
# Consumers' Willingness to Pay for Customization of Smartphones

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Dissertation submitted in partial fulfillment of requirements for the MSc in Management with specialization in Strategic Marketing, at the Universidade Católica Portuguesa, 01.06.2022.

**ABSTRACT**

The customization of products presents a strategic opportunity to adapt to the changing consumer needs by offering products that are tailored to a specific consumer's preferences, differentiating them from other, standardized products. This process positively influences many variables such as customer satisfaction, customer loyalty or consumers' willingness to pay for such a product. Nevertheless, successful implementation of customization is not yet common. This research focused on exploring personality-based influences on the evaluation of customized products and the demand for such by measuring the impact of consumers' need for uniqueness on their willingness to pay for a customized product as well as on the perceived quality of a customized product.

For this purpose, different levels of customization were tested and explored using qualitative as well as quantitative data. Results show that the customization of all product attributes is highly appreciated by consumers, expressed by an increased willingness to pay. Here, the perceived quality of a customized product fully mediates the increased willingness to pay. Most importantly, consumers with a strong need for uniqueness are willing to pay more for customized products than consumers with a weak need for uniqueness.

Therefore, this study offers valuable insights into how customization is not valued equally by every consumer and that the right segmentation of consumers can lead to higher marketing efficiency and the adaptation of the pricing strategy to increase profitability.

**Title:** Consumers' Willingness to Pay for Customization of Smartphones

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**Keywords:** Mass Customization, Product Customization, Need for Uniqueness, Consumers' Need for Uniqueness, Customer Satisfaction, Willingness to Pay, Perceived Quality, Idiosyncratic-Preference Attribute Customization, Shared-Preference Attribute Customization

**SUMÁRIO**

A customização de produtos apresenta uma oportunidade estratégica de adaptação às mudanças nas necessidades dos consumidores, oferecendo produtos que são adaptados às suas preferências específicas, e diferenciando-o de outros produtos padronizados. Este processo influencia positivamente muitas variáveis como a satisfação do cliente, a sua fidelidade ou a sua predisposição a pagar por um produto deste tipo. No entanto, uma implementação bem-sucedida da customização não é ainda comum. Esta investigação centrou-se na exploração de influências baseadas na personalidade na avaliação de produtos customizados e na procura dos mesmos, medindo o impacto da necessidade de singularidade dos consumidores na sua predisposição a pagar por um produto customizado, bem como na perceção da qualidade de um produto customizado.

Para este efeito, foram testados e explorados diferentes níveis de customização, utilizando dados qualitativos bem como quantitativos. Os resultados mostram que a customização de todos os atributos do produto é altamente apreciada pelos consumidores, expressa por uma maior predisposição a pagar. Aqui, a perceção de qualidade de um produto customizado medeia totalmente esta maior predisposição a pagar. Mais importante ainda, consumidores com uma forte necessidade de singularidade estão dispostos a pagar mais por produtos customizados do que consumidores com uma reduzida necessidade de singularidade.

Por conseguinte, este estudo oferece valiosos contributos sobre como a customização não é igualmente valorizada por cada consumidor e que uma segmentação correta dos mesmos pode levar a uma maior eficácia de marketing e à adaptação da estratégia de preços para aumentar a rentabilidade.

**Título:** A predisposição dos consumidores a pagar pela customização de Smartphones

**Autor:** Paulina Schulze Berndt

**Palavras-chave:** Customização em massa, Customização do produto, Necessidade de exclusividade, Necessidade de exclusividade dos consumidores, Satisfação do cliente, Predisposição a pagar, Qualidade Percebida, Customização de Atributos de Referência Idiossincráticos, Customização de Atributos de Referência Partilhada

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## GLOSSARY

MC – Mass Customization

CNFU – Consumers' Need for Uniqueness

WTP – Willingness to Pay

IPA – Idiosyncratic-Preference Attribute

SPA – Shared-Preference Attribute

CI – Confidence Interval

SD – Standard Deviation

# CHAPTER 1: INTRODUCTION

## 1.1 Background

Mass Customization (MC) has been identified as a potential competitive advantage and the next differentiating factor driving customer satisfaction as early as 1993 by Pine. Since then, academic research agreed on MC as creating superior customer value through meeting individual consumer's demands (Da Silveira et al., 2001) in a market environment characterized by an increasing demand heterogeneity (Franke & Piller, 2004). Accordingly, the superior customer value of MC products directly relates to increased customer satisfaction (Coelho & Henseler, 2012) and perceived quality (Samudro et al., 2020), ultimately resulting in a higher Willingness to Pay (WTP) for customized products (Franke & Schreier, 2008). Customization, being feasible for look, fit and functionality of a product, therefore promises to be the way for companies to ensure future business success (Piller, 2004).

Nevertheless, when asking about MC and the consumption of MC products, the vast minority of people know about the term, let alone have purchased a MC product. Additionally, the failure of companies like customization pioneer "Shoes of Prey" suggests a differing consumer demand not only for product attributes but for MC as a whole (Pallant et al., 2020). Adapting to MC involves companies going through a transformation that can be subject to implementation challenges (Piller, 2004) leading to the still small number of successful MC implementations. Hence, one of the main challenges appears to be a successful implementation strategy and identifying the appropriate attribute scales that represent the scope of consumer needs regarding a certain product (Salvador et al., 2009).

With one of the main characteristics of MC being the possibility to create a unique, personally tailored product, a close link to the concept of "Consumers' Need for Uniqueness" (CNFU) (Tian et al., 2001) has been suggested in previous literature (Coelho & Henseler, 2012). As customization allows for choosing between different attributes with multiple levels, the nature of these and the value they bring to the consumer is based on a subjective evaluation process. Nevertheless, a classification can be introduced by dividing the attributes into those, that are equally evaluated by everyone, with one level of the attribute being more valuable than the other, and those, that are subject to a very individual evaluation process, with each level having a different value for each consumer. These two types of attributes can be referred to as "Shared-Preference Attributes" (SPAs) and "Idiosyncratic-Preference Attributes" (IPAs) (Puligadda et al., 2010). Thus, when establishing variations in CNFU, differing preferences in IPAs and SPAs

can be expected and are likely to support a successful determination of consumer segments, ensuring an optimized customization experience.

Considering the still growing managerial relevance of MC and the continuously evolving technical and social environment, this research focuses on the effects of perceived quality as well as personal differences in CNFU on the evaluation of MC products through measuring WTP.

### 1.2 Problem Statement

To efficiently use MC as a differentiating competitive factor, one needs to understand the underlying motivations for product customization. Also, considering different origins of evaluation of a customized product and its attribute levels may present an important privilege in successfully designing the MC process and addressing the target segment's needs appropriately.

Hence, the problem statement for this research can be defined as:

"The exploration of the moderating role of consumers' need for uniqueness on perceived quality and WTP for customization."

Subsequently, the following research questions have been defined to explore the problem statement:

**RQ1:** How do different levels of customization impact consumers' willingness to pay?

**RQ2:** What is the effect of perceived quality on the relationship between customization and consumers' willingness to pay?

**RQ3:** How does consumers' need for uniqueness impact the effect of customization on perceived quality and consumers' willingness to pay?

### 1.3 Relevance

When observing the topic of product customization from a consumer perspective, one of the first things that come to mind is the question of why the concept is not adapted more commonly. For consumers, and from a personal point of view, it seems to offer great benefits. Nonetheless, customization has not yet found its way into the day-to-day purchasing experiences. Based on this observation, a personal interest in the reasoning behind it grew.

From a managerial perspective, MC promises a great strategic opportunity based on different reasons. The topic of MC not only has been proven to create a valuable consumer demand but more importantly also a willingness to pay a price premium (Rosenbaum et al., 2021). The

reasoning behind this demand and especially the increase in WTP has been studied from different perspectives, using different theories. Rosenbaum et al. (2021), for instance, suggest that the created customer relationship through exclusivity can be drawn as an explanatory factor for this effect while Franke et al. (2010) assign the incremental willingness to pay to the increased personal value of self-creating a product. Furthermore, Coelho & Henseler (2012) found empirical support for the effectiveness of customization and its positive impact on perceived service quality and customer satisfaction. Therefore, customization can be successfully used as a supporting variable of customer loyalty (Coelho & Henseler, 2012).

Academically, the first rise of MC as a topic in research started in the early 2000s. Since then, the era of customization has evolved with new technological developments and faster manufacturing processes (Fogliatto et al., 2012). Current academic research on the topic of MC often focuses on a firm-centered approach and neglects the identification of underlying factors determining consumers' demand for customization based on individual needs and differing personality traits. Yet, the consumer perspective and personal differences offer great knowledge about the success factors of MC for firms (Pallant et al., 2020). A topic that has not been in the focus of academic research on this topic is CNFU (Tian et al., 2001) and its influence on satisfaction with a customizable product as well as WTP. Thus, further research will be required to grasp the influences of evolving MC and its impact on consumer behavior based on a customer-based research approach. By establishing a connection between MC and CNFU, useful insights may be added to existing literature on the origins of created value by customized products. With a focus on underlying consumer motivations and the related value-creating aspects, managerial decision making in terms of communication or design of the customization process can be supported (Franke & Schreier, 2008).

### 1.4 Research methods

For the purpose of this study, both primary and secondary data were used to answer the research questions. First, secondary data has been reviewed as part of the literature review to gain a deeper understanding of the relevant constructs and previous research results.

Next, primary data has been collected in the form of both qualitative as well as quantitative research. Qualitative research, in the form of interviews, has been used as a validation of the chosen stimuli before proceeding with the quantitative data collection. With regard to the quantitative data collection, a survey measuring the theoretical constructs and their

interdependencies has been distributed. The collected data allowed for statistical analysis of the proposed hypotheses.

### 1.5 Dissertation outline

The present dissertation consists of five chapters, aiming to answer the defined research questions. Firstly, the following chapter of the literature review and conceptual framework offers valuable insights into previous research and explores the theoretical constructs that will be used within this research. This chapter also allows to derive hypotheses from existing literature. Next, the methodology chapter will provide a detailed description of the research approach and data collection as well as statistical analysis. The fourth chapter then focuses on the results of the main study and reflects these within a discussion. Afterwards, the fifth and last chapter draws main conclusions and allows for the formulation of academic as well as managerial implications of this research. Lastly, the limitations and opportunities for future research will be discussed within this chapter.

## CHAPTER 2: LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

In this chapter, the theoretical background of the presented research questions is elaborated and discussed. The terms of customization, customer satisfaction, WTP and CNFU are defined, and fundamental concepts and theories are explored in more detail. In addition, the current state of research on need for uniqueness and customer satisfaction in relation to customization is reviewed, from which the theoretical relevance of the work can be described in the following. Finally, hypotheses are derived based on the knowledge gained.

### 2.1 Customization

Reacting to increasingly complex consumer needs, a diverse market and maintaining cost efficiency creates an objective for companies to rethink traditional production approaches. These challenges created a need for new paths to satisfy consumers and grow businesses, one of which being the concept of "Customization" (Piller et al., 2004). Customization can be defined as the process of choosing from a set of variables given by the organization to modify a product to one's own needs. This definition of customization differentiates it from the concept of "personalization", as personalization refers to the interaction of a supplier and a customer to create a specific product directly for the customer (Rosenbaum et al., 2021). Customization being offered to every customer based on highly effective and flexible processes is referred to as "Mass Customization" which is being used by companies as a competitive point of difference through enabling a superior meeting of demands (Da Silveira et al., 2001). MC is enabled using online toolkits, which give consumers the opportunity to change attributes such as design or color to match their individual preferences (Franke et al., 2010).

Customization can be classified based on differing consumer motives such as functionality, aesthetics, or self-expression. For functionality-driven consumers, the increase of product performance for a specific need acts as the main motivation for product customization. Accordingly, customization for aesthetic purposes is based on optimizing attraction or positive affections. Customization motivated by self-expression on the other hand could aim for creating a sense of self and communicating this to one's surroundings or promote identification with an aspirational group (Lei et al., 2020).

The process of customizing a product involves effort from the side of the consumer. Only if those efforts pay off by bringing fundamental value to the consumer, MC will be successful (Piller et al., 2004). Over the years, different research approaches found several value-creating factors which drive the need for customization. As customized products allow for the adaption

of product aesthetics as well as functionalities, an increased fit of personal preferences has been identified as the main factor contributing to consumers' willingness to customize a product (Simonson, 2005).

Even simple customization toolkits already allow for a large number of customizing options which empowers consumers to build a truly unique product (Franke & Piller, 2004). This uniqueness of a customized product and the achieved differentiation from other consumers have been shown to play a major role in consumers' motivations towards customization (Fiore et al., 2004). Here, the uniqueness of a product can be measured in the difference consumers perceive between a customized and a standardized product (Tian et al., 2001). But not only product-related variables have been discovered in previous research. Franke et al. (2010) also discovered the effect of self-designing a product and its relationship to an increased personal value. Thus, it can be concluded that the need for customization derives from both, the direct product value as well as the process and attached personal value.

In addition to these findings, a price premium is being attributed to customized products in comparison to a standard, mass-produced version of the product even without a direct purchase intention (Rosenbaum et al., 2021).

### 2.1.1 Idiosyncratic vs. Shared-Value Attributes

Consumers' evaluation of attributes in the customization process differs with their nature. Thus, in order to understand consumer preferences in customization, it is crucial to differentiate between attribute types and their impact on consumer satisfaction with the customized product (Puligadda et al., 2010).

Puligadda et al. (2010) defined two attribute types in product customization by consumers: Firstly, "Shared-Preference Attributes" (SPA) refer to attributes, which are evaluated equally by all consumers. Hence, for SPAs, consumers generally agree on a certain level of this attribute being preferred over others. For instance, a phone battery that lasts up to 12 hours is preferred over one that only lasts up to 6 hours.

Secondly, "Idiosyncratic-Preference Attributes" (IPA) are evaluated based on subjective consumer preferences of the different attribute levels (Puligadda et al., 2010). Thus, an idiosyncratic consumer choice is solely based on a personal appraisal and is not subject to universal evaluations and their impact on the decision-making process (Sherman et al., 1984). Examples for IPAs could include product design elements such as color. The differentiation of

these attribute types creates an important insight into consumer evaluation of the customization process and its outcome, as SPAs and IPAs are valued differently by consumers (Puligadda et al., 2010).

### 2.2 Willingness to Pay

Willingness to pay (WTP) is a subjective measurement of the maximum price for a certain product and a certain quantity of that product, one is willing to pay. This subjective value that an individual assigns to a product and quantity ultimately defines the purchasing choice a consumer makes when being presented different alternatives. Thus, the consumer will choose the alternative that matches the WTP best (Wertenbroch & Skiera, 2002). The construct can be considered as widely studied and important in marketing, as it provides guidance in terms of pricing strategies or demand planning (Kuo & Cranage, 2012) and therefore directly influences companies' profitability (Homburg et al., 2005).

The previously explored increased product-value of a customized product that is tailored to a specific consumer's needs suggests a direct impact on consumers' WTP. Consequently, Franke & Piller (2004) found a significant increase in WTP for a customized product in comparison to the standardized version. This finding supports previous theories on the increased benefits gained from the customization of a product. Especially the perceived uniqueness of a customized product shows a substantial effect on WTP (Franke & Schreier, 2008). These findings can be further justified by the described positive relation between customization and customer satisfaction. Therefore, the effect of customer satisfaction on WTP will be reviewed in the following.

In addition, a difference in WTP for customized products has been found for consumers with differing motivations for self-expression. Consumers customizing a product to differentiate themselves from others show a higher WTP than those customizing a product to express a shared identity with a specific social group (Lei et al., 2020).

Based on the presented academic research on customization and WTP, the following hypotheses can be derived:

***H1a:*** *Customization positively impacts WTP.*

***H1b:*** *In customization, IPAs have a higher impact on WTP than SPAs.*

## 2.3 Customer Satisfaction

Customer satisfaction has been an essential construct in previous literature on customer loyalty and can be described as a comprehensive result valuation of the degree to which a customer is pleased and attributes a positive evaluation to the product or supplier (Flint et al., 2011). Thus, consumers assess their level of satisfaction or dissatisfaction based on previous expectations and the degree to which these expectations are fulfilled (Oliver, 1980). Early research has shown that customer satisfaction not only results in a positive attitude towards a company and its products but most importantly can be directly linked to an increased financial performance (Anderson et al., 1994).

### 2.3.1 Customer satisfaction with customized products

The evolvement of customizable products can be linked to a change of strategies for consumer satisfaction. Where previously, companies aimed to meet the needs of as many consumers as possible with only one product, a differentiating factor for customer satisfaction now is the customizable product which can be designed to solely meet the needs of one specific customer (Coelho & Henseler, 2012). Coelho & Henseler (2012) found empirical support for the effectiveness of customization and its positive impact on perceived service quality and customer satisfaction. Therefore, customization can be successfully used as a supporting variable of customer loyalty.

Moreover, the previously discussed attribute types, SPAs and IPAs, show a significant impact on satisfaction with the customization process. For IPAs, being evaluated subjectively by each consumer, a greater number of attribute variables to choose from when customizing a product is being appreciated by consumers. This ultimately creates higher satisfaction with the customization. On the contrary, a greater choice variety of SPAs, which are subject to universal consumer evaluation, does not add significant value to the consumer's experience with the customization process. Thus, a great number of attribute variables for SPAs does not create higher consumer satisfaction (Puligadda et al., 2010).

This differing importance of attribute types for consumer satisfaction with customization suggests an impact of the perceived uniqueness of a customized product on the satisfaction with such. A greater choice variety of IPAs is what enables the design of a product that is customized to specific consumer needs and preferences, facilitating uniqueness. Therefore, this research will aim to explore CNFU and its link to customization in more detail.

### 2.3.2 The Influence of Customer Satisfaction on Willingness to Pay

When investigating the influence of consumer satisfaction on WTP, Homburg et al. (2005) draw from the equity theory. This theory states that social interactions or exchanges are perceived positively only if the input and output of this interaction are considered to be of equal value (Adams & Freedman, 1976). Hence, applying this theory to the relation of satisfaction and WTP, it can be concluded that the more satisfied a consumer is, the higher the expected WTP (Homburg et al., 2005).

Furthermore, consumers' WTP can also be subject to change over a period of time. When a company, for instance, applies changes in functionalities or quality of a product or service, consumers are likely to adapt their WTP accordingly. Thus, with an increase in relevant functionalities or quality, a consumer would be willing to pay more. This can again be explained using the equity theory, as consumers are adapting their input to meet the expected increased output and maintain the positive evaluation of the exchange (Homburg et al., 2005).

Moreover, it is important to note that this relationship is nonlinear, as the strong positive relationship between consumers' level of satisfaction and the WTP is found to be most significant at extremely high or low levels of satisfaction. Accordingly, a very satisfied consumer will be willing to pay significantly more, and a very unsatisfied consumer will be willing to pay significantly less, whereas a medium level of satisfaction does not have a very significant impact on consumers' WTP (Homburg et al., 2005). This relationship has a strong effect on managerial decision-making and companies' pricing strategies, as it suggests that a price premium can be charged only for high customer satisfaction levels. Here, customer segmentation could be used to effectively prioritize investments into customer satisfaction (Homburg et al., 2005).

In conclusion, the review of previous literature suggests a connection between satisfaction and the WTP for a customized product. However, satisfaction is considered a post-purchase construct, focusing on present consumers (Eggert & Ulaga, 2002). Thus, for the sake of this research and measurement feasibility, the construct of "Perceived Quality" will be introduced. Perceived quality can be defined as consumers' evaluation of a product's supremacy and distinction (Zeithaml, 1988) and has been proven to be closely linked to the construct of customer satisfaction. The cognitive evaluation of a product's quality is followed by an affective reaction to the consumption, which can be described as customer satisfaction (Gotlieb et al., 1994). Nevertheless, perceived quality, as not being objective quality, is an attitudinal

construct (Zeithaml, 1988) which therefore allows an evaluation of a hypothetical purchase situation, making it a feasible measurement item for the purpose of this research.

Furthermore, perceived quality is assumed to be an appropriate proxy for customer satisfaction with customized products, as similar results for the effect of customization on perceived quality have been indicated. Hereby, customized products are expected to create an improvement in perceived quality due to the superior need of demands (Samudro et al., 2020). In addition, perceived quality was found to be one of the relevant constructs in determining consumers' WTP for a product (Netemeyer et al., 2004). Based on these findings, perceived quality will be used as a proxy for customer satisfaction within this research. Thus, the following hypothesis can be defined:

***H2:*** *Perceived quality mediates the effect of customization on WTP.*

### 2.4 Consumers' Need for Uniqueness

In a world aiming to make everything available for everyone, the differentiation between the self and others becomes increasingly challenging. Nevertheless, this differentiation is natural to our society and can be detected within everyone – in a more or less distinctive manner (Ruvio, 2008). This phenomenon can be described using the theory of "Consumers' Need for Uniqueness" which is defined as "the trait of pursuing differentness relative to others through the acquisition, utilization, and disposition of consumer goods for the purpose of developing and enhancing one's self-image and social image" (Tian et al., 2001, p. 52). Additionally, it is important to note that CNFU is confined by social norms (Tian et al., 2001). Thus, consumers behave in a way that differentiates them when feeling a low level of uniqueness in comparison to others or that assimilates them when feeling a level of uniqueness which exceeds social norms. Here, consumers' level of need for uniqueness is what defines both scenarios. Therefore, consumers with a strong need for uniqueness require a significantly higher deviation from social expectations in order to feel the need to assimilate than those with a weaker need for uniqueness (Ruvio, 2008).

The theory is based on the concept of "Counter Conformity" (Nail, 1986) and the "Need for Uniqueness Theory" as defined by Snyder & Fromkin (1977) and consists of three main behavioral aspects: Firstly, "Creative Choice Counter Conformity" refers to consumers aiming to make choices that are not in line with those of many others to socially differentiate themselves and yet are likely to be valued positively by others. Secondly, "Unpopular Choice Counter Conformity" can be described as the use of products that are not acknowledged as part

of social norms and thus risking social criticism to achieve differentiation. Lastly, "Avoidance of Similarity" summarizes actions that aim to show one's distinctive characteristics by discontinuing the use or possession of products that become ordinary when used by others (Tian et al., 2001).

Uniqueness has been previously identified as one of the main drivers for customization (Simonson, 2005). Thus, a direct link between customization and answering CNFU can be established. Customized products can help to counteract conformity with the mass consumption of standardized products and therefore allow consumers with a high need for uniqueness to differentiate themselves from others (Tian et al., 2001). Moreover, the perceived uniqueness of a customized product was found to bring independent value to the consumer which is not linked to functional or aesthetic attributes (Franke & Schreier, 2008). In conformity, the longing for protecting one's self-identity was found to have an impact which directly drives consumption behavior. Accordingly, consumers are willing to pay a higher price for unique products, which fulfill this need (Sivanathan & Pettit, 2010).

These findings implicate a close connection between a high need for uniqueness and customer satisfaction as well as WTP for customization which would especially be enhanced by the customization of IPAs. As perceived quality will be used as a proxy for customer satisfaction, these findings allow for the formulation of following hypotheses:

***H3:*** *Consumers' need for uniqueness moderates the effect of customization on WTP.*
***H4:*** *Consumers' need for uniqueness moderates the effect of customization on perceived quality.*

## 2.5 Conceptual Model

Based on the presented literature review and the derived hypotheses, the following conceptual model can be defined:

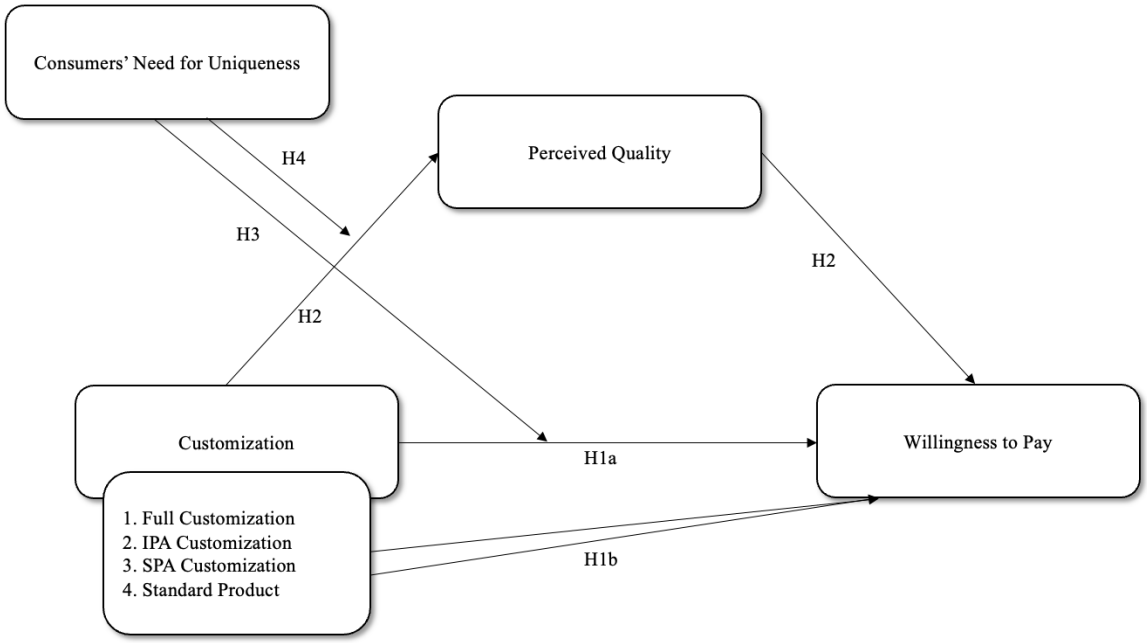


*Figure 1: Conceptual Model*

## CHAPTER 3: METHODOLOGY

This chapter illustrates the detailed methodology used to accept or reject the proposed hypotheses and ultimately answer the research questions of this study. Firstly, the research approach will be explained, followed by a description of the collection of secondary as well as primary data. With a focus on the primary data collection, the topics of measurement and data analysis will be explored in more detail.

### 3.1 Research Approach

To accomplish the objective of this study, exploratory as well as explanatory research approaches have been applied. After having collected secondary data in the form of a literature review, the theoretical base of this study has been established and the hypotheses were derived. For testing these hypotheses, primary data has been gathered. Firstly, qualitative research in form of interviews was used to validate the proposed stimuli representing different levels of customization based on previous literature review. Secondly, the adapted stimuli were used to conduct quantitative research as the main study of this research, aiming to investigate the impact of perceived quality and CNFU on consumers' WTP for customization.

### 3.2 Secondary Data

Secondary data in the form of a literature review has been gathered as a starting point of this research. With the objective to gain a good understanding of the constructs and the status quo of previous research, mainly academic articles have been reviewed. The acquired insights helped to assess existing relationships between constructs and discover possibilities for future research. Therefore, secondary data presented the base of the conceptual model used for this study.

Furthermore, secondary data has been used to define the correct variable levels and anchors for the smartphone consumption related items of the main study. Namely, the four most common smartphone brands have been identified to be Samsung, Apple, Huawei and Xiaomi (Archana Kabra, 2021). Additionally, the average smartphone selling price worldwide of 317$ in 2021 (Statista, 2019) has been identified using secondary data and was used as an anchor in the survey of the main study.

### 3.3 Primary Data

Primary data has been collected using both, a qualitative as well as a quantitative methodology. First, qualitative data in the form of interviews was used to validate the stimuli.

This data has then been used to create the final stimuli which were used for the main quantitative study. The following chapter will provide a detailed description of the data collection, measurements, and data analysis.

### 3.3.1 Qualitative Data

To validate the stimuli to be used in the main study, seven one-on-one interviews were conducted (Appendix 2). For this purpose, semi-structured interviews (Döring & Bortz, 2016) based on open-ended questions had been chosen as the appropriate design. This approach allowed for an exploration of the interviewee's thoughts and open opinions on the presented stimuli.

#### 3.3.1.1 Data Collection

The interviewees were selected based on a convenience sample. All interviews were held before the main study, as the results were to be used to optimize the presented stimuli. The interviews were partially held online due to geographic restraints.

Due to the clear differentiation of IPAs and SPAs of a smartphone, this product has been chosen for the stimuli creation. Thus, four stimuli were created: 1) IPA customization, 2) SPA customization, 3) IPA and SPA customization and lastly 4) standard product. To ensure a comprehensive stimuli presentation, IPA customization was referred to as "Design Customization", SPA customization as "Utility Customization" and finally, IPA and SPA customization as "Full Customization".

After a short introduction phase, the interviewees were given the scenario of a new brand launching a smartphone and testing different customization options for their customers. Next, the four stimuli were presented. After being given time to closely examine all four stimuli, interviewees were asked to give detailed feedback on the clarity of design and information given, focusing specifically on the differentiation of the stimuli (Appendix 1).

#### 3.3.1.2 Stimuli Creation

After reviewing all conducted interviews, the gathered information has been used to adapt the presented stimuli. All interviewees congruently communicated a good understanding of the presented stimuli and referred to the information as concise and well comprehensible as part of an online survey. With a more detailed view at the different attribute levels, feedback was given on the smartphone design being referred to as "round" and "square" in the initial stimuli development. Here, an adaptation of the wording to "round edges" and "square edges" was

proposed as an improvement of attribute definition (Appendix 1). The given feedback has been aggregated and used to develop the final stimuli for the following main study (Appendix 3).

### 3.3.2 Quantitative Data: Main Study

The main study is an empirical investigation with a quantitative research design. This serves to test the previously derived hypotheses by means of statistical analysis. By collecting primary data, correlations and differences between variables will be investigated. Based on the questioning of the respondents at only one point in time, this study is a cross-sectional study (Döring & Bortz, 2016). The research design can be described as a 2x2 factorial design:

*Table 1: Research Design*

| | | **IPA Customization** | |
|---|---|---|---|
| **SPA Customization** | | Yes | No |
| | Yes | Full Customization | Utility Customization |
| | No | Design Customization | Standardized Product |

### 3.2.1 Data Collection

As the main study of this research, an online survey has been distributed from the 19th of April until the 2nd of May 2022 mainly via social media platforms (Appendix 4). An online survey is characterized by advantages such as low costs, speed, and ease of completion. However, an online survey restricts the sample only to the part of the population that uses the internet and thus cannot represent the population as a whole (Döring & Bortz, 2016). To ensure an easy usability of the study, the survey has been created using "Qualtrics". Also, a pilot survey has been conducted using 11 respondents, testing functionality and clarity of the survey.

The target of this survey was reduced to those who have bought a smartphone at any point in time in their lives, to assure a good understanding of the presented stimuli. In order include only those respondents who match this requirement, a control question at the beginning of the survey was used to determine a previous smartphone purchase and exclude those who have not yet bought a smartphone.

Before starting the survey, the respondents were given a brief explanation of its purpose. They were informed that there is no right or wrong information when filling out the survey, as it is only a personal evaluation. In addition, the respondents were assured that their data would be treated anonymously, exclusively within the framework of this scientific study. It was pointed out to a maximum processing time of 5 minutes, to achieve a possibly high number of completed surveys. The respondents were thanked for their participation and an e-mail contact was left for queries and further information.

To collect the data of the main study, the non-probability sampling techniques of a convenience sample as well as snowball sampling have been used. Those techniques are characterized by low monetary and timely costs as well as a high probability of reaching an adequate sample size within the restricted scope of this research. Nevertheless, non-probability sampling can be subject to biases which will be recognized in the later presented limitations of this research (Saunders et al., 2008).

### 3.2.2 Measurement / Indicators

To adequately measure the constructs presented in the literature review and the resulting conceptual model, validated scales have been used within the survey. For the independent variable of customization, the previously presented stimuli have been used as measurement items. Next, the moderating effect of consumers' need for uniqueness has been measured using a seven-point Likert Scale defined by Tian et al. (2001). This scale consists of 17 items and was found to show a Cronbach's Alpha value of 0.95, indicating an excellent scale reliability.

Furthermore, to measure the mediating effect of perceived quality, a seven-point Likert Scale by Bao et al. (2011) has been used. This four-item scale also shows an excellent value of 0.95 for the Cronbach's Alpha. Lastly, the dependent variable of consumers' willingness to pay was measured using the two-item scale from (Breidert et al., 2006). As this scale is a numeric scale containing open questions, the concept of Cronbach's Alpha does not apply.

*Table 2: Construct Measurement*

| Framework | Measure | Items | Scale | Reference | Cronbach's α |
|---|---|---|---|---|---|
| IV | Customization | Stimuli | na | na | na |
| Moderator | Consumers' Need for Uniqueness | 17 | 7-point Likert Scale | Tian et al., 2001 | 0.95 |
| Mediator | Perceived Quality | 4 | 7-point Likert Scale | Bao et al., 2011 | 0.95 |
| DV | Willingness to Pay | 2 | na | Breidert et al., 2006 | na |

### 3.2.3 Data Analysis

The collected quantitative data has been analyzed using statistical analysis with SPSS. Firstly, the data has been prepared and cleaned followed by a characterization of the sample using descriptive statistics. Thereafter, the hypotheses have been tested. To describe the relationship between customization as the independent variable and consumers' WTP as the continuous dependent variable, a linear regression analysis has been conducted after creating dummy variables for the independent variable, with the stimulus "Standard Product" as a reference variable. Concerning the difference in effect between IPA customization and SPA customization on consumers' WTP, an ANOVA has been applied to compare all levels of customization with a focus on IPA and SPA customization.

Next, the mediating effect of perceived quality on the relationship between customization and WTP has been tested using the macro PROCESS model 4 (Hayes, 2012). Furthermore, to analyze the moderating effect of CNFU on first, the relationship between customization and WTP and second, the relationship between customization and perceived quality, the macro PROCESS model 1 (Hayes, 2012) has been used in both cases.

Finally, the complete model, being the mediating effect of perceived quality as well as the moderating effect of CNFU, has been tested using the macro PROCESS model 8, considered as moderated mediation, by Hayes (2012). This model allows to discover the mediating effect of perceived quality on the relationship between customization and consumers' WTP as well as the moderating effect of CNFU on the indirect effect of customization on perceived quality and the impact of customization on consumers' WTP.

## CHAPTER 4: RESULTS AND DISCUSSION

The following chapter focuses on the main study and its results by performing statistical analysis using SPSS. First, the data-preparation process will be described, followed by a sample characterization and the hypotheses testing. Finally, the full moderated mediation model will be analyzed.

### 4.1 Data Preparation

A total of 249 survey answers have been initiated, from which 240 have been completed. Accordingly, the survey can be considered as sufficiently designed due to its high response rate of 96,4% (Saunders et al., 2008). Thereafter, a total of six responses were deleted due to never having bought a smartphone and thus not entailing the required knowledge for completing the survey adequately, leaving the sample with 234 responses. Additionally, 93 responses did not pass the manipulation check for the four stimuli, being 27 for each of the "Design Customization" stimulus, the "Standard Product" stimulus and the "Utility Customization" stimulus and lastly, 12 for the "Full Customization" stimulus. Hence, the number of valid survey responses has decreased to 141. Next, the data has been reviewed with regard to consistent and logical answers. Here, three responses have been deleted, as no valid answer in the form of a numeric WTP in € has been given to the open questions of minimum and maximum WTP. This leaves the sample with 138 responses from which one has been deleted during the last step of data preparation, the detection of extreme outliers using the Mahalanobis Distance. Moreover, no missing values had to be considered, as all survey questions were mandatory. Therefore, the final valid sample size, with which the statistical analysis has been conducted, is 137, with a total of 40 valid responses within the "Full Customization" stimulus, 34 within the "Standard Product" stimulus and the "Utility Customization" stimulus respectively and 30 within the "Design Customization" stimulus. Finally, it is important to note that the variable "Customization" which includes all four stimuli groups, has been coded as follows: 1=Standard Product, 2=Utility Customization, 3=Design Customization and 4=Full Customization. This coding resonates with an increase in individually relevant customization with an increase in the value of this variable and allows for accurate interpretation of the following analyses.

### 4.2 Sample Characterization

The sample was characterized by analyzing demographics the respondents, namely "Gender", "Age", "Marital Status", "Education", "Income" and "Employment". In terms of gender, the

sample showed a close to equal distribution of male (47,4%) and female (51,1%) respondents . Additionally, one respondent identified as "Non-binary / third gender" (0.7%) and one respondent preferred not to state their gender (0.7%) (Appendix 5). Regarding the respondents' age, the majority, with 50,4% stated to be between 25 and 34 years old. The second-largest age group of the sample was found to be between 18 and 24 years old, with a total of 31,4% of the respondents. In addition, 13,1%, 3,6% and 1,5% stated to be between 35 and 44, 45 and 54 and lastly between 55 and 64 years old respectively (Appendix 6).

Concerning marital status, with 76,6%, the vast majority of respondents have never been married. Furthermore, 19% of respondents stated to be married and 2,9% to live separated. Lastly, only two respondents preferred not to state their marital status (1,5%) (Appendix 7). Next, regarding education, the majority of respondents stated to have a bachelor's (50,4%) or a master's (42,3%) degree. Also, 3,6% respectively stated to have finished a high school degree and a P.h.D or higher (Appendix 8). In terms of income, a less concentrated distribution was found. Here, most respondents (27%) stated to have a net disposable income between 1001€ and 1500€. Additionally, 22,6% have an income between 500€ and 1000€ and 16,8% between 1501€ and 2000€. An income below 500€ has been stated by 14,6% of the respondents and lastly, the minority of respondents stated to have higher incomes of between 2001€ and 2500€ (7,3%), 2501€ and 3000€ (2,9%) and above 3000€ (5,1%). Overall, five respondents preferred not to state their net disposable income (3,6%) (Appendix 9).

Finally, the sample mainly consists of employed respondents, with 54,7%, and students, with 35,8%. A minority stated to be self-employed (7,3%) or unemployed (1,5%). Only one respondent preferred not to state their employment status (0,7%) (Appendix 10).

When observing respondents' smartphone buying behavior, as previously mentioned, all respondents that are considered as part of the valid sample have already purchased a smartphone in the past. Being asked about the smartphone brand which the respondents are currently using, Apple is found to be the most used brand under all respondents, with a total of 69,3%, followed by Samsung with 20,4%. Additionally, Huawei and Xiaomi were stated by 4,4% and 2,9% respectively (Appendix 11). A total of three respondents (2,1%) use a Google smartphone and lastly only one respondent (0,7%) uses a Motorola smartphone (Appendix 12).

### 4.3 Measures Reliability

The used measurement scales' reliability has been tested in previous literature. Nevertheless, it was found necessary to test the scales within this research to verify the reliability of the results.

The Cronbach's Alpha Coefficient was used to test the internal consistency of all measurement items as part of the constructs used. As implied by George an Mallery (2003), the following values guidelines were considered in order to accept or deny the construct's reliability: Values above 0.9 are considered excellent, values above 0.8 are considered good and values above 0.7 are considered acceptable. Therefore, all values below 0.7 will not be considered as internally consistent and thus, not reliable.

Looking at the scales used within this research, firstly, the construct of CNFU showed a good Cronbach's Alpha of 0.836 (Appendix 13) and therefore can be classified as a reliable measure. Next, the construct of perceived quality also showed a good Cronbach's Alpha values of 0.842 for the "Standard Product" stimulus (Appendix 16), 0.865 for the "Utility Customization" stimulus (Appendix 17) and 0.894 for the "Design Customization" stimulus (Appendix 15). Additionally, for the "Full Customization" stimulus, an excellent Cronbach's Alpha value of 0.925 was found (Appendix 14). Thus, for perceived quality, a mean of Cronbach's Alpha of 0.882 can be defined. In addition to the constructs used as part of the research model, the construct of perceived value has been measured for further analysis, providing additional insights. This construct shows a good Cronbach's Alpha value of 0.826 (Appendix 25). Hence, all construct measurements were found to be internally consistent.

*Table 3: Cronbach's Alphas*

| Measure | Items | Scale | Reference | Cronbach's α |
|---|---|---|---|---|
| Consumers' Need for Uniqueness | 17 | 7-point Likert Scale | Tian et al., 2001 | 0.836 |
| Perceived Quality | 4 | 7-point Likert Scale | Bao et al., 2011 | 0.882 |
| Perceived Value | 5 | 7-point Likert Scale | Dodds et al., 1991 | 0.826 |

## 4.4 Multicollinearity Effects

To test for multicollinearity in the model variables, the intercorrelation between each of the variables has been tested (Appendix 30). The results show no significant multicollinearity effects between the independent variables with VIF values of 1.007 for CNFU, 1.064 for customization and 1.071 for perceived quality. Furthermore, all tolerance values are found to

be above the threshold of 0.25 with values of 0.993, 0.940 and 0.934 for the variables CNFU, customization and perceived quality respectively. Therefore, no multicollinearity effects can be found.

## 4.5 Hypothesis Testing

The structure of the hypotheses suggests testing the influence of customization on WTP using a linear regression (H1a), the comparison of all four customization levels and their influence on WTP using an ANOVA (H1b), a mediation model (H2) as well as two moderation models (H3, H4) and lastly the entire model using a moderated mediation model. To validate the appropriateness of the presented parametric tests, the data has been tested for all four assumptions. As all respondents were only presented one of the stimuli, the independence of observations is ensured. Due to the data preparation process, which included the deletion of outliers, the assumption of no outliers could also be verified. Furthermore, normality can be assumed due to more than 30 respondents in each stimulus group. Lastly, the data showed homogeneity of variance for the variables perceived quality and WTP (Appendix 18). On the contrary, the results of Levene's Test showed significant results for the variable CNFU (Appendix 18). Thus, for CNFU, homogeneity of variances among the stimuli groups could not be validated. After testing for all four assumptions of parametric tests, it could be concluded that hypothesis H1a will be tested using a linear regression. With regard to H1b, an independent samples t-test will be applied followed by an ANOVA to include all four stimuli groups. Additionally, the moderation, mediation and moderated mediation models will be tested. Here, the moderation models (H3, H4) as well as the total moderated mediation model will be interpreted with caution, as non-parametric data has been used.

### 4.5.1 The Impact of Customization on WTP

**H1a:** Customization positively impacts WTP.

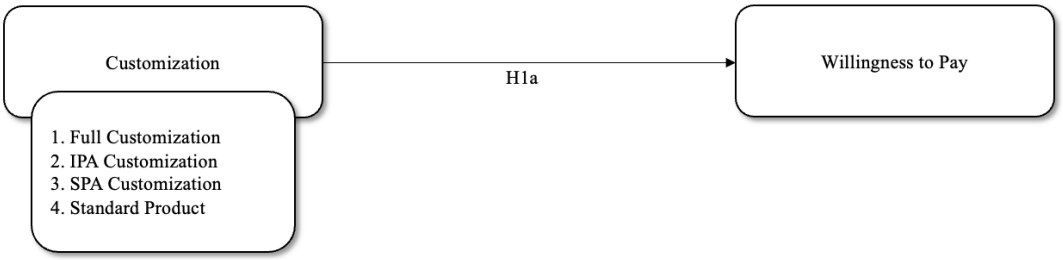


*Figure 2: Hypothesis H1a*

As described in the previous chapter, the assumptions of parametric tests have been tested prior to the hypothesis testing. Looking at H1a, all assumptions for a linear regression could be met. Therefore, to test the hypothesis H1a, a linear regression with dummy variables was applied (Appendix 19). The results show positive tendencies for all three levels of customization in comparison to the "Standard Product" stimulus with regard to consumers' WTP with coefficients of 81.972 for the "Full Customization", 70.049 for the "Design Customization" and 72.838 for the "Utility Customization". Nevertheless, only the impact of the "Full Customization" stimulus was found to be significant with a P-value of .026. Here, a significant impact of the "Full Customization" stimulus on the dependent variable WTP can be observed with an increase of 81.97€ in WTP in comparison to a "Standard Product". Due to the P-values of .075 for the "Design Stimulus" and .056 for the "Utility Stimulus", the positive WTP tendencies of these stimuli in comparison to the "Standard Product" stimulus were not found to be significant. Furthermore, the R Square value of 0.044 shows that the model only explains 4,4% of the variance in the dependent variable. Based on these results, hypothesis H1a is rejected.

### 4.5.2 The Impact of IPA vs. SPA Customization on WTP

**H1b:** In customization, IPAs have a higher impact on WTP than SPAs.

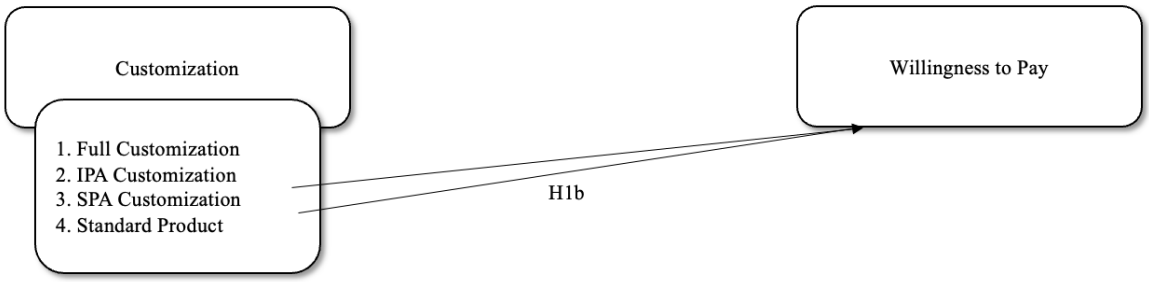


*Figure 3: Hypothesis H1b*

For hypothesis H1b, a one-way ANOVA tested the mean differences of all four stimuli groups after all parametric test assumptions have been successfully tested (Appendix 20). Overall, the ANOVA showed a non-significant result with a P-value of .11. In order to test H1b, the relevant comparison groups were "Utility Customization" as the SPA customization stimulus and "Design Customization" as the IPA customization stimulus. An opposite tendency was found when observing the mean comparisons of "Utility Customization" and "Design Customization", as "Utility Customization" showed a mean difference of 2.79 in comparison to "Design Customization". Therefore, the results indicate a higher WTP for the SPA customization stimulus of 2.79€ in comparison to the IPA customization stimulus. Nonetheless, the mean difference was not found to be significant with a P-value of 1, leading to a rejection of hypothesis H1b.

### 4.5.3 The Mediating Effect of Perceived Quality

**H2:** Perceived quality mediates the effect of customization on WTP.

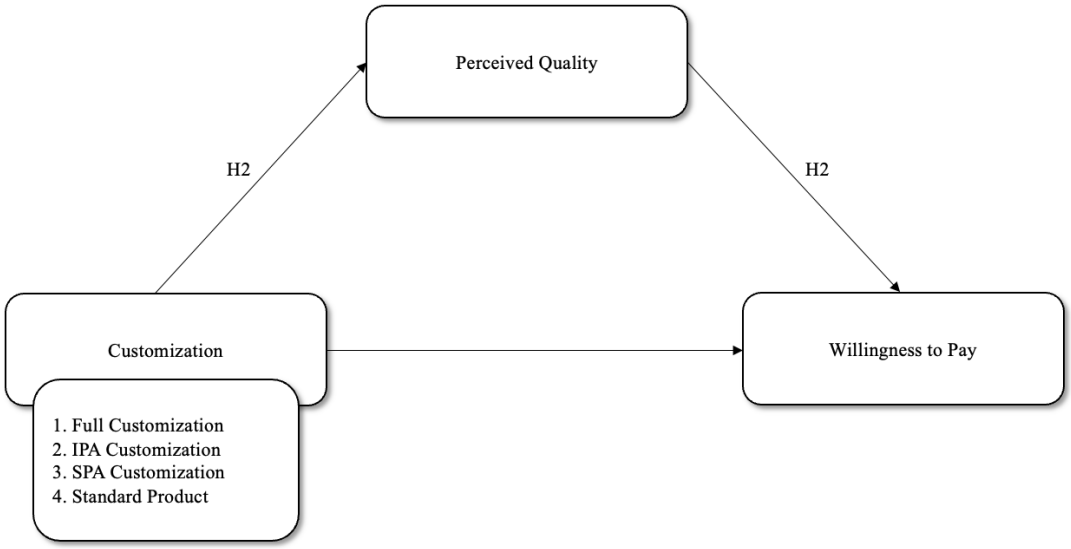


*Figure 4: Hypothesis H2*

The mediating effect of perceived quality on the influence of customization as the independent variable on WTP as the dependent variable has been measured using the macro PROCESS model 4 (Appendix 21). The model's R Square value of 0.0599 was able to show that customization only explains 5,99% of the variance in the variable perceived quality, with an increase in one unit of the independent variable customization leading to an increase of 0.1814 in the mediating variable perceived quality. This effect was found to be highly significant with a P-value of .0039. In addition, the R Square value (R Square=0.2598) for the effect of perceived quality and customization on WTP shows an explanation of 25,98% of the variance in WTP. Here, an increase of one unit in perceived quality significantly increases WTP by 91.25€ (unstandardized coefficient=91.2534) with a P-value of .00 while an increase of one unit in customization increases WTP by 7.31€ (unstandardized coefficient=7.3090) but was not found to be significant with a P-value of .4872.

With a look at the model's total effect, it can be observed that the model explains solely 3% of the variation in the dependent variable WTP (R Square=0.0304) and is found to be significant with a P-value of .0416. Overall, the total effect of the independent variable customization on the dependent variable WTP, including the indirect effect of the mediating variable perceived quality, was found to be an increase of 23.86€ (unstandardized coefficient=23.8613) with every unit increase in customization. Focusing on the indirect effect of perceived quality, the prior

effects of customization on perceived quality (0.1814) and perceived quality on WTP (91.2534) can be multiplied. This leads to a total indirect effect of 16.5523. With a lower CI of 0.0373 and an upper CI of 0.2148, the model was able to prove an existing indirect effect. Due to the non-significant direct effect of customization on WTP without the mediating effect of perceived quality, a full mediation was found and H2 can be accepted.

### 4.5.4 The Moderating effect of CNFU

**H3:** Consumers' need for uniqueness moderates the effect of customization on WTP.

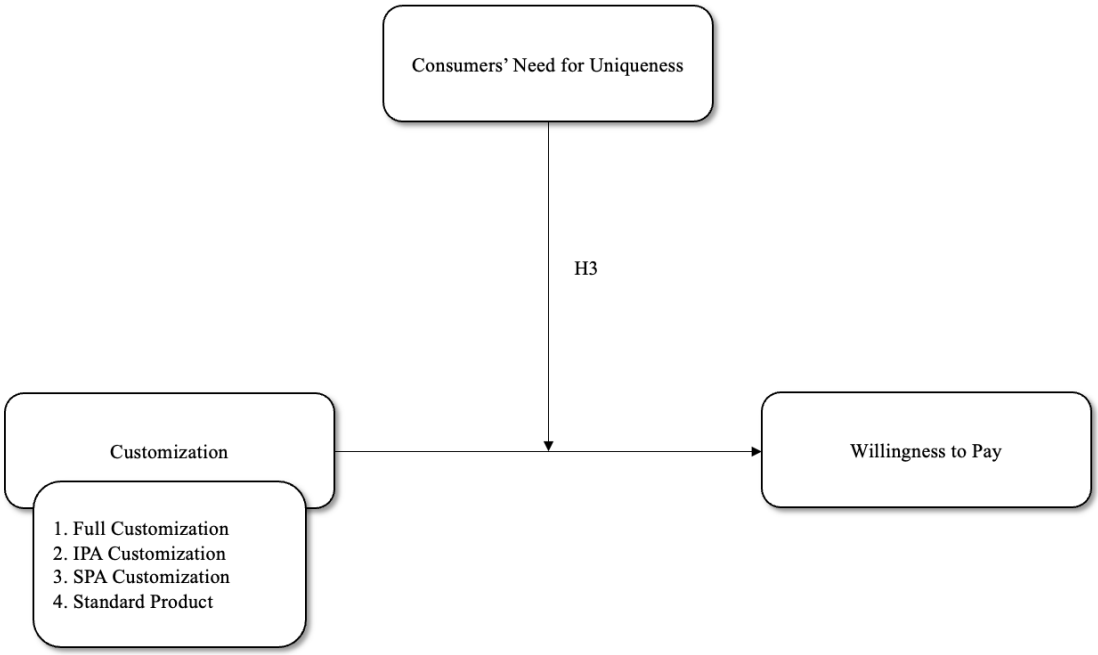


*Figure 5: Hypothesis H3*

The moderating effect of CNFU on the impact of customization on WTP has been tested using the macro PROCESS model 1 (Appendix 22). The model was found to be significant with a P-value of .0049 and explains 9,2% of the variance in WTP (R Square=0.092). Regarding the direct effects of CNFU on WTP and customization on WTP, both effects were not found to be significant with respective P-values of .0881 and .0510. The actual interaction effect of customization on WTP under the influence of CNFU on the other hand was found to be significant with a P-value of .0106 and shows an increase in WTP of 31.7204. Thus, a higher WTP of 31.72€ can be observed for an increase of one unit in the independent variable customization, under the influence of the moderator variable CNFU. This interaction effect causes an increase of 4,6% (R Square Change=0.0459) in the variance of WTP. With a closer

look at the interaction effect of customization on WTP under the influence of CNFU and its value changes, it can be observed that WTP significantly increases with an increase in CNFU value. Here, at a CNFU value of 3.5294, the effect on WTP was found to be 25.4052 while an increase in CNFU to a value of 4.4118 congruently causes an increase in the effect on WTP to 53.3938. Hence, with a higher value of WTP, a higher moderating effect on the impact of customization on WTP can be found. Both effect sizes are found to be significant with P-values of .0266 and .0012 respectively. Thus, the existing moderating effect of CNFU on the impact of customization on WTP could be proven and hypothesis H3 can be accepted.

**H4:** Consumers' need for uniqueness moderates the effect of customization on perceived quality.

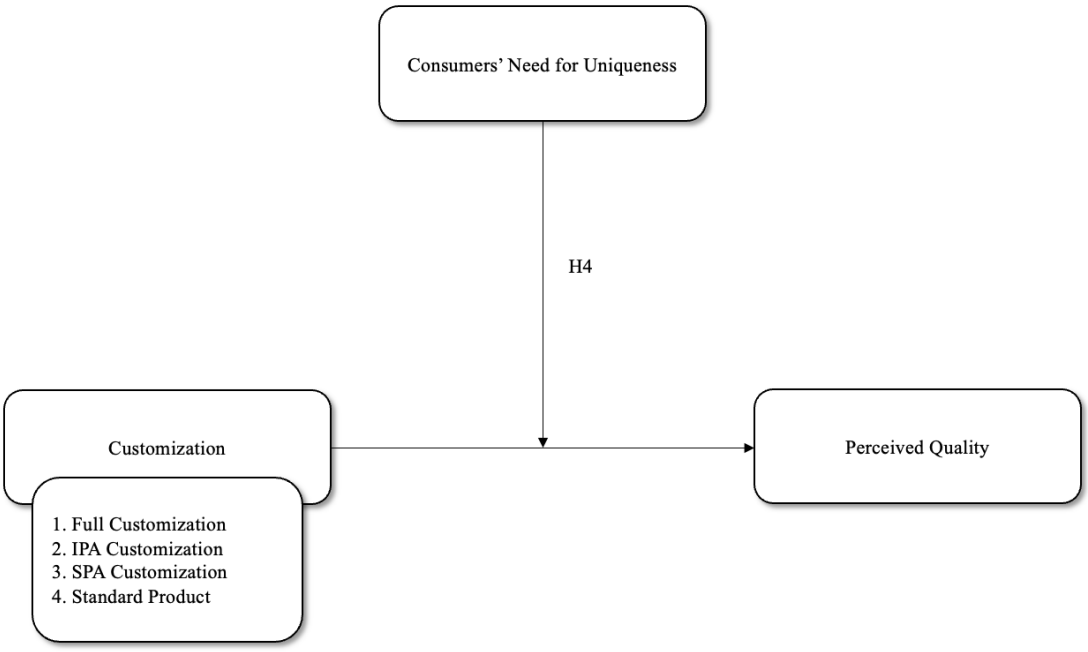


*Figure 6: Hypothesis H4*

Next, the moderating effect of CNFU on the impact of customization on perceived quality has been tested using the macro PROCESS model 1 (Appendix 23). The overall model was found to be significant with a P-value of .02 and explains 7,11% of the variance in perceived quality as the dependent variable, as indicated by the R Square value of 0.0711. Nevertheless, it can be observed that the separate unstandardized coefficient values of CNFU and customization on perceived quality are non-significant with P-values of .7214 and .9568 respectively. Most

importantly, also the interaction coefficient of customization and CNFU, being 0.0557, on perceived quality was not found to be significant with a P-value of .4075. This indicates a non-existent moderation effect of CNFU. Hence, it can be concluded that hypothesis H4 can be rejected.

### 4.5.5 Moderated Mediation Model

Finally, the entire moderated mediation research model has been tested using the macro PROCESS model 8 (Appendix 24). As the separate moderation and mediation models have already been tested, this analysis focuses solely on the moderated mediation model results. Here, it can be observed that the conditional direct effect of the independent variable customization on the dependent variable WTP is not found to be significant when the moderator variable, CNFU, is mean-centered and thus has a value of zero. On the contrary, the effect is significant for a positive value of CNFU. With a value of .8681, being the standard deviation of CNFU (SD=0.86808), the conditional direct effect is found to be 31.8448. Thus, at this value of CNFU, an increase of one unit in the independent variable customization causes an increase of 31.84€ in the dependent variable, WTP. Next, with a look at the indirect mediation effect at different levels of the moderator variable CNFU, a similar result can be found. At a mean-centered value of zero for CNFU, the mediation effect shows a significant positive result of 15.8896 due to the lower CI of 5.0977 and upper CI of 27.3502. Complementary, with an increase of one SD in CNFU, the indirect effect increases to 20.1157 and is also found to be significant with a lower CI of 4.4217 and an upper CI of 35.6704. On the contrary, with a decrease of one SD in CNFU to a coefficient value of -0.8681, the indirect mediation effect is not found to be significant with CI levels of -3.2851 for the lower CI and 28.5606 for the upper CI. Lastly, an observation of the overall moderated mediation model, shows a non-significant result with a lower CI of -8.6763 and an upper CI of 16.9122. Therefore, it can be concluded that no moderated mediation can be found.

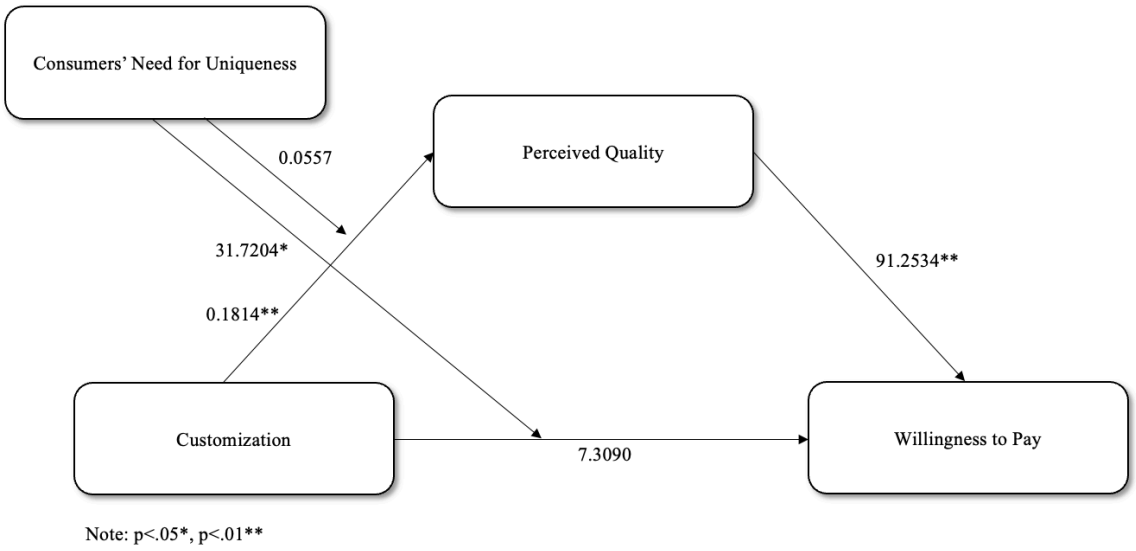


*Figure 7: Moderated Mediation Model*

## 4.6 Further Analysis

To gain further insights based on the collected data, some additional analyses were conducted. Firstly, using an independent samples T-Test (Appendix 26), no significant differences in CNFU or perceived quality were found for male and female respondents, with P-values of .965 and .512 respectively. Concerning differences in WTP, females showed a higher WTP of 538.11€ while males showed a WTP of 523.58€. Nevertheless, this result solely represents a tendency and does not show any significant results with a P-value of .593. Also, using a one-way ANOVA (Appendix 24), the differences between respondents' age groups have been tested in terms of CNFU, WTP and perceived quality. The results show no significant differences between the age groups for any of the three variables, with P-values of .761 for CNFU, .592 for WTP and .872 for perceived quality.

Additionally, a moderating effect of income on the impact of customization on WTP has been tested using macro PROCESS model 1 (Appendix 25). Here, it can be concluded that no moderating effect of income could be found with a non-significant interaction effect (p=.6729). Furthermore, a one-way ANOVA has been used to identify differences between users of the smartphone brands Apple, Samsung, Xiaomi, Huawei and others, being Google and Motorola (Appendix 26). Here, no significant differences in CNFU or perceived quality values were shown with P-values of .520 and .146 respectively. Regarding WTP, a significant difference between the groups was found with a P-value of .008. When observing the mean differences in WTP for the different smartphone brand users, it can be observed that the respondents currently

using an Apple smartphone show a higher WTP in comparison to all other smartphone brand users. Nevertheless, solely the mean difference between Apple users and users of “other” smartphone brands, being Google and Motorola, was found to be significant with an increased WTP of 234.14€ (p=.025). A similar tendency can be found for Samsung users in comparison to Xiaomi, Huawei and “other” smartphone users, yet no significant values could be found.

## CHAPTER 5: CONCLUSIONS AND LIMITATIONS

The following chapter will focus on a conclusion of the findings and an interpretation with reference to previous research and the underlying theory. Furthermore, the results will be analyzed with regard to academic as well as managerial implications. Lastly, the limitations of this research as well as opportunities for future research are defined.

### 5.1 Main Findings & Conclusions

**RQ1:** How do different levels of customization impact consumers' willingness to pay?

The main focus of this research was to determine the impact of customization on consumers' WTP. Especially differences in the levels of customization have been explored by manipulating different stimuli which represent the levels of IPA customization, SPA customization and full customization, including both IPA and SPA customization. These levels of customization were tested in comparison to a standard product stimulus.

The results generally indicate a higher WTP for all levels of customization in comparison to the standard product, thus suggesting a positive impact of customization on WTP. Nevertheless, due to the non-significant results for IPA and SPA customization, only full customization of all product attributes shows a significant positive impact on consumers' WTP. More precisely, consumers are willing to pay a higher price of 81.97€ for a fully customizable product in comparison to the standard product. These results are aligned with previous research, suggesting a higher WTP for customized products (Franke & Schreier, 2008) due to a superior product fit with the individual consumers' needs (Da Silveira et al., 2001). With a closer look at the different levels of customization considered in this research, no significant difference between any of the levels of IPA, SPA and full customization was found. In conclusion, no difference in IPA and SPA customization concerning the impact on WTP could be proven. These results do not show congruency with previous research suggesting a more positive impact of IPA customization in comparison to SPA customization due to the higher level of individual expression and meeting of more personal needs (Puligadda et al., 2010). This could be explained by the limitations of this research, which will be described in the following.

Therefore, it can be concluded that no significant difference in the impact on WTP between the levels of customization could be found. Nevertheless, tendencies show that customization positively impacts consumers' WTP in comparison to a standard product without any customizable attributes but due to the non-significant results of the linear regression, no significant positive impact of overall customization on WTP can be confirmed.

**RQ2:** What is the effect of perceived quality on the relationship between customization and consumers' willingness to pay?

Previous research proposed an increase in perceived quality for customizable products which is caused by the individualizable product attributes (Samudro et al., 2020). As perceived quality is found to be one of the main factors influencing consumers' WTP (Netemeyer et al., 2004), the impact of perceived quality on the relationship between customization and consumers' WTP can be suggested. To validate this assumption, a mediation model has been used.
The results are congruent with previous literature and show that customization has a highly significant positive impact on perceived quality. Thus, a higher level of customization leads to a higher level of perceived quality of the product. Also, the significant positive impact of perceived quality on WTP supports previous literature and indicates a higher WTP of 91.25€ with an increase of one unit in perceived quality. Here, it is important to note the non-significant impact of customization on consumers' WTP, suggesting a full mediation. Thus, it can be concluded that the perceived quality of the presented product entirely mediates the relationship between customization and consumers' WTP.
As perceived quality has been used as a proxy for customer satisfaction, similar results for the effect of customer satisfaction on the relationship between customization and consumers' WTP can be assumed. This assumption supports previous literature indicating a positive impact of customization on customer satisfaction (Coelho & Henseler, 2012) as well as a higher WTP connected to higher customer satisfaction (Homburg et al., 2005).

**RQ3:** How does consumers' need for uniqueness impact the effect of customization on perceived quality and consumers' willingness to pay?

With uniqueness being one of the main drivers of customized products (Simonson, 2005), this research aimed to explore the impact of CNFU on the effect of customization on perceived quality as well as consumers' WTP. For this purpose, two moderation models were applied. Firstly, the results show that consumers with a high value in CNFU do not generally have a higher WTP but solely show an increase in WTP for customized products. This can be concluded by observing the non-significant direct effect of CNFU on WTP and the significant moderation effect of customization on WTP under the influence of CNFU. Hence, the higher a

consumers' CNFU value, the higher the WTP for customization. These results are in line with previous research suggesting an additional independent value of perceived uniqueness of a product (Franke & Schreier, 2008) and the higher WTP for a unique product (Sivanathan & Pettit, 2010).

When observing the impact of CNFU on the effect of customization on perceived quality, neither a significant direct effect of CNFU on perceived quality, nor a significant indirect moderating effect of CNFU can be found. Hence, the results show a differing tendency in comparison to the impact of CNFU on the effect of customization on WTP. Nevertheless, this lack of congruency could be justified by the limited previous research available and thus, missing insights into influencing factors. In conclusion, CNFU was found to moderate the effect of customization on WTP but simultaneously does not have a significant impact on the effect of customization on perceived quality.

## 5.2 Managerial Implications

This research aimed to investigate underlying factors which influence consumers' perception of a customized product as well as define the WTP for these products – both of which bring an important strategic value to managerial decision making. The results further strengthen existing insights and most importantly provide a new perspective based on the consideration of personal differences in consumers. Overall, the strategic importance of MC was emphasized by the results of this research, as a clear positive impact of customizability on perceived quality of a product could be confirmed. Hence, a positive impact on customer satisfaction as well as customer loyalty can be suggested.

Firstly, it should be noted that customization should not focus solely on IPAs or SPAs but should rather include customizable options for all available attribute levels of a product. This full customization of all product attributes can be linked to an increased exclusivity which leads to an increased WTP (Rosenbaum et al., 2021). Nevertheless, this study did not aim to take process costs into account. Therefore, the implications will need to be reviewed with a closer look at processing costs linked to enabling a customization of all available attribute levels.

Furthermore, the gained insights into the impact of CNFU on WTP provide the opportunity to further strengthen segmentation and specifically target consumers with a high need for uniqueness. Especially in communication, a clear focus on creating a truly unique product should be established, speaking directly to consumers' inner need for differentiation and expressing uniqueness. Targeting consumers with a high need for uniqueness then offers the

opportunity to adapt the pricing strategy according to the target segment, as a higher WTP for the satisfaction of ones' need for uniqueness can be expected. Thus, when successfully implementing this targeting strategy, financial efficiency can be increased through directing communication efforts towards the high CNFU segment, ultimately increasing the marketing return on investment.

## 5.3 Academic Implications

Previous literature and academic research already gathered strong and important insights into the topic of MC and especially its high strategic potential due to a positive impact on customer satisfaction and loyalty (Coelho & Henseler, 2012) as well as WTP (Franke et al., 2010). This research adds to this base and offers an important, so far neglected (Pallant et al., 2020), focus on underlying motivational factors which influence consumers' decision-making processes unconsciously. While previous research was able to provide insights into a generally higher WTP for customized products, this research was able to offer a more granular perspective, defining a difference in WTP for consumers' with a higher and lower need for uniqueness. Furthermore, the exploration of MC products creating an additional value by meeting consumers' needs more accurately, solely offers an objective product-value based approach. The approach chosen for this research on the other hand, provides a new perspective focusing on closer observation of the direct influence of personality traits on the previously gained insights. More precisely, this research fills the gap of exploring the origin of the additionally created value of MC products and hereby creates a base for future research which will be described in the following chapter.

## 5.4 Limitations and Further Research

Due to the academic nature of this research, it is firstly important to note the timely and monetary constraints that were faced which led to the use of a hypothetical purchase scenario. These circumstances should be named as one of the main limitations of this research due to the experimental design of the main study. Hence, when interpreting the results of this research, this limitation needs to be considered, as respondents may have been constrained in providing accurate responses. Additionally, these limitations also caused the use of perceived quality as a proxy for customer satisfaction. As customer satisfaction would require a post-purchase evaluation of a customized product, a measurement of this variable within the scope of this research was not feasible. Thus, the gained insights focusing on perceived quality are to be interpreted with caution. A simulation of a realistic purchase situation in the form of a field experiment (Döring & Bortz, 2016) in combination with a post-purchase evaluation would meet

the requirements of the research topic more accurately and should therefore be considered for future research. Furthermore, as the scope of this research only allowed a focus on one product category, external validity cannot be guaranteed (Kothari, 2004). Therefore, the results would need to be validated in follow-up studies focusing on different product categories. In addition, the sample consists of unproportionally young and highly educated respondents. Thus, to ensure external validity, future research should concentrate on a broader distribution and the inclusion of all age and education groups.

Moreover, the qualitative interviews used to validate the stimuli represent another limitation of this research due to the rather homogeneous and small sample size. A validation of the created stimuli with a more heterogeneous sample could be used in future research to ensure a good understanding of the presented stimuli throughout all demographic groups.

Also, the use of non-parametric data for the testing of hypotheses H2 and H3 should be named as an additional limitation of this research. Hence, the results of these hypotheses need to be interpreted with caution and should be validated using parametric data in future research. Lastly, the overall low R Square values, indicating a low percentage of the variance in the dependent variable being explained by the independent variables of the model, suggest a high percentage of unexplained variance which could be explored in further research.

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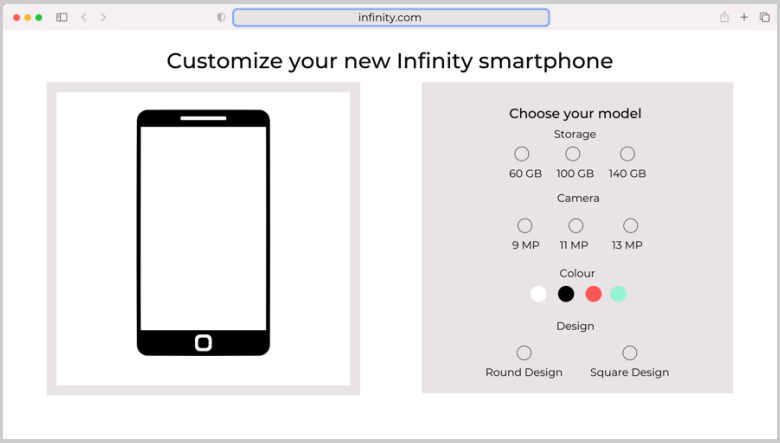
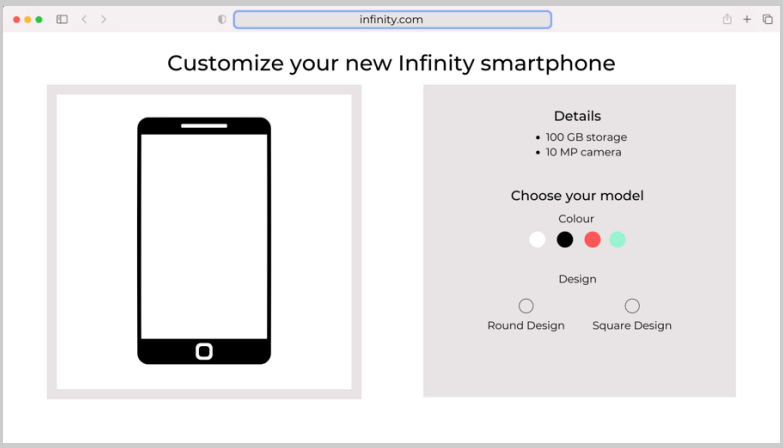
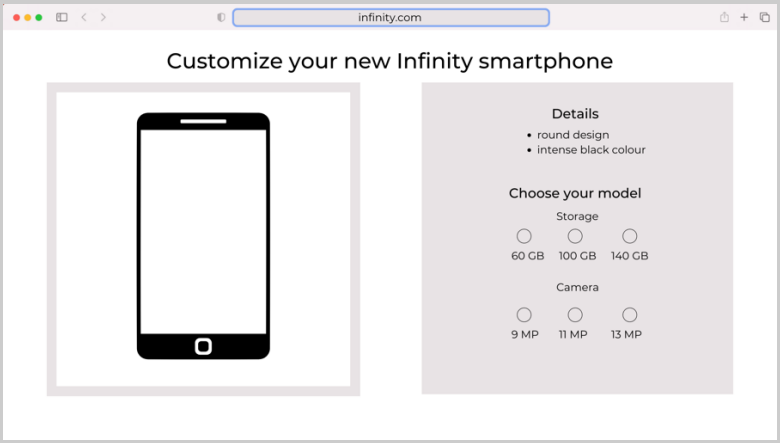
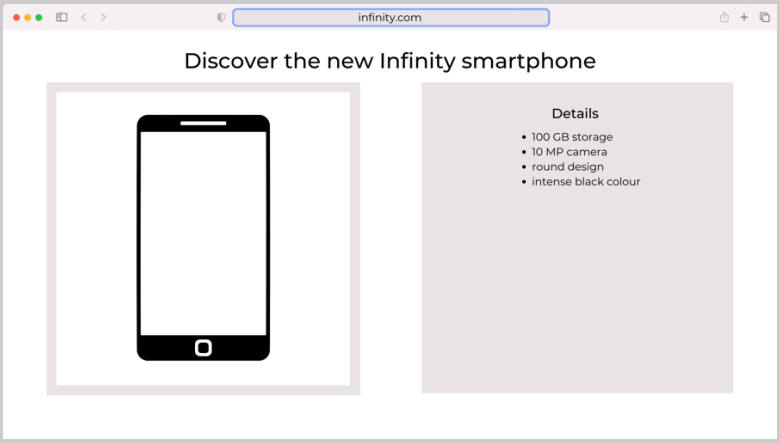
**APPENDICES**

**Appendix 1: Interview Discussion Guide and Results**

| **Section** | |
|---|---|
| **Introduction** | Thank you for taking the time today to support me! My name is Paulina Schulze Berndt and this short interview has the purpose to understand how you interpret four stimuli in the form of images which I will present to you. It will take around 15 min. and the results will be used as part of my masters' thesis.<br>Now please imagine that a new phone brand will be launched, called "Infinity". Infinity is currently looking into the customization of their mobile phones with a focus on which sort of attributes consumers would like to be able to customize to their needs. For that, Infinity is currently testing four different levels of attribute customization:<br>1)<br>  <br>2)<br>  |

| | |
|---|---|
| | 3)<br>  <br><br>4)<br>  <br> |

| Section | Questions | Results |
|---|---|---|
| **Full Customization Stimulus** | 1) What do you see in this image?<br>2) Are all contents clear?<br>3) Do you have any further feedback on the image? | • All interviewees understood the presented content as a "website, offering a customizable smartphone"<br>• One interviewee suggested to change the wording from "round design" and "square design" to "round edge design" and "square edge design" |

| | | |
|---|---|---|
| **Design Customization Stimulus** | 1) What do you see in this image?<br>2) Are all contents clear?<br>3) How is it different from the previous image? | • All interviewees understood the presented content as a "website offering a smartphone for which you can customize colour and design"<br>• One interviewee suggested to change the wording from "round design" and "square design" to "round edge design" and "square edge design" |
| **Utility Customization Stimulus** | 1) What do you see in this image?<br>2) Are all contents clear?<br>3) How is it different from the previous image? | • All interviewees understood the presented content as a "website offering a smartphone for which you can customize technical attributes"<br>• One interviewee suggested to change the wording from "round design" to "round edge design" |
| **Standard Product Stimulus** | 1) What do you see in this image?<br>2) Are all contents clear?<br>3) How is it different from the previous image? | • All interviewees understood the presented content as a "website offering a smartphone"<br>• One interviewee suggested the use of a "slightly more realistic smartphone image" |

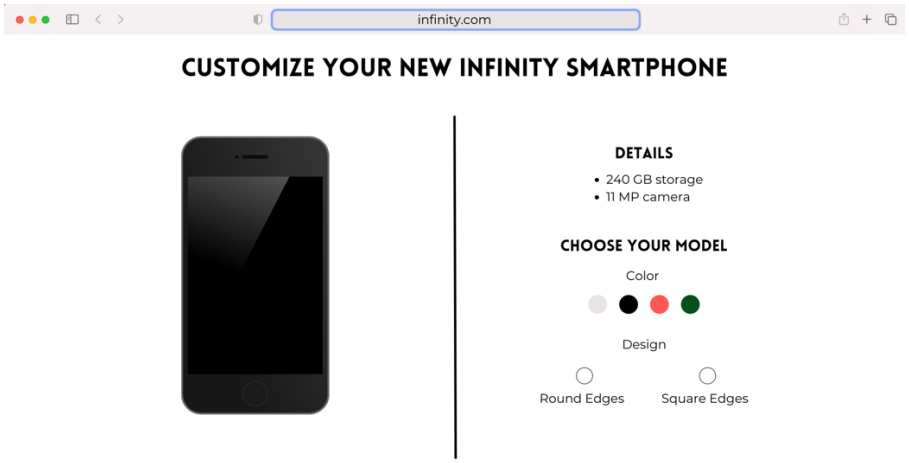
**Section**

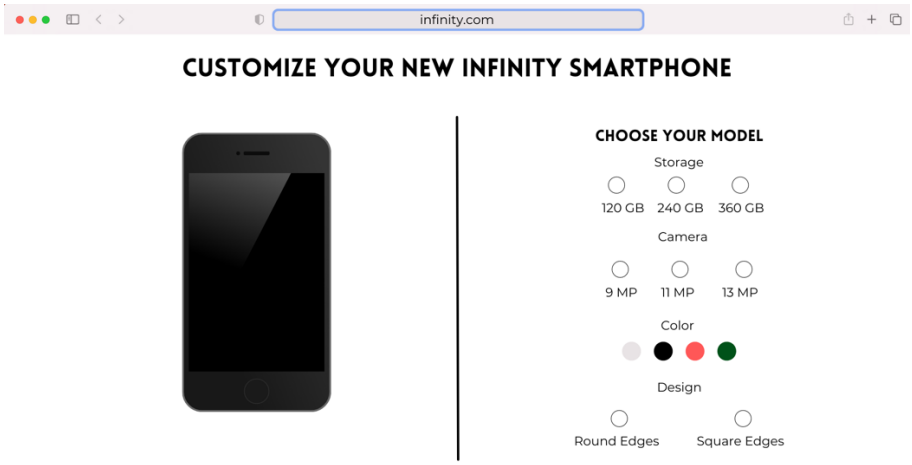
| | |
|---|---|
| **Closing** | We will end the discussion now. Do you have any further comments or questions?<br>Thank you for your time and answers! |

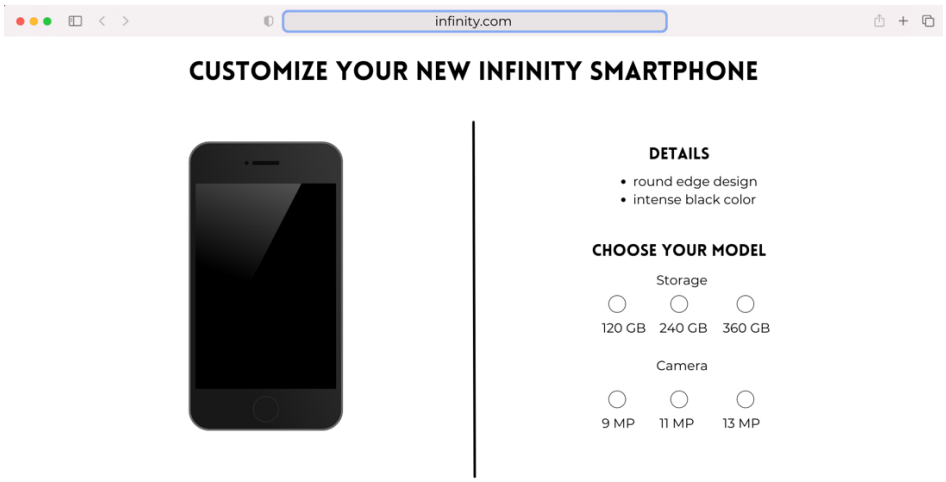
## Appendix 2: Interviewee Demographics

| Name | Age | Nationality |
|---|---|---|
| Kaj Annika Oestmann | 27 | German |
| Steven Smith | 38 | German / British |
| Marte Wieling | 25 | German |
| Henrik Menz | 25 | German |
| Sara Pereira | 22 | Portuguese |
| Isabel Schulze Berndt | 29 | German |
| Arne Kronemeyer | 27 | German |

## Appendix 3: Stimuli




**Appendix 4: Main Survey**

Dear participant,

this questionnaire is being conducted as part of my master's thesis at Cátolica Lisbon School of Business and Economics. I kindly ask you to take 5 minutes of your time to read and complete this questionnaire on marketing thoroughly. There are no right or wrong answers here, as it is only about your personal assessment.

Your data will be treated anonymously and will not be passed on to third parties.

Thank you in advance for your participation,

Paulina Schulze-Berndt

If you have any questions regarding the questionnaire, please do not hesitate to contact me at the following e-mail address: s-pmschulze-berndt@ucp.pt.

**Block 1: Smartphone Usage**

Q1: Have you ever bought a smartphone?

- Yes
- No

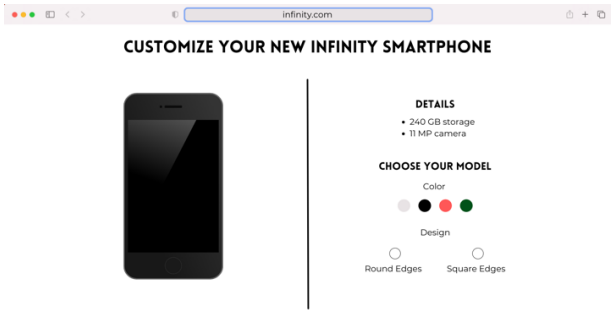
*If "No" is selected, skip to the end of the survey*

Q2: Which smartphone brand are you currently using?

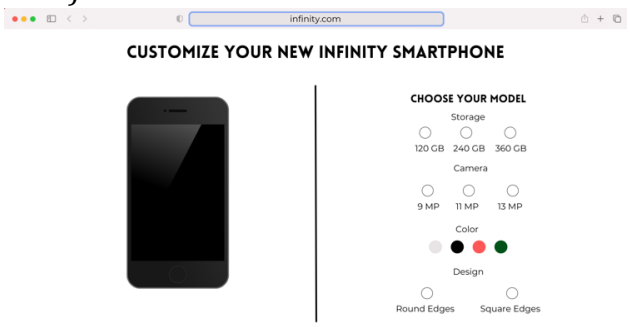
- Apple
- Samsung
- Huawai
- Xiaomi
- Other:___
- None

**Block 2: Stimuli Presentation**

1) Design Customization

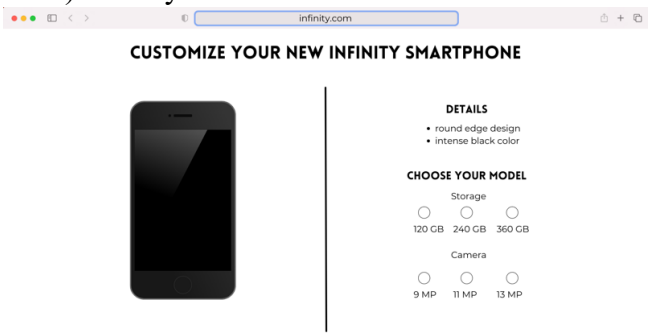



2) Full Customization



3) Standard Product


4) Utility Customization




*One of the four stimuli was randomly presented to each respondent*

*The following blocks 3-7 were presented in a randomized order after the stimuli presentation*

**Block 3: Willingness to pay**

Q3: Above which price would you definitely not buy the product, because you can't afford it or because you didn't think it was worth the money?

_____

Q4: Below which price would you say you would not buy the product because you would start to suspect the quality?"

_____

**Block 4: Perceived Quality**

Q5: Please state your level of agreement with each statement on a scale from Strongly Disagree to Strongly Agree.

| | Strongly disagree | Disagree | Somewhat disagree | Neither agree nor disagree | Somewhat agree | Agree | Strongly agree |
|---|---|---|---|---|---|---|---|
| The presented product is of high quality | | | | | | | |
| The presented product is very reliable | | | | | | | |
| The presented product is a superior product | | | | | | | |
| The presented product is of very good quality | | | | | | | |

**Block 5: CNFU**

Q6: Please state your level of agreement with each statement on a scale from Strongly Disagree to Strongly Agree.

| | Strongly disagree | Disagree | Somewhat disagree | Neither agree nor disagree | Somewhat agree | Agree | Strongly agree |
|---|---|---|---|---|---|---|---|
| I often combine possessions in such a way that I create a personal image that cannot be duplicated | | | | | | | |
| I often try to find a more interesting version of run-of-the-mill products because I enjoy being original | | | | | | | |
| I actively seek to develop my personal uniqueness by buying special products or brands | | | | | | | |
| Having an eye for products that are interesting and unusual assists me in establishing a distinctive image | | | | | | | |

Q7: Please state your level of agreement with each statement on a scale from Strongly Disagree to Strongly Agree.

| | Strongly disagree | Disagree | Somewhat disagree | Neither agree nor disagree | Somewhat agree | Agree | Strongly agree |
|---|---|---|---|---|---|---|---|
| When it comes to the products I buy and the situations in which I use them, I have broken customs and rules | | | | | | | |
| I have often violated the understood rules of my social group regarding what to buy or own | | | | | | | |
| I have often gone against the understood rules of my social group regarding when and how certain products are properly used | | | | | | | |
| I enjoy challenging the prevailing taste of people I know by buying something they would not seem to accept | | | | | | | |

Q8: Please state your level of agreement with each statement on a scale from Strongly Disagree to Strongly Agree.

| | Strongly disagree | Disagree | Somewhat disagree | Neither agree nor disagree | Somewhat agree | Agree | Strongly agree |
|---|---|---|---|---|---|---|---|
| When a product I own becomes popular among the general population, I begin to use it less | | | | | | | |
| I often try to avoid products or brands that I know are bought by the general population | | | | | | | |
| As a rule, I dislike products or brands that are customarily bought by everyone | | | | | | | |
| The more commonplace a product or brand is among the general population, the less interested I am in buying it | | | | | | | |

Q9: Please state your level of agreement with each statement on a scale from Strongly Disagree to Strongly Agree.

| | Strongly disagree | Disagree | Somewhat disagree | Neither agree nor disagree | Somewhat agree | Agree | Strongly agree |
|---|---|---|---|---|---|---|---|
| I have decorative walls in my house like brick stones, plaster walls, etc. | | | | | | | |
| I have a wet bar in my kitchen | | | | | | | |
| I have a tattoo on my body | | | | | | | |
| I own a pure-bred cat, or dog, or horse | | | | | | | |
| I own a unique collection (knifes, stamps, coins, etc.) | | | | | | | |

**Block 6: Perceived Value**

Q10: Imagine that the presented product is priced at 300€. The presented product is..

| | Strongly disagree | Disagree | Somewhat disagree | Neither agree nor disagree | Somewhat agree | Agree | Strongly agree |
|---|---|---|---|---|---|---|---|
| ..considered good value for money | | | | | | | |
| ..economical | | | | | | | |
| ..considered to be a good buy | | | | | | | |
| ..priced acceptably | | | | | | | |
| ..considered a bargain | | | | | | | |

**Block 7: Manipulation Check**

Q11: Please state your level of agreement with each statement on a scale from Strongly Disagree to Strongly Agree.

| | Strongly disagree | Disagree | Somewhat disagree | Neither agree nor disagree | Somewhat agree | Agree | Strongly agree |
|---|---|---|---|---|---|---|---|
| For the presented product, design attributes can be customized | | | | | | | |
| For the presented product, utility attributes can be customized | | | | | | | |

**Block 8: Demographics**

Q12: What is your gender?

- Female
- Male
- Non-binary/ Third gender
- Prefer not to say

Q13: What is your age?

- Under 18
- 18 - 24
- 25 - 34
- 35 - 44
- 45 - 54
- 55 - 64
- 65 - 74
- 75 - 84
- 85 or older
- Prefer not to say

Q14: How would you describe your marital status?

- Married
- Widowed
- Divorced
- Separated
- Never married
- Prefer not to say

Q15: What is the highest degree or level of education you have completed?

- Less than high school
- High school graduate
- Undergraduate Degree / Bachelor's Degree
- Graduate Degree / Master's Degree
- P.h.D or higher
- Prefer not to say

Q16: What is your current employment status?

- Unemployed
- Employed
- Self-Employed
- Student
- Other:_____
- Prefer not to say

Q17: What is your monthly income?

- below 500€
- 500€ to 1000€
- 1001€ to 1500€
- 1501€ to 2000€
- 2001€ to 2500€
- 2501€ to 3000€
- above 3000€
- Prefer not to say

## Appendix 5: Gender Frequencies

**Gender**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Male | 65 | 47.4 | 47.4 | 47.4 |
| | Female | 70 | 51.1 | 51.1 | 98.5 |
| | Non-binary / third gender | 1 | .7 | .7 | 99.3 |
| | Prefer not to say | 1 | .7 | .7 | 100.0 |
| | Total | 137 | 100.0 | 100.0 | |

## Appendix 6: Age Frequencies

**Age**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 18-24 | 43 | 31.4 | 31.4 | 31.4 |
| | 25-34 | 69 | 50.4 | 50.4 | 81.8 |
| | 35-44 | 18 | 13.1 | 13.1 | 94.9 |
| | 45-54 | 5 | 3.6 | 3.6 | 98.5 |
| | 55-64 | 2 | 1.5 | 1.5 | 100.0 |
| | Total | 137 | 100.0 | 100.0 | |

## Appendix 7: Marital Status Frequencies

**Marital Status**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Married | 26 | 19.0 | 19.0 | 19.0 |
| | Seperated | 4 | 2.9 | 2.9 | 21.9 |
| | Never married | 105 | 76.6 | 76.6 | 98.5 |
| | Prefer not to say | 2 | 1.5 | 1.5 | 100.0 |
| | Total | 137 | 100.0 | 100.0 | |

## Appendix 8: Education Frequencies

**Education**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Highschool | 5 | 3.6 | 3.6 | 3.6 |
| | Bachelor | 69 | 50.4 | 50.4 | 54.0 |
| | Master | 58 | 42.3 | 42.3 | 96.4 |
| | P.h.D or higher | 5 | 3.6 | 3.6 | 100.0 |
| | Total | 137 | 100.0 | 100.0 | |

## Appendix 9: Income Frequencies

**Income**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Below 500 | 20 | 14.6 | 14.6 | 14.6 |
| | 500-1000 | 31 | 22.6 | 22.6 | 37.2 |
| | 1001-1500 | 37 | 27.0 | 27.0 | 64.2 |
| | 1501-2000 | 23 | 16.8 | 16.8 | 81.0 |
| | 2001-2500 | 10 | 7.3 | 7.3 | 88.3 |
| | 2501-3000 | 4 | 2.9 | 2.9 | 91.2 |
| | Above 3000 | 7 | 5.1 | 5.1 | 96.4 |
| | Prefer not to say | 5 | 3.6 | 3.6 | 100.0 |
| | Total | 137 | 100.0 | 100.0 | |

## Appendix 10: Employment Frequencies

**Employment**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Unemployed | 2 | 1.5 | 1.5 | 1.5 |
| | Employed | 75 | 54.7 | 54.7 | 56.2 |
| | Self-employed | 10 | 7.3 | 7.3 | 63.5 |
| | Student | 49 | 35.8 | 35.8 | 99.3 |
| | Prefer not to say | 1 | .7 | .7 | 100.0 |
| | Total | 137 | 100.0 | 100.0 | |

## Appendix 11: Smartphone Brand Frequencies

**SmartphoneBrand**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Apple | 95 | 69.3 | 69.3 | 69.3 |
| | Xiaomi | 4 | 2.9 | 2.9 | 72.3 |
| | Samsung | 28 | 20.4 | 20.4 | 92.7 |
| | Huawei | 6 | 4.4 | 4.4 | 97.1 |
| | 5 | 4 | 2.9 | 2.9 | 100.0 |
| | Total | 137 | 100.0 | 100.0 | |

## Appendix 12: Other Smartphone Brands Frequencies

**OtherSmartphoneBrand**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | | 133 | 97.1 | 97.1 | 97.1 |
| | Google | 1 | .7 | .7 | 97.8 |
| | Google Pixel | 1 | .7 | .7 | 98.5 |
| | Motorola | 1 | .7 | .7 | 99.3 |
| | oneplus | 1 | .7 | .7 | 100.0 |
| | Total | 137 | 100.0 | 100.0 | |

## Appendix 13: Cronbach's Alpha CNFU

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .836 | 17 |

## Appendix 14: Cronbach's Alpha Perceived Quality "Full Stimulus"

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .925 | 4 |

## Appendix 15: Cronbach's Alpha Perceived Quality "Design Stimulus"

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .894 | 4 |

## Appendix 16: Cronbach's Alpha Perceived Quality "Standard Stimulus"

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .842 | 4 |

## Appendix 17: Cronbach's Alpha Perceived Quality "Utility Stimulus"

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .865 | 4 |

## Appendix 18: Levene's Test CNFU, Perceived Quality, WTP

**Test of Homogeneity of Variance**

| | | Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|---|---|
| CNFU | Based on Mean | 3.865 | 3 | 133 | .011 |
| | Based on Median | 3.702 | 3 | 133 | .013 |
| | Based on Median and with adjusted df | 3.702 | 3 | 127.022 | .014 |
| | Based on trimmed mean | 3.912 | 3 | 133 | .010 |
| PQuality | Based on Mean | 2.108 | 3 | 133 | .102 |
| | Based on Median | 1.506 | 3 | 133 | .216 |
| | Based on Median and with adjusted df | 1.506 | 3 | 120.492 | .216 |
| | Based on trimmed mean | 1.735 | 3 | 133 | .163 |
| WTP | Based on Mean | 1.638 | 3 | 133 | .184 |
| | Based on Median | 1.075 | 3 | 133 | .362 |
| | Based on Median and with adjusted df | 1.075 | 3 | 125.465 | .362 |
| | Based on trimmed mean | 1.533 | 3 | 133 | .209 |

## Appendix 19: Linear Regression H1a

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .210[a] | .044 | .022 | 155.67470 |

a. Predictors: (Constant), UtilityStimulus, DesignStimulus, FullStimulus

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 148415.319 | 3 | 49471.773 | 2.041 | .111[b] |
| | Residual | 3223203.32 | 133 | 24234.611 | | |
| | Total | 3371618.64 | 136 | | | |

a. Dependent Variable: WTP

b. Predictors: (Constant), UtilityStimulus, DesignStimulus, FullStimulus

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | Sig. |
| 1 | (Constant) | 473.118 | 26.698 | | 17.721 | <.001 |
| | FullStimulus | 81.972 | 36.526 | .236 | 2.244 | .026 |
| | DesignStimulus | 70.049 | 38.995 | .185 | 1.796 | .075 |
| | UtilityStimulus | 72.838 | 37.757 | .201 | 1.929 | .056 |

a. Dependent Variable: WTP

# Appendix 20: ANOVA H1b

**ANOVA**

WTP

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 148415.319 | 3 | 49471.773 | 2.041 | .111 |
| Within Groups | 3223203.32 | 133 | 24234.611 | | |
| Total | 3371618.64 | 136 | | | |

## Post Hoc Tests

**Multiple Comparisons**

Dependent Variable: WTP

Tukey HSD

| (I) Stimulus | (J) Stimulus | Mean Difference (I–J) | Std. Error | Sig. | 95% Confidence Interval | |
|---|---|---|---|---|---|---|
| | | | | | Lower Bound | Upper Bound |
| 1.00 | 2.00 | -72.83824 | 37.75666 | .221 | -171.0739 | 25.3974 |
| | 3.00 | -70.04902 | 38.99491 | .280 | -171.5064 | 31.4083 |
| | 4.00 | -81.97210 | 36.52647 | .117 | -177.0070 | 13.0628 |
| 2.00 | 1.00 | 72.83824 | 37.75666 | .221 | -25.3974 | 171.0739 |
| | 3.00 | 2.78922 | 38.99491 | 1.000 | -98.6681 | 104.2466 |
| | 4.00 | -9.13386 | 36.52647 | .994 | -104.1688 | 85.9011 |
| 3.00 | 1.00 | 70.04902 | 38.99491 | .280 | -31.4083 | 171.5064 |
| | 2.00 | -2.78922 | 38.99491 | 1.000 | -104.2466 | 98.6681 |
| | 4.00 | -11.92308 | 37.80504 | .989 | -110.2846 | 86.4384 |
| 4.00 | 1.00 | 81.97210 | 36.52647 | .117 | -13.0628 | 177.0070 |
| | 2.00 | 9.13386 | 36.52647 | .994 | -85.9011 | 104.1688 |
| | 3.00 | 11.92308 | 37.80504 | .989 | -86.4384 | 110.2846 |

# Appendix 21: Mediation Model H2

```
Model  : 4
    Y  : WTP
    X  : Stimulus
    M  : PQuality

Sample
Size:  137

**************************************************************************
OUTCOME VARIABLE:
 PQuality

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .2448      .0599      .6880     8.6089     1.0000   135.0000      .0039

Model
             coeff         se          t          p       LLCI       ULCI
constant    4.0338      .1723    23.4135      .0000     3.6930     4.3745
Stimulus     .1814      .0618     2.9341      .0039      .0591      .3037

Standardized coefficients
             coeff
Stimulus     .2448


**************************************************************************
OUTCOME VARIABLE:
 WTP

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .5097      .2598 18624.2232    23.5170     2.0000   134.0000      .0000

Model
             coeff         se          t          p       LLCI       ULCI
constant   101.1620    63.7650     1.5865      .1150   -24.9542   227.2783
Stimulus     7.3090    10.4904      .6967      .4872   -13.4392    28.0572
PQuality    91.2534    14.1601     6.4444      .0000    63.2472   119.2596

Standardized coefficients
             coeff
Stimulus     .0534
PQuality     .4940

************************** TOTAL EFFECT MODEL ****************************
OUTCOME VARIABLE:
 WTP

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .1744      .0304 24215.6837     4.2328     1.0000   135.0000      .0416

Model
             coeff         se          t          p       LLCI       ULCI
constant   469.2575    32.3212    14.5186      .0000   405.3361   533.1790
Stimulus    23.8613    11.5978     2.0574      .0416      .9243    46.7982

Standardized coefficients
             coeff
Stimulus     .1744


************** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y **************

Total effect of X on Y
     Effect         se          t          p       LLCI       ULCI       c_cs
    23.8613    11.5978     2.0574      .0416      .9243    46.7982      .1744

Direct effect of X on Y
     Effect         se          t          p       LLCI       ULCI      c'_cs
     7.3090    10.4904      .6967      .4872   -13.4392    28.0572      .0534

Indirect effect(s) of X on Y:
            Effect     BootSE   BootLLCI   BootULCI
PQuality    16.5523     6.2148     5.0256    29.4378

Completely standardized indirect effect(s) of X on Y:
            Effect     BootSE   BootLLCI   BootULCI
PQuality     .1210      .0447      .0373      .2148
```

# Appendix 22: Moderation Model H3

```
Model  : 1
    Y  : WTP
    X  : Stimulus
    W  : CNFU

Sample
Size:  137

**************************************************************************
OUTCOME VARIABLE:
 WTP

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .3033      .0920 23018.5770     4.4913     3.0000   133.0000      .0049

Model
             coeff         se          t          p       LLCI       ULCI
constant   682.4056   127.9241     5.3345      .0000   429.3763   935.4349
Stimulus   -86.5493    43.9473    -1.9694      .0510  -173.4755      .3769
CNFU       -61.5210    35.8092    -1.7180      .0881  -132.3504     9.3083
Int_1       31.7204    12.2401     2.5915      .0106     7.5100    55.9308

Product terms key:
 Int_1    :        Stimulus x        CNFU

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W      .0459     6.7160     1.0000   133.0000      .0106
----------
    Focal predict: Stimulus (X)
          Mod var: CNFU     (W)

Conditional effects of the focal predictor at values of the moderator(s):

       CNFU     Effect         se          t          p       LLCI       ULCI
     2.6471    -2.5834    15.1413     -.1706      .8648   -32.5323    27.3654
     3.5294    25.4052    11.3337     2.2416      .0266     2.9875    47.8228
     4.4118    53.3938    16.1533     3.3054      .0012    21.4431    85.3445
```

# Appendix 23: Moderation Model H4

```
Model  : 1
    Y  : PQuality
    X  : Stimulus
    W  : CNFU

Sample
Size:  137

**************************************************************************
OUTCOME VARIABLE:
 PQuality

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .2666      .0711      .6901     3.3914     3.0000   133.0000      .0200

Model
             coeff         se          t          p       LLCI       ULCI
constant    4.2768      .7005     6.1058      .0000     2.8913     5.6622
Stimulus    -.0131      .2406     -.0543      .9568     -.4890      .4629
CNFU        -.0701      .1961     -.3574      .7214     -.4579      .3178
Int_1        .0557      .0670      .8310      .4075     -.0769      .1883

Product terms key:
 Int_1    :        Stimulus x        CNFU

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W      .0048      .6906     1.0000   133.0000      .4075
```

# Appendix 24: Moderated Mediation Model

```
**************************************************************************
Model  : 8
    Y  : WTP
    X  : Stimulus
    M  : PQuality
    W  : CNFU

Sample
Size:  137

**************************************************************************
OUTCOME VARIABLE:
 PQuality

Model Summary
          R       R-sq        MSE     F(HC4)        df1        df2          p
      .2666      .0711      .6901     2.8551     3.0000   133.0000      .0396

Model
             coeff    se(HC4)          t          p       LLCI       ULCI
constant    4.4934      .0718    62.5544      .0000     4.3513     4.6355
Stimulus     .1818      .0639     2.8430      .0052      .0553      .3083
CNFU         .0714      .0902      .7913      .4302     -.1071      .2499
Int_1        .0557      .0791      .7044      .4824     -.1007      .2121

Product terms key:
 Int_1    :        Stimulus x        CNFU

Test(s) of highest order unconditional interaction(s):
       R2-chng     F(HC4)        df1        df2          p
X*W      .0048      .4961     1.0000   133.0000      .4824


**************************************************************************
OUTCOME VARIABLE:
 WTP

Model Summary
          R       R-sq        MSE     F(HC4)        df1        df2          p
      .5477      .3000 17880.1717    18.3574     4.0000   132.0000      .0000

Model
              coeff    se(HC4)          t          p       LLCI       ULCI
constant   136.4528    55.5251     2.4575      .0153    26.6185   246.2871
Stimulus     8.5350     9.7449      .8758      .3827   -10.7413    27.8113
PQuality    87.4094    12.6687     6.8996      .0000    62.3493   112.4694
CNFU        12.8124    12.8448      .9975      .3204   -12.5958    38.2207
Int_1       26.8521     9.6659     2.7780      .0063     7.7320    45.9722

Product terms key:
 Int_1    :        Stimulus x        CNFU

Test(s) of X by M interaction:
     F(HC4)        df1        df2          p
      .6738     1.0000   131.0000      .4132

Test(s) of highest order unconditional interaction(s):
       R2-chng     F(HC4)        df1        df2          p
X*W      .0327     7.7174     1.0000   132.0000      .0063
----------
    Focal predict: Stimulus (X)
          Mod var: CNFU     (W)


 ***************** DIRECT AND INDIRECT EFFECTS OF X ON Y *****************

 Conditional direct effect(s) of X on Y:
       CNFU     Effect    se(HC4)          t          p       LLCI       ULCI
     -.8681   -14.7748    11.7003    -1.2628      .2089   -37.9192     8.3696
      .0000     8.5350     9.7449      .8758      .3827   -10.7413    27.8113
      .8681    31.8448    13.9226     2.2873      .0238     4.3045    59.3851

 Conditional indirect effects of X on Y:

 INDIRECT EFFECT:
  Stimulus    ->    PQuality    ->    WTP

       CNFU     Effect     BootSE   BootLLCI   BootULCI
     -.8681    11.6634     7.9718    -3.2851    28.5606
      .0000    15.8896     5.6733     5.0977    27.3502
      .8681    20.1157     7.9590     4.4217    35.6704

      Index of moderated mediation:
          Index     BootSE   BootLLCI   BootULCI
 CNFU     4.8683     6.4409    -8.6763    16.9122
 ---
```

********** BOOTSTRAP RESULTS FOR REGRESSION MODEL PARAMETERS **********

OUTCOME VARIABLE:
 PQuality

| | Coeff | BootMean | BootSE | BootLLCI | BootULCI |
|---|---|---|---|---|---|
| constant | 4.4934 | 4.4959 | .0705 | 4.3588 | 4.6314 |
| Stimulus | .1818 | .1832 | .0616 | .0614 | .3020 |
| CNFU | .0714 | .0713 | .0869 | -.1026 | .2378 |
| Int_1 | .0557 | .0544 | .0746 | -.0952 | .1973 |

---

OUTCOME VARIABLE:
 WTP

| | Coeff | BootMean | BootSE | BootLLCI | BootULCI |
|---|---|---|---|---|---|
| constant | 136.4528 | 139.1315 | 56.6768 | 31.9102 | 257.3903 |
| Stimulus | 8.5350 | 8.5938 | 9.7413 | -10.5700 | 27.5186 |
| PQuality | 87.4094 | 86.8340 | 12.8365 | 60.4787 | 111.5489 |
| CNFU | 12.8124 | 12.8699 | 12.7981 | -12.9804 | 38.3728 |
| Int_1 | 26.8521 | 26.8841 | 9.6472 | 7.9284 | 45.6330 |

## Appendix 25: Cronbach's Alpha Perceived Value

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .826 | 5 |

## Appendix 26: Independent Samples T-Test Gender

**Independent Samples Test**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Significance | | | | 95% Confidence Interval of the Difference | |
| | | F | Sig. | t | df | One-Sided p | Two-Sided p | Mean Difference | Std. Error Difference | Lower | Upper |
| PQuality | Equal variances assumed | 3.669 | .058 | -.657 | 133 | .256 | .512 | -.09725 | .14798 | -.38996 | .19545 |
| | Equal variances not assumed | | | -.650 | 118.514 | .258 | .517 | -.09725 | .14953 | -.39334 | .19884 |
| CNFU | Equal variances assumed | .732 | .394 | .056 | 133 | .478 | .956 | .00834 | .15011 | -.28857 | .30525 |
| | Equal variances not assumed | | | .056 | 132.997 | .478 | .956 | .00834 | .14966 | -.28769 | .30437 |
| WTP | Equal variances assumed | .004 | .950 | -.535 | 133 | .297 | .593 | -14.52967 | 27.14218 | -68.21584 | 39.15650 |
| | Equal variances not assumed | | | -.535 | 132.229 | .297 | .593 | -14.52967 | 27.14386 | -68.22204 | 39.16270 |

**Independent Samples Effect Sizes**

| | | Standardizer[a] | Point Estimate | 95% Confidence Interval | |
|---|---|---|---|---|---|
| | | | | Lower | Upper |
| PQuality | Cohen's d | .85912 | -.113 | -.451 | .225 |
| | Hedges' correction | .86400 | -.113 | -.448 | .224 |
| | Glass's delta | .73387 | -.133 | -.470 | .206 |
| CNFU | Cohen's d | .87145 | .010 | -.328 | .347 |
| | Hedges' correction | .87641 | .010 | -.326 | .345 |
| | Glass's delta | .90402 | .009 | -.328 | .347 |
| WTP | Cohen's d | 157.57361 | -.092 | -.430 | .246 |
| | Hedges' correction | 158.46920 | -.092 | -.427 | .244 |
| | Glass's delta | 157.44765 | -.092 | -.430 | .246 |

## Appendix 27: ANOVA Age Groups

**ANOVA**

| | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| CNFU | Between Groups | 1.425 | 4 | .356 | .465 | .761 |
| | Within Groups | 101.060 | 132 | .766 | | |
| | Total | 102.485 | 136 | | | |
| PQuality | Between Groups | .915 | 4 | .229 | .308 | .872 |
| | Within Groups | 97.893 | 132 | .742 | | |
| | Total | 98.808 | 136 | | | |
| WTP | Between Groups | 70241.345 | 4 | 17560.336 | .702 | .592 |
| | Within Groups | 3301377.29 | 132 | 25010.434 | | |
| | Total | 3371618.64 | 136 | | | |

## Appendix 28: Moderation Income

```
**************************************************************************
Model  : 1
    Y  : WTP
    X  : Stimulus
    W  : Income

Sample
Size:  137

**************************************************************************
OUTCOME VARIABLE:
 WTP

Model Summary
          R       R-sq        MSE     F(HC4)        df1        df2          p
      .1941      .0377 24395.2662     1.7017     3.0000   133.0000      .1697

Model
              coeff    se(HC4)          t          p       LLCI       ULCI
constant   529.9282    13.4958    39.2662     .0000   503.2340   556.6223
Stimulus    23.8913    11.6213     2.0558     .0418     .9047    46.8779
Income      -6.8880     8.9750     -.7675     .4442   -24.6402    10.8643
Int_1       -2.7074     6.3981     -.4232     .6729   -15.3626     9.9477

Product terms key:
 Int_1    :        Stimulus x        Income

Test(s) of highest order unconditional interaction(s):
       R2-chng     F(HC4)        df1        df2          p
X*W      .0013      .1791     1.0000   133.0000      .6729


*********** BOOTSTRAP RESULTS FOR REGRESSION MODEL PARAMETERS ************

OUTCOME VARIABLE:
 WTP

              Coeff   BootMean     BootSE   BootLLCI   BootULCI
constant   529.9282   530.3350    13.5212   503.7859   556.2789
Stimulus    23.8913    23.9944    11.4933     1.5804    46.5801
Income      -6.8880    -7.1194     8.5249   -23.6366    10.1846
Int_1       -2.7074    -2.8976     6.1024   -15.2034     8.7666
```

# Appendix 29: ANOVA Smartphone Brands

**ANOVA**

| | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| CNFU | Between Groups | 2.458 | 4 | .615 | .811 | .520 |
| | Within Groups | 100.027 | 132 | .758 | | |
| | Total | 102.485 | 136 | | | |
| PQuality | Between Groups | 4.933 | 4 | 1.233 | 1.734 | .146 |
| | Within Groups | 93.875 | 132 | .711 | | |
| | Total | 98.808 | 136 | | | |
| WTP | Between Groups | 333732.104 | 4 | 83433.026 | 3.625 | .008 |
| | Within Groups | 3037886.53 | 132 | 23014.292 | | |
| | Total | 3371618.64 | 136 | | | |

**Post Hoc Tests**

**Multiple Comparisons**

Tukey HSD

| Dependent Variable | (I) SmartphoneBrand | (J) SmartphoneBrand | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| CNFU | Apple | Xiaomi | .05789 | .44432 | 1.000 | -1.1710 | 1.2868 |
| | | Samsung | .22176 | .18719 | .760 | -.2960 | .7395 |
| | | Huawei | .45986 | .36643 | .719 | -.5536 | 1.4734 |
| | | 5 | -.26563 | .44432 | .975 | -1.4946 | .9633 |
| | Xiaomi | Apple | -.05789 | .44432 | 1.000 | -1.2868 | 1.1710 |
| | | Samsung | .16387 | .46530 | .997 | -1.1231 | 1.4508 |
| | | Huawei | .40196 | .56191 | .953 | -1.1522 | 1.9561 |
| | | 5 | -.32353 | .61554 | .985 | -2.0260 | 1.3790 |
| | Samsung | Apple | -.22176 | .18719 | .760 | -.7395 | .2960 |
| | | Xiaomi | -.16387 | .46530 | .997 | -1.4508 | 1.1231 |
| | | Huawei | .23810 | .39161 | .974 | -.8450 | 1.3212 |
| | | 5 | -.48739 | .46530 | .833 | -1.7744 | .7996 |
| | Huawei | Apple | -.45986 | .36643 | .719 | -1.4734 | .5536 |
| | | Xiaomi | -.40196 | .56191 | .953 | -1.9561 | 1.1522 |
| | | Samsung | -.23810 | .39161 | .974 | -1.3212 | .8450 |
| | | 5 | -.72549 | .56191 | .697 | -2.2796 | .8287 |
| | 5 | Apple | .26563 | .44432 | .975 | -.9633 | 1.4946 |
| | | Xiaomi | .32353 | .61554 | .985 | -1.3790 | 2.0260 |
| | | Samsung | .48739 | .46530 | .833 | -.7996 | 1.7744 |
| | | Huawei | .72549 | .56191 | .697 | -.8287 | 2.2796 |
| PQuality | Apple | Xiaomi | .66974 | .43044 | .528 | -.5208 | 1.8603 |
| | | Samsung | -.00883 | .18134 | 1.000 | -.5104 | .4927 |
| | | Huawei | .12807 | .35499 | .996 | -.8538 | 1.1099 |
| | | 5 | .91974 | .43044 | .211 | -.2708 | 2.1103 |
| | Xiaomi | Apple | -.66974 | .43044 | .528 | -1.8603 | .5208 |
| | | Samsung | -.67857 | .45077 | .561 | -1.9253 | .5682 |
| | | Huawei | -.54167 | .54436 | .857 | -2.0473 | .9639 |
| | | 5 | .25000 | .59631 | .993 | -1.3993 | 1.8993 |
| | Samsung | Apple | .00883 | .18134 | 1.000 | -.4927 | .5104 |
| | | Xiaomi | .67857 | .45077 | .561 | -.5682 | 1.9253 |
| | | Huawei | .13690 | .37938 | .996 | -.9124 | 1.1862 |
| | | 5 | .92857 | .45077 | .244 | -.3182 | 2.1753 |
| | Huawei | Apple | -.12807 | .35499 | .996 | -1.1099 | .8538 |
| | | Xiaomi | .54167 | .54436 | .857 | -.9639 | 2.0473 |
| | | Samsung | -.13690 | .37938 | .996 | -1.1862 | .9124 |
| | | 5 | .79167 | .54436 | .594 | -.7139 | 2.2973 |
| | 5 | Apple | -.91974 | .43044 | .211 | -2.1103 | .2708 |
| | | Xiaomi | -.25000 | .59631 | .993 | -1.8993 | 1.3993 |
| | | Samsung | -.92857 | .45077 | .244 | -2.1753 | .3182 |
| | | Huawei | -.79167 | .54436 | .594 | -2.2973 | .7139 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| WTP | Apple | Xiaomi | 185.39474 | 77.43274 | .123 | -28.7724 | 399.5619 |
| | | Samsung | 18.89474 | 32.62200 | .978 | -71.3327 | 109.1222 |
| | | Huawei | 43.72807 | 63.85899 | .959 | -132.8962 | 220.3523 |
| | | 5 | 234.14474* | 77.43274 | .025 | 19.9776 | 448.3119 |
| | Xiaomi | Apple | -185.39474 | 77.43274 | .123 | -399.5619 | 28.7724 |
| | | Samsung | -166.50000 | 81.08953 | .247 | -390.7813 | 57.7813 |
| | | Huawei | -141.66667 | 97.92491 | .599 | -412.5121 | 129.1787 |
| | | 5 | 48.75000 | 107.27137 | .991 | -247.9463 | 345.4463 |
| | Samsung | Apple | -18.89474 | 32.62200 | .978 | -109.1222 | 71.3327 |
| | | Xiaomi | 166.50000 | 81.08953 | .247 | -57.7813 | 390.7813 |
| | | Huawei | 24.83333 | 68.24701 | .996 | -163.9275 | 213.5942 |
| | | 5 | 215.25000 | 81.08953 | .067 | -9.0313 | 439.5313 |
| | Huawei | Apple | -43.72807 | 63.85899 | .959 | -220.3523 | 132.8962 |
| | | Xiaomi | 141.66667 | 97.92491 | .599 | -129.1787 | 412.5121 |
| | | Samsung | -24.83333 | 68.24701 | .996 | -213.5942 | 163.9275 |
| | | 5 | 190.41667 | 97.92491 | .299 | -80.4287 | 461.2621 |
| | 5 | Apple | -234.1447* | 77.43274 | .025 | -448.3119 | -19.9776 |
| | | Xiaomi | -48.75000 | 107.27137 | .991 | -345.4463 | 247.9463 |
| | | Samsung | -215.25000 | 81.08953 | .067 | -439.5313 | 9.0313 |
| | | Huawei | -190.41667 | 97.92491 | .299 | -461.2621 | 80.4287 |

*. The mean difference is significant at the 0.05 level.

# Appendix 30: Multicollinearity Effects

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | Sig. | Tolerance | VIF |
| 1 | (Constant) | 52.133 | 76.309 | | .683 | .496 | | |
| | CNFU | 15.754 | 13.511 | .087 | 1.166 | .246 | .993 | 1.007 |
| | Stimulus | 7.308 | 10.476 | .053 | .698 | .487 | .940 | 1.064 |
| | PQuality | 89.900 | 14.189 | .487 | 6.336 | <.001 | .934 | 1.071 |

a. Dependent Variable: WTP