collection, algorithms and segmentation were deliberately avoided to ensure that no threatening thoughts were imparted into the participants mind once the data collection / conversation is concluded as it was important to the study to be mindful not to cause any anxiety in the participants mindset around the use of these platforms in the future. The fact that the participants were spoken to directly ensured a comfortable conversational environment had been created to put the participant at ease during the

conversation so that they were free to provide honest answers. Their environment was also more comfortable because the interviewer and the participant were previously acquainted and the initial anxiety of speaking to a stranger was therefore eliminated. It was also important to mention that Google Forms was used to distribute the survey and that this is a well-known reliable distribution platform which is widely used to conduct research of this nature particularly during the period of 2020 when the research was conducted in which it was mandated that South Africans were to be social distancing. Lastly the data collection took place over a lengthy period of time – over 3 weeks. This ensured that enough data was collected in order to perform sound analysis on the contributions derived from the volume of data collected.

PRESENTATION OF FINDINGS

RESPONDENT QUALIFIER DATA



RESPONDENTS AWARENESS LEVELS



38%

REVENUE

The percent of respondents who know how social media platforms make their money

77%

DATA COLLECTION

Were recorded as being aware or make the unconfirmed assumption that social media transactions were recorded

55%

DATA OWNERSHIP

The proportion of respondents who are unaware or make the incorrect assumption of who own social media transactional data

100%

PATTERNS & ADVERTS

All respondents who use their social media platforms frequently notice patterns as well as adverts however are unaware or incorrect on how adverts appear on their timelines



INTERPREATION OF FINDINGS

In total there were 41 respondents who participated in the data collection process. In light of the fact that snowball sampling was used as part of the data collection method, it resulted in some participants who were asked to share the online survey, sharing it with other prospective participants who did not meet the qualifying criteria. This therefore resulted in there being 6 male responses being collected as well as 2 female responses who were under the age of 35 and therefore there was a total of 8 responses which were not included in the final analysis of the results. The total amount of responses from the online survey which were used for the analysis of South African females over the age of 35 who regularly use social media was 29 respondents as well as 12 telephonic interviews resulting in a total 41 respondents. Seeing that there was 100% overlap in the questions the results were therefore analysed together.

Before delving into the awareness levels of respondents it is important to note that when asked why participants use social media: the usage of these platforms is primarily with the intention of keeping in touch with loved ones or keeping up to date with news events. This is an important factor when looking at the data because it the interpretation of the primary reasons for using social media highlights the frame of mind that the respondents are in when they visit their preferred social media platforms.

This mind set is one that is unsuspecting and relaxed with no intention of needing to have their guard up or protect themselves from what they are consuming as they are there to share love to those who they care about or find information on their interests or current events. Looking specifically at participants over the age of 40, there were no respondents who frequent social media platforms for the purpose of light hearted entertainment. This provides an additional avenue regarding research which needs to be conducted within this age group because they could be found to be even more unsuspecting because their intentions are genuine and trusting on social media platforms. What will be unpacked further on in the analysis is that there is genuine confusion around how adverts appear on their social media timelines as they view this as their personal space with some responding in such a way that their tone was indicated that they were alarmed and bothered when reminded about the adverts.

Looking at the primary research question which was to ascertain the level of awareness to data mining in South African females over the age of 35 it was found that 77% of qualifying respondents are aware or made use of language that assumes that they assume that all social media interactions are recorded, the insight here is that there is awareness around probable tracking on the social media platforms used. 55% of the of the qualifying respondents answered to be unaware or made the incorrect assumption of who owns that transactional data. The insight on this point is that not knowing who owns the data translates into not knowing that the data is used for and further research needs to be done to know what these participants think the record keeping is used for. This was clear when reviewing the results of the question around how social media platforms generated revenue. Only 38% of respondents were aware of the fact that social media platforms generated revenue through advertising. This indicates that there is a lack of understanding around what the uses of the collected transactional data are. Lastly when asked if respondents noticed patterns on their timeline, everyone answered yes however only one person unpacked their statement by explaining what type of patterns which creates a segway for additional research to be conducted regarding whether there is an understanding in this target population of how posts are represented on their respective times which is obviously through an algorithm which monitors a number of behaviours on the platform. Lastly when respondents were asked if they notice adverts on their timeline all frequent users of social media answered yes. There was however an additional question which was

added to the telephonic interviews at the end and that was if there was awareness on how adverts landed up on the respondents timelines, of the 12 respondents none of them were able to correctly share how advertisements are served to users and as mentioned before, were found to be very irritated at the fact that these adverts are brought into their personal social media space.

It can be seen through the pilot study that South African females over the age of 35 are aware of data collection on social media platforms. Their consciousness levels however diminish regarding who owns this data and around how social media platforms generate revenue. Which raises the most concern that this target population is indeed as at risk as they were assumed to be at the beginning of the study because they are unaware of what the collection of the transactional data is used for. Why this is a problem is because there is a direct correlation between collection of data and generation of revenue and the fact that there is a disconnect in the subject population around these two points show that there could be quite severe risk to this isolated population. What the low awareness levels around this disconnect also indicates, is that the collection and usage of this data is more beneficial to businesses driving revenue and that the assumption can be made that social media users in the sample population age group are at risk of their rights to freedom of choice are being infringed upon through the influence of intricate social media targeting through the use of social media data analytics. Additional research would need to be conducted on a larger scale to understand the severity of the impact to this target population on mass scale and more importantly to what extent their buying decisions are impacted on through their usage of social media and exposure to social media marketing.

RESEARCH QUESTION ADDRESSED

The power of data mining being used in marketing as well as data driven creative execution has been proven multiple times over the past decade, in its ability to drive conversion from impressions to click-throughs to ultimately drive the overall corporate goal which is increased market share as stated by Neilson: 2019. What has been identified from the perspective of the South African market is that there is a lucrative market in particular segments that being the females over the age of 35 as shared earlier from Neilson : 2019 in the buying power of the South African female consumer.

This segment is so powerful not only because of their buying power but also because they drive household purchasing decisions. What was found from the research is that what we set to uncover regarding awareness levels was indeed that this target population is as unaware of the uses of the collected transactional social media activity. Based on this, it can be seen that there is considerable risk as was assumed at the beginning of the study, this risk is due to the fact that while participants were aware of transactional data being collected that fact that they are unaware of how social media platforms generate revenue as well as the fact that they are unaware of how adverts land on their timelines indicates that actually their awareness levels are minimal because of the lack of that specific understanding.

What was also identified was that the awareness level were considerably lower with females over the age of 50. These users have therefore been identified as potentially at higher risk is because they did not grow up in the prime of the digital acceleration period and based on the research results are unaware of the power their data holds. The study therefore exposed that there is a declining awareness, the older the women get which is likely to be worse than anticipated as the older a person gets it can be assumed that this women would be in an established career meaning they have a considerably higher buying power this naturally depending on the individuals career and salary trajectory. Ultimately concluding that those who face the highest risk are those who potentially earn the most, this all to do with the lack of awareness.

ETHICAL CONSIDERATIONS

As a starting point all participants approached to contribute to the study were informed upfront that the research is for academic purposes only and that full anonymity will be adhered to when assessing the data which was collected from the online surveys of which it was mandatory for everyone to opt-in to. Regarding the answers of the telephonic interviews it was verbally shared that full confidentiality is assured in the process and no personal information will be used during that data analysis. When forming the questions it was considered that some people are unaware of the risks that they face by interacting online particularly on social media and that all language used in the questions needed to be carefully selected so as not to cause the participant to be fearful of their online interactions in the future. It was also important to try to ensure that they had a calm state of mind when sharing their answers, using academic

language has a tendency to have people change their mindset and view the data collection process as a test and therefore try too hard to appear knowledgeable when they are not and it was necessary that all participants were not threatened by the language used in the questions. It was important that no respondents mental state was put into harms way and also that respondents do not feel offended in any sort of way. The questions also had a specific flow which was intentional, so the participant was made to feel comfortable to share their answers openly, honestly and uninhibited with a desired to over complicate their answers due to intimidation of being a part of an academic study. All participation agreements were shared up front in both the online surveys as well as telephonically however the telephonic was done more casually so as not to cause anxiety and therefore resulted in a more relaxed conversational tone.

LIMITATIONS

The primary concern is that there was not enough data collected for the study to draw any conclusive findings due to lack of time and therefore it is recommended to run the study for a longer period in future. This because the findings confirmed the need for in-depth research to be done on the targeted population and that if the data collected is anything to go by there is a large population of high earning South African females who are at risk on a large scale due to lack of awareness of data mining on social media. Luckily from a more practical standpoint there were no issues which arose regarding service provider issues regarding electricity in South Africa and in turn connectivity issues were not experienced by participants. Another aspect which was considered to potentially impact connectivity to the participant was data and a the lack there of, which the study did not subsidise however there was a complete willingness from the participants to use their own data to share their views on the topic however on mass scale this might not be the case. Other limitations which were considered was that time needed to be spared by the participants, they however were able to arrange an interview within a time which was suitable to both parties. Lastly, with the fact that the online survey was answered remotely from the study left the possibility that the respondents might lack an understanding for what is being asked in the questions and might be deterred from answering / completing the online survey so we

possibly are not seeing a true reflection of all those who attempted to complete the survey.

CONCLUSION

Reverting to the initial intention of the study, the aim was to gauge the awareness levels of social media users on data mining and the usage of data insights in marketing. Specifically, in female social media users over the age of 35. As mentioned earlier, this target population was selected based on the influence that their buying power has on the South African retail market in light of the fact that they also drive household decision making. What was found was that there is indeed a lack of awareness in the target population and the awareness levels diminish as their age increases. There were 3 significant connections that were not made by the social media users who participated in the study and that was the link between who own the social media data collected, how social media platforms generate revenue and how adverts land up on the participants timeline. This disconnect clearly outlines the degree to which social media users in the target population have a little amount of awareness to social media data mining. Additional research needs to be conducted to delve further into the severity of the lack of understanding as well as how social media marketing is impacting purchasing decisions.

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ANNEXURE A

Please scroll

Research Purpose/ Objective	Primary Research Question	Research Rationale	Seminal Authors/ Sources	Literature Review – Conceptual Framework	Paradigm	Approach	Data Collection Method(s)	Ethics	Anticipated Findings
To determine the awareness level of social media users re: social media data collection.	What are the public awareness levels around invasive SM data collection methods on social media platforms?	The study is important because consumer data is being traded and a balance needs to be found between consumer privacy rights and consumer insights for marketers.	Alfred Marshall A. Belden Fields	1. Inferring Urban Land Use Using Large-Scale Social Media Check-in Data 2. Exploring uses of social media in a global corporation 3. Social media use by government: From the routine to the critical	Interpretivism <u>Epistomology</u> Uncovering a deeper truth – what are people aware of. How do they feel. To educate and inform society about the topic	Qualitative Population 35-50+ female SA who participate on social media Must have: Internet access Phone Availability	Online Survey 50 - 70 3 weeks In-depth Interviews – 10 to 15 respondents 10 mins. Once off	Anonymous Consent Data collected used for study only Respect respondents Make them feel at ease / comfortable /	There is low awareness Where there is awareness it is limited
To determine who is at risk.				4. Using social media to quantify nature-based tourism and recreation 5. Data Mining in Social Media	Reality is subjective. <u>Axiology</u> Research must serve to educate & inform				
Research Problem	Secondary Questions/ Hypotheses/ Objectives	Key Concepts	Key Theories			Sampling	Data Analysis Method(s)	Limitations	Anticipated Contribution
The problem is around any violation of human rights through any form of data mining on SM usage data.	What is the use of aggressive data collection on social media?	Data mining Data trading Social media data collection. Privacy Consumer insights The price of personalisation	Demand theory Human Rights Theory			Probability sampling Simple random sampling – Survey None probability sampling (interview) – Convenience sampling	Survey – google forums Telephonic interviews	Enough data collection Time / sticking to appointments Load shedding Awareness may make them uncomfortable	What the study is expecting to show is that the older the respondent is the lower their awareness is to the uses of their online data in marketing

ANNEXURE B

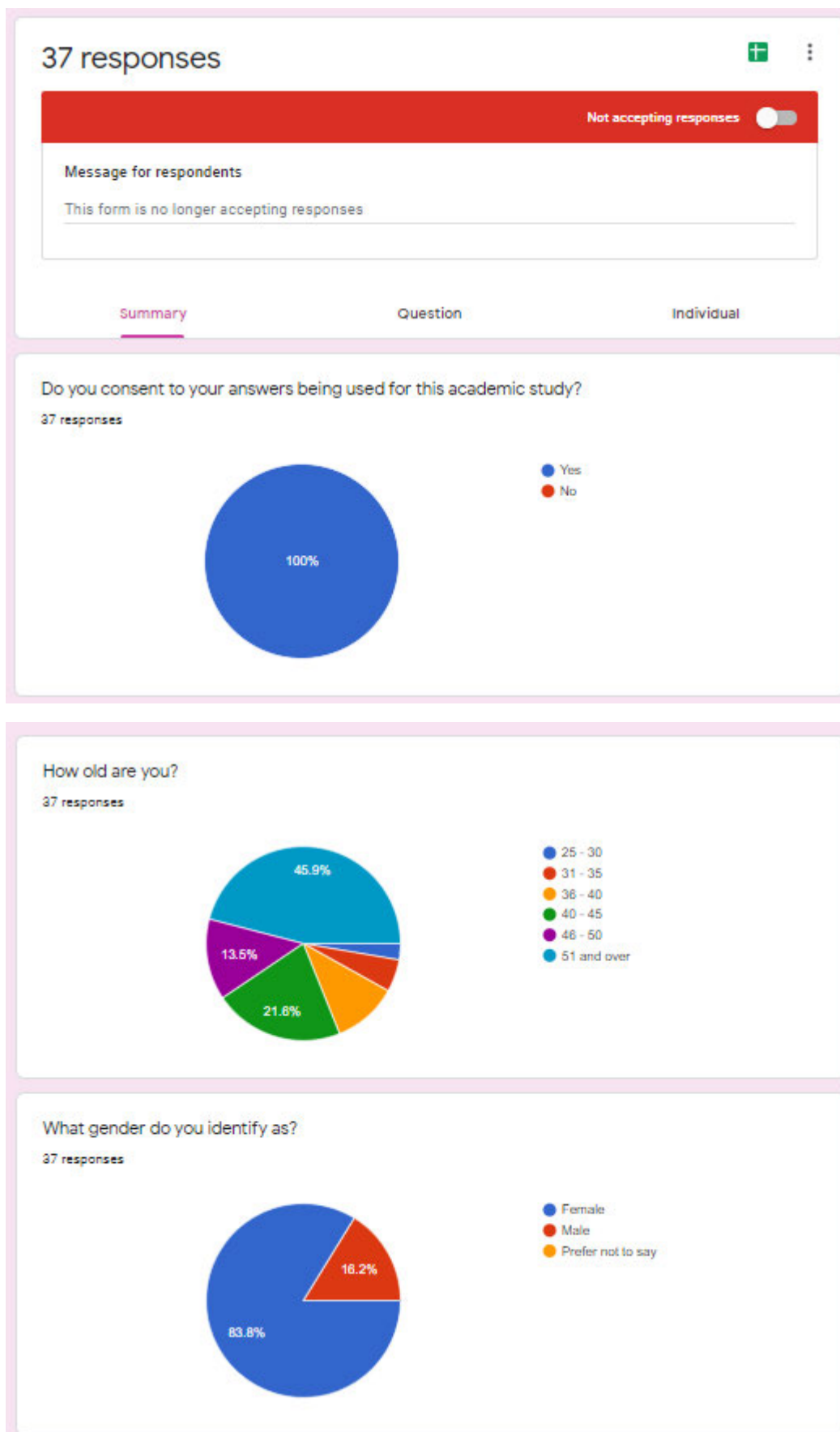
Online Survey

1. Do you consent to your answers being used for this academic study?
2. How old are you?
3. Do you use social media and what platforms do you use (ie. Facebook, Instagram, Twitter)?
4. How often do you check your social media?
5. What is the main reason for your use of social media?
6. In your opinion how does social media make money?
7. In your view is there a record of social media interactions?
8. In your view if there was a record of social media interactions who would own this record?
9. Do you notice patterns on your social media feed?
10. Do you notice adverts on your social media feed?

Interview questions?

1. Do you use social media and why?
2. How do you think social media makes money?
3. In your view is there a documented record of social media interactions (ie. status, shares, likes)?
4. If there is a record of interactions who owns these records?
5. Do you notice patterns on your social media feed?
6. Do you notice adverts on your social media feed?
7. How do you think those adverts end up on your timeline?

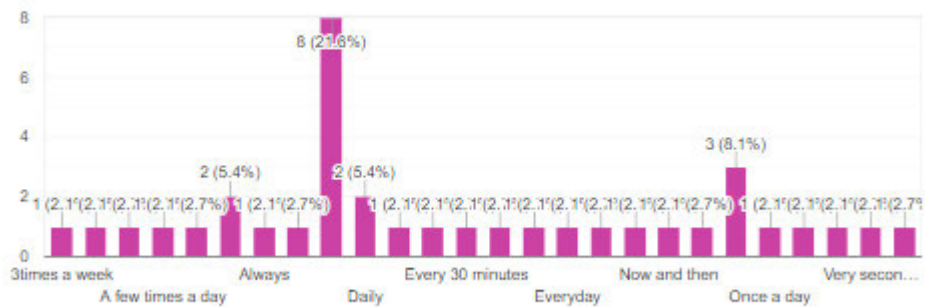
ANNEXURE C



37 responses

Facebook and Instagram

37 responses



What is the main reason for your use of social media?

37 responses

Connecting with family and friends.

Keeping up to date with what's trending, reading motivational quotes and feeds. Love the music videos that my friends post.

The be inform .

To stay connected

To remain in contact with friends and family and I also use it for networking.

Information updates

To check on friend at home and abroad

To connect with family and friends

Stay in touch with others

In your opinion how do social media platforms make money?

37 responses

Advertising

Have no idea

No idea.

Through advertising and amount of followers

By us liking anything and using data

Google Ads

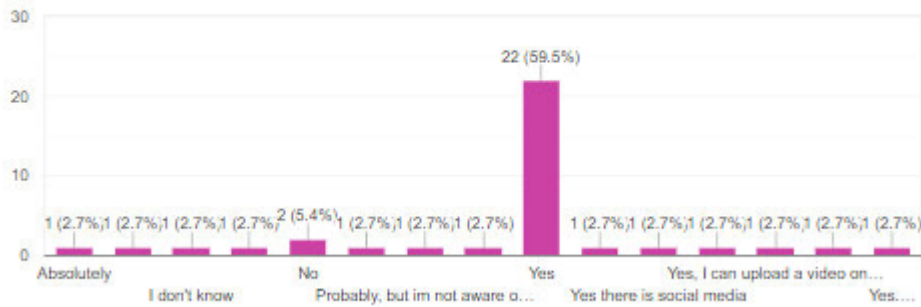
Worldwide advertising

The more you use it

By putting up adds, people using vlogs to sell their brands

In your view is there a record of social media interactions?

37 responses



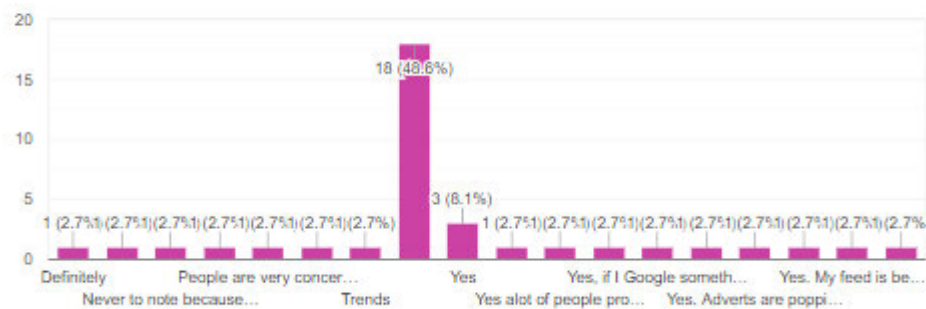
In your view if there was record keeping of social media interactions who would own these records?

37 responses



Do you notice patterns on your social media feed?

37 responses



Do you notice adverts on your social media feed?

37 responses

Yes

Yes

Yes, especially viewing videos.

No

Yes..once you've googled something automatically your social media is flooded with similar ads

To much ad's

Alot

Sometimes

Yes definitely ads especially after searching for a product or talking about a product

How old are you?	In your opinion how do s	In your view is there a r	In your view if there wa	Do you notice patterns o	Do you notice adverts or	How do
51 and over	Not sure	Yes	The owners of the app	Yes	Yes	That's w
46 - 50	Adverts, blogs etc	Yes	Owners of these platfor	Yes	Yes	Not sure
51 and over	Through advertising and	I think so	Facebook creators	Yes	Yes	I don't kn
51 and over	Have no idea	Absolutely	Those in charge and sta	Yes	Sometimes	Not sure
46 - 50	By posting	Yes there is social media	Social media	People are very concern	Everything issued is the	When pe
51 and over	No idea.	Probably, but im not aw	No idea, probably the pe	Yes. If i check out a rec	Yes, especially viewing	Not sure
46 - 50	By putting up adds, peop	Yes	In my view I think it woul	Yes alot of people prom	Alot	I don't kn
40 - 45	Advertising revenue fro	Yes there is, that's how	Facebook owns the rec	Yes, if I Google somethir	Yes	Don't kno
51 and over	Advertising	No	Yes	Trends	Yes	Don't kno
40 - 45	By us liking anything and	Yes	Not me	Yes	No	Not sure
51 and over	Boosting advertisements	Yes	Once you have posted s	Yes	Yes	From goo