

The influence of personality factors on smartphone choice



This image has been generated using AI assisted tools

Author: Ruben de Vreede
Student number: 5372922
Thesis supervisor: Dr. Schelte Beltman
Second reader: C. Tor Kadioglu
Finish date: July 25th, 2024

The views stated in this thesis are those of the author and not necessarily those of the supervisor, second reader, Erasmus School of Economics or Erasmus University Rotterdam.

Abstract

The smartphone market has grown to be a matured market in one and a half decade and is an interesting market to study because it is a product that nearly every has and is a big and increasing part of our life. Earlier research has been done that shows that your social environment plays a major role in making a smartphone choice. A second variable that influences brand of smartphone choice is quality. This research tests the three personal factors studies by Sun et al. (2020) to see if the same results of a study among young adults in China apply in the Netherlands among the same demographic. These three personal factors are attention to social comparison, need for uniqueness and quality consciousness. Other factors that are tested to influence the smartphone choice are gender, source of income and purchasing price. The research question is whether these variables increase the chance of iPhone ownership. The study finds that none of the variables measured have a significant positive or negative effect on choosing to own an iPhone. However, the study does find that attention to social comparison, quality consciousness and iPhone ownership have a significant positive effect on the purchasing price of a smartphone.

Keywords: Smartphone choice, Purchasing Price, Attention to social comparison information, Need for uniqueness, Quality consciousness.

Table of contents

Abstract	iii
Table of contents	iv
List of tables	vi
List of figures	vi
1 Introduction	1
2 Theoretical Framework	5
2.1 Overview of the chapter.....	5
2.2 Attention to Social Consciousness Information (ATSCI)	5
2.3 Need for Uniqueness.....	6
2.4 Quality consciousness (QC)	6
2.5 Gender.....	7
2.6 Income	7
2.7 Purchasing price.....	7
3 Data	9
3.1 Overview of the chapter.....	9
3.2 Sample population	9
3.3 Data collection	9
3.4 Data filtering.....	10
3.5 Remaining Sample.....	11
4 Method	12
4.1 Overview of the chapter.....	12
4.2 Structure of the survey.....	12
4.3 General remarks and assumptions	13
5 Results	15
5.1 Overview of the chapter.....	15
5.2 Descriptive Statistics	15
5.3 Explanation of the SPSS Models.....	17
5.4 Regression Results.....	18
5.4.1 Attention to social comparison information (ATSCI).....	18
5.4.2 Need for uniqueness (NFU)	18
5.4.3 Quality consciousness (QC).....	18
5.4.4 Gender	18
5.4.5 Source of income.....	19
5.4.6 Purchasing Price.....	19
6 Conclusion	21
6.1 Overview of the chapter.....	21

6.2	Answering the research question	21
6.3	Comparison of this research and the findings of Sun et Al.	21
6.4	Managerial Implication.....	22
6.5	Limitations of this research	22
6.6	Reflection on the research	23
6.7	Future Research	24
6.8	Ending Conclusion	25
References		26
Appendix		28
Appendix A: Survey Questions Thesis.....		28
Appendix B: Invitations for filling out survey		30
Appendix C: Figures and Tables		30
Appendix D: Collected dataset in Excel.....		37
Appendix E: Python code in Deepnote.....		41
Appendix F: SPSS Output		44

List of tables

Table 1	Descriptive Statistics	15
Table 2	Regression model 1 showing the effect of the six hypothesis variables on iPhone choice	17
Table 3	Regression model 2 showing the price respondents paid for their smartphone depending on several variables	17
Table 4	Correlation between source of income and purchasing price	19
Table 5	Correlation between source of income and smartphone choice	36

List of figures

Figure 1	Histogram of the survey duration before filtering for a large outlier	30
Figure 2	Histogram of the survey duration after filtering for a large outlier	10
Figure 3	Histogram showing the purchase price without removing a large outlier	11
Figure 4	Histogram showing the purchase price after removal of a large outlier	11
Figure 5	Pie chart iPhone ownership	11
Figure 6	Histogram showing the distribution of Attention to social comparison scores	32
Figure 7	Histogram showing the distribution of Need for uniqueness scores	33
Figure 8	Histogram showing the distribution of Quality consciousness scores	33
Figure 9	Histogram showing the distribution of age	16
Figure 10	Pie chart education level	34
Figure 11	Pie chart gender	34
Figure 12	Pie chart source of income	16
Figure 13	Pie chart nationality	35
Figure 14	Boxplot showing the differences in purchasing price between non-iPhone owners and iPhone owners	20

1 | Introduction

This study is about the drivers of choosing to purchase an iPhone and the purchasing price of a smartphone in central. In 2023 Apple outperformed Samsung for the first time since 2010 in global smartphone sales, becoming the largest manufacturer in the world (Kaur, 2024). According to a report by the international data corporation (IDC), the iPhone accounted for a 20.1% of the market, followed by Samsung with a share of 19.4%. In the highly competitive market of the smartphone industry at this moment, with global sales reaching 1.17 billion units in the last year, the importance of an excellent marketing plan is becoming increasingly important. In contrast to other consumer electronics in the past century, smartphone devices are becoming increasingly popular as they age (Mickle, 2023). Smartphone sales have increased in the last five years as consumers' needs and wants for the product are increasing. The smartphone industry has rapidly grown from the introduction of the first smartphone in 2008 to a mature market in one and a half decades.

The smartphone has a big influence on our lives as more tasks get automated. Virtually every activity today has a smartphone application for it (Mackenzie, 2006). People in the Netherlands on average spend 5 hours and 30 minutes on their smartphone each day (Kemp, 2024). Smartphones are changing the way we think, act and behave. Sanders (2017) describes that our dependence on technology is having an impact on memory, perceptions, attention and reaction time. According to Gupta (2015), smartphones are causing us to be more connected, but are creating physical and emotional distance towards each other.

The enormous growth of the product in combination with the importance of the device in our everyday lives make it one of the most interesting markets to study. With a product that is sold to around one in eight people worldwide each year, it is no surprise that companies like Apple, Samsung and Google are doing their utmost to maintain market share in this increasing market. The smartphone is a product that almost every person has and arguably needs, but marketing still makes a big difference in the choice of brand that consumers opt for. Smartphones are a necessary good but not a homogeneous good and therefore it is important for corporations to differentiate their product and create a strong brand image, identity and loyalty from their customers. It is important for smartphone producers to find out what drives consumers' choices to improve their position in the market.

How and why people make choices when buying products can improve the understanding of manufacturing companies towards customer preferences when it comes to their brand and product. First, it is important to note that choices are based on internal influences as well as external influences. Examples of internal influences are your personal likes and dislikes, but also your values. External influences are factors like your community and culture.

Besides these examples, the influence of media as an external factor cannot be underestimated. Globalization due to technological advancements have made it possible for people all around the world to connect with each other and to exchange cultural values. These global connections between people to share values has created an excellent climate for brands to thrive and become a big part of our street scene and our society. Globalization has caused people all around the globe to develop the same preferences and to buy the same products. Brands have become part of people's personality; The brands you own are an image of who you are. This process has to do with the way brands establish themselves within the markets they operate. Brands often create a story, a lifestyle or a personality trait around their products. People that resonate with one of these three identify themselves with the product and grow a relationship with the brand.

Sun et. al (2020) conducted research about personal factors that have an influence on the choice of smartphone brand of consumers. The study tests three personal factors that influence the buying behavior of consumers. Sun et al. (2020) bases these three factors on a study done by Zhan and He (2012). The personal factors are: The influences of attention to social comparison information (ATSCI), need for uniqueness (NFU) and quality consciousness (QC). The study finds that all three factors have a positive impact on the purchase intention of iPhone. A sample was taken in China among young adults that were categorized as upper middle class.

Following up on the study done by Sun et al. other studies about smartphone choices among young adults have shown similar results. Research by Malviya et al. (2013) in Indore, India finds that social image, technology and durability have big influences on customer behavior. A study done in Malaysia shows that social influence and product features have an impact on brand choices (Lay-yee et al., 2013). Moreover, Ayodele & Ifeanyichukwu (2016) concluded that product features as well as aesthetic value have the biggest impact on smartphone choice in Nigeria, while social influences were not significant in this research.

This thesis will aim to replicate the study done by Sun et al. (2020) in an aim to further support their findings. The context will be changed by taking a sample from young adults in the Netherlands. By having a different context, this study will try to discover whether the personal factors described in Sun et al. that influence consumer behavior are reproducible and apply in a different demographic. In this case, a developed country will be examined instead of a developing country, with major differences in cultural values.

Repeating this Chinese study in the Netherlands is relevant because of two reasons. The first being that similar research that was done regarding the smartphone market among young adults were all done in developing countries. The research is done in a certain part of the world leaving space for research in the western world. It is possible that research in this part of the world yields different results because of

different values of the three factors that will be studied as well as differences in wealth and the differences in products priorities this results in. The second relevance of this study is that the outcomes of this study can improve the understanding of smartphone manufacturers. Having a good idea of how customers behave towards smartphone brands and knowing what the reasons are to purchase a certain brand can improve the manufacturers market share significantly.

The goal of this research is to strengthen the existing literature and to extrapolate the ideas to verify that the conclusions still hold true. This increases the reliability of the findings reported and can contribute to a better understanding of the consumer market. The goal of this thesis leads to the following research question:

What personal and demographic factors influence the ownership of an iPhone by young people in the Netherlands?

In this study, young people are people within the cohort 18-34 and people living in the Netherlands. The reasons for choosing this cohort will be explained in the data chapter. The following hypotheses are formulated to answer the research question:

H1: ATSCI has a positive influence on iPhone ownership

H2: Need for uniqueness has a positive influence on iPhone ownership

H3: Quality Awareness has a positive influence on iPhone ownership

H4: Men are more likely to own an iPhone

H5: Income has a positive influence on iPhone ownership

H6: Purchasing price has a positive influence on iPhone ownership

Several remarks can be made about the context of the research and decisions made. In this way, the purity of the research can be improved and any doubts about lack of consideration of important factors can be removed.

The first concern to address is market intervention by the Chinese government. The Chinese market is known to interfere significantly with consumer markets and the question could be raised if that isn't the case in the smartphone market. There are two reasons why this effect is neglectable when it comes to consumers' smartphone choices, and maybe (because the Chinese government is quite secretive, so it is not known for certain) even non-existent. The first reason is that the Chinese culture has strong values about being better than others. People in China have a strong incentive to buy the premium products as a symbol of status. Research has shown that Apple is the premium smartphone brand in China, which makes Chinese people want to purchase the iPhone over other smartphones, regardless of government intervention. The second reason is that the iPhone is the most sold smartphone in China, which not only

proves that a lot of people have the preference of iPhone, but also that any government interference is not holding Chinese people of too much.

The second context this thesis addresses is that the research will be done from the perspective of Apple. This is done for the following reasons: Apple is seen as the dominant brand. This means that most people would want to buy Apple over other brand when being able to. Most people are therefore willing to pay a higher price for the product and people scoring higher on the personal factors will have a higher chance of owning an iPhone. Therefore, separating the dominant brand from the other brands, these factors can be studied more closely. This thesis in no way has a preferable choice of brand and the choice of perspective has no to research's bias.

2 | Theoretical Framework

2.1 Overview of the chapter

To answer the formulated research question, several hypotheses will be formulated in this chapter. This chapter contains all the literature behind the hypotheses we will study in this thesis. Each variable will be explained and interpreted. The hypotheses will follow from the earlier research that will be discussed regarding the specific topic. The variables in the first three hypotheses will be called personal factors in the rest of this study. Gender and Source of income in hypothesis 4 and 5 will be called demographic factors. All the variables will show a sign of influence (positive or negative) on iPhone ownership. iPhone ownership will be defined as the chance that one owns an iPhone. For example, if a variable has a positive influence on iPhone ownership, this means that the variable increases the chance of the person owning an iPhone.

2.2 Attention to Social Consciousness Information (ATSCI)

Attention to social consciousness information (hereafter ATSCI) is the extent to which individuals are sensitive to social comparison cues relevant to their product choices (Bearden & Rose, 1990).

ATSCI originates from the idea of social learning (Heyes, 1994). What other people do and how they behave has influence on you. This stems from a history where people seek confirmation from others and want to fit in. This originates from cultural norms and values, in other words, what we think is 'normal'. It is no surprise that these cultural values effect decision making and what brands we buy. Copying others is part of what makes humans successful and is part of social learning (Rendell et al. 2010). An example of this normality is that students drinking alcohol influences others to show the same behaviour (Novak & Crawford, 2001). In this research, copy culture is described and behaviours of humans are learned from others. These people also avoid conspicuous brand logos even in the case of highly prestigious brands (Kim et al, 2014).

Chinese people attach great value to the valuation of others. China can be seen as a collectivist culture, where there is great importance in fitting in and behaving like other people (Zhang & Tsai, 2015). This is different in the Netherlands, where there is a much more individualistic culture (Yaman et al, 2010). This thesis predicts that people who have a high ATSCI score are more likely to buy the products and brands that are accepted as the social norm. They are more sensitive to the reaction of others (Bearden and Rose, 1990). This leads to the following hypothesis.

H1: ATSCI has a positive influence on iPhone ownership

2.3 Need for Uniqueness (NFU)

Need for Uniqueness (hereafter NFU) is the inner desire to stand out from the crowd (Snyder & Fromkin, 1977). This study defines need for uniqueness as a positive striving for abnormality relative to other people. The need for people to stand out originated from the threat to one's identity when being too similar to others (Sun et al. 2020). Cockrill (2012) states that Apple has done this by creating selling point like 'cool factor' and 'fashionable yet sophisticated' as ways to make their products stand out from other brands. Uniqueness can be achieved through acquisition, utilization and disposition of consumer goods for the purpose of developing personal and social identity (Tian et al., 2001).

Comparing Chinese culture with the Dutch culture this thesis expects that need for uniqueness in the Netherlands is higher than in China. In China, it is much more important to fit in instead of expressing yourself. The Dutch culture is more open to this idea. This thesis expects that people with high NFU are more likely to purchase an iPhone to express themselves and their identity. This leads to the following hypothesis.

H2: Need for uniqueness has a positive influence on iPhone ownership

2.4 Quality consciousness (QC)

Quality consciousness is a measure to what degree a consumer tends to look for the best quality products (Sproles & Kendall, 1986). Buying quality products is important for consumers they seek to get the highest utility. Perception of quality is a very important aspect of quality. When consumers have good experiences with a brand, they value a company's products more than others (Kenyon & Kabir, 2015). This is why brand image is important for manufacturers. By creating a relationship with consumers, loyalty will arise, and consumers will value products of one company as having higher quality than other while the quality can be the same.

People in the Netherlands are expected to have a higher value for QR as Chinese people in the study of Sun et al. (2020). Although it is important for Chinese people to own products of good quality, QR comes second to ATSCI. In the Netherlands, it is expected that ATSCI and NFU will have smaller effects, as the culture is more individualistic. QR will most likely have the highest impact in the Netherlands. This study expects that people who score higher on QC are more likely to own an iPhone. The iPhone is seen as the highest quality product on the market, making it appealing to the people that value quality the most. This leads to the following hypothesis.

H3: Quality Awareness has a positive influence on iPhone ownership

2.5 Gender

This study will also test two demographic variables that could have an influence on iPhone ownership. These two are discussed in the following two paragraphs. Men are known to show more interest in technology markets and are more often early adopters of tech products than women (Strengers et al. 2019). Research also shows that men also have a higher brand consciousness than women (Solka et al, 2011).

Looking at China and the Netherlands, this thesis does not expect that the outcomes of a gender effect differ. Sun et al. (2020) concluded that gender does not have a significant effect on purchasing intention in the smartphone market. This study will, however, hypothesize that there is an effect. This is done to create unity in the hypotheses formulated; all of them are said to have an influence on iPhone ownership. The following hypothesis is formulated:

H4: Men are more likely to own an iPhone

2.6 Income

One's income determines what products people can buy. Having a higher income leads to more budget to purchase more expensive items. Apple products are seen as luxury items, thus products that people usually purchase when getting a higher income. The smartphone industry might be different. Nearly every person has a smartphone, therefore there is something to be said for smartphone being a normal good. At this point, marketing plays a big role, because why would consumers pay a premium for an iPhone? This is because of an excellent marketing strategy where Apple has created a relationship with consumers.

When comparing Dutch income with those of Chinese people, a conclusion that can be drawn is that although China has a strong upcoming economy, a lot more people live in poverty than in the Netherlands. In absolute terms as well as relative. That is why this thesis would expect that income plays a bigger role in iPhone ownership in China than in the Netherlands. The Chinese culture with its importance to showing others what you have, it could be that Chinese people with lower incomes still opt for an iPhone instead of another brand. This means that Chinese people will, no matter what income, always want to opt for an iPhone. In conclusion, the effects of iPhone ownership are expected to have the same effect in both countries. This leads to the following hypothesis:

H5: Income has a positive influence on iPhone ownership

2.7 Purchasing price

The last hypothesis this thesis will study is about Purchasing price. Purchasing price is an interesting variable to study, because it shows the premium that Apple owners are willing to pay for their smartphone. This study will see whether iPhone owners spend more money on their smartphone.

This variable was not studied by Sun et al. but was added because of curiosity of the researcher. This thesis expects that respondents who pay a premium for their smartphone and therefore have a high purchasing price have an increased chance of being an iPhone owner. This leads to the following hypothesis.

H6: Purchasing price has a positive influence on iPhone ownership

3 | Data

3.1 Overview of the chapter

This chapter will explain the data collected to test the hypotheses formulated in the theoretical framework. The chapter will be split in four topics. In order of occurrence, these are: The sample of the demographic used, the way the data was collected, what data was filtered out and what the data looked like after filtering/cleansing the data.

3.2 Sample population

The research was set out to collect a sample of the population of people living in the Netherlands between the ages of 18 and 34 with a high education. High education is defined as people with education level HBO or WO (Centraal Bureau voor de Statistiek, 2022). This demographic was chosen for several reasons.

The first reason is that this cohort is part of the first generation with access to smartphones somewhere in their youth. People aged 34 were 17 at the time of the first smartphone release in 2007 (Apple, 2007). Having a generation that is highly engaged in global media and the internet is very appropriate (Strizhakova et al., 2011). People below 18 are not considered adults and do not make all purchasing decisions themselves, nor do many of them purchase their own smartphone. Therefore, people below 18 years old were not eligible to engage in the research.

The second reason for choosing this cohort for the research is that this generation have the highest percentage of smartphones owned (A.M. Wennekers, J. de Haan en F. Huysmans, 2016). 96% percent of people aged 20-34 report owning a smartphone. Also, 86% of high educated individuals report owning a smartphone. Both percentages are significantly higher than other demographics.

The third reason this demographic was chosen is because this age bracket is the youngest adult generation. The young generation is always looking for ways to be cool and new, in other words scoring high on external factors influencing behaviour like what other people think about you and wanting to stand out (Cockrill, 2012). The last reason for using this demographic in this study is that it aims to replicate the study done by Sun et al. Having the same demographic is best to compare the findings of this study well with their study.

3.3 Data collection

The data was collected in the following two ways: In the initial publication a survey was sent to close friends and family members of the same age as the researcher. They were all asked to fill out the survey and spread it to at least 10 other people. After a few days responses stopped coming in. The researcher then decided to post a story on my Instagram asking followers to fill out the survey (See appendix B). The

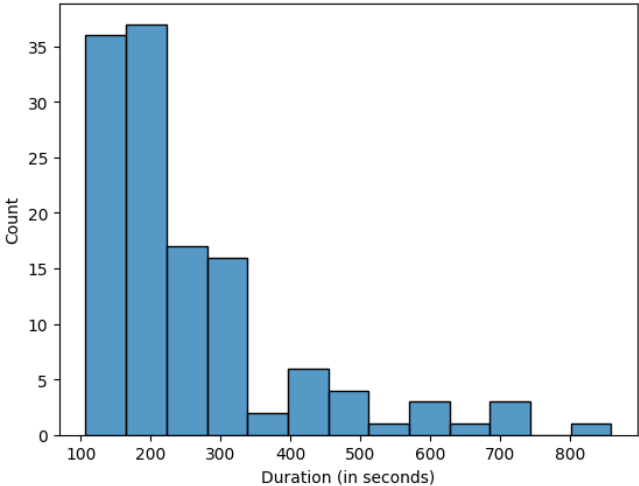
intention of this post was to on one hand, remind people that had already been sent the survey to respond and on the other hand to reach potential respondents. The way of sampling used is called snowball sampling. This is an example of non-probability sampling.

3.4 Data filtering

After collecting the data of 167 respondents, some data was filtered out. At first, the data was transferred to Excel using a CSV file (see appendix D). There were two ways in which a response was deleted. First, all incomplete responses were removed, resulting in 145 responses left. The second reason for removing a response was not being in the desired demographic. This means that the respondent was not within the desired age bracket or did not have a high education level. 135 responses were left after filtering for demographics. We now have all valid responses within the desired cohort.

Next, the data was transferred to an online programme called Deepnote to analyse the results using python code (see appendix E). Here, the last filtering of the data was done. First, a histogram was made of the duration of the survey. This way, any response that was unusually fast could be removed out of caution for an unserious response. Any unusually slow respondents presumably closed the survey somewhere along the way and continued later and were left in the data. Figure 1 in appendix C shows the histogram of the duration with several slow responses. Figure 2 shows that the peak of response duration is between 100 and 200 seconds, there are no outliers before the 100 second mark, so there was no need to remove any response.

Figure 2: Histogram of the survey duration after filtering for a large outlier



Next, the data was checked for any outliers. This led to the observation of a very large outlier in the price paid for a smartphone of 74440 euros. This can be see in figure 3. This response was removed from the dataset as this is an invalid answer and will result in unaccurate results using the data. In figure 4, the data is shown without the outlier.

Figure 3; Histogram showing the purchasing price without removal of a large outlier

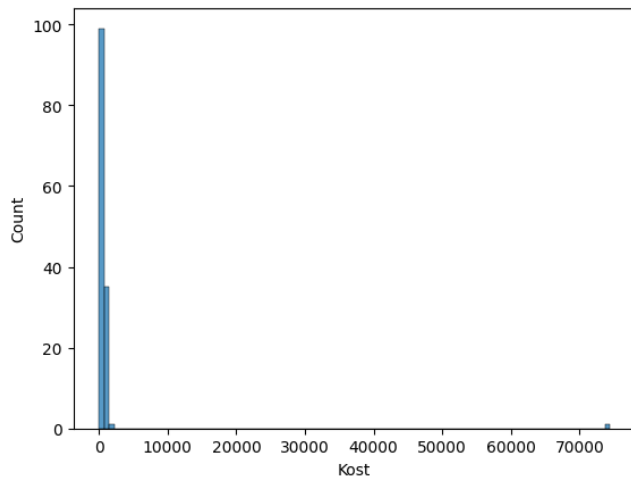
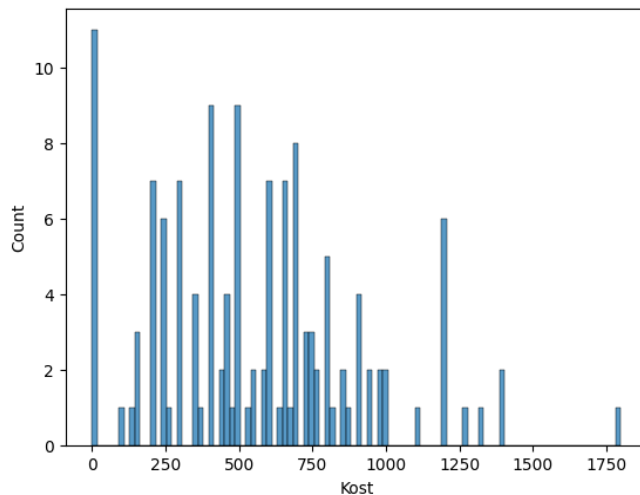


Figure 4: Histogram showing the purchase price after removal of a large outlier



3.5 Remaining Sample

After filtered out the data for the desired demographic and removing potentially unserious answers and outliers, the sample contains 135 respondents. 64.4% are iPhone owners (see figure 5) and Gender was distributed as 55.6% female and 44.4% male. The largest Source of income group was students with a side job, accounting for 55.6% of the responses, while working people came second with 24.4%. People with a part-time job or students without side job occupied the other 20%. See appendix C for the pie charts of all demographic variables.

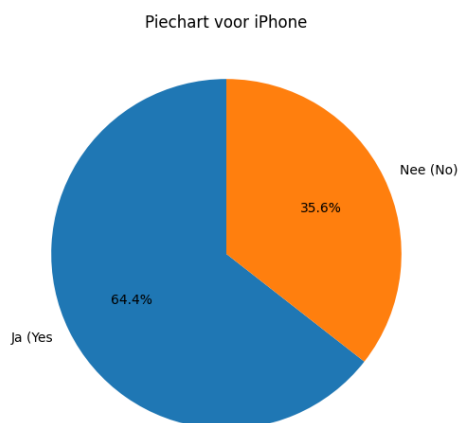


Figure 5: Pie chart iPhone ownership

4 | Method

4.1 Overview of the chapter

In this chapter, the following will be discussed: First, the kind of research that was conducted will be discussed and what the structure of the survey is. This will be supported by example questions. Next, several general remarks and assumptions in making the survey will be discussed and considered. Finally, there will be information about how the data is analyzed to create the results needed to answer the hypotheses and the research question.

4.2 Structure of the survey

This thesis will conduct quantitative research like the study of Sun et al. as it will try to replicate the research. The quantitative research will be conducted by using an online survey using Qualtrics. The survey consists of three parts: Section A, B and C.

Section A consists of 3 questions about the smartphone the respondent owns. The questions are whether you own an iPhone, what model phone you own and what the purchasing price of your phone was. Question 1 was used to have the percentage of iPhone ownership at a glance. This can also be deciphered from question 2 where the model smartphone is asked, but this requires manual counting of brands. Question 2 was designed to give insights in whether iPhone owners are more influenced by social factors or pay more for their phone. This insight will be illustrated later in the research, but question 2 was not used in the results section. Question 3 will be a continuous variable used as the metric for Purchasing price in of the hypotheses.

Section B is composed of statements on the three personal factors regarding choice behaviour by using 7-point scale multiple choice questions. The statements were based on the survey by Sun et al. customized to appeal to people in the Netherlands. This was done to stay as close to their research as possible. Each of the three personal factors consisted of 5 statements with answers ranging from 'Strongly disagree' to 'Strongly agree'. An example from each of the personal factors is '*I buy the same brands and goods as others*', '*I buy other/unusual brands than others to be unique*' and '*I prefer to pay more money to get better quality than buy the cheapest version of a good possible*'. The full survey question list can be found in appendix A.

Section C consisted of the demographics Sex, Age, Source of income, Level of education and Nationality. Age and Level of education were used to create a sample with the desired demographic. Sex and Source of income were asked to include in the regression model to answer the demographic hypotheses.

Nationality was not used in the study due to reasons mentioned in chapter 6.6 in the reflections of this research.

4.3 General remarks and assumptions

There are several considerations made when creating the survey. These considerations will be discussed here. First, every section started with a short explanatory text containing definition of questions asked in that section. For example, at the beginning of section B, respondents were given a definition of the terms ‘goods’ and ‘others’. Many statements in this section included these words, to avoid bias in phrasing of the questions. It was important for respondents to understand the meaning of these words. The exact phrasing of the explanatory texts used can be found in appendix A.

Next, it was a deliberate choice to put Section C at the end. This way respondents got an indication that the survey was almost finished when arriving at the demographic questions, increasing the chance they would finish the survey.

Another deliberate choice was separating the most similar phrased questions within each personal factor. This was done to keep the respondent thinking about their answers instead of getting the feeling they see the same question and filling in the same answer.

The fourth deliberate choice was made to make Source of income a categorical variable. This was done for two reasons. The first reason being that people don’t know their yearly income by heart and don’t bother looking it up before answering an income question in the questionnaire. Instead, they know the income group they belong in and can fill it in easily. The second reason is that asking income in this way results in a more general result for each group of people. This way groups can be studied more easily instead of looking at individuals. This can be explained in the following way. There are 4 income groups in this study: ‘Working’, ‘Part time working’, ‘Student with side job’ and ‘Student without side job’. In general, it is expected that people earn less money than the group before it in the list above. This doesn’t have to be the case necessarily, but because it is preferred to have information of a group as total, asking individual’s incomes would possibly suggest them to be in a different income group than they are.

The last remark about the survey is that there is no question that asks if the respondent owns a smartphone. This question was excluded because the survey was sent via WhatsApp, which can only be accessed when owning a smartphone. A reminder was sent via Instagram and in the slightest chance that someone did not fill out the survey on their smartphone but used a computer or other device instead, the data supports that 96% of the desired demographic owns a smartphone (A.M. Wennekers, J. de Haan & F. Huysmans, 2016). The chance that one of the respondents doesn’t have a smartphone is therefore neglectable.

4.4 Analysing the data

After filtering the data in ways chapter 3.4 describes, several changes to the data were made to interpret the results more easily. Firstly, the responses of the statements of ATSCI, NFU and QC were transformed into numerical values. This was done in the following way: Each of the 7 possible answers was given a score. ‘Strongly Disagree’ received a score of 1, while ‘Strongly Agree’ received a score of 7. All the answers in between received the other integer numbers. For every respondent, the total amount of points scored in the respective personal score were summed together to form a personal factor score. For example, a respondent that would answer ‘Strongly Agree’ to four statements of ATSCI and ‘Neither Agree nor Disagree’ to the last statement would receive an ATSCI score of $4 \times 7 + 1 \times 4 = 32$. These total scores of ATSCI, NFU and QC was used for the regression analysis. Next, the demographic variables Gender and Source of income as well as iPhone ownership were transformed into dummy variables with numerical values. This required a little more work for Source of income than the other two variables, because it is not a binary variable, and had four possible answer options. For Source of income, three dummy variables were created. The fourth category representing a value of 0 for the other variables.

Besides changing text answers to numerical values, variables were given a simplified name to easily work with in Deepnote. iPhone ownership was noted as ‘iPhone’, Purchasing price as ‘Kost’ and ‘BronVanInkomen’ followed by the respective category represented Source of income. All these data changes can be found in appendix E.

The data was then used to create results. Results were created in the following two ways. Python was used to create histograms and pie charts of the variables to display the results. Furthermore, the correlations and a boxplot were created using python. The data was also sent to SPSS to create regression tables. During the entire analysis and interpretation of the results, an alpha of 0.05 will be used. If one would like, the full data of appendix D, E and F in Excel, Deepnote with the use of python and SPSS respectively can be requested from the researcher.

5 | Results

5.1 Overview of the chapter

After analyzing the results by using the methods described in chapter 4, several observations can be made. This chapter will discuss the various outcomes of the conducted research. The chapter starts with descriptive statistics and the demonstration of the SPSS regression models, followed by the discussion of the results of each hypothesis.

5.2 Descriptive Statistics

After filtering the data, the study was left with 135 respondents. Table 1 provides the descriptive statistics for the continuous variables in the study. The following observations can be made. First, respondents on average score highest in the personal factor Quality consciousness averaging just below 26 points. Besides this, Quality consciousness is higher than the other two personal factors Attention to social comparison information and Need for uniqueness as 75% percent of respondents record a score of 23 or higher, while in the other two factors less than 50% has a score of at least 23 or higher. Another thing that is noticeable when looking at figure 6, 7 and 8 of appendix C is that all three personal factors have an almost normal distribution. This means that the data spread well.

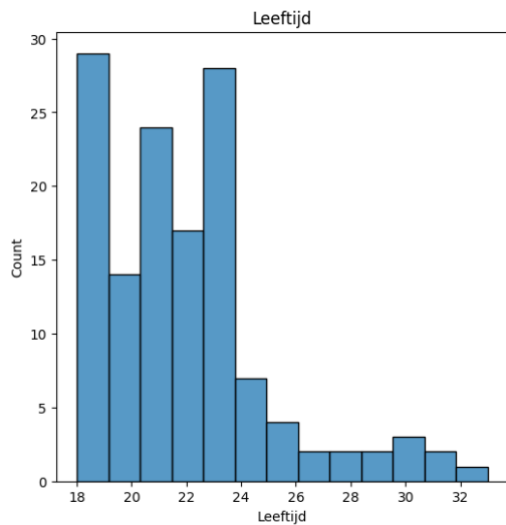
Table 1: Descriptive Statistics

	ATSCI	NFU	QC	Leeftijd	Kost	iPhone
count	135.000000	135.000000	135.000000	135.000000	135.000000	135.000000
mean	18.296296	16.540741	25.970370	21.918519	564.127919	0.644444
std	5.257651	5.765004	4.588989	3.049472	352.843347	0.480464
min	5.000000	5.000000	11.000000	18.000000	0.000000	0.000000
25%	15.000000	12.000000	23.000000	20.000000	300.000000	0.000000
50%	19.000000	17.000000	26.000000	22.000000	527.000000	1.000000
75%	22.000000	21.000000	29.000000	23.000000	754.500000	1.000000
max	29.000000	32.000000	35.000000	33.000000	1800.000000	1.000000

Another observation from table 1 is that the average amount that people pay on their smartphone at purchase is over 564 euros. However, the standard deviation is large in this variable. The standard deviation is more than half the size of the mean value leading to a big spread of the data. Looking at figure 3 in appendix C it is noticeable that the data is not spread with a normal distribution. A large proportion of the observations have a value of 0. This means that a proportion of respondents got their smartphone for free or did not pay for their smartphone.

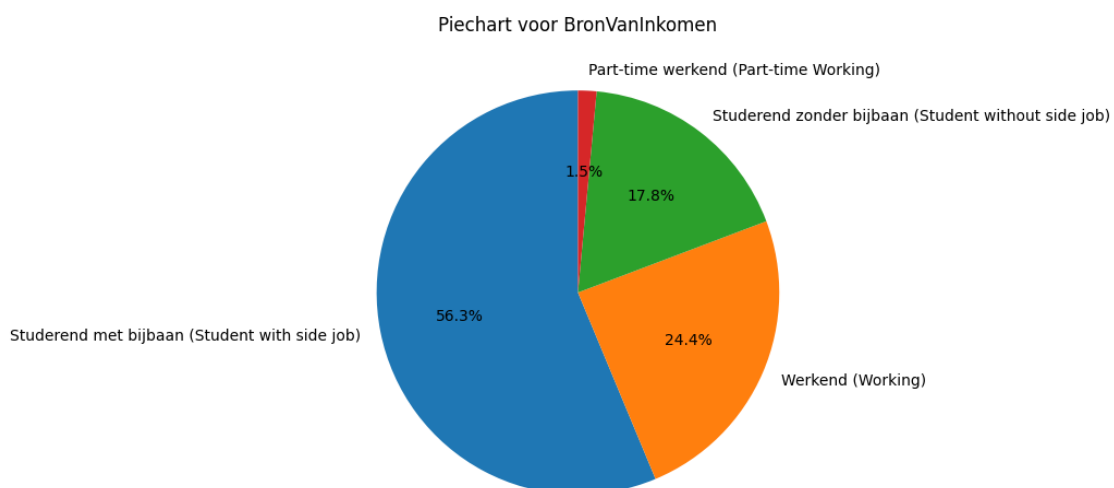
Finally, table 1 shows that the average age is slightly below 22 years old. What strikes most when looking at table 1 is that at least 75% of respondents is between the ages of 18 and 23 while the remaining respondents of the respondents account for the biggest part of the desired cohort for this study of 18-34. Figure 9 in appendix supports this idea. The histogram shows a right-skewed distribution.

Figure 9: Histogram showing the distribution of age



Furthermore, figure 10 in appendix C provides information about the different education levels. These outcomes will be ignored for reasons mentioned in chapter 6.5 in the limitations of this research. Figure 11 in appendix C shows that 56,3% of respondents are female, while men account for the other 43,7%. Figure 12 provides information about the source of income of respondents. The largest part, 56,3% is student with a side job, followed by nearly 25% being full-time employed. The remaining part are students without side job (17,8%) and part-time employed (1,5%). Figure 13 in appendix C shows that 98,5% of respondents are Dutch. Unfortunately, this study cannot study nationality due to lack of respondents being non-Dutch.

Figure 12: Pie chart source of income



5.3 Explanation of the SPSS Models

This study uses regressions analysis to test the hypotheses stated in the theoretical framework. Two models were created using SPSS to present the results of this study. Important to note is that the R squared of both models is relatively low with a score of 0,377 and 0,479 respectively. An R squared of at least 0,7 is often considered to be a reliable model. Low R squares mean that the independent variables do not accurately explain the dependent variable and that there is a high probability of omitted variables in the model. The first model shows the regression coefficient of ATSCI, NFU, QC, Gender, Income and Purchasing cost on Smartphone choice (table 2). The dependent variable iPhone is a binomial variable which means the model can be interpreted in the following way. The coefficients can be seen as percental increase or decrease of the chance of owning an iPhone. For example, a man that works full time with ATSCI, NFU and QC scores of 19, 17, and 26 respectively is estimated to have a 45,8% of owning an iPhone. Model 2 (table 3) presents the regression coefficients of the same variables, in addition to Smartphone choice displayed in the variable iPhone ownership, with Purchasing price being the dependent variable. In this model, the coefficient can be interpreted as the amount of euros that a variable adds or subtracts from the Purchasing Price. For example, each point of ATSCI adds 16,36 euro to the Purchasing price. We will now discuss the results of each hypothesis separately.

Table 2: Regression model 1 showing the effect of the six hypothesis variables on iPhone choice

Model 1		Coefficients ^a		Standardized Coefficients	t	Sig.
		Unstandardized Coefficients	Std. Error			
	B			Beta		
1	(Constant)	-.172	.420		-.409	.684
	Kost	.000	.000	.236	2.573	.011
	ATSCI	.004	.008	.045	.485	.628
	NFU	.010	.007	.120	1.337	.184
	QC	.014	.009	.135	1.496	.137
	Geslacht	-.022	.085	-.023	-.259	.796
	BronVanInkomen_Stude rendmetbijbaanStudent withsidejob	.067	.335	.069	.200	.842
	BronVanInkomen_Stude rendzonderbijbaanStude ntwithoutsidejo	-.030	.343	-.024	-.088	.930
	BronVanInkomen_Werk endWorking	.020	.343	.018	.059	.953

a. Dependent Variable: iPhone

Table 3: Regression model 2 showing the price respondents paid for their smartphone depending on several variables

Model 2		Coefficients ^a		Standardized Coefficients	t	Sig.
		Unstandardized Coefficients	Std. Error			
	B			Beta		
1	(Constant)	-408.171	290.582		-1.405	.163
	iPhone	155.491	60.438	.212	2.573	.011
	ATSCI	16.361	5.704	.244	2.868	.005
	NFU	-6.459	5.201	-.106	-1.242	.217
	QC	13.269	6.537	.173	2.030	.044
	Geslacht	10.903	59.268	.015	.184	.854
	BronVanInkomen_Stude rendmetbijbaanStudent withsidejob	336.511	231.147	.475	1.456	.148
	BronVanInkomen_Stude rendzonderbijbaanStude ntwithoutsidejo	219.176	237.750	.238	.922	.358
	BronVanInkomen_Werk endWorking	416.477	236.023	.509	1.765	.080

a. Dependent Variable: Kost

5.4 Regression Results

5.4.1 Attention to social comparison information (ATSCI)

The first hypothesis that will be discussed is the influence of ATSCI on the Smartphone choice is positive. Model 1 shows that ATSCI has a regression coefficient of 0.004 with a significance greater than 0.05. This means that, first, an extra point of ATSCI increases the choice for an iPhone with 0.4% and second, that the hypothesis can be rejected that ATSCI has a significant positive effect on iPhone choice. Looking at model 2, more information can be gained about the role that ATSCI plays. ATSCI has a positive effect of 16,36 euros per point on the Purchasing price with a significance of 0.005. This means that ATSCI has a significant positive effect. In conclusion, a higher ATSCI does not cause people to buy an iPhone instead of another brand, but it does cause people to spend more money on their smartphone.

5.4.2 Need for uniqueness (NFU)

The second hypothesis is that NFU has a positive influence on the Smartphone choice of consumers. First, looking at model 1, the regression coefficient of NFU is 0.010 with a significance of 0.184. This is a lot more significant than the ATSCI regression coefficient, but not significant enough to not reject the hypothesis. In model 2, NFU has a negative regression coefficient of 6,459 per euro. Therefore, the data suggest that the more need for uniqueness a person has, the less this person will pay for their smartphone. In contrary to ATSCI, NFU does not have a significant effect on Purchasing Price. In model 2, again a non-significant regression coefficient of NFU is recorded.

5.4.3 Quality consciousness (QC)

The last hypothesis regarding personal factors is that QC has a positive influence on iPhone choice. The regression coefficient of QC in model 1 is 0.014, meaning that every point increase in the QC score results in a 1.4% increase in owning an iPhone. This regression coefficient is the most significant out of all the three personal factors but is not significant enough. The hypothesis is rejected. Model 2, however, shows a positive significant effect of 13,269 euros for every point increase in QC. From all three personal factors, QC has the most significant coefficients in model 1 as well as model 2. This makes QC the most significant personal factor in this study.

5.4.4 Gender

The next hypothesis is that men have a higher chance of owning an iPhone. The results show a convincing conclusion. In neither of the two models does gender have a close to significant result. The significance of the gender variable was 0.796, which is much larger than the allowed alpha of 0.05. This means that not only the hypothesis is rejected, but that gender also does not influence the amount spent on purchasing a smartphone.

5.4.5 Source of income

For the last two hypotheses, additional results were calculated by python. First, the hypothesis that Source of income has a positive influence on iPhone ownership will be discussed. Model 1 shows that Source of income does not have a significant effect on iPhone ownership by a long range. The significance ranges from 0.842 to 0.953. This means that the hypothesis is rejected. In model 2, like ATSCI and QC, Source of income shows much more significant results. There are differences of close to 100 euros in the Purchasing price between different income groups.

To look further into this relationship, the correlation between source of income and the purchasing price was calculated in table 4. This output shows that income groups with higher incomes have a more positive relationship with Purchasing price than lower incomes. Model 2 does not show significant effects of Source of income on Purchasing price, but these correlations suggest that income could be play a role on Purchasing price of smartphone, be it said with great caution. More research should be done to confirm this behaviour. Table 5 in appendix C also shows the calculated correlation between iPhone ownership and Source of income. These correlations indicated that the Source of income group does not affect iPhone ownership and has the same conclusions as model 1.

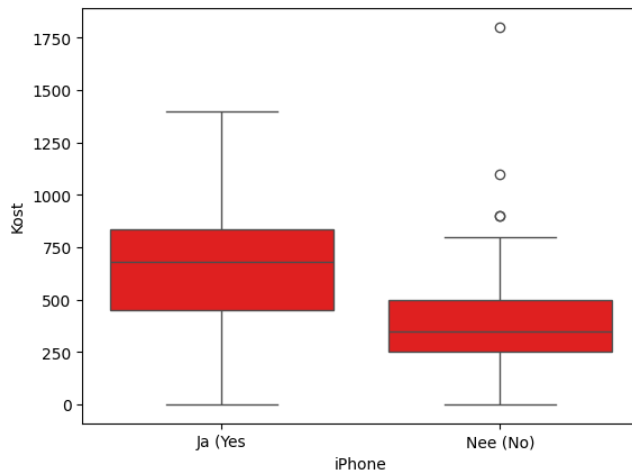
Table 4: Correlation between source of income and purchasing price

Kost	1.000000
BronVanInkomen_Werkend (Working)	0.150320
BronVanInkomen_Studerend met bijbaan (Student with side job)	0.059923
BronVanInkomen_Part-time weekend (Part-time Working)	-0.093533
BronVanInkomen_Studerend zonder bijbaan (Student without side job)	-0.217155

5.4.6 Purchasing Price

The last hypothesis is certainly the most interesting of all. This is the hypothesis that Purchasing price has a positive effect on iPhone ownership. Model 1 shows that Purchasing price has a regression coefficient of 0.000 with a significance of 0.011. This means that Purchasing price is the only significant variable in model 1. However, the hypothesis is rejected because the regression coefficient shows that Purchasing price has no effect on iPhone ownership. In fact, an alternative hypothesis that Purchasing price does not have influence on iPhone ownership cannot be rejected.

Figure 14: Boxplot showing the differences in purchasing price between non-iPhone owners and iPhone owners



Model 2 provides a regression coefficient of the effect of iPhone ownership on Purchasing price. In other words, the inverted relationship is tested in the second regression model. It is shown that iPhone ownership has a significant positive relationship of 155,491 euros. This indicates that an iPhone owner on average spends over 155 euros more on a smartphone than non-iPhone users. To visualize this relationship, figure 14 should be inspected. The median iPhone owner purchased their smartphone for a little less than 750 euros. On the other hand, 50% of non-iPhone owners spend less than a little more than 250 euros. Moreover, 75% of non-iPhone owners pay less than 500 for their smartphone, while only 25% of iPhone owners can say the same. In conclusion, purchasing price has no effect on purchasing an iPhone, but iPhone owners spend significantly more on their smartphone than non-iPhone owners.

6 | Conclusion

6.1 Overview of the chapter

After discussing the results in chapter 5, this chapter will draw conclusion from the study done. The results will then be compared to the research of Sun et al. (2020), the main research that this study was based on. After this, managerial implications will be given for smartphone manufacturers. Furthermore, this chapter will consist of limitations and reflections of this research and give advice for future research. Finally, this thesis will end with a summarizing conclusion.

6.2 Answering the research question

The regression results showed that all the posed hypotheses were rejected. The only variable that showed significant results was purchasing price, but this variable showed more signs of having no effect than a positive or negative effect. Because all the hypotheses were rejected, there was interest in finding out what the effect of the researched could be. Model 2 was created to inspect the role of Purchasing Price more closely. All the variables discussed in this chapter showed more significant results in model 2 than in model 1, leading to the suggestion that the researched variables do not influence iPhone ownership, but in fact influence Purchasing price more. ATSCI, QC and iPhone ownership all showed significant positive regression with Purchasing price, while Source of Income showed a suggestion of possible relationship. The answer to the research question: *‘What personal factors influence the ownership of an iPhone by young people in the Netherlands?’* is the following. This research shows that none of the personal and demographic variables of the hypotheses have influence on the chance of owning an iPhone. However, there are personal factors that have an influence on Purchasing price of a smartphone. People that have high Attention to social comparison information or Quality awareness scores pay significantly more for their smartphone than people who score low on these factors. Also, iPhone owners pay significantly more money on a smartphone than non-iPhone owners.

6.3 Comparison of this research and the findings of Sun et Al.

Comparing the results of this research with the study by Sun et al. (2020), there are several differences and several comparable aspects. The following differences are most noticeable. All three personal factors show significant a positive relationship with iPhone purchase intention China, while none of these factors showed significant effect in the Netherlands. A possible reason could be that Chinese culture is different than in the Netherlands and that respondents in this study give different ATSCI, NFU and QC scores. An indication of culture differences can be seen when looking at the order of importance of the personal factors. In China, ATSCI is the most significant factor in determining purchase intention, followed by QC and NFU respectively (Sun et al., 2020). In the Netherlands, quality consciousness is the most important factor, followed by ATSCI and NFU that both received much lower scores than QC. A possible reason for

this is the collectivist culture in China where opinions of others is much more important than Dutch individualist culture.

Another difference between Sun et al. (2020) and this study is that income is a significantly positive factor in purchase intention in China. In the Netherlands, income was not significant enough to have influence on iPhone ownership. A reason for this can be that the Netherlands has a higher percent of population living outside of poverty than in China, resulting in a larger part of the population able to make a smartphone choice and having a budget to buy the smartphone they prefer. More research has been done on this subject to confirm these ideas.

Lastly, a result that was comparable across this study and the study by Sun et al. (2020) is that gender has no influence on the smartphone choice intention. This means that men and women have nearly the same purchase intentions.

6.4 Managerial Implication

Following the conclusions of this research, several managerial implications can be made. These can help improve the business and marketing strategies of smartphone manufacturers. This study has seen that consumers pay significantly more money for an iPhone, but that people who spend a relatively high amount on their smartphone do not necessarily buy an iPhone. The focus of smartphone manufacturers should not be on targeting customers in certain price class, but to get brand engagement to convince consumers to like your brand better than others. Smartphone manufactures should make their brand should appeal to the people in certain personality classes. For example, companies could create a smartphone that has a high quality but has a very neutral look to appeal to a consumer group that has high quality consciousness scores and low need for uniqueness scores and pricing this smartphone in a way that this consumer group will find this smartphone the most appealing. The message is, do not target certain income groups, but target personality groups.

6.5 Limitations of this research

Like any other research, this research has several limitations. Removing these limitations or improving the state of these limitations will contribute to a more reliable study. This study has the following limitations.

The first limitation is that data for this research was gathered using snowball sampling. Snowball sampling is the way of sampling in which the researcher chooses respondents using his own network of people and asks respondents to recruit new respondents (Goodman, 1961). Respondents often choose friends and family as new respondents. This results in the sample staying in the same demographic groups. This conclusion stems from the idea that people become friends because they are similar

(Laursen, 2017). Snowball sampling is a non-probability way of sampling, which means that the sample that is gathered is not random and will therefore not be fully representable to the population.

Next, the sample size of this research could be larger. The study of Sun et al. has a sample of 345 respondents. This study has about 40% of that amount. The results of this study do not differ a lot from the study of Sun et al. and could possibly be more comparable when the sample sizes are nearly the same. The research would be more robust when the sample is larger. As of now, we cannot say with certainty how big the difference between the two demographics is. The research would be more robust when the sample is larger.

The third drawback of this study is that there is a possibility that a group of respondents did not take the survey seriously. A histogram of the duration of filling out the survey was made to remove the respondents that rushed through the survey without thinking about their answers, but a second metric would improve the quality and reliability of the survey answers even more. One or more control questions could be added to check if the respondent was paying attention to the question asked. An example of such a question is 'Respond with totally agree when you read this question'. When one or more of the control questions was answered wrongly, the respondent should be removed from the sample.

Finally, the education level metric caused several problems. The first being that there was confusion among respondents about what their education level was. Respondents that are student wondered whether they should respond with their highest degree or the degree they are studying for right now. The aim of this research was to gather individuals with a high level of education between the age of 18 and 34. A lot of people in this cohort are students and are therefore not finished with determining their education level. If the study was to filter out all the people who filled in HBO or High school as highest education level, data with students of HBO or WO would be lost. Upon receiving feedback about this confusion, the decision was made to not remove any respondents that responded with HBO or WO. The desired demographic was therefore not tested properly and could be improved by stating a clearer question about education level.

6.6 Reflection on the research

When reflecting on this thesis, there are several things that could have been done differently. These will be discussed in this part.

Firstly, it is worth considering changing the dynamic of a gender variable in this time and age. Gender has become much more complex than simply male or female. A growing share of the population cannot simply be put in one of both boxes anymore. Gender has become a wide spectrum containing several genders that lie anywhere between man and woman. This makes predicting the effect of gender much

more complicated. Possible solutions can be to make gender a categorical variable instead of a dummy variable or even a continuous variable if the spectrum of genders becomes even larger. Another solution could be to implement a set of question to determine if a person has more male or more female attributes to place the individual somewhere along the spectrum.

Secondly, a consideration was made to include nationality as a variable of influence on iPhone usage. This was done with the idea to see if people with a foreign cultural background living in the Netherlands score different on the various personal factors. Every nation has its own cultural values and will most likely yield differences in the personal factors, but studying cultural differences within a country will remove the effect of the country of residence and only measure the culture aspect. For example, people in Germany will likely have different cultural values than people in the Netherlands but will Germans living in the Netherlands have personal factors more like the Dutch or to Germans. However, the hypothesis was removed due to a lack of internationals responding to the survey. This made any prediction about this in influence impossible.

6.7 Future Research

To continue research on what causes smartphone choices of consumers, there are several recommendations for future research. The first two recommendations follow from the research reflections. The last two recommendations give suggestions that future research could include.

The first recommendation for future is to continue to repeat this study in different countries, like this study has done in relation to the study of Sun et al. Nationality can be interesting when studying this topic, because a lot of variables on your smartphone choice depend on the personality factors of consumers and how strong the factors are related to each other. Because personality is based partly on cultural norms and values, the personal factors between people of different nationalities can differ quite significantly.

Future research can also be done around cultural values that influence personal factors. For example, the cultural dimensions power distance, uncertainty avoidance, collectivism, masculinity, long-short term orientation and indulgence could be observed. (Hofstede, 2003) When knowing the scores of participants in the different cultural dimensions, correlations can be found with personal factors.

To add to this, future research could include if a culture can classified as prone to high or low levels of certain personal factors. For example, the Dutch culture could be marked as a culture with low collectivism and high long-term orientation. Knowing this about the culture predicts that a lot of Dutch people will most likely have a low ATSCI score. This is an example, put it would be very interesting to

classify cultures and to get a good understanding of how people behave in different countries. This would give smartphone manufacturers a better understanding in knowing what personal factors to respond to.

A last recommendation for future research is including more age groups. Until now, research was mainly focused on young adults given that this was the most active cohort in the smartphone market. The growing popularity of the smartphone has caused people of every age owning a smartphone. It would be interesting to find out what drives smartphone brand choice in these cohorts as well.

6.8 Ending Conclusion

Although all the hypotheses in this research were rejected, several interesting findings were done. It has come to light that personal factors have influence on the price that consumers pay for their smartphone instead of having influence on the chance of owning an iPhone. Besides this, demographic variables within the researched cohort did not seem to have influence, except for a minor suggestion that Source of income could have an influence on the Purchasing price.

References

- Adetola, A. A., & Ifeanyichukwu, C. (2016). Factors influencing smartphone purchase behavior among young adults in Nigeria. *International Journal of Recent Scientific Research*, 7(9), 13248–13254.
- Apple reinvents the phone with iPhone*. Apple Newsroom. (2007, May 16). <https://www.apple.com/newsroom/2007/01/09Apple-Reinvents-the-Phone-with-iPhone/>
- Bearden, W. O., & Rose, R. L. (1990). Attention to social comparison information: An individual difference factor affecting consumer conformity. *Journal of Consumer Research*, 16(4), 461. <https://doi.org/10.1086/209231>
- Centraal Bureau voor de Statistiek. (2022, June 14). *Onderwijs*. <https://www.cbs.nl/nl-nl/onze-diensten/methoden/begrippen/onderwijs>
- Cockrill, A. (2012). Does an ipod make you happy? an exploration of the effects of iPod ownership on Life Satisfaction. *Journal of Consumer Behaviour*, 11(5), 406–414. <https://doi.org/10.1002/cb.1385>
- Goodman, L. A. (1961). Snowball sampling. *The Annals of Mathematical Statistics*, 32(1), 148–170. <https://doi.org/10.1214/aoms/1177705148>
- Gupta, R. (2015). Impacts of Smart Phones in our Life. *Journal of Educational and Management Studies*, 5(4), 200–203.
- Heyes, C. M. (1994). Social Learning in animals: Categories and mechanisms. *Biological Reviews*, 69(2), 207–231. <https://doi.org/10.1111/j.1469-185x.1994.tb01506.x>
- Kaur, D. (2024). *How has Apple beaten Samsung on smartphone sales in 2023?*. TechHQ. <https://techhq.com/2024/01/apple-claims-top-spot-outshining-samsung-in-2023-smartphone-sales/>
- Kemp, S. (2024, February 21). *Digital 2024: The Netherlands - DataReportal – Global Digital Insights*. DataReportal. <https://datareportal.com/reports/digital-2024-netherlands>
- Kenyon, G. N., & Sen, K. C. (2014). The perception process. *The Perception of Quality*, 41–50. https://doi.org/10.1007/978-1-4471-6627-6_5
- Kim, E., Ratneshwar, S., Roesler, E., & Chowdhury, T. G. (2014). Attention to social comparison information and brand avoidance behaviors. *Marketing Letters*, 27(2), 259–271. <https://doi.org/10.1007/s11002-014-9333-y>
- Laursen, B. (2017). Making and keeping friends: The importance of being similar. *Child Development Perspectives*, 11(4), 282–289. <https://doi.org/10.1111/cdep.12246>
- Lay-Yee, K. L., Kok-Siew, H., & Yin-Fah, B. C. (2013). Factors affecting smartphone purchase decision among Malaysian generation Y. *International Journal of Asian Social Science*, 3(12), 2426–2440.
- MacKenzie, D. L. (2006). *What works in corrections*. Cambridge: Cambridge University Press.
- Malviya, S., Saluja, M. S., & Singh Thakur, A. (2013). A study on the factors influencing consumer's purchase decision towards smartphones in Indore. *International Journal of Advance Research in Computer Science and Management Studies*, 1(6).

- Mickle, T. (2023, September 11). *As smartphone industry sputters, the iPhone expands its dominance*. The New York Times. <https://www.nytimes.com/2023/09/11/technology/apple-iphone-17.html>
- Novak, K. B., & Crawford, L. A. (2010). Beliefs about alcohol and the college experience as moderators of the effects of perceived drinking norms on student alcohol use. *Journal of Alcohol and Drug Education, 54*(3), 69–86.
- Rendell, L., Boyd, R., Cownden, D., Enquist, M., Eriksson, K., Feldman, M. W., Fogarty, L., Ghirlanda, S., Lillicrap, T., & Laland, K. N. (2010). Why copy others? insights from the Social Learning Strategies Tournament. *Science, 328*(5975), 208–213. <https://doi.org/10.1126/science.1184719>
- Sanders, L. (2017). Smartphones may be changing the way we think. *Neuroscience Health, 191*(6), 18.
- Snyder, C. R., & Fromkin, H. L. (1977). Abnormality as a positive characteristic: The development and validation of a scale measuring need for uniqueness. *Journal of Abnormal Psychology, 86*(5), 518–527. <https://doi.org/10.1037//0021-843x.86.5.518>
- Solka, A., Jackson, V. P., & Lee, M.-Y. (2011). The influence of gender and culture on Generation Y Consumer Decision Making Styles. *The International Review of Retail, Distribution and Consumer Research, 21*(4), 391–409. <https://doi.org/10.1080/09593969.2011.596554>
- Sprotles, G. B., & Kendall, E. L. (1986). A methodology for profiling consumers' decision-making styles. *Journal of Consumer Affairs, 20*(2), 267–279. <https://doi.org/10.1111/j.1745-6606.1986.tb00382.x>
- Strengers, Y., Kennedy, J., Arcari, P., Nicholls, L., & Gregg, M. (2019). Protection, productivity and pleasure in the smart home. *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*. <https://doi.org/10.1145/3290605.3300875>
- Strizhakova, Y., Coulter, R. A., & Price, L. L. (2011). Branding in a global marketplace: The mediating effects of quality and self-identity brand signals. *International Journal of Research in Marketing, 28*(4), 342–351. <https://doi.org/10.1016/j.ijresmar.2011.05.007>
- Sun, G., Li, J., Cheng, Z., D'Alessandro, S., & Johnson, L. (2020). Consumer personality factors and iPhone consumption in China. *Journal of Consumer Behaviour, 20*(4), 862–870. <https://doi.org/10.1002/cb.1899>
- Tian, K. T., Bearden, W. O., & Hunter, G. L. (2001). Consumers' need for uniqueness: Scale development and validation. *Journal of Consumer Research, 28*(1), 50–66. <https://doi.org/10.1086/321947>
- Wennekers, A. M., de Haan, J., & Huysmans, F. (2016). *Bezit van media-apparaten*. https://digitaal.scp.nl/mediatijd/bezit_van_media-apparaten.
- Yaman, A., Mesman, J., van IJzendoorn, M. H., Bakermans-Kranenburg, M. J., & Linting, M. (2010). Parenting in an individualistic culture with a collectivistic cultural background: The case of Turkish immigrant families with toddlers in the Netherlands. *Journal of Child and Family Studies, 19*(5), 617–628. <https://doi.org/10.1007/s10826-009-9346-y>
- Zhan, L., & He, Y. (2012). Understanding luxury consumption in China: Consumer perceptions of best-known brands. *Journal of Business Research, 65*(10), 1452–1460. <https://doi.org/10.1016/j.jbusres.2011.10.011>

Appendix

Appendix A: Survey Questions Thesis

Survey Questions Thesis

This appendix contains the questions of the survey I am going to conduct. The survey is based on the survey of the research by Sun et al.. Some questions are rephrased to appeal more to the respondents and make sure they answer accordingly. The questions will be stated in English, as well as Dutch. The questions in Section A and C will be provided with appropriate answer options. In Section B, all statements will be provided with a 7-point scale answer option ranging from 'Fully agree' to 'Fully Disagree'.

Introduction text

Bedankt voor je interesse in deze enquête. Deze enquête is deel van mijn bachelorscriptie aan de Erasmus Universiteit Rotterdam. De enquête duurt niet langer dan 5 minuten en bestaat uit 3 onderdelen: Je smartphone keuze, je koopgedrag met betrekking tot producten en demografische vragen. De verzamelde informatie is anoniem en wordt alleen voor dit onderzoek gebruikt. Bij vragen kunt u terecht bij de onderzoeker. Neem dan contact op via 537922rv@student.eur.nl

Thank you for your interest in this survey. This survey is part of my bachelor thesis at the Erasmus University Rotterdam. This survey should take no longer than 5 minutes and consists of three parts: Your smartphone choice, your purchasing behaviour towards products, and demographic questions. The information gathered is anonymous will be solely used for this research. If you have any question, do not hesitate to contact the researcher. In this case, please reach out to 537922rv@eur.nl

Section A: Smartphone Choice

- Explanation:

In het eerste onderdeel bedoelen we met smartphone degene voor persoonlijk gebruik, niet voor werk of ander gebruik.

In the first section, with smartphone we mean the device for personal use, not work or else related.

1. *Heb je een iPhone?* Do you have an iPhone?
2. *Wat is de naam van het model smartphone die je gebruikt?* What is the name of the smartphone model you own?
3. *Wat is de prijs die je voor je huidige smartphone hebt betaald bij aankoop?* What is the price you paid for this smartphone at purchase?

Section B: Sensitivity to personal factors

- Explanation:

In dit onderdeel worden er vragen gesteld over je gedrag. Twee termen die wat uitleg nodig hebben zijn: 'Anderen' = Mensen om je heen in je directe omgeving. 'Goederen' = (Secundaire) Luxe spullen zoals kleding, auto's en electronica.

In this section, questions will be asked about your behavior. Two terms to clarify are: 'Others' = People around you in your direct environment. 'Goods' = (secondary) luxury items like clothes, cars, electronics etc.

- Attention to Social Comparison Intention (ATSCI)
 1. *Ik ben me bewust van de merken en goederen die anderen kopen en hebben.* I am aware of the brands and goods that others buy and have.
 2. *Wanneer ik niet weet welk merk ik moet kopen, koop ik wat anderen hebben.* When I don't know what brand to buy, I buy what others have.
 3. *Wanneer anderen iets hebben wil ik het ook.* When others have something, I want it too.
 4. *Ik koop bepaalde goederen omdat anderen dat van mij verwachten.* I buy certain good because others expect that of me.
 5. *Ik koop dezelfde merken en goederen als anderen.* I buy the same brands and goods as others.

- Uniqueness
 1. *Ik koop merken en goederen met de intentie uniek te zijn.* I buy brands and goods with the purpose to be unique.
 2. *Mijn favoriete goederen zijn degene die mij uniek maken.* My favorite goods are goods that make me unique
 3. *Ik koop andere/ongebruikelijke merken dan anderen om uniek te zijn.* I buy other/unusual brands than others to be unique.
 4. *Ik koop unieke items van hetzelfde merk als anderen om uniek te zijn.* I buy unique items of the same brands as others to be unique.
 5. *Ik koop weleens custom-made goederen.* I occasionally buy custom-made goods.

- Quality
 1. *Ik betaal liever meer geld om betere kwaliteit te krijgen dan dat ik goedkoopst mogelijke versie van een goed koop.* I prefer to pay more money to get better quality than buy the cheapest version of a good possible.
 2. *Ik koop graag goederen van goede kwaliteit.* I am happy to buy goods of good quality.
 3. *Ik haal plezier uit het kopen van goederen van de beste kwaliteit die ik kan vinden.* I enjoy buying goods of the best quality I can find.
 4. *Wanneer ik meer betaal dan het goedkoopst mogelijke product, doe ik dat omdat ik verwacht dat de kwaliteit hoger is.* When I pay more money than the cheapest good available, I do it because I expect the quality to be higher.
 5. *Ik koop geen goederen van lage kwaliteit.* I don't buy goods of low quality.

Section C: Demographic

1. *Wat is je leeftijd?* What is your age?*
2. *Wat is je hoogste opleidingsniveau?* What is your highest education level?*

*Note: The first two demographic questions are asked to determine if a respondent is suitable for this research. The demographic we are trying to get is young adults (18-34) who are high educated (HBO or above).

3. *Ben je werkend of studerend?* Are you studying or working? Studying, Working, Both part-time
4. *Wat is je geslacht?* What is your gender?
5. *Wat is je nationaliteit?* What is your nationality?

Appendix B: Invitations for filling out survey



Appendix C: Figures and Tables

Figure 1: Histogram of the survey duration before filtering for a large outlier

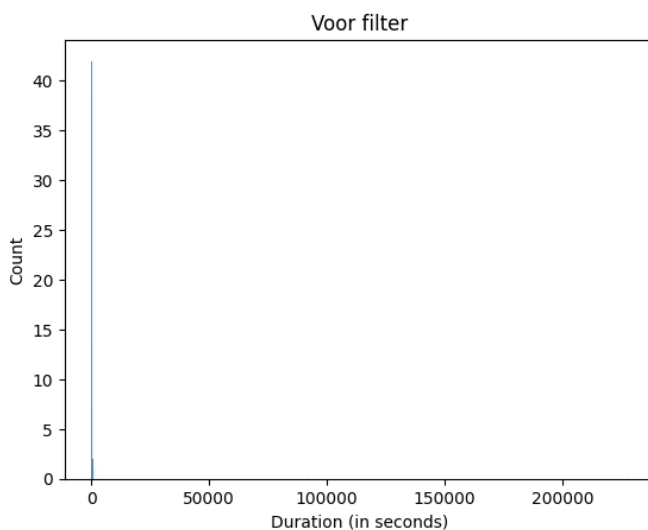


Figure 2: Histogram of the survey duration after filtering for a large outlier

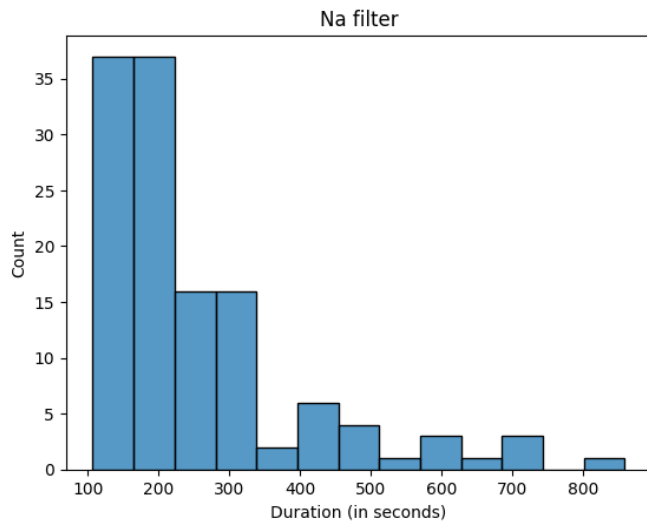


Figure 3: Histogram showing the purchase price without removing a large outlier

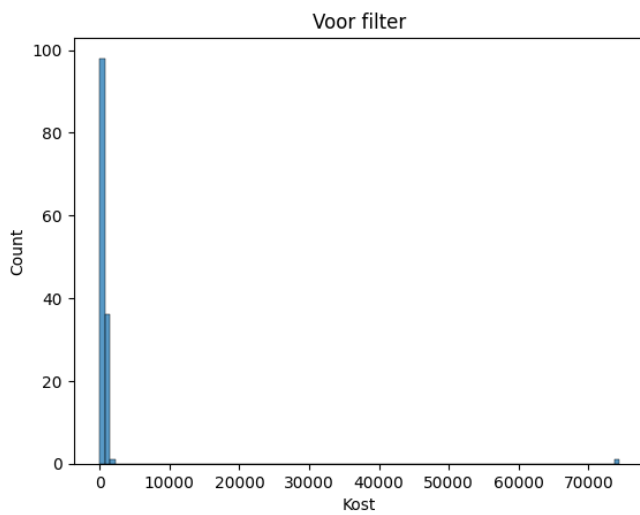


Figure 4: Histogram showing the purchase price after removal of a large outlier

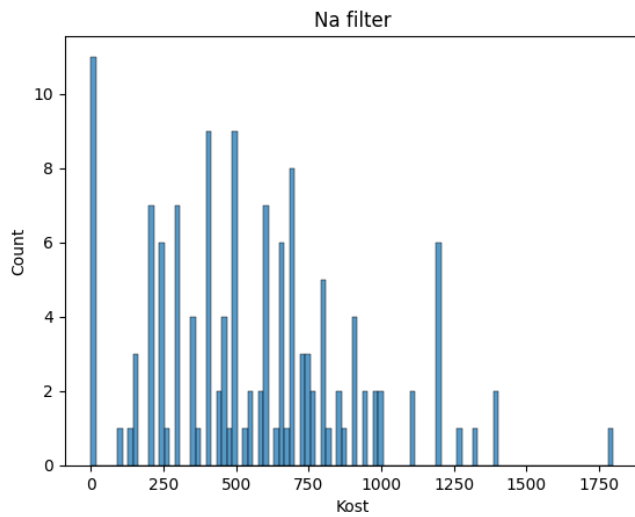


Figure 5: Pie chart iPhone ownership

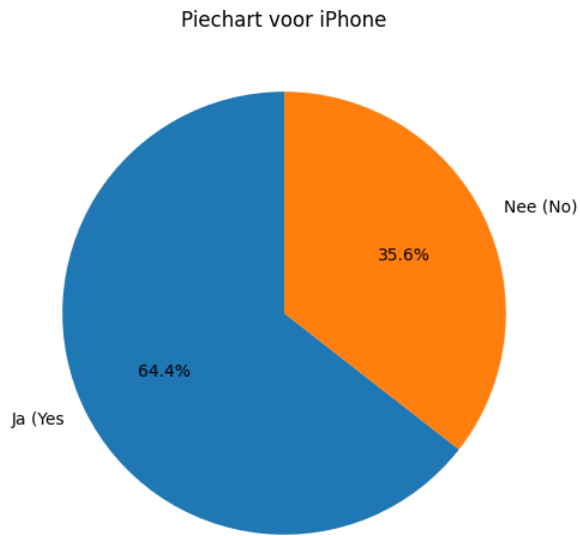


Table 1: Descriptive statistics

	ATSCI	NFU	QC	Leeftijd	Kost	iPhone
count	135.000000	135.000000	135.000000	135.000000	135.000000	135.000000
mean	18.296296	16.540741	25.970370	21.918519	564.127919	0.644444
std	5.257651	5.765004	4.588989	3.049472	352.843347	0.480464
min	5.000000	5.000000	11.000000	18.000000	0.000000	0.000000
25%	15.000000	12.000000	23.000000	20.000000	300.000000	0.000000
50%	19.000000	17.000000	26.000000	22.000000	527.000000	1.000000
75%	22.000000	21.000000	29.000000	23.000000	754.500000	1.000000
max	29.000000	32.000000	35.000000	33.000000	1800.000000	1.000000

Figure 6: Histogram showing the distribution of Attention to social comparison scores

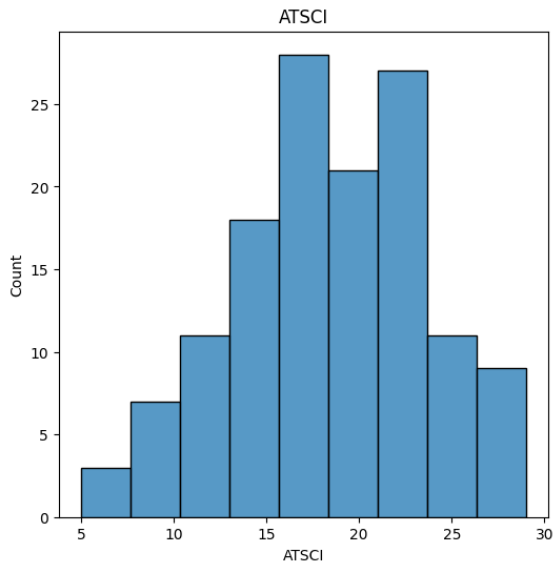


Figure 7: Histogram showing the distribution of Need for uniqueness scores

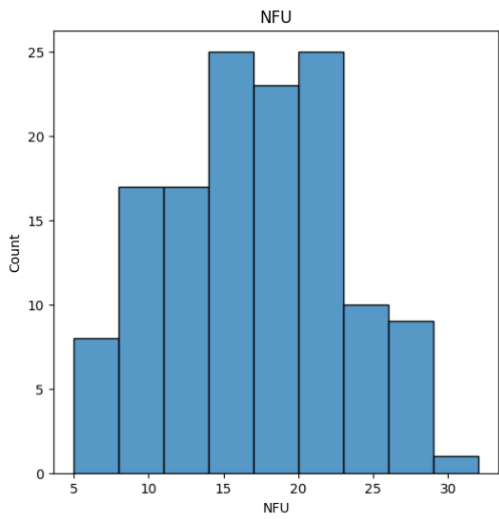


Figure 8: Histogram showing the distribution of Quality consciousness scores

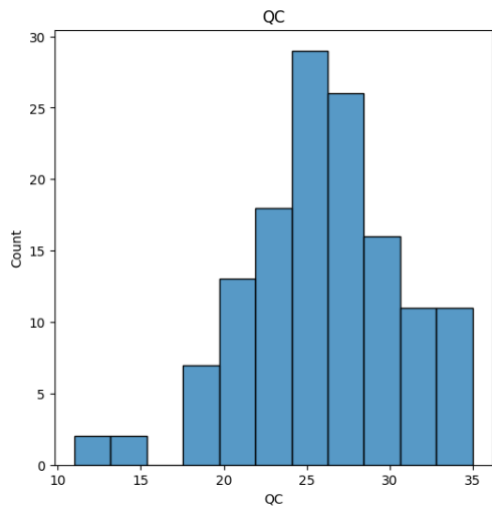


Figure 9: Histogram showing the distribution of age

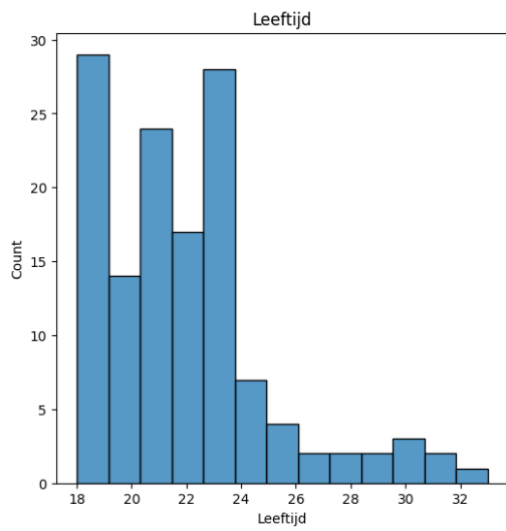


Figure 10: Pie chart education level

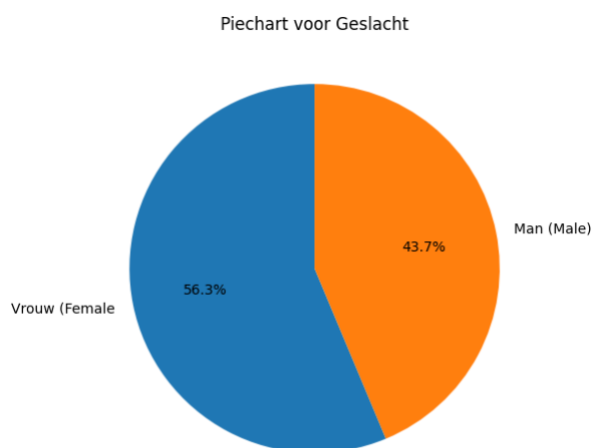
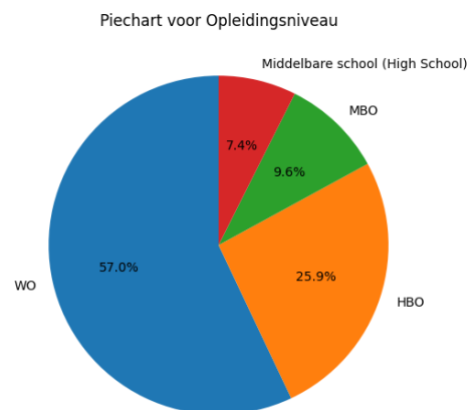


Figure 11: Pie chart gender

Figure 12: Pie chart source of income

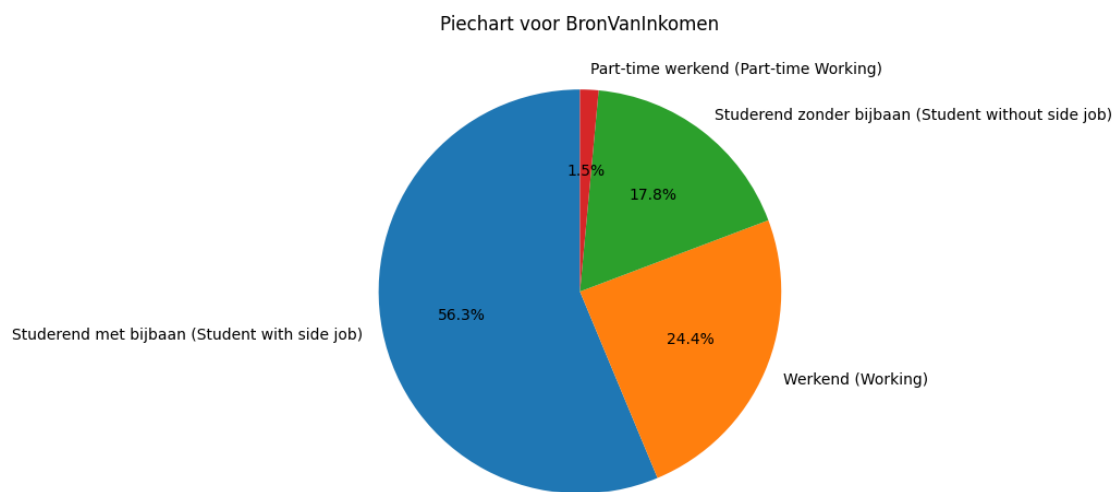


Figure 13: Pie chart nationality

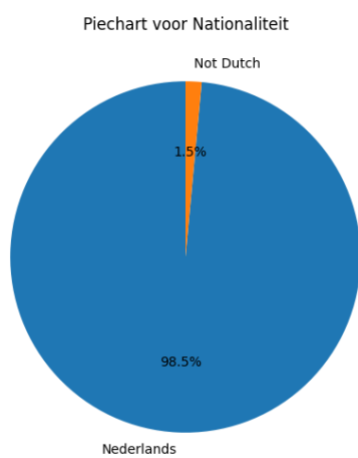


Table 2: Regression model 1 showing the effect of the six hypothesis variables on iPhone choice

		Coefficients ^a				
		Unstandardized Coefficients		Standardized Coefficients		
Model 1		B	Std. Error	Beta	t	Sig.
1	(Constant)	-.172	.420		-.409	.684
	Kost	.000	.000	.236	2.573	.011
	ATSCI	.004	.008	.045	.485	.628
	NFU	.010	.007	.120	1.337	.184
	QC	.014	.009	.135	1.496	.137
	Geslacht	-.022	.085	-.023	-.259	.796
	BronVanInkome n_Stude rendmetbijbaanStude ntwithsidejob	.067	.335	.069	.200	.842
	BronVanInkome n_Stude rendzonderbijbaanStude ntwithoutsidejo	-.030	.343	-.024	-.088	.930
	BronVanInkome n_Werk endWorking	.020	.343	.018	.059	.953

a. Dependent Variable: iPhone

Table 3: Regression model 2 showing the price respondents paid for their smartphone depending on several variables

		Coefficients ^a				
		Unstandardized Coefficients		Standardized Coefficients		
Model 2		B	Std. Error	Beta	t	Sig.
1	(Constant)	-408.171	290.582		-1.405	.163
	iPhone	155.491	60.438	.212	2.573	.011
	ATSCI	16.361	5.704	.244	2.868	.005
	NFU	-6.459	5.201	-.106	-1.242	.217
	QC	13.269	6.537	.173	2.030	.044
	Geslacht	10.903	59.268	.015	.184	.854
	BronVanInkome n_Stude rendmetbijbaanStude ntwithsidejob	336.511	231.147	.475	1.456	.148
	BronVanInkome n_Stude rendzonderbijbaanStude ntwithoutsidejo	219.176	237.750	.238	.922	.358
	BronVanInkome n_Werk endWorking	416.477	236.023	.509	1.765	.080

a. Dependent Variable: Kost

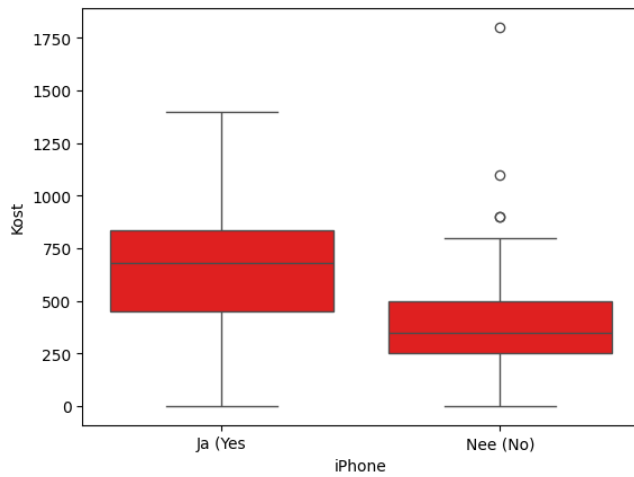
Table 4: Correlation between source of income and purchasing price

Kost	1.000000
BronVanInkome n_Werk end (Working)	0.150320
BronVanInkome n_Stude rend met bijbaan (Student with side job)	0.059923
BronVanInkome n_Part-time werkend (Part-time Working)	-0.093533
BronVanInkome n_Stude rend zonder bijbaan (Student without side job)	-0.217155

Table 5: Correlation between source of income and smartphone choice

iPhone	1.000000
BronVanInkome n_Stude rend met bijbaan (Student with side job)	0.094286
BronVanInkome n_Werk end (Working)	0.026406
BronVanInkome n_Part-time werkend (Part-time Working)	-0.037004
BronVanInkome n_Stude rend zonder bijbaan (Student without side job)	-0.140313

Figure 14: Boxplot showing the differences in purchasing price between non-iPhone owners and iPhone owners



[Appendix D: Collected dataset in Excel](#)

This appendix shows a snippet of the collected data of the survey. The reasons behind showing a snippet instead of the full dataset is that it would take a lot of space in this thesis and would be too unclear. The full dataset can be requested from the researcher at any time.

Duration (in seconds)	Finished	Heb je een iPhone? Do you have an iPhone?	Wat is de naam van het model smartphone die je gebruikt? What is name of the smartphone model that you own?	Wat is de aankoopprijs die je voor je huidige smartphone hebt betaald in euro's? What is the price you have paid for your smartphone in euros?
107	TRUE	Ja (Yes	11 pro	699
91624	TRUE	Ja (Yes	iPhone 13	579
140	TRUE	Nee (No)	Samsung s22	600
152	TRUE	Ja (Yes	15 pro	1269
916	TRUE	Ja (Yes	iPhone 12	879
152	TRUE	Ja (Yes	iPhone 13	680
1830	TRUE	Ja (Yes	iPhone XR	700
151	TRUE	Ja (Yes	13 pro	1200
223	TRUE	Ja (Yes	Iphone XR	650
146	TRUE	Nee (No)	Samsung Galaxy 22 plus	1100
639	TRUE	Nee (No)	Samsung	250
177	TRUE	Ja (Yes	iphone 13 mini	550
107	TRUE	Ja (Yes	Iphone 11	750
110	TRUE	Ja (Yes	Iphone 13	900
255	TRUE	Ja (Yes	13 pro	800
859	TRUE	Ja (Yes	Iphone SE	400
239	TRUE	Nee (No)	Samsung Galaxy A80	400
429	TRUE	Nee (No)	Samsung Galaxy A53	0
215	TRUE	Nee (No)	Samsung galaxy a52	200
185	TRUE	Nee (No)	Samsung S20 FE	0
250	TRUE	Ja (Yes	Iphone Xs Max	100
3482	TRUE	Ja (Yes	Iphone 14 plus	1200
150	TRUE	Ja (Yes	Iphone 14	759
183	TRUE	Nee (No)	Fairphone 5	500
145	TRUE	Nee (No)	Motorola edge 40	350
163	TRUE	Ja (Yes	Iphone 12	0
173	TRUE	Nee (No)	Samsung Galaxy A15	215
126	TRUE	Ja (Yes	iphone 13 (refurbished)	600
1361	TRUE	Nee (No)	Samsung galaxy s21	650
312	TRUE	Ja (Yes	iphone 15 plus	985
7983	TRUE	Ja (Yes	Iphone 13 pro max	1400
404	TRUE	Ja (Yes	Iphone 14 pro max	240
149	TRUE	Ja (Yes	iPhone 13	1200
303	TRUE	Ja (Yes	iPhone 13	850
587	TRUE	Ja (Yes	iPhone 12	600
228	TRUE	Nee (No)	Samsung	500
128	TRUE	Ja (Yes		11 900
132	TRUE	Nee (No)	Samsung A34 5G	250

153	TRUE	Nee (No)	Oppo	400
170	TRUE	Ja (Yes	IPHONE 15	1100
186	TRUE	Ja (Yes	Iphone 10	600
115	TRUE	Ja (Yes	Iphone 11	400
416	TRUE	Ja (Yes	Iphone XR	700
165	TRUE	Nee (No)	samsung galaxy fold 5	1800
191	TRUE	Nee (No)	pixel 6 pro	450
157	TRUE	Ja (Yes	iPhone Xr	0
128	TRUE	Nee (No)	Galaxy a35	350
334	TRUE	Nee (No)	Xiaomi Poco X3 Pro	234,99
275	TRUE	Ja (Yes	Iphone 11	700
189	TRUE	Ja (Yes	Iphone 12	1000
189	TRUE	Nee (No)	S20	400
173	TRUE	Nee (No)	Samsung M21	200
158	TRUE	Ja (Yes	iPhone 11	650
181	TRUE	Nee (No)	Samsung S20	300
120	TRUE	Ja (Yes	iPhone 13 Pro max	700
176	TRUE	Nee (No)	Samaung galaxy a52s	350
134	TRUE	Ja (Yes	iPhone	725
711	TRUE	Ja (Yes	iphone 11	700
293	TRUE	Ja (Yes	11 pro	200
480	TRUE	Ja (Yes	iPhone 13	816
183	TRUE	Ja (Yes	iPhone 12 Pro max	700
148	TRUE	Ja (Yes	Iphone 11 pro	0
298	TRUE	Nee (No)	Samsung s21 ultra	445
322	TRUE	Nee (No)	Samsung Galaxy A52s	370
386	TRUE	Ja (Yes	iPhone 13	630
264	TRUE	Ja (Yes	iPhone 11	500
172	TRUE	Nee (No)	Samsung a34	300
454	TRUE	Ja (Yes	iphone 7 pro	0
614	TRUE	Ja (Yes	Iphone 13 pro	1,279
304	TRUE	Ja (Yes	iphone 11 pro max	450
191	TRUE	Ja (Yes	12pro	650
153	TRUE	Nee (No)	samsung	250
720	TRUE	Nee (No)	Xiaomi note 4	300
175	TRUE	Nee (No)	Samsung S20FE	450
309	TRUE	Nee (No)	Fairphone	350
367	TRUE	Ja (Yes	Iphone 12 pro	400
224	TRUE	Ja (Yes	Iphone Xs	650
432	TRUE	Nee (No)	OnePlus Nord CE2 Lite	292
195	TRUE	Ja (Yes	iPhone 12 mini	500
160	TRUE	Ja (Yes	iPhone 8	0
211	TRUE	Ja (Yes	13	750
182	TRUE	Ja (Yes	Iphone 14 plus	1200
315	TRUE	Ja (Yes	11 pro	1329
126	TRUE	Ja (Yes	iPhone 12 Pro Max	450
134	TRUE	Ja (Yes	XR	499
129	TRUE	Ja (Yes	iPhone 15	800
241	TRUE	Ja (Yes	iphone 14	860
128	TRUE	Ja (Yes	Iphone 13	650
195	TRUE	Nee (No)	OnePlus 7 Pro	260
168	TRUE	Ja (Yes	Iphone 12 mini	500

531	TRUE	Nee (No)	Samsung A51	160
213	TRUE	Ja (Yes	Iphone 13 Pro	550
128	TRUE	Ja (Yes	Iphone XS	720
402	TRUE	Ja (Yes	iPhone SE 2020	500
209	TRUE	Ja (Yes	Iphone XR	527
479	TRUE	Ja (Yes	iphone 13	750
251	TRUE	Nee (No)	Fairphone 4	580
135	TRUE	Ja (Yes	12 Pro	1200
217	TRUE	Nee (No)	Samsung Galaxy Flip 4	800
326	TRUE	Ja (Yes	iPhone 11	700
150	TRUE	Nee (No)	Samsung Galaxy S24+	74410
288	TRUE	Ja (Yes	iPhone 12 Mini	500
141	TRUE	Ja (Yes	Iphone 15 plus	980
225	TRUE	Nee (No)	Samsung	399
211	TRUE	Nee (No)	Samsung s23	600
165	TRUE	Ja (Yes	iPhone 12	725
205	TRUE	Nee (No)	Redmi	150
231	TRUE	Nee (No)	Samsung galaxy S9	500
320	TRUE	Ja (Yes	iPhone 12 pro max	1400
331	TRUE	Nee (No)	Oneplus 7	470
245	TRUE	Ja (Yes	iPhone 15	292
227892	TRUE	Ja (Yes	Iphone 13 pro	999
137	TRUE	Ja (Yes	iPhone pro max 11	770
327	TRUE	Ja (Yes	iPhone SE 2020	400
189	TRUE	Nee (No)	Samsung Galaxy S10	600
261	TRUE	Nee (No)	Samsung A53	300
165	TRUE	Ja (Yes	iPhone 14	940
316	TRUE	Nee (No)	Samsung	250
231	TRUE	Nee (No)	Samsung A55	449
199	TRUE	Nee (No)	Samsung galaxy S21+	900
119	TRUE	Nee (No)	Samsung galaxy a15	199
623	TRUE	Nee (No)	Samsung galaxy A51	300
197	TRUE	Nee (No)	Samsung S22 Ultra	900
148	TRUE	Ja (Yes	IPhone 11	950
687	TRUE	Ja (Yes	iPhone 15	800
177	TRUE	Ja (Yes	iPhone 8	200
119	TRUE	Ja (Yes	iphone 15 pro max	1200
320	TRUE	Ja (Yes	X	150
31170	TRUE	Ja (Yes	Iphone SE 2022	600
178	TRUE	Ja (Yes	iPhone 12 pro max	400
192	TRUE	Ja (Yes	iPhone 12 mini	0
219	TRUE	Ja (Yes	13	0
477	TRUE	Nee (No)	Samsung a15 4g	130
259	TRUE	Ja (Yes	iPhone 13	800
51104	TRUE	Ja (Yes	Iphone 7 plus	0
459	TRUE	Ja (Yes	Iphone SE	200

Appendix E: Python code in Deepnote

This appendix shows all code used in python. To run and check the code, the Deepnote document can be requested from the researcher.

21/07/2024, 10:17 Thesis

Deepnote t Thesis > Thesis Private Run Export to PDF Ruben

```
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt
```

Data Exploration

```
# Maak eerste dataframe aan
df = pd.read_csv("dataset.csv", delimiter=';')

# Copy paste de dataframe zodat je er dingen mee kan doen op een snelle manier.
new_df = df.copy()

# Laat de geïmporteerde data vanuit Excel zien
display(new_df)
```

Data Cleaning

```
# Seaborn histogram om duration te laten zien
sns.histplot(data=new_df, x="Duration (in seconds)")
plt.title('Voor filter')
plt.show()
print(new_df.shape)

# Filter data onder de 900 seconden
# Hoge outliers halen we er niet uit en het verlagen van de grens maakt outliers makkelijker te herkennen
temp_df = new_df[new_df['Duration (in seconds)'] <= 900 ]

# Seaborn histogram om duration te laten zien met tijdelijk dataframe
sns.histplot(data=temp_df, x="Duration (in seconds)")
plt.title('Na filter')
plt.show()
print(new_df.shape)
```

```
new_df['Kost'] = new_df['Kost'].str.replace(',', '.').astype(float)

# Seaborn histogram om aankooprijzen van telefoons te laten zien
sns.histplot(data=new_df, x='Kost', bins=100)
plt.title('Voor filter')
plt.show()
print(new_df.shape)

# Filter data onder de 10000 euro (drop aankooprijzen hoger dan 10000 euro)
# Verwijder outlier uit de dataset
new_df = new_df[new_df['Kost'] < 10000]

# Seaborn histogram om duration te laten zien met tijdelijk dataframe
sns.histplot(data=new_df, x='Kost', bins=100)
plt.title('Na filter')
plt.show()
print(new_df.shape)
```

Data display

```

# Verander text naar 1-7 gebaseert op antwoord
text_to_int = {
    'Helemaal mee eens (Strongly agree)': 7,
    'Mee eens (Agree)': 6,
    'Enigszins mee eens (Somewhat agree)': 5,
    'Niet eens, niet oneens (Neither agree nor disagree)': 4,
    'Enigszins mee oneens (Somewhat disagree)': 3,
    'Oneens (Disagree)': 2,
    'Helemaal mee oneens (Strongly disagree)': 1,
    "Vrouw (Female)": 0,
    "Man (Male)": 1,
}

new_df = new_df.replace(text_to_int)

# Maak nieuwe kolommen aan voor de totalen per persoonlijke factor.

# ATSCI = Attention to social consciousness information
ATSCI = new_df[['A1', 'A2', 'A3', 'A4', 'A5']].copy()
new_df['ATSCI'] = ATSCI.sum(axis=1)

# NFU = Need for uniqueness
NFU = new_df[['B1', 'B2', 'B3', 'B4', 'B5']].copy()
new_df['NFU'] = NFU.sum(axis=1)

# QC = Quality conscious
QC = new_df[['C1', 'C2', 'C3', 'C4', 'C5']].copy()
new_df['QC'] = QC.sum(axis=1)

# Laat dataframe weer zien.
display(new_df)

pielist = ['iPhone', 'Opleidingsniveau', 'BronVanInkomen', 'Geslacht', 'Nationaliteit']
for x in pielist:
    value_counts = new_df[x].value_counts()
    plt.figure(figsize=(6, 6))
    plt.pie(value_counts, labels=value_counts.index, autopct='%1.1f%%', startangle=90)
    plt.title(f"Piechart voor {x}")
    plt.show()

histolist = ['ATSCI', 'NFU', 'QC', 'Leeftijd']
for x in histolist:
    print(f"Histogram voor {x}")
    plt.figure(figsize=(6, 6))
    sns.histplot(data=new_df, x=x)
    plt.title(x)
    plt.show()

sns.boxplot(data=new_df, x='iPhone', y='Kost', color="red")

# Maak beschrijvende statistieken
new_df = new_df.replace({"Ja (Yes)": 1, "Nee (No)": 0})
newlist = ["Kost", "iPhone"]
totallist = histolist + newlist
print(totallist)
print(new_df[totallist].describe())

```

Data preparation for analysis


```
#Dummy creëren voor BronVanInkomen omdat we die gaan gebruiken in de regressie
dummies = pd.get_dummies(new_df['BronVanInkomen'], prefix='BronVanInkomen', drop_first=True)
dummies = dummies.astype(int)

# Dummies toevoegen aan dataframe
dummy_df = pd.concat([new_df.drop('BronVanInkomen', axis=1), dummies], axis=1)

# Laat dataframe zien
display(dummy_df)
```

Data analysis

```
#Exporteren naar SPSS
dummy_df.to_csv('out.csv', index=False)
```

```
import numpy as np
from scipy.stats import pearsonr, spearmanr
import tableprint as tp
# 'ATSCI', 'NFU', 'QC', "Geslacht", "BronVanInkomen", "Kost"
cordf = df_dum[['iPhone', 'ATSCI', 'NFU', 'QC', "Geslacht", "BronVanInkomen_Student met bijbaan (Student with side job)"]]
matrix = cordf.corr().round(2)

correlation_matrix = cordf.corr()

# Extract the correlation with the 'iPhone' column
iphone_correlation = correlation_matrix['iPhone'].sort_values(ascending=False)

# Print the correlation with 'iPhone'
print(iphone_correlation)
```

```
#Dummy creëren voor BronVanInkomen omdat we die gaan gebruikennin de regressie
dummies = pd.get_dummies(new_df['BronVanInkomen'], prefix='BronVanInkomen', drop_first=False)
dummies = dummies.astype(int)

# Dummies toevoegen aan dataframe
dummy_df = pd.concat([new_df.drop('BronVanInkomen', axis=1), dummies], axis=1)

columns_of_interest = [
    "BronVanInkomen_Student met bijbaan (Student with side job)",
    "BronVanInkomen_Student zonder bijbaan (Student without side job)",
    "BronVanInkomen_Werkend (Working)",
    "BronVanInkomen_Part-time werkend (Part-time Working)",
    "Kost"
]

kost_correlation = dummy_df[columns_of_interest]
kost_correlation = kost_correlation.corr()
kost_correlation = kost_correlation.loc["Kost", :]
kost_correlation_sorted = kost_correlation.sort_values(ascending=False)
print(kost_correlation_sorted)

columns_of_interest = [
    "BronVanInkomen_Student met bijbaan (Student with side job)",
    "BronVanInkomen_Student zonder bijbaan (Student without side job)",
    "BronVanInkomen_Werkend (Working)",
    "BronVanInkomen_Part-time werkend (Part-time Working)",
    "iPhone"
]

iphone_correlation = dummy_df[columns_of_interest]
iphone_correlation = iphone_correlation.corr()
iphone_correlation = iphone_correlation.loc["iPhone", :]
iphone_correlation = iphone_correlation.sort_values(ascending=False)
print(iphone_correlation)
```

Appendix F: SPSS Output

Data written to the working file.

30 variables and 135 cases written.

```
Variable: Durationinseconds    Type: Number    Format : F6
Variable: Finished             Type: String    Format : A4
Variable: iPhone              Type: Number    Format : F1
Variable: Model               Type: String    Format : A23
Variable: Kost                Type: Number    Format : F8.3
Variable: A1                  Type: Number    Format : F1
Variable: A2                  Type: Number    Format : F1
Variable: A3                  Type: Number    Format : F1
Variable: A4                  Type: Number    Format : F1
Variable: A5                  Type: Number    Format : F1
Variable: B1                  Type: Number    Format : F1
Variable: B2                  Type: Number    Format : F1
Variable: B3                  Type: Number    Format : F1
Variable: B4                  Type: Number    Format : F1
Variable: B5                  Type: Number    Format : F1
Variable: C1                  Type: Number    Format : F1
Variable: C2                  Type: Number    Format : F1
Variable: C3                  Type: Number    Format : F1
Variable: C4                  Type: Number    Format : F1
Variable: C5                  Type: Number    Format : F1
Variable: Leeftijd            Type: Number    Format : F2
Variable: Opleidingsniveau    Type: String    Format : A31
Variable: Geslacht           Type: Number    Format : F1
Variable: Nationaliteit       Type: String    Format : A10
Variable: ATSCI               Type: Number    Format : F2
Variable: NFU                 Type: Number    Format : F2
Variable: QC                  Type: Number    Format : F2
Variable: BronVanInkomen_StuderendmetbijbaanStudentwithsidejob
Type: Number    Format : F1
Variable:
BronVanInkomen_StuderendzonderbijbaanStudentwithoutsidejo
Type: Number    Format : F1
Variable: BronVanInkomen_WerkendWorking    Type: Number    Format :
F1
```

Substitute the following to build syntax for these data.

```
/VARIABLES=
  Durationinseconds F6
  Finished A4
  iPhone F1
  Model A23
  Kost F8.3
  A1 F1
  A2 F1
```

A3 F1
A4 F1
A5 F1
B1 F1
B2 F1
B3 F1
B4 F1
B5 F1
C1 F1
C2 F1
C3 F1
C4 F1
C5 F1
Leeftijd F2
Opleidingsniveau A31
Geslacht F1
Nationaliteit A10
ATSCI F2
NFU F2
QC F2
BronVanInkomen_StuderendmetbijbaanStudentwithsidejob F1
BronVanInkomen_StuderendzonderbijbaanStudentwithoutsidejo F1
BronVanInkomen_WerkendWorking F1

Model 1

Output Created		07-JUL-2024 22:21:44
Comments		
Input	Data	U:\out(1).csv
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	135
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on cases with no missing values for any variable used.
Syntax	REGRESSION /MISSING LISTWISE /STATISTICS COEFF OUTS R ANOVA /CRITERIA=PIN(.05) POUT(.10) /NOORIGIN /DEPENDENT iPhone /METHOD=ENTER Kost ATSCI NFU QC Geslacht BronVanInkomen_Studere ndmetbijbaanStudentwithsi dejob BronVanInkomen_Studere ndzonderbijbaanStudentwit houtsidejo BronVanInkomen_Werken dWorking.	
Resources	Processor Time	00:00:00.08
	Elapsed Time	00:00:00.03
	Memory Required	8288 bytes
	Additional Memory Required for Residual Plots	0 bytes

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	BronVanInkomen_WerkendWorking, NFU, Kost, Geslacht, BronVanInkomen		. Enter

en_Studerendz onderbijbaanSt udentwithoutsid ejo, QC, ATSCI, BronVanInkom en_Studerendm etbijbaanStude ntwithsidejob ^b		
---	--	--

a. Dependent Variable: iPhone

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.377 ^a	.142	.087	.459

a. Predictors: (Constant), BronVanInkomen_WerkendWorking, NFU, Kost, Geslacht, BronVanInkomen_StuderendzonderbijbaanStudentwithoutsidejo, QC, ATSCI, BronVanInkomen_StuderendmetbijbaanStudentwithsidejob

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.388	8	.549	2.604	.011 ^b
	Residual	26.545	126	.211		
	Total	30.933	134			

a. Dependent Variable: iPhone

b. Predictors: (Constant), BronVanInkomen_WerkendWorking, NFU, Kost, Geslacht, BronVanInkomen_StuderendzonderbijbaanStudentwithoutsidejo, QC, ATSCI, BronVanInkomen_StuderendmetbijbaanStudentwithsidejob

Coefficients^a

Model 1		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.172	.420		-.409	.684
	Kost	.000	.000	.236	2.573	.011
	ATSCI	.004	.008	.045	.485	.628
	NFU	.010	.007	.120	1.337	.184
	QC	.014	.009	.135	1.496	.137
	Geslacht	-.022	.085	-.023	-.259	.796
	BronVanInkomen_Studere ndmetbijbaanStudentwithsi dejob	.067	.335	.069	.200	.842
	BronVanInkomen_Studere ndzonderbijbaanStudentwi thoutsidejo	-.030	.343	-.024	-.088	.930
	BronVanInkomen_Werken dWorking	.020	.343	.018	.059	.953

a. Dependent Variable: iPhone

Model 2

Output Created		07-JUL-2024 22:22:39
Comments		
Input	Data	U:\out(1).csv
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	135
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on cases with no missing values for any variable used.
Syntax		REGRESSION /MISSING LISTWISE /STATISTICS COEFF OUTS R ANOVA /CRITERIA=PIN(.05) POUT(.10) /NOORIGIN /DEPENDENT Kost /METHOD=ENTER iPhone ATSCI NFU QC Geslacht BronVanInkomen_Studere ndmetbijbaanStudentwithsi dejob BronVanInkomen_Studere ndzonderbijbaanStudentwit houtsidejo BronVanInkomen_Werken dWorking.
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.01
	Memory Required	8288 bytes
	Additional Memory Required for Residual Plots	0 bytes

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	BronVanInkomen_WerkendWorking, NFU, iPhone, QC, BronVanInkom	.	Enter

en_Studerendz onderbijbaanSt udentwithoutsidejo, Geslacht, ATSCI, BronVanInkom en_Studerendm etbijbaanStude ntwithsidejob ^b		
---	--	--

a. Dependent Variable: Kost

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.479 ^a	.229	.180	319.463517

a. Predictors: (Constant), BronVanInkomen_WerkendWorking, NFU, iPhone, QC, BronVanInkomen_StuderendzonderbijbaanStudentwithoutsidejo, Geslacht, ATSCI, BronVanInkomen_StuderendmetbijbaanStudentwithsidejob

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3823615.045	8	477951.881	4.683	<.001 ^b
	Residual	12859174.250	126	102056.938		
	Total	16682789.295	134			

a. Dependent Variable: Kost

b. Predictors: (Constant), BronVanInkomen_WerkendWorking, NFU, iPhone, QC, BronVanInkomen_StuderendzonderbijbaanStudentwithoutsidejo, Geslacht, ATSCI, BronVanInkomen_StuderendmetbijbaanStudentwithsidejob

Coefficients^a

Model 2		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-408.171	290.582		-1.405	.163
	iPhone	155.491	60.438	.212	2.573	.011
	ATSCI	16.361	5.704	.244	2.868	.005
	NFU	-6.459	5.201	-.106	-1.242	.217
	QC	13.269	6.537	.173	2.030	.044
	Geslacht	10.903	59.268	.015	.184	.854
	BronVanInkomen_Studere ndmetbijbaanStudentwithsi dejob	336.511	231.147	.475	1.456	.148
	BronVanInkomen_Studere ndzonderbijbaanStudentwi thoutsidejo	219.176	237.750	.238	.922	.358
BronVanInkomen_Werken dWorking	416.477	236.023	.509	1.765	.080	

a. Dependent Variable: Kost

