

# *TOO MUCH CHOICE?*

Chronia Amalia Christopoulou

578503

MSc Economics and Business, Marketing

*Erasmus School of Economics*

Supervisor

Agapi Fytraki



## **Abstract**

In challenging decision scenarios, ecommerce websites may use decision aids to help consumers make better decisions. Prior study has mostly focused on determining the decision aids' validity. Instead, the focus of this research is to examine how different sources of decision difficulty interact and influence a consumer's propensity to use decision aids, more specifically, recommendation agents. Many aspects connected to the decision context and the personal decision, such as task complexity, emotional trade-off difficulty, and preference uncertainty, which can all contribute to decision difficulty, according to the conceptual framework. Furthermore, the impact of time pressure and its interaction with decision difficulty, as well as willingness to use recommendation agents, on decision difficulty, is investigated. First, findings reveal that the dimensions of decision difficulty positive influence consumer's willingness to use decision aids. This effect is enhanced by time pressure, as it can make a significant difference by making consumer's reliance on decision aids more robust. Current study supports that, emotional trade-off difficulty, preference uncertainty and task complexity in online purchase selections has a beneficial impact on a customer's desire to utilize a decision aid. However, when time pressure is involved, the estimate is statistically significant only in the relationship with emotional trade-off difficulty, demonstrating that as time increases, the effect of emotional trade-off on willingness to use recommendation agents upsurges. With regards to preference uncertainty and task complexity, there is a negative correlation, meaning that time pressure had no impact on the purchasers to use such aids while facing preference uncertainty and task complexity. The study's findings have managerial implications since they add to our knowledge of when buyers face heightened choice difficulties and when they are reliant on a decision aid while shopping online.

**KEYWORDS:** *Decision Difficulty, Emotional Trade-Off Difficulty, Preference Uncertainty, Task Complexity, Decision Aids, Recommendation Agents, Time Pressure*

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## **Introduction**

Today's complex decision-making environment offers consumers an abundance of options as well as information access. To a certain extent, this can be a constructive aspect of the decision-making process yet can contribute and raise the sources of decision difficulty. The major arrays available today often offer freedom of choice (Markus & Schwartz, 2010). Widespread information sources enable consumers to have access to detailed product information, reviews, or even expert recommendations helping with browsing through the internet more effectively aiding the decision process (Goldenberg et al., 2012).

Consumers can benefit from various decision aids that are being offered and, therefore be capable of eliminating some of the underlying decision difficulty sources (Häubl & Trifts, 2000). Therefore, they seek out suggestions from their social networks or expert systems, to simplify the capacity of data and make the purchase decision-making process (Senecal & Nantel, 2004). Given that the digital environment is peculiarly dissimilar from traditional shopping channels, consumers learn how to adapt during the shopping process, which impacts their choice.

The focus of my research is centralized on the impact of decision difficulty on specific decision aids use. Decision difficulty may arise on a vast array of fields, as the expansion of consumer choices in the marketplace spans all facets of consumers' life forcing them to decide towards a vast pledge of choices from supermarket products, restaurant menus, apps, or even on life-based decisions. In general, the area of decision difficulty has been increasingly examined in recent literature. Previous researchers have frequently referred to decision difficulty as a subjective feeling (Hanselmann & Tanner, 2008) and many studies have made attempts to measure it (Chatterjee & Heath, 1996).

Research conducted by Gerald Häubl & Valerie Trifts (2000), pertained to how each of the decision aids affects different aspects of consumer decision making in online shopping environments whereas little or no research has been made on how decision and task difficulty, decision complexity, and choice complexity empowers a consumer's eagerness to use decision aids.

## 1. Research problem & motivation

Decision aids, based on previous scientific research are beneficial for consumers as they ameliorate the choice quality as well as lessening the effort of decision making (Häubl & Trifts, 2000; Häubl & Murray, 2006; Xiao & Benbasat, 2007). In the Information Age, decision overload affects consumers' decision-making, and considering that decision aids often can be seen as a valuable tool helping consumers to eliminate the effort needed to process the information, resulting in empowering the adoption of such systems (Aljukhadar et al., 2012). The usefulness of the agents along with trust as "virtual assistants", is of utmost importance for consumers' adoption of RA as without trust there is a high level of recommendation and advice rejection (Benbasat & Wang, 2005). Perceived stress, as well as perceived ease of use, are both influencing consumers' adoption of IT (Davis, 1989). However, decision difficulty can come to light from many components related to the choice environment such as task complexity, emotional trade-off difficulty, and preference uncertainty (Broniarczyk & Griffin, 2014).

Nonetheless, prior research that has examined the willingness to use a decision aid has focused almost mainly on the accuracy of various decision aids and regularly misses the primary decision problem that determines whether consumers would use such aid (Knijnenburg et al., 2012). For experience products, which product and quality characteristics are difficult to be observed before the actual decision is made, decision-making processes rely more on external sources of information such as recommendation agents (Knijnenburg et al., 2012). Subsequently, a gap is identified in the literature on acknowledging consumers' inherent intentions that influence them to use a decision aid towards their decision process (Tong et al., 2018). Following this, in my study, I will apply a quantitative measure to specific sources of decision difficulty and its effects on the use of interactive decision aids, which has yet to be done in the context of online shopping.

Consequently, this study will further focus and examine three primary sources of decision difficulty and their implications on the consumer to use decision aids. Regarding Rhavi Dhar (Dhar, 1994), consumers find it difficult to handle multiple options without becoming baffled. Existing literature confirms that users can be benefited from a decision aid by saving cognitive effort and improving their decision quality (Murray & Häubl, 2000). Hence, these advantages in turn increase users' intentions to shop online and use decision aids.

Specifically, this research focuses on the determinants of decision difficulty, task complexity, emotional trade-off difficulty, and preference uncertainty. These elements have been identified as key elements for determining decision difficulty, making it necessary to understand their effects (Scheibehenne et al., 2010). Firstly, task complexity refers to the rule of performing a given task under certain conditions. Deciding which source to devote while classing through the enormous amount of sources, can be overwhelming. Paradoxically, consumers avail themselves of advice most when under difficult decisions (Gino & Moore, 2007).

Next, emotional trade-off difficulty is a factor of utmost importance that should be considered for marketers when attempting to predict consumer choice patterns. In particular, is defined as the level of subjective hazard associated with making an explicit trade-off between two attributes by a decision maker (Luce et al., 1999).

Finally, based on (Thurstone, L.L 1927), preference uncertainty, was described as an individual randomly draws a value at a given instant when reflecting an underlying valuation distribution (L., 1927). The significance of recognizing preference uncertainty becomes evident when respondents make several choices between items.

Following this, a recommendation agent (RA) will be used to measure the willingness to use an aid, with which choice difficulty is reduced as is used to recommend products that are likely to match consumer preferences (Yoon et al., 2013). Using this type of interactive decision aid is relevant as they are increasingly used by businesses (Häubl & Murray, 2006).

Outside the adoption of decision aids, academic literature focuses on the implications of time pressure while consumers make decisions. Consumer behavior is often influenced by time constraints as time pressure decision-making (Howard & Sheth, 1971). Time pressure has historically been taken to mean an unquestionable psychological stress condition under which consumers have to make a buying decision within a short period of time (Mitomi, 2018). Based on evidence, shows that the pressure to decide reduces the volume of data evaluated (S., 1989) and raises the propensity to evaluate on the basis of behaviours (Wood & Neal, 2009)

## **1.1. Research objectives**

The major objective of the study is to identify how different sources of decision difficulty interact and affect a consumer's willingness to use decision aids as well as how this is moderated by time pressure. I will analyse further what specific aspects of decision difficulty are most influential in this context and how those can be linked with referred decision aids. Overall, the aim is to discuss the marketing consequences of these different sources of decision difficulties regarding the use of decision aids.

Under the theoretical framework of decision difficulty, it can evolve from many factors related to the choice environment and the individual decision-maker such as: task complexity, emotional trade-off difficulty, and preference uncertainty (Anderson, 2003; Broniarczyk & Griffin, 2014). These factors have been widely identified and utilized in studies researching and measuring decision difficulty. Furthermore, the three experiences are identified in Sinclair and Tinson's study in music streaming and psychological ownership as the antecedents by which they suggest the participants are experiencing psychological ownership (Sinclair & Tinson, 2017).

Based on this, the research in this study will focus upon the eagerness to use decision aids RA, in the frame of these three factors: task complexity, trade-off difficulty, and preference uncertainty.

### **The following is the research question posed by the study:**

*How do different sources of decision difficulty interact and affect a consumer's willingness to use decision aids moderated by time pressure?*

### **Under this research question, there exist the following sub-questions:**

- i. How does preference uncertainty affect a consumer's willingness to use decision aids in e-commerce?
- ii. How does emotional trade-off difficulty affect a consumer's willingness to use decision aids in e-commerce?



- iii. How does task complexity affect a consumer's willingness to use decision aids in e-commerce?

## **1.2. Research Methodology**

Regarding the research methodology, to test for the effects, an online web experiment will be conducted entailing a self-administered survey to collect data by manipulating one or more of the dimensions of difficulty across the conditions. In the experiment, an RA will be used as the proposed decision aid.

More specifically, decision difficulty will be quantified using an amendment of previous measurements, all of them measured, on a 7-point Likert scale. As mentioned above (see. Research objectives.), decision difficulty consists of three specific dimensions, trade-off difficulty, preference uncertainty, and task complexity. Through my literature review, the relationship of difficulty to the classic determinants of decision aids use (usefulness, ease of use) would be determined.

Moving on to the sub-questions, preference uncertainty will be measured based on previous research by Ravi Dhar on "*Consumer Preference of a no-choice option*" (Dhar & Nowlis, 1999). Task complexity, referred to as the combined effect of the number of attributes and the number of alternatives in the choice, will be measured again on a Likert-scale, influenced by Joffre Swait and Wiktor Adamowicz, who conducted research on the task complexity on consumer choice (Joffre & Adamowicz, 2001).

Lastly, trade-off difficulty, as well as the pre-mentioned sources will be measured in the same way, using a ranked preference approach between price and safety attributes. Further contributors to trade-off difficulty can be product videos, product descriptions of characteristics, previous consumers' reviews based on personal experience. Overall, applying a quantitative method makes it easier to establish the effect of different difficulty sources.

Moreover, demographic information would be encountered in the conducted survey and will further be analysed through SPSS. Finally, a conjoint analysis would be performed to carry out a quantitative approach to different trade-off implications.

### **1.3. Thesis Outline**

The outline of the thesis will be as follows. Primarily, decision difficulty and its sources, as well as decision aids, will be specified and discussed in chapter 2 as well as task difficulty, choice complexity, and attribute quantity (Literature review). Influenced by previous studies that have been conducted in these areas of context, the hypotheses will be formulated based on those empirical studies. Subsequently, research design and methodology will be clarified, in chapter 3. The results of this research according to the survey collected from the questionnaire will be presented in chapter 4. Finally, the thesis will culminate with the final chapter 5, which will entail a summary of the research as well as the main findings and potential future research.

## **2. Literature Review**

This chapter provides an overview of previous studies on consumer decision-making and the consequences on choice difficulty. Following that, literature on sources of difficulty and their effects on decision-making are reviewed. The impact of time pressure is then discussed. Furthermore, determinants of choice deferral are addressed in order to emphasize the possibility of deferring a choice when people are unable to make one. After determining the sources of choice difficulty, the relationship between them and customers' willingness to use decision aids is investigated.

### **2.1. Emotional trade-off difficulty on choice**

Previous studies have been investigating to determine how consumers are willing to make trade-offs between factors such as price and brand quality. People, for example, appear to resist “putting a price on” life or justice by trading off these attributes for monetary ones, and when asked to do so, they frequently demonstrate distress and/or refusal (Baron & Spranca, 1997). The level of subjective danger a decision maker associates with making an explicit trade-off between two attributes is defined as emotional trade-off difficulty (Luce et al., 1999).

According to their findings, Payne, Bettman and Eric, when a decision-maker engages in a mental process involving some degree of trade-off difficulty, negative feelings and mental conflicts increase in proportion to the difficulty of assessing the trade-off (Payne et al., 1993).

Consumers are driven by a desire to deal with emotional trade-off difficulty, and this desire to deal leads to predictable changes in choice patterns. Moreover, consumer trade-offs can vary qualitatively, and these differences have consequences for decision-making patterns.

### **2.1.1. The effect of emotional trade-off on the willingness to use a decision aid**

Demand for products with the best benefit-to-cost ratio is expected to rise as customers become even more price sensitive (Creyer & Ross, 1997). Consumers' ability to process the information is restricted, so it's not always easy for them to figure out which choice is the best to purchase. As a consequence, the ease at which available data can be used or analysed has been proved to have an impact on decision-making (Payne et al., 1993).

Price, quality, and value have long been established as important indicators of purchase decision. Many customers consider value to be a trade-off between the price paid and the quality earned, while others believe value is determined by the features that they desire in a product. All in all, an assortment of attributes is required, just as it is for other goods, and the product purchased will be determined by the trade-offs the buyer is willing to make among different levels of such attributes (Henion et al., 1981).

A RA considers the needs or desires of customers and makes recommendations based on that information. A RA, in my estimation, is a digital tool that assists customers in the screening process of viable alternatives in an online retailer's repository. A RA will propose a selection of products (advice set) based on a number of attributes chosen by the customer. These products tend to be among the most suitable products to recommend for that given customer. While consumers making buying decisions, will first conduct the initial screening of available goods in a database, without thoroughly reviewing them, and then choose a selection of the most promising options.

Before deciding to an alternative, the user tests the consideration set in greater detail by conducting comparisons based on essential attributes (Häubl & Trifts, 2000). It is critical to evaluate the interaction between the trade-off difficulty between product attributes and the willingness that consumers have to use a decision aid.

This leads to the following hypotheses:

*H1. Emotional trade-off difficulty in online purchase decisions positive influences a consumer's willingness to use a decision aid.*

## **2.2. Task complexity on choice**

Task complexity, in addition to the aforementioned factor, influences decision difficulty. Regarding Payne, task complexity has two variations, number of alternatives and number of dimensions on the information processing techniques used by subjects to arrive at a preferred choice (Payne, 1976). The difficulty of a task is determined by factors that have no impact on the values of individual choice options (Payne et al., 1993). Time constraints, decision accountability, and presentation format are all variables to consider.

Consumer decision accountability entails requiring them to justify their choices. Decision transparency has been shown to reduce the probability of making a choice and thus increase deferral when consumers choose to form a large choice set (Chernev et al., 2015). The effect of assortment size on decision complexity is at the heart of decision accountability. The effect of assortment variety on decision complexity is addressed by presentation format. The difficulty of selecting an item is reduced by ordering the options in each assortment. According to recent studies, the complexity of a decision is affected by whether the assortment is presented verbally or visually. More structure is associated with verbal communication, which leads to less complexity (Townsend & Kahn, 2014).

### **2.2.1. The effect of task complexity on the willingness to use a decision aid**

The previously discussed studies have been conducted in auditing and clinical decisions. In the equation of decision aid dependence, task complexity is a significant factor. Many tasks are extremely challenging, and the complexity of these tasks can have a direct effect on audit decisions (Bonner & Walker, 1994). As task difficulty rises, the use of decision aids in the decision-making process will help enhance judgment consistency and thereby audit efficacy. Information requirements and decision-making performance are affected by task complexity, since more complex tasks necessitate more conscious processing for cognition. Task complexity has also been shown to be one of the most significant factors affecting decision quality, network communication selection, and technology adoption (Sintchenko & Coiera, 2005).

However, the purpose of this research is to investigate and highlight the effect of decision difficulty components, such as task complexity in online context environments. There has been research into the relationship between task difficulty and knowledge seeking. O'Reilly, (O'Reilly, 1982) used questionnaires to investigate the relationships between perceived task difficulty, information ease of access, and knowledge searching. When making purchases online, consumers can complete tasks of varying degrees of difficulty. Certain types of goods, for example, may have a wide set of alternatives, while others may not. Similarly, when comparing products, some consumers may consider only a few features, while others may consider several more (Tang, 2020).

Evidence indicates that although people consider they are better than others at easy tasks, they believe they are worse at complicated tasks (Windschitl et al., 2003). In more detail, people have no incentive to listen to others' guidance on basic tasks where they perform better than anticipated and feel they are superior to others. On the other hand, on tough tasks where participants performed far less than expected and feel they are doing worse than others, they are more likely to believe that others will have valuable information to share (Gino & Moore, 2007). Previous field of cognitive psychology has shown that people tend to compare choices when dealing with information from multiple sources under some circumstances. When multiple experts provide their perspectives as sources of knowledge, for example, people prefer to combine them using an average weighting model (Budescu et al., 2003).

According to previous research, on which the effects of task difficulty on the use of advice were being conducted, results has shown, that the level of difficulty increased the willingness to receive advice by decreasing confidence, as calculated by the width of participants' 95% confidence interval. Even after accounting for conveyed confidence, difficulty still increased the willingness of advice. Current research would explore the causes for this effect.

All in all, the contradicting findings of prior research have shown that task complexity is a factor that influences consumers' decision choice and more specifically while they are involved in online purchase situations. This study will focus on judgment tasks that people encounter on a regular basis, such as making buying decisions.

Accordingly, it is hypothesized that when task complexity is higher, consumers are more willing to use a decision aid:

*H2. Task complexity in online purchase decisions positive influences a consumer's willingness to use a decision aid.*

### **2.3. Preference uncertainty on choice**

Over the last fifteen years, the notion of "preference uncertainty" has gotten a lot of attention in the literature on stated preferences. Hanemann et al. (1995) were the first to suggest a welfare model that included some uncertainty about individual preferences (Hanemann et al., 1995). Li and Mattsson (1995) extended the theory of preference uncertainty by defining preference uncertainty as a stochastic error term that occurs in a hypothetical valuation scenario when people do not know their true values of a good with certainty (Li & Mattsson, 1995).

Alba and Hutchinson divide a consumer's overall understanding of a product into two categories: familiarity and expertise within the category (Alba & Hutchinson, 1987). When customers are unfamiliar with a product category or service, selecting from a large selection also leads to deferral. The effect is the opposite if the consumer has a lot of expertise. A smaller decision set results in more deferral in this case (Chernev, 2003). Knowing a product means having product knowledge, and having an articulated ideal point means that consumers have distinct preferences within a product category. When consumers have a clearly defined ideal point, the complexity of a decision is reduced because they know which characteristics to prioritize. In conclusion, the complexity of a decision is influenced by an individual's preference uncertainty. Higher levels of preference ambiguity, which include knowledge and an articulated ideal point, result in more complexity.

#### **2.3.1. The effect of preference uncertainty on the willingness to use a decision aid**

In terms of preference uncertainty, today's freedom of choice can be both beneficial and detrimental for consumers especially under the purchase decision making.

Preference uncertainty is reduced when the main options are all highly appealing (Dhar & Nowlis, 1999); however, minor variations in attractiveness between options exacerbate preference uncertainty and increase decision complexity (Dhar & Nowlis, 1999).

When consumers are uncertain how different trait combinations combine to provide benefits (Randall et al., 2007), they may be unable to find the set of factors that perfectly serves their preferences (Itamar, 2005).

Consumer experience, which includes both product expertise and the degree to which a consumer's preferences have developed, is critical in determining how consumers are influenced by challenging decision environments.

When there are many options and the decision climate is complex, making decisions under uncertainty and risk becomes extremely difficult (Payne et al., 1993). When it comes to online shopping, it is generally accepted that customers must cope with confusion. There has been a lot of research done on online shopping, with an emphasis on the uncertainty and cohesion (Youngsoo & Ramayya, 2015). When faced with tough decisions, consumers who are less experienced put more weight on advice (Yaniv, 2004) and use more simplifying heuristics (Chernev, 2008).

The need for control can clarify the connection between uncertainty and customer purchase decision making in online shopping. Control, according to Howell and Burnett (Howell & Burnett, 1978), is a perception of assurance, since behaviours over which people perceive control are less ambiguous than behaviours over which they have little or no control. Consumer regulation positively affects purchasing decisions, according to previous research (Taylor & Todd, 1995). Furthermore, website design and knowledge contribute to an improvement in market influence, which would have a positive impact on consumer buying decisions (Song & Zahedi, 2005).

Preference learning tools, such as decision aids, help consumers recognize attributes, articulate their attribute preferences, and determine their across-attribute value trade-offs (Huffman & Kahn, 1998) can help consumers develop awareness and minimize preference confusion. Consumer preference creation has been shown to be aided by retailers providing a product context that provides a mechanism for consumers to better define specific product attributes, value these traits, and then assess the relationship between a product's features and their own preference build-up of the product (West et al., 1996). Learning the connection among a product's characteristics and the benefits it provides is a crucial component of boosting preference certainty (Hoeffler, 2003). It is, therefore, significant to quantify consumers'

willingness to use a decision aid whilst preference uncertainty making the decision-making process even more complex.

Thereupon the following is hypothesized:

*H3. Preference uncertainty in online purchase decisions positive influences a consumer's willingness to use a decision aid.*

## **2.4. Consequences of choice difficulty**

Due to its negative effects on people's decision-making processes, choice difficulty is a controversial topic in research. Choice difficulty, for example, is discovered to be a key driver of deferred decision-making, choice avoidance, and as well as choice deferral (Anderson, 2003). Interestingly, customer research indicates that as the amount of choices and information about options grows, people tend to consider limited options and process a lower portion of the overall information about their options (Hauser & Wernerfelt, 1990). Other research has found that while a wide range of choices may appear attractive at first, it can decrease consumers' subsequent motivation to purchase a product (Iyengar & Lepper, 2000). Indecisiveness is a personality trait that reflects a general tendency to experience difficulty while making decisions. Unique attributes of this trend include finding decisions difficult, taking too long to make choices, trying to delay or avoid making decisions, continually shifting one's mind before making a final decision, and stressing about decisions after they have been taken (Germeijs, 2002; Rassin, 2007).

### **2.4.1. Choice deferral**

Marketers invest a lot of time and money into increasing traffic to their virtual and physical stores. However, an increase in store traffic may not result in an increase in sales, as many shoppers leave empty-handed. Consumers often defer a decision when faced with many appealing options (Leeflang & Wittink, 2000), even though each option is deemed sufficiently appealing on its own (Iyengar & Lepper, 2000). Traditional explanations for choice deferral include decisional conflict or difficulty, which occurs when a decision-maker seems unable to trade-off important characteristics (Tversky & Shafir, 1992). Consumers might defer choice in



order to avoid the negative feelings that can occur when making difficult trade-offs between important characteristics, according to the trade-off avoidance hypothesis (Luce et al., 1997).

#### **2.4.2. Assortment size**

The impact of assortment size on complexity is extensively studied, yet there is a lot of variation in the results. Various researchers have argued for the advantages of having a big selection. When customers have a huge number of options, they are more likely to locate something that is a near fit to their preferences (Kahn & Wansik, 2004). Another viewpoint is that having more options provides consumers with more utility (Chernev et al., 2015). Because consumers feel that a big choice set includes all available possibilities, it minimizes uncertainty.

However, a large choice set can be also detrimental except from beneficial for consumers. A wider selection can exaggerate expectations of finding the greatest option among the available options. Furthermore, if satisfaction with the decision-making process declines, more choice deferral may occur (Sela et al., 2009). As a result, customers have less trust in their choices and have difficulty making decisions; this condition is referred to as choice overload (Chernev et al., 2015). Apart from the benefits of a big assortment, such as a better chance of finding a close match, expanding the selection complicates the choices. Consumers are more likely to postpone their purchases in this more complicated circumstance.

#### **2.5. Time pressure on choice deferral**

The majority of customer decisions today are focused on a sense of urgency and, to overcome decision-making issues under intense time pressure and decision overload, customers must conduct a complex search over the collection of possible objects (Reutskaja et al., 2011). Time pressures almost often influence decision-making, causing consumers to feel pressed for time. The perceived cost of time scarcity is referred to as time pressure (Godinho et al., 2016). It has been suggested that “time pressure manifests itself and induces feelings of stress only when the available time to complete a task is viewed as inadequate or limited” (Thomas et al., 2010). Under conventional time pressure manipulations, decisions are often characterized by the use of shortcuts, and the risk of deferring a choice increase. When customers are under time constraints, they are more likely to regret their purchases (Godinho et al., 2016; Inbar et al., 2011).

Several previous research looked into the impact of time constraints on decision-making and discovered three distinct ways in which customers respond to time constraints. First of all, customers are less likely to scrutinize the details given to them. In addition, customers concentrate on the most essential characteristics. To be more precise, time pressure increased the importance provided to the most critical characteristics, which may lead to more negative details being found (Dhar & Nowlis, 1999). Third, time pressure will influence a consumer's decision-making strategy; they are more likely to simplify their choices when faced with a deadline (Dhar & Nowlis, 1999). Consumers prefer to delay their decision under time pressure as the decision becomes more difficult, according to research. This suggests that time pressure moderates the impact of decision uncertainty on choice deferral (Dhar & Nowlis, 1999).

### **2.5.1. Heuristic decision strategies and time pressure**

The idea of rational decision making is not always a fitting model to characterize and explain human actions in a world of restricted information, resources, and time. According to previous research, people prefer to use shortcuts when making decisions due to the absence of time and dedication (Payne et al., 1993). As a result, the idea of heuristics has gained traction as a useful tool for describing human decisions.

Intuitive heuristics can be effective decision-making tools, and research shows that they are commonly used in real-world scenarios. While several different forms of heuristics have been discovered and studied, little study has been done on the contributing factors to the use of a specific heuristic (del Campo et al., 2016). Financial intermediaries often rely on basic heuristics rather than complicated equations in many daily decisions, such as buying situations (Hauser, 2011). The use of heuristic may be caused by both subjective and objective variables, such as task and scope (Payne et al., 1993). Time pressure (Hilbig et al., 2012) and the way information on the issue is portrayed (Bröder & Schiffer, 2006) are two situational variables that have been examined in previous literature.

Time pressure is yet another significant factor that affects the use of heuristics. Pachur and Hertwig, (Pachur & Hertwig, 2006) discovered that time pressure has a beneficial impact upon the use of identification heuristic. Moreover, Hilbig et al. (Hilbig et al., 2012) discovered that under time pressure, dependence on the recognition heuristic increases, even though time

restrictions have no adverse implications for the decision - makers. Time pressure, according to previous studies, can make a difference by causing individuals to depend more on a decision aid (Rieger & Manzey, 2020). In particular, time pressure, has been shown to contribute to more heuristic decision-making, which does not always imply lower results (Gigerenzer & Gaissmaier, 2011).

Consumer buying decision-making is influenced by time pressure, according to previous research. However, few studies have examined into the connection of time pressure with the purchasing decision-making process when it comes to cell phones. The purpose of this study is to see how perceived time pressure in cell phone shopping, time pressure conditions, specific product type, and their interactions affect the mobile phone purchasing process.

Time pressure is a mental attitude experienced by consumers when they believe they may not have enough time to complete the tasks at hand, and it is a situation of inadequate time to perform purchasing and consumption activities. Consumers not only are confronted with an ever-growing number of options they are having to make the right choice from in several decision-making scenarios, but they are also constrained in the capacity of time they have to actually make decisions. Hence, when there are a lot of choices, time constraint can impact decision difficulty (Haynes, 2009). When the amount of time available is limited, analyses of the literature on time constraints have established a variation of ways in which the results and mechanisms of decision-making change (Maule et al., 2000). Discussions on how time pressure influences decision-making efficiency have driven the conceptual framework, with significant findings that people perform substantially worse when are feeling pressure of time.

Time pressure was already described as a type of tension reflected in the perception of being rushed or forced, as well as the presumed restriction of time allocated for a person to complete a given task (Ackerman & Gross, 2003). Suri and Monroe (Suri & Monroe, 2003), for example, examined that when low time pressure is indicated in an electronic goods environment, consumers are more likely to process information for product evaluation and acceptance decisions in a structured manner. Furthermore, other studies show that under time constraints, decision makers use less but more significant characteristics, less nuanced decision laws, put a higher emphasis on negative factors, and minimize their information seeking and filtering (Ahituv et al., 1998).

Accordingly, the following are hypothesized:

*H4. The effect of emotional trade-off difficulty on consumers' willingness to use an RA is higher when time pressure is higher.*

*H5. The effect of preference uncertainty on consumers' willingness to use an RA is higher when time pressure is higher.*

*H6. The effect of task complexity on consumers' willingness to use an RA is higher when time pressure is higher.*

## **2.6. Decision aids**

Given the negative effects of choice difficulty, it is critical for retailers to either reduce the factors that lead to choice difficulty or have solutions that can eliminate the issue.

Previous research has shown that a cognitive effort model of decision making can be used to understand decision maker actions by using a decision aid. The core idea is that specific features can be integrated into a decision aid to change the amount of effort needed to execute a strategy, and thereby affect the decision maker's strategy selection (Todd & Benbasat, 1991). Over time, a growing body of literature has emphasized the importance of decision aids as a tools for facilitating decision-making and assisting customers in the digital world who are faced with a challenging choice (Häubl & Trifts, 2000; Broniarczyk & Griffin, 2014; Häubl & Murray, 2006; Xiao & Benbasat, 2007).

Decision aids are tools that enable users to tailor the online shopping experience to their own needs. As a result, decision aids come in a number of forms and applications. Preference learning tools, product filtering and comparison tools and recommendation tools, for example, are all said to be helpful in the consumer's decision-making process (Broniarczyk & Griffin, 2014).

Product recommendation agents are a well-researched decision aid that is therefore essential to discuss (Xiao & Benbasat, 2007). Consumers can effectively filter a range of items by using RAs, which provide options in a more easily processed and structured format. RAs have the ability to minimize consumers' overload of information and search difficulty while also enhancing the consistency of their decisions by offering product recommendations based on user-specified preferences, a user's purchasing history, or decisions made by other consumers with similar profiles (Chiasson et al., 2002 ).

### **2.6.1. Willingness to use a decision aid**

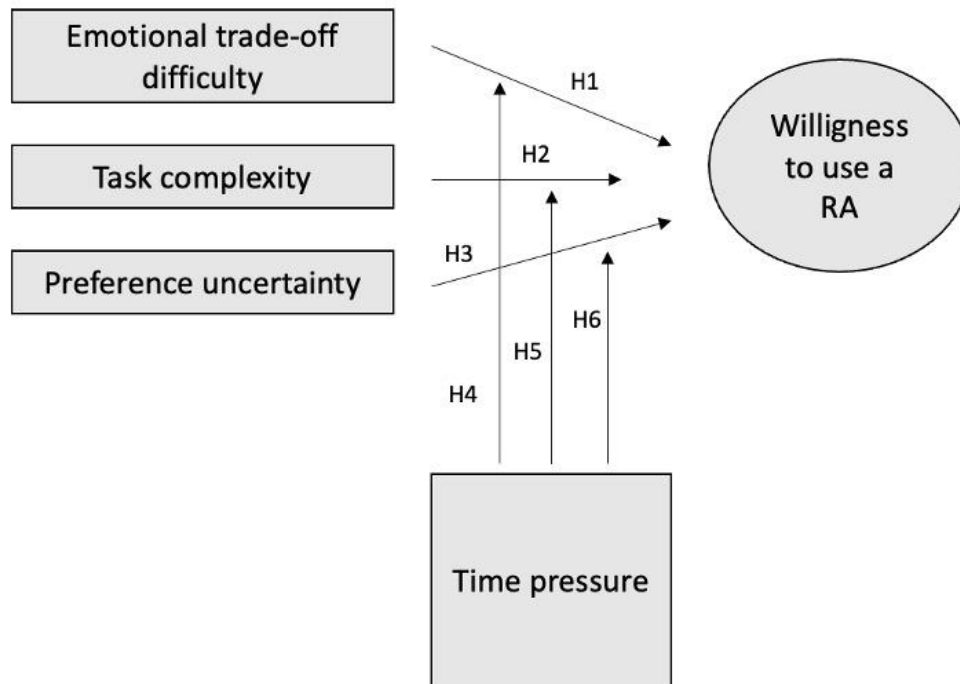
It can be argued that there are two opposing viewpoints on the ability to use decision aids based on prior literature. The first viewpoint involves experiments that look at how the decision aid's characteristics influence customers' ability to use it, referring to perceived ease of use as well as perceived usefulness (Dulcica et al., 2012). Traditionally, this viewpoint necessitates the participant's interaction with the support system, as well as an examination of the participant's post-use ability to use the aid. Moving on to the second viewpoint, the ability of how the features of the decision-making process influence one's ability to use a decision aid is highlighted.

Diving into the first perspective, perceived ease of use, when the technology that people using is characterized by ease of use, then they are more optimistic and capable in implementing such technology (He et al., 2018). According to Davis, “the degree to which a person believes that using a particular system would be free of effort”, is described as perceived ease of use (Davis, 1989). Moreover, perceived ease of use, has a significant effect on online purchasing when the overarching purpose of people website usage is mainly focused on information searching (Gefen & Straub, 2000). If a system, such as a decision aid, has a high level of complexity in terms of how to use, the significance of the benefits that can provide will be outweighed by the difficulties that using the system will entail. The most widely used measurement instruments is connected to the system's operation structure, and the endeavour to understand and use it (Legris et al., 2003).

In terms of the second, perceived usefulness, according to Davis, refers to “the degree to which a person believes that using a particular system would enhance his or her job performance” (Davis, 1989). Additionally, against the role that perceived ease of uses plays on people actions, perceived usefulness is more important when people visiting websites in order to purchase products and services. The perceived utility of a decision aid, like perceived ease of use, is a motivating factor that can coincide with someone's willingness to follow it and is therefore regulated for (Xiao & Benbasat, 2007).

These results shed light on the function of decision aids and their characteristics in influencing people's intentions to use them. However, the aim of current research is to determine the interaction between decision aids and a consumers' willingness to use such aid, rather than explore the characteristics of them.

## 2.7. Conceptual model



## 3. Research Methodology

### 3.1. Research design & Manipulations

To test my hypotheses, I will adopt an online experiment to collect data and investigate whether a consumer's decision difficulty would lead a consumer to use a decision aid as a guide to make the right decision. This research approach allows for the collection of vast amounts of data from a wide variety of individuals and locations. Since filling out a survey online has less restrictions than filling it out in a lab, there is also a higher level of participation (Reips, 2002). Since everyone is a customer in the end, an online experiment is reflective of this study. Online, you will find consumers that are reflective of the general public. This strengthens the research's

credibility. This assumes that a study calculates exactly what it claims to calculate. Consumers are assessed as respondents in online experiments.

Respondents who completed online surveys were randomly assigned to one of two treatments in order to overcome the disparity between high and low time pressure on their willingness to use a RA. The term "randomization" refers to a method of assigning subjects to various treatment classes (Kohavi et al., 2009). One treatment will be positioned under high time pressure to make a decision, while the other will be positioned under low time pressure to make a decision. Following that, the two treatments are again randomly divided into two treatments, high or low levels of emotional trade off difficulty.

The above-mentioned research design is known as a 2X2 in-between-subjects design, time pressure (high vs low) x decision difficulty (high vs low), where high difficulty = high assortment size + "emotional attributes", whereas low difficulty= low assortment size + absence of "emotional attributes". Experiments involve the observation of an experiment group, which is exposed to a stimulus, whereas the control group has not received the stimulus.

### **3.2. Manipulation**

#### **Emotional trade-off manipulation**

The displayed emotional trade-off difficulty will be manipulated by displaying a high level of SAR value, whereas in the control group will be an absence of the emotional attribute. The price will remain constant in the 2 conditions at a low amount, as this safety-price trade-off is defined as the level of unpleasant emotion felt or expected as a result of the direct trade-off between safety and purchase price.

#### **Manipulation check**

To evaluate a difference in perception of emotional trade off difficulty participants will be asked to respond to the statement "How negatively emotional (stressful) do you think it would be for you to give up safety in order to save money?" on a 5-point scale (from "not at all" to "extremely") (Drolet & Luce, 2004). This was originally a 100-point Likert scale. To keep the experiment consistent and accessible, it was chosen to convert it to a 5-point Likert scale, which is equivalent to the assessments for preference uncertainty and task complexity. In addition,

three more statements was used to evaluate how consumers perceive decision difficulty, “*Safety was a significant priority while making the decision?*” (Nguyen & Ayda, 2014), “*Saving money was not a major factor in my purchase decision*” (Nguyen & Ayda, 2014), “*I felt emotionally stressed while making the decision*” (Jun & Yeo, 2012), on a 5-point Likert scale 1= “Strongly disagree”; 5=“Strongly agree”).

### **Time pressure**

Time pressure has also been described as an indirect effect that can affect consumer behaviour (Howard & Sheth, 1969). As a result, time pressure can be described as a perception of a limited time on which to consider information and to make choices. Participants will be assigned in two different conditions, by either having a high time pressure (2 minute) in order to make any appropriate choices or a low time pressure (5 minutes) influence by Graeme A. Haynes, (Haynes, 2009). Time pressure will be manipulated by altering the amount of time that is allocated to the participants in order to make the right decision.

### **Manipulation check**

To evaluate a difference in perception of time pressure participants will be asked to respond to the statement “I felt pressured when making a decision” using a scale adapted from (Inbar, Botti, & Hanks, 2011) & (Godinho, Prada, & Garrido, 2016), “*I would need more time to make a similar decision in the future*” (Hanselmann & Tanner, 2008), “*The task was overwhelming*” (Stanton & Paolo, 2012), “*For me choosing a phone was not simple and direct*” (Pereira, 2000), “*I would ponder for a long time on this decision*” (Hanselmann & Tanner, 2008) this is a 5-point Likert scale. Thus, the experiment will be adapted to a 5-point-Likert-scale (1= “Strongly disagree”; 5=“Strongly agree”) to keep it accessible and accurate,

### **Preference Uncertainty**

Preference uncertainty will be measured by a scale presented in the research “*Using donation mechanisms to value non-use benefits from public goods*” (Champ et al. (1997), ordinal scale in which respondents will be asked to state their level of uncertainty regarding their choice on 7-likert scale from 1 (very uncertain) to 7 (very certain) point scale. More specifically, subjects will be asked “How certain are you of your choice?”, and two more statements on 5-likert scale from 1 (Strongly disagree) to 5 (Strongly agree), “*I feel very confident about my decision*”



(Nepal, 2020) , “*The choices presented aligned with my preference on phones*” (Hanselmann & Tanner, 2008).

### **Task complexity**

Task complexity will be measured by an adapted scale from the research article “*Measuring Task Complexity in Information Search from User’s Perspective*”, (Chen et al., 2011). For each simulated task situation, the participants will be asked to assess the degree of complexity of the task, based on a 5-point scale from very simple (1) to very complex (5). More specifically, subjects will be asked to rate the following, “*I found this to be a complex task*”, “*Completing the task using the scenario was straight forward*” (Pereira , 2000), “*I could imagine myself doing the things described in this scenario*” (Pereira , 2000).

#### **3.2.1. Dependent variables**

##### **Willingness to use a RA**

The decision aid can be classified as a product filtering recommendation agent because it needs prompted responses from the participant. Since existing research does not concentrate on the engagement with the decision aid, participants are unable to use it. A scale derived from Wang & Benbasat (Benbasat & Wang, 2005), that they used to assess the desire to adopt a recommendation agent, is used to test the intentions to embrace a decision aid, “*I am willing to use this recommendation agent to help me with my decision about which mobile phone to buy*” and “*Using this this recommendation agent did not enable me to find a suitable phone more quickly*”. On a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree), participants were asked to rate three objects.

#### **3.2.2. Control variables**

The dimensions of decision difficulty are influenced by variables such as gender, age, education, and online shopping experience, in addition to the constructs mentioned. These variables will be included as control variables to evaluate the influence of decision difficulty and time pressure on customer willingness to use a RA.

### **3.3 Procedure**

The questionnaire begins with a thank you for taking the time to fill it out, followed by an explanation of the study's purpose. To avoid demand consequences, the subject is referred to as "consumers' shopping behaviour." Following that, participants will be prompted with a message instructing them to pretend they are searching for a new mobile phone and are currently shopping at an online electronics store for one that meets their requirements. Then, participants will be randomly assigned to one of four conditions based on this message. All of the terms provide an assortment variety which displays a complete list of all cell phones available. Participants are phasing high or low decision difficulty, under high or low time pressure depending on the condition. Every situation includes the availability of decision assistance, which is seen at the top of the image's assortment so as to check consumer's indication to use it. Following that, participants' manipulation checks and the willingness to use a RA. Finally, there are control questions as well as demographic questions on gender, age, nationality, and educational level. The survey is completed once the demographic questions have been answered, and participants are thanked once again for their participation.

The data will then be analyzed using SPSS to test hypothesis, whereby multiple regression with one line will be used to test the first three hypothesis as it is deemed to be appropriate as the objective is to check for the effect of emotional trade-off, task complexity, and preference uncertainty on willingness to use the recommendation agent. The last three hypothesis will be checked using multiple linear regression with three lines to find the interaction between time pressure and the independent variables.

## **4. Analysis**

### **4.1. Preparing the Dataset**

It is necessary to use reliable data to conduct statistical analysis. Failure to clean that data always lead to results that are also unreliable. It is not possible to make a conclusion that affects millions of people based on the results from unreliable data. Hence, it is vital for the researchers to clean the data before starting the analysis. Therefore, the data has been cleaned the data through manipulation checks.

An amount of 300 respondents have been interviewed to the type of phone they would purchase based on two essential factors, including time pressure and decision difficulty. All the

respondents who agreed to participate in the interview received the questionnaires. Out of 250 questionnaires only 226 received back from the respondents. The assumption was that the remaining 24 participants failed to respond to the interview. The entire interview process took about 7 minutes as the respondents took about 5 minutes each to respond to the first two questions and 2 minutes each to respond to the final questions. Therefore, removing all the participants who failed to answer all the questions within the provided 7 minutes was necessary. As a result, the study used the data of 200 participants that answered all the questions appropriately. The first question was about the phone type and factors that would lead to purchase.

In contrast, the second section of the paper had questions about the respondent's data, including gender, age, education level, and origin. The respondents have been classified into four groups based on the time pressure and decision difficulty for the phones as they would be high or low. The study further applied a 5 to 7-point Likert Scale to measure the responses on the dependent variable and the four independent variables. The control variables, which included the personal data of the participants, also had different classifications. For example, the participants needed to choose from three types of gender include male, female, and third gender.

## **4.2 Summary Statistics**

The participants were randomly assigned to each condition and the total number per condition was 50. Each condition represents 25% of the total sample size (Table 9). The distribution between males and females in the sample is approximately equal with males forming 47%, and females 50.5%. However, the non-binary/third gender forms 2.5%. The distribution of non-binary is within the expected limit of less than 3% in a sample. The data, therefore, do not overrepresent any of the two main gender categories (table 10). The majority of the participants were aged between 18-24 years at 44.5% followed by 25-34 years at 43%. The remaining age groups represent 0.5%, 10.0%, and 2.0% for under 18 years, 35-44 years and 45-54 years, respectively (Table 11).

The majority of the participants originate from countries in Europe at 48% followed by Dutch participants at 37.5% and 14% were from other countries outside Europe (table 12). The sample represents the experiences of people from Europe more as opposed to from other countries. Finally, 2% of the participants were high school graduates, 3.5% had some college certification (no degree), 43% had a Bachelor degree, 51% had a Master degree and 0.5% had a PhD (table

13). The majority of the participants had a Bachelor degree and above forming approximately 94% of the sample size. Table 1 shows summary statistics for the response, explanatory and control variables.

**Table 1**

*Descriptive Statistics*

Variable	Minimum	Maximum	Mean	Std. Deviation
Task complexity	1.00	5.00	3.28	0.82
Emotional trade-off	1.75	5.00	4.05	0.76
Time Pressure	1.00	5.00	3.01	1.04
Preference Uncertainty	1.00	5.00	2.95	1.10
Willingness	1.00	5.00	2.62	1.16

*Note:* Source (2021)

Overall, the participants were willing to use the recommendation agent to help with the decision about which mobile phone to buy ( $M = 2.62, SD = 1.16$ ). The standard deviation is small implying that the majority would fall within the mean. On average the participants were emotionally stressed when presented with a situation of trading safety for saving money ( $M = 4.05, SD = 0.76$ ). Next, the respondents were overall found to be uncertain with their preferences (choices) ( $M = 2.95, SD = 1.10$ ) as their average certainty was found to be below neither uncertain nor certain point. On average the participants are indifferent about the complexity of the task ( $M = 3.28, SD = 0.82$ ) as the average reported task complexity lies on the neutral point. Finally, the participants on average reported not experiencing time pressure when deciding on which phone to purchase ( $M = 3.01, SD = 1.04$ ).

### 4.3. Factor Analysis

The measures used in the data collection have been used by previous researchers, thus, as was expected, each factor loaded into the correct variable. The Kaiser-Meyer-Olkin measure of sampling adequacy was .844, above the commonly recommended value of .7, and Bartlett's test of sphericity was significant ( $\chi^2 (136) = 1866.768, p < .001 (< .05)$ ). The diagonals of the anti-image correlation matrix were also all over .48 (Table 20). Finally, the communalities were all above .55 (Table 21). The high communality confirms that each of the items shared significant common variance with other items. The overall checkpoints for EFA show that the 17 items are suitable measurements of the study variables. Table 2 shows the varimax rotated

factor. A total of five factors were found which aligned with them initially. From table 3 all the items loaded very high with values greater than 0.70 to their respective construct factors. From table 23 factors explain 28.74%, 17.65%, 13.81%, 11.93%, and 3.66% for factor 1, 2, 3, 4, and 5, respectively. Collectively the five factors extracted explains 75.78% of the variances.

**Table 2**

*Rotated Factor Matrix*

Item	Factor				
	1	2	3	4	5
Emotional 1		.710			
Emotional 2		.846			
Emotional 3		.869			
Emotional 4		.789			
Time 1	.791				
Time 2	.733				
Time 3	.757				
Time 4	.796				
Time 5	.744				
Uncertainty 1			.824		
Uncertainty 2			.822		
Uncertainty 3			.724		
Complexity 1				.724	
Complexity 2				.771	
Complexity 3				.813	
Willingness 1					.902
Willingness 2					.902

*Note:* Extraction Method: Principal Axis Factoring.

Rotation Method: Varimax with Kaiser Normalization.

#### 4.4. Reliability Check

Reliability entails the ability of a scale to give consistent results or outcomes if the same tool is used in the future. The reliability was checked using Cronbach's Alpha. Table 3 shows the estimated alphas.

**Table 3**

*Reliability Statistics*

Variable	Cronbach's Alpha	Items
Emotional trade-off	0.873	4
Time pressure	0.872	5
Preference uncertainty	0.833	3
Task complexity	0.808	3
Willingness	0.888	2

*Note:* Source (2021)

According to (Pallant , 2013), alpha above .7 is considered significant and acceptable. The emotional trade-off four-point scale resulted in a Cronbach's Alpha of .873. The alpha is way above the accepted minimum an indication that the four questions on emotional trade-off measure emotional trade-off correctly. The Cronbach's alpha value for the time pressure five-point scale was .872 while for preference uncertainty was .833. The Cronbach's alpha value for the willingness to use the recommendation agent was .888. These two alphas are strong and an indication that the factors will lead to the expected groups. The reliability of the scales of perceived task complexity was .808 the items are acceptable. The general conclusion from the reliability tests is that there exists strong internal consistency for all scales when applied to the survey sample.

#### 4.5. Manipulation

An independent sample t-test was performed to test for mean differences in low and high time pressure conditions. The assumption of equal variance was used since Levene's Test for Equality of Variances failed to reject the null hypothesis of equal variances ( $F = 0.16, p =$

.900 ( $> .05$ )). There was a significant difference in mean low time pressure ( $M = 2.03, SD = 0.322$ ) and high time pressure ( $M = 3.99, SD = 0.34$ );  $t(198) = -41.752, p < .001 (< .05)$ . The time manipulation was successful (See table 15 and 16 for full results).

Similarly, an independent sample t-test was performed to tests for average differences in low and high decision difficulty conditions. The assumption of equal variance was used since Levene's Test for Equality of Variances failed to reject the null hypothesis of equal variances ( $F = 0.479, p = .490 (< .05)$ ). There was a significant difference in mean perception of decision difficulty between low decision difficulty ( $M = 1.97, SD = 0.49$ ) and high decision difficulty ( $M = 3.94, SD = .49$ );  $t(198) = -28.39, p < .001 (< .05)$ . The time manipulation was successful (See table 17 and 18 for full results).

#### 4.6. Hypotheses Tests and Results

To test the first three hypotheses multiple linear regression was deemed appropriate as the objective was to check for the effect of emotional trade-off, task complexity and preference uncertainty on willingness to use the recommendation agent. The general form of the regression model is (1).

$$y_i = \beta_0 + \sum_{k=1}^3 \beta_k x_{ki} + \varepsilon_i \quad (1)$$

Where:

$i$  – the  $i^{th}$  participants

$y_i$  – the  $i^{th}$  participant's average response on willingness to use the recommendation agent

$\beta_0, \beta_k$  – intercept and the slope estimates

$x_{ki}$  – the  $i^{th}$  participant's average response on  $k = 1$ (*Emotional trade – off*),  $k = 2$ (*Task complexity*) and  $k = 3$ (*Preference uncertainty*).

$\varepsilon_i$  – the  $i^{th}$  residual

Prior to fitting the regression model (1) assumptions underlying the model were checked. These assumptions include (1) there should exist at least two independent variables measured as nominal, ordinal, or interval/ratio levels. The assumption was satisfied since there are three independent variables (*Emotional trade-off*, *Task complexity*, and *Preference uncertainty*). (2) The samples should be independent and at 20 cases per independent variable. the analysis. The second assumption was also satisfied there are 200 independent samples. (3) There must be a

linear relationship between the response and the explanatory variables. From figure 1, a positive linear relationship between willingness and the three independent variables is observable.

Table 24 shows a significant and strong positive correlation between the response and the independent variables. Therefore, the third assumption was satisfied (Figure 4). The residuals should follow a normal distribution with zero mean and constant variance. The histogram shows that the residuals are approximately normal with zero mean and constant variance due to the bell shape and an almost perfect fit of the normal density curve (Figure 2). The assumption was satisfied (Figure 5) the model assumes that the independent variables are not highly correlated with each other. Table 24 shows that the explanatory variables are not highly correlated. Further VIF's are all below 10 from table 4, therefore, the assumption was satisfied (Figure 6). The variance of the error terms must be similar across the values of independent variables (homoscedasticity). From figure 3, the plotted points are randomly distributed above and below the zero line. Therefore, the variances are constant and, the estimated model was considered to be appropriate. Table 4 shows a summary of the estimated model.

**Table 4**

*Effect on Willingness to use recommendation agent*

Coefficient	Beta	t-statistic	p-value	VIF
(Constant)	-0.431	-2.356	0.019	
Emotional trade-off	0.391	11.353	0.000	1.009
Task Complexity	0.365	11.593	0.000	1.044
Preference Uncertainty	0.458	15.657	0.000	1.048

$F(3,196) = 206.174, p < .001. R^2 = 0.759$

The overall model is statistically significant  $F(3,196) = 206.174, p < .001$ . The p-value is less than 0.05. The  $R^2 = 0.759$  indication that emotional trade-off, task complexity and preference uncertainty explain 75.95% of the variations in the willingness to use online recommendation agents (See table 25 to 27 for complete results).

*H1: Emotional trade-off difficulty in online purchase decisions positive influence a consumer's willingness to use a decision aid.*



A positive significant effect of emotional trade-off on willingness to use decision aid was observed ( $b = .391, t = 11.352, p < .001$ ). Therefore, H1 is supported with the conclusion that at a 95% significance level, emotional trade-off difficulty in online purchase decisions positive influence a consumer's willingness to use a decision aid. For instance, a participant who reports a fair level of emotional stress giving up safety to save money is more likely to use the recommendation agent in making a decision. However, a participant who reports a slight level of emotional stress giving up safety to save money is less likely to use the recommendation agent in making a decision.

*H2: Task complexity in online purchase decision positively influence a consumer's willingness to use a decision aid.*

A positive significant effect of task complexity on willingness to use decision aid was observed ( $b = .365, t = 11.593, p < .001$ ). Therefore, H2 is supported with the conclusion that at a 95% significance level, task complexity in online purchase decisions positive influence a consumer's willingness to use a decision aid. A participant who finds the task simple would not be willing to use the recommendation agent compared to a customer who reports the task being complex.

*H3: Preference uncertainty in online purchase decisions positively influences a consumer's willingness to use a decision aid.*

A positive significant effect of preference uncertainty on willingness to use decision aid was observed ( $b = .458, t = 15.657, p < .001$ ). H3 is supported with the conclusion that at a 95% significance level, preference uncertainty in online purchase decisions positively influences a consumer's willingness to use a decision aid. A consumer who feels certain about their preferences are not likely to use the recommendation agent compared to those who report high levels of uncertainty.

The last three hypotheses were tested using multiple linear regression with time pressures are the interaction with the independent variables. Similarly, the assumptions of the regression model were satisfied (see table 28 to 30 and figure 4 and 5). Table 5 shows a summary of the model.

**Table 5***Effect on Willingness to use recommendation agent controlling for time pressure*

Coefficient	Beta	t-statistic	p-value
(Constant)	-1.789	-4.110	.000
Time Pressure	0.656	4.488	.000
Emotional trade-off	0.488	6.252	.000
Task Complexity	0.546	6.076	.000
Preference Uncertainty	0.304	4.351	.000
Time pressure x emotional trade- off	-0.066	-2.169	.031
Time pressure x task complexity	-0.038	-1.499	.136
Time pressure x preference uncertainty	0.003	.122	.903

---

$F(7, 192) = 173.485, p < .001. R^2 = 0.863$

From table 5 after controlling for time pressure the independent variables account for 86.3% of variations in willingness to use online recommendation agents to make a purchase decision.

*H4: The effect of emotional trade-off difficulty on consumers' willingness to use an RA is higher when time pressure is higher.*

The parameter estimates for the interaction between time pressure and emotional trade-off is ( $b = -0.066, t = -2.169, p = .031$ ). The estimate is statistically significant indicating that as time increases, the effect of emotional tradeoff on willingness to use the RA increases. Therefore, the hypothesis of significant effect of emotional trade-off difficulty on consumers' willingness to use RA is supported. Figure 4 shows the interaction plot.

Figure 4: Interaction between Time Pressure and Emotional Trade-off

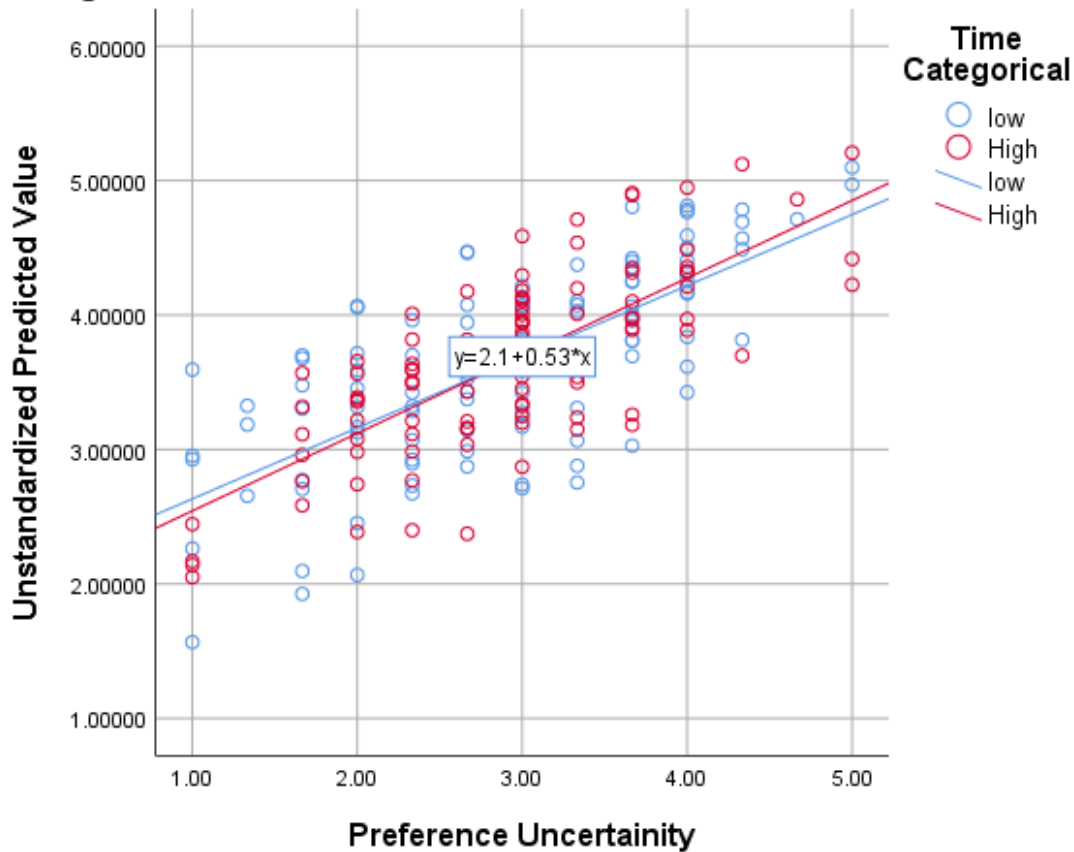


The hypothesis is supported at 95% levels of confidence since the p-value is less than .01. The beta estimate for the interaction term is  $-0.066$  ( $t = -2.169$ ),  $p = .031$ . The relationship is inverse as expected, but moderate since its estimate is slightly less than  $-0.1$ .

*H5: The effect of preference uncertainty on consumers' willingness to use RA is higher when time pressure is higher.*

The slope estimates for the interaction between time pressure and preference uncertainty while controlling for time pressure is ( $b = -0.038$ ,  $t = -1.499$ ,  $p = .136$ ). The estimate is statistically insignificant at a 95% confidence level, an indication that preference uncertainty is not moderated by time pressure but statistically significant on the willingness to use the RA has a significant effect on RA ( $b = 0.304$ ,  $t = 4.351$ ,  $p < .001$ ). Moreover, the coefficient is positive indicating that high preference uncertainty increases willingness to use the RA by an average of .304. Figure 5 shows plot of the interaction.

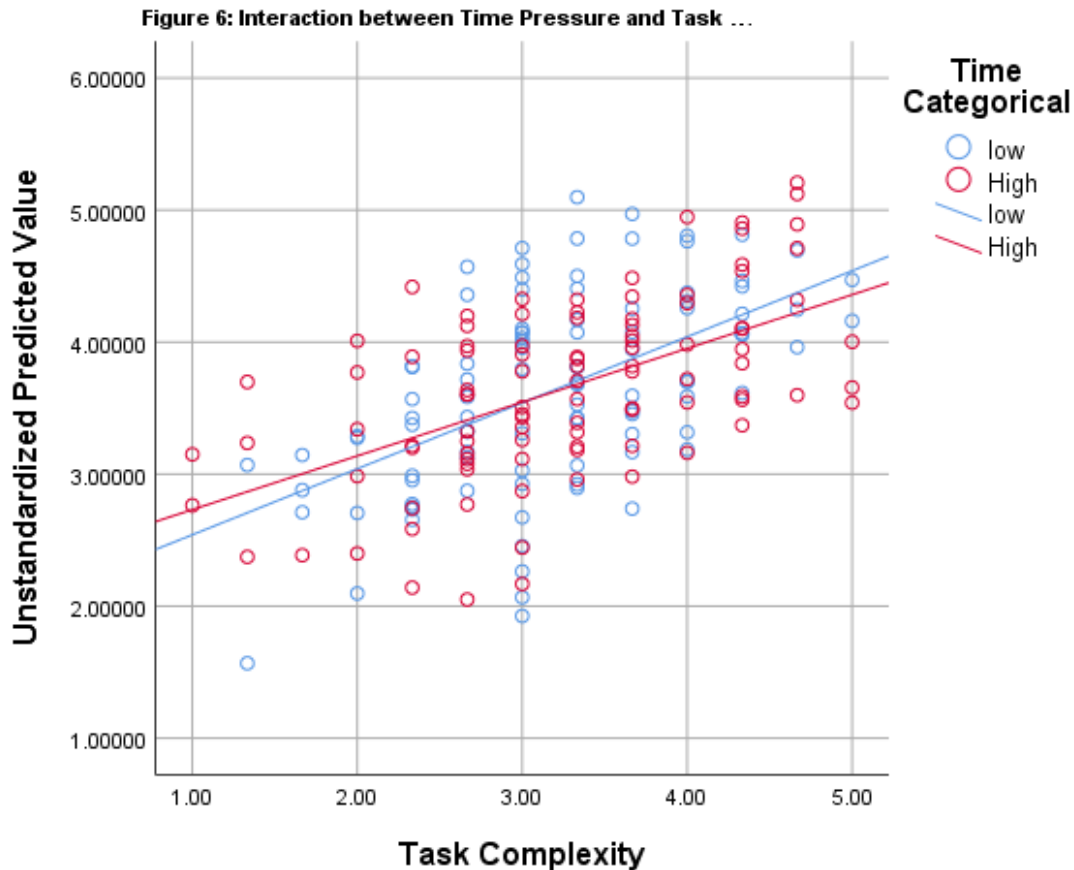
Figure 5: Interaction between Time Pressure and Preference Uncertainty



Similar to the beta estimate the plot does not show significant interaction effect between time pressure and preference uncertainty.

*H6: The effect of task complexity on consumers' willingness to use RA is higher when time pressure is higher.*

The slope estimates for the interaction between time pressure and task complexity while controlling for time pressure is ( $b = 0.003, t = .122, p = .903$ ). The estimate is statistically insignificant at a 95% confidence level, an indication that task complexity is not moderated by time pressure but statistically significant on the willingness to use the RA has a significant effect on RA ( $b = 0.546, t = 6.076, p < .001$ ). Moreover, the coefficient is positive indicating that high increased task complexity increases willingness to use the RA by an average of .546. Figure 6 shows plot of the interaction.



Contrary to the beta estimate which was insignificant the interaction plot in figure 6 shows a significant effect.

## 5. Discussion

### 5.1 General Discussion

There has been a gradual introduction of virtual assistants for the adoption by consumers to assist them in making decisions. The recommendation of the virtual assistants is due to the belief that they can help in the faster recommendation of certain choices or rejection of other choices. Therefore, this study performed various analyses to measure how various factors influence the consumers' adoption of IT. Some of the factors considered in the study included preference uncertainty, emotional trade-off difficulty, and task complexity. It established that the previous studies had primarily aimed at finding the accuracy of the decision aids. Instead, this study focused on understanding the willingness of the consumers to use the decision aids. In consistent with previous research, which suggests that the purpose of using decision aids is

to reduce cognitive effort while improving search quality (Broniarczyk & Griffin, 2014). Therefore, decision aids can help customers make better decisions when they are faced with a difficult choice. All in all, participants who had more trouble making a decision were shown to be much more willing to use a decision aid, as anticipated. This research was carried out to find out the consumer willingness to use RA when doing an online purchase under task complexity, preference uncertainty, and decision difficulty, and time pressure as a moderating factor.

## **5.2 Emotional Trade-off Difficulty on Choice**

There have been several attempts to investigate the willingness of the consumers to make trade-offs between various factors, which are brand, quality, and price. The previous researchers have carried out measurements on trade-off consumers and their willingness to make a choice on which products to buy considering price, quality, and brand. According to Green et al., (1991), consumer trade-offs can be assessed through conjoint methodologies. Coping with emotional trade-off difficulty may lead to different choice patterns which may complicate the standard measures interpretation. Traditionally, it is assumed that consumers are willing and able to make trade-offs at all times under conflicting circumstance. However, this assumption of decision-making behavior has been rejected by past researchers decades ago (Johnson, Payne, and Bettman 1992; Simon 1995). Consumers have been avoiding trade-offs most often especially the most difficult ones. The recent research has been focusing on the explanation on how to avoid trade-offs (Johnson, Payne, and Bettman 1992; Simon 1995). However, another argument is that consumer emotions can also contribute to some certain trade-offs.

This research conducted the study to establish the impact of emotional trade-off difficulty on the willingness to apply decision aid among consumers making an online purchase. Based on the hypothesis testing, the study established a strong positive correlation between emotional trade-off difficulty and the willingness of consumers to use the decision aid in online purchase. The findings confirmed that consumers who purchase items through online platforms are willing to use decision aids since they undergo an essential amount of emotional trade-off difficulty in making purchase decisions. Consumers encounter a hard time choosing the right products from online shops due to different features. For example, consumers would develop high mental challenges when deciding between purchasing a cheap smartphone but having a battery that lasts over a short period and an expensive smartphone with better battery life (Payne et al., 1993). However, the possibility of having a long-lasting battery for the phone might

prompt the consumer to opt for the more expensive phone. Such decisions are never easy, and they might create an essential emotional trade-off that requires decision aid.

The study further reviewed the impact of emotional trade-off difficulty in using decision aids when consumers are under high time pressure. High time pressure means that the clients need to make the decision quickly on which item to purchase. Therefore, it was necessary to establish how time pressure impacts emotional trade-off difficulty on the willingness of the buyers to use recommendation agents. This study found that emotional trade-off difficulty had a strong correlation with time pressure. Meaning that emotional trade-off is moderated by time pressure and the willingness of consumers to use RA when time pressure is high also increases. It meant that when consumers are having decision difficulty to purchase under high time pressure, they would prefer to use the RA.

### **5.3 Task Complexity**

The past literatures have reported evidence suggesting that there are many factors that leads someone to decision making. For example, being specific on a particular product or brand, and even time pressure, which makes it complex for a consumer to make a quick decision. Task complexity is the difficulty in deciding on the product to purchase when buying from an online platform (Payne, 1976). JDM literature focused on finding the evidence on compensatory and non-compensatory strategy utilization as task complexity by decision makers (Bettman 1970; Payne 1976; Russo and Doshier 1983; Lynch 1981; Ball 1997). JDM literature satisfied that consumers make their choices based on many different factors, due to complexity to make a choice. On the contrary, this study was conducted to establish the relationship between task complexity and consumer willingness to use decision aid when deciding on which item to buy. When there are several options for the consumer, choosing the best product from the choices is always complex. Besides, consumers might have to apply complex information processing techniques to arrive at the preferred choice. The complexity of these dimensions could prompt the need for recommendation agents, or decision aid to assist in decision-making.

The analysis on the test showed a positive correlation between task complexity and the willingness to use decision aid. This shows that online buyers would use recommendation agents to ease task complexity during online purchase. The tests on the decision difficulty established that buyers' willingness to apply decision aids when making online purchases had a strong relationship with task complexity in the decision process. Another test was carried out

to determine the relationship between task complexity on the willingness of consumers to apply decision aids when they are under higher time pressure. Results further showed a positive correlation suggesting that consumers would prefer to use the decision aid when they are under time pressure to buy items that require complex choice techniques. However, there was a strong negative correlation between task complexity and time pressure. Meaning that, time pressure had no influence on the consumers to use recommendation agent when facing complexity. This can be argued that both time pressure and task complexity can independently influence consumers to apply the use of decision aid and so no interaction is expected to occur between the two.

Time pressure and task complexity are likely to have a combined influence on decision aid dependence, as the former stimulates the consumer to rely on a decision aid in order to be more effectual, while the latter motivates the consumer to rely on a decision aid in order to be more actual. According to Byström and Järvelin (Byström & Järvelin, 1995), when a task's complexity grows, people seek for additional resources to assist them in completing it. When consumers are faced with completing a complex activity under time constraints, especially when they are facing a real life web based shopping experience, they are likely to seek assistance, such as a recommendation agent, due to the increased pressure generated by the perceived time constraints and the cognitive overload created by the perceived task complexity. Therefore, in a real-world purchasing situation where consumers are constantly confronted with difficult decision-making situations while under time limitations, they will depend on recommendation agents to enhance their efficiency and performance. Likewise, the consumers are still willing to apply the use of recommendation agent when facing task complexity. It can be concluded that time pressure and task complexity can both influence the willingness of the consumers to apply the use of decision aid independently and so no interaction is expected to occur between the two.

#### **5.4 Preference Uncertainty**

Previous literatures have stated that consumers who make decision to purchase an item when they are not certain is a risk taking. There is a possibility that the items bought under uncertainty may not satisfy the need of the buyer due to luck of preference. The extent to which a consumer is uncertain over a probability is ambiguity (Knight, 1921; Ellsberg, 1961). The ambiguity test has been carried out in past literatures focusing on some specific task both unknown and known



probabilities, which is always hard to understand without explanation. Accurate results have been produced from this method. However, due to complexity of this task, it is impractical to largely scale them out to understand the consumer decision making behavior (Schroder, D; Cavatorta, E, 2019). On the contrary, this research conducted an analysis to determine the relationship between preference uncertainty and consumer willingness to use decision aid when doing an online purchase. The test reported a strong correlation to conclude that preference uncertainty in online purchase impacted the willingness of the consumers to apply decision aid. It meant that consumers under high preference uncertainty had the highest willingness to apply the recommendation agents during online purchase.

The study further carried out a test to find the relationship between preference uncertainty and the willingness to use decision aid when under high time pressure. Results showed a positive correlation between preference uncertainty and the willingness of the consumers to apply decision aid when the time pressure is high. Meaning that consumers are willing to use recommendation aid to purchase when they are under high time pressure. However, there was no correlation between preference uncertainty and time pressure. It meant that customers without any preferred choice of the product during online purchase would be highly willing to use decision aid to assist them in choosing the products with or without time pressure. It can be argued that preference uncertainty can independently influence the consumers to apply the use of recommendation aid without a moderator and therefore, no interaction is expected to occur between preference uncertainty and time pressure. It also makes sense to assume that time pressure added to the lack of preference is a strong factor that prompts the shoppers to apply recommendation agents. In such occasions, consumers facing difficulties to decide on their preferred options, especially when they have to choose from a large assortment size of alternatives. Consumer preference portrays consumers subjective desires immediately, and the outcome of consumers' personal desires frequently influences customers' choices instantly. Therefore, it is a natural consequence for buyers under preference uncertainty to apply the use of decision aids. However, the negative correlation between preference uncertainty and time pressure as the latter does not influence consumer's willingness to use recommendation agents due to the direct interaction between preference uncertainty and the willingness to use decision aid, meaning that consumers are willing to use decision aid even without time limitations.

## **5.5 Managerial Implications**

The study findings avail essential insights that can enable managers to improve the decision-making process for consumers who shop through online platforms. There was overwhelming support for the willingness among the consumers to apply recommendation agents when purchasing items from online shops. The study found that consumers under emotional trade-off difficulty, task complexity and those under preference uncertainty will opt for decision aids to enable them to purchase the products online. The study found that RA would assist the consumers in overcoming the challenges associated with both decision difficulty and time pressure in online shopping. Therefore, managers can develop significant types of decision aids that meet the demands of the consumers that purchase from the online platform.

Further, the study found that this report would be useful for many online vendors who need to understand the best ways to assort their products. Consumers could face difficulty choosing the products based on factors such as emotional trade-offs or preference uncertainty. The best in which the managers can help these clients is to improve specifications for their products so that consumers can sort them faster during online purchase and decide to buy. Products that provide detailed information to the buyers are likely to record higher sales since they will eliminate the decision difficulty that the majority of the consumers face during online shopping. Besides, the provision of clear features of the products will save time for the consumers during online purchases and allow the clients to decide on the goods to buy quickly. Further, managers can introduce new features in the websites that assist consumers in choosing the products so that they would not suffer from decision difficulty.

## **5.6 Limitations of the Study**

The first limitation of this study was the use of a fictitious website as it failed to provide the respondents with the clear features that consumers find when purchasing online. The fictitious online shop failed to provide the interviewees with the shopping environment that they would witness in the actual online store to enable them to experiment with their real shopping environment. Therefore, the shopping choices recorded by the consumers in the survey could have been fictitious too, as the respondents understood that it was online for the study purposes. It shows that the result would have been difficult when the consumers underwent the shopping experience where they face the challenges of choice difficulty (Thomas et al., 2017).

Another limitation of this study was the assortment size of the smartphones which consumers attempted to purchase from the online store. Consumers are provided with several choices ranging to hundreds that require an extremely large amount of time in the real situation. In such cases, consumers may not have the time to read every listed feature of the product to purchase. Respondents might have found it quite difficult in making a choice on which phone to buy within the shortest time possible. The research must provide the true experience that consumers are likely to witness during online shopping.

The use of a Likert scale as a measure to collect data may have been a problem to some of the respondents due to ambiguity and lack of understanding. It is therefore assumed that most of the respondents may have given their choices on willingness to purchase for the sake of fulfilling the requirement and not because they understood what they were doing or what they wanted to purchase. In addition, there was a large number of respondents of about 300, of which 250 respondents agreed to participate in the interview and were issued the questionnaire, out of 250, only 226 respondents were received back. Meaning, the remaining 24 respondents did not answer the questionnaire. The assumption might be that the remaining 24 respondents did not understand anything to do with online purchasing, or which choice to take in the scale, thus they opt not to proceed. Finally, another limitation can be that the failure of other respondents to send back their questionnaires, is because there was no a motivation factor like payment to facilitate a quick data collection.

### **5.7 Suggestions for Further Research**

The first suggestion made in this report based on the findings is that future research should consider examining consumers' experience based on the experience from the real websites. It is necessary to take participants through purchase in the real websites to ensure that they represent the opinion of the people that would buy from the stores. Otherwise, the issue would remain different as consumers could respond contrary to the real experience.

There is also the need to take respondents through the online purchase procedure so they can relate it to how they do their daily shopping and what they do consider when doing shopping in a daily life. It is easier for the respondent to have clarity on which choice in the scale reflect their way of shopping after understanding the method thus leading them to give a correct feedback, or to change their perspective on some of the things to consider when purchasing an online item.

## 5.8 Conclusion

Decision aids are essential factors in the purchase decision. They help consumers make quality choices when buying various products and reduce the difficulty that customers undergo in the choice-making process. Decision aids have received recognition as a highly valuable tool that consumers require when purchasing to make good choices promptly. At times, consumers undergo a highly difficult process of making choices when they purchase goods. This difficulty might complicate things, leading to poor-quality products as consumers get confused and exhausted by the long process, thus consumer needs to take some important factors into consideration when doing an online purchase under emotional trade-off difficulty, task complexity, preference uncertainty, and time pressure. From the result analysis of this research, consumers can make good use of recommendation agent and decision aid to ease their choice complexity when making a choice to purchase online under any condition. The willingness of the consumer to purchase a product under these conditions depends on the customer's taste and preference, prices, quality, and the consumers frequent interactions with the product that gives them a clear idea of how the product works. The decision aid will enable the consumer to make a faster decision during the purchase process, since it provides consumers with the list of qualities to review before deciding on the product to purchase hence, it leads to a significant emotional challenge among the buyers to decide on the best quality when they have contradicting features. The decision aid will be necessary for the buyers to avoid the decision difficulty and make a quick decision to purchase.

Time pressure is another factor that impact consumer's willingness to use recommendation agents and decision aids when purchasing an item online under emotional trade-off difficulty, task complexity, and preference uncertainty. However, it is an indication that time pressure has no interaction with task complexity, and preference uncertainty, since the two independent variables can independently influence the consumers to use recommendation agent without a moderator. From the analysis, it is therefore necessary to say that clients would be willing to apply decision aids and recommendation agents when they are under emotional trade-off difficulty, task complexity, and preference uncertainty while purchasing items online. Time pressure refers to when a consumer needs to purchase items and has a short time to decide on the item to purchase from the available option. Hence, the time restriction would prompt consumers to seek recommendation agent in deciding on which item to buy.

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## Appendix

Table 6	
<i>Emotional Trade-off</i>	
<b>Prompt</b>	<b>Source</b>
E1: How negatively emotional (stressful) do you think it would be for you to give up safety in order to save money?  1(Not at all) to 5(Extremely stressful)	(Wang & Benbasat, 2009)
<b>Prompt</b>	<b>Source</b>
E2: Safety was a significant priority while making the decision?	(Nguyen & Ayda, 2014)
E3: Saving money was not a major factor in my purchase decision	(Nguyen & Ayda, 2014)
E4: I felt emotionally stressed while making the decision	(Jun & Yeo , 2012)
<i>Note: E2-E4 Likert scale - 1(Strongly disagree) to 5 (Strongly agree)</i>	
Table 7	
<i>Time pressure</i>	
T1: I felt pressured when making this decision	(Inbar, Botti, & Hanko, 2011) (Godinho, Prada, & Garrido, 2016)
T2: I would need more time to make a similar decision in the future	(Hanselmann & Tanner, 2008)
T3: The task was overwhelming	(Stanton & Paolo, 2012)
T4: For me choosing a phone was not simple and direct	(Pereira , 2000)
T5: I would ponder for a long time on this decision.	(Hanselmann & Tanner, 2008)
<i>Note: Likert scale - 1(Strongly disagree) to 5 (Strongly agree)</i>	
Table 8	
<i>Preference Uncertainty</i>	
<b>Prompt</b>	<b>Source</b>
P1: How certain are you of your choice?  1(Very uncertain) to 7 (Very certain)	(Champ, Bishop , Brown, & McCollum, 1997)
P2: I feel very confident about my decision	(Nepal, 2020)
P3: The choices presented aligned with my preference on phones	(Hanselmann & Tanner, 2008)
<i>Note: P2-P4 Likert scale - 1(Strongly disagree) to 5 (Strongly agree)</i>	

**Table 9***Task Complexity*

C1: I found this task to be:  1(Very complex) to 5(Very simple)	(Chen, et al., 2011)
C2: Completing the task using the scenario was straight forward	(Pereira , 2000)
C3: I could imagine myself doing the things described in this scenario	Vos (1993)

*Note:* C2-C3 Likert scale - 1(Strongly disagree) to 5 (Strongly agree)

**Table 10***Willingness*

Prompt	Source
W1: I am willing to use this recommendation agent to help me with my decision about which mobile phone to buy	(Benbasat & Wang, 2005)
W2: Using this this recommendation agent did not enable me to find a suitable phone more quickly	(Wang & Benbasat, 2013)

*Note:* Likert scale - 1(Strongly disagree) to 5 (Strongly agree)

**Table 11***Condition*

		Frequency	Percent t	Valid Percent	Cumulative Percent
Valid	Low time pressure x high decision difficulty	50	25.0	25.0	25.0
	Low time pressure x low decision difficulty	50	25.0	25.0	50.0
	high time pressure x high decision difficulty	50	25.0	25.0	75.0
	high time pressure x low decision difficulty	50	25.0	25.0	100.0
	Total	200	100.0	100.0	

**Table 12***Gender Distribution*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	94	47.0	47.0	47.0
	Female	101	50.5	50.5	97.5

	Non-binary/ third gender	5	2.5	2.5	100.0
	Total	200	100.0	100.0	

**Table 13**

*Age group*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Under 18	1	.5	.5	.5
	18 - 24	89	44.5	44.5	45.0
	25 - 34	86	43.0	43.0	88.0
	35 - 44	20	10.0	10.0	98.0
	45 - 54	4	2.0	2.0	100.0
	Total	200	100.0	100.0	

**Table 14**

*Nationality*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Dutch	75	37.5	37.5	37.5
	Other country in Europe	97	48.5	48.5	86.0
	Other country outside of Europe	28	14.0	14.0	100.0
	Total	200	100.0	100.0	

**Table 15**

*Highest level of education*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	High school graduate	4	2.0	2.0	2.0
	Some college, no degree	7	3.5	3.5	5.5
	Bachelor Degree	86	43.0	43.0	48.5
	Master Degree	102	51.0	51.0	99.5

PhD	1	.5	.5	100.0
Total	200	100.0	100.0	

**Table 16**  
*Descriptive Statistics*

	N	Minimum	Maximum	Mean	Std. Deviation
Task Complexity	200	1.00	5.00	3.2800	.82089
Emotional trade-off	200	1.75	5.00	4.0450	.76462
Time Pressure	200	1.00	5.00	3.0120	1.03887
Preference Uncertainty	200	1.00	5.00	2.9533	1.10025
Willingness	200	1.00	5.00	2.6225	1.16427
Valid N (listwise)	200				

**Table 17**  
*Group Statistics*

	Time Condition	N	Mean	Std. Deviation	Std. Error Mean
Time Pressure	Low	100	2.0300	.32208	.03221
	High	100	3.9940	.34284	.03428

**Table 16**  
*Independent Samples Test for time condition*

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Willingness	Equal variances assumed	2.135	.146	37.549	198	.000	2.17500	.05792	2.0607	2.2892
	Equal variances not assumed			37.549	197.834	.000	2.17500	.05792	2.0607	2.2892

**Table 18**  
*Group Statistics for decision difficulty condition*

	Decision Condition	N	Mean	Std. Deviation	Std. Error Mean
--	--------------------	---	------	----------------	-----------------



Willingness	$\geq 2.00$	150	2.9900	1.10136	.08993
SS	$< 2.00$	50	1.5200	.40356	.05707

**Table 18**

*Independent Samples Test for decision difficulty condition*

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Willingness	Equal variances assumed	72.103	.000	9.2	198	.000	1.4700	.15942	1.1556	1.7843
	Equal variances not assumed			13.	196.	.000	1.4700	.10651	1.2599	1.6800
				21			0		1	9
				802	342		0		6	4

**Table 19**

*KMO and Bartlett's Test*

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.799
Bartlett's Test of Sphericity	Approx. Chi-Square	1866.768
	df	136
	Sig.	.000

**Table 20**

*Anti-image Matrices*

	Emotional 1	Emotional 2	Emotional 3	Emotional 4	Time 1	Time 2	Time 3	Time 4	Time 5	Uncertainty 1	Uncertainty 2	Uncertainty 3	Complexity 1	Complexity 2	Complexity 3	Willingness 1	Willingness 2	
Anti-image Covariance	1																	
	Emotional	.532	-.181	-.043	-.053	-.001	-.005	-.011	-.049	.035	-.027	-.011	-.007	-.018	-.009	.015	.022	-.004
	Emotional	-.181	.382	-.144	-.035	-.021	.015	.046	.021	.009	.029	-.009	-.017	-.031	.026	.023	-.020	-.010
	Emotional	-.043	-.144	.324	-.196	.033	.015	-.020	.002	-.007	.009	-.018	.016	-.017	.000	.008	.000	-.009
	Emotional	-.053	-.035	-.196	.410	-.035	.007	.027	.006	-.065	-.026	.026	-.016	.032	-.043	.021	-.007	.027

	Time 1	-.001	-.021	.033	-.035	.392	-.037	-.115	-.026	-.020	.014	.012	-.006	.001	-.058	.042	-.034	-.070
	Time 2	-.005	.015	.015	.007	-.037	.455	.016	-.041	-.006	-.026	.004	-.023	.044	-.066	.015	-.073	-.079
	Time 3	-.011	.046	-.020	.027	-.115	.016	.431	-.031	-.055	.010	-.040	-.005	.002	-.013	.025	-.073	-.020
	Time 4	-.049	.021	.002	.006	-.026	-.041	-.031	.378	.008	.003	.009	.026	-.050	.033	.009	-.092	-.068
	Time 5	.035	.009	-.007	-.065	-.020	-.006	-.055	.008	.432	.061	-.002	-.045	-.001	.003	-.039	-.057	-.095
	Uncertainty 1	-.027	.029	.009	-.026	.014	-.026	.010	.003	.061	.465	-.231	-.167	.024	.023	-.033	-.004	-.011
	Uncertainty 2	-.011	-.009	-.018	.026	.012	.004	-.040	.009	-.002	-.231	.467	-.164	-.005	-.044	.016	.009	-.009
	Uncertainty 3	-.007	-.017	.016	-.016	-.006	-.023	-.005	.026	-.045	-.167	-.164	.558	-.042	.007	.024	.003	.009
	Complexity 1	-.018	-.031	-.017	.032	.001	.044	.002	-.050	-.001	.024	-.005	-.042	.578	-.162	-.196	.008	-.003
	Complexity 2	-.009	.026	.000	-.043	-.058	-.066	-.013	.033	.003	.023	-.044	.007	-.162	.512	-.229	.013	.039
	Complexity 3	.015	.023	.008	.021	.042	.015	.025	.009	-.039	-.033	.016	.024	-.196	-.229	.492	-.022	-.004
	Willingness 1	.022	-.020	.000	-.007	-.034	-.073	-.073	-.092	-.057	-.004	.009	.003	.008	.013	-.022	.246	-.060
	Willingness 2	-.004	-.010	-.009	.027	-.070	-.079	-.020	-.068	-.095	-.011	-.009	.009	-.003	.039	-.004	-.060	.241
Anti-image	Emotional	.832 <sup>a</sup>	-.402	-.105	-.113	-.002	-.010	-.024	-.109	.073	-.054	-.023	-.012	-.033	-.017	.030	.061	-.012
Correlation	1																	
	Emotional	-.402	.779 <sup>a</sup>	-.410	-.088	-.055	.037	.114	.055	.023	.068	-.022	-.036	-.066	.059	.052	-.064	-.032
	2																	
	Emotional	-.105	-.410	.745 <sup>a</sup>	-.537	.092	.040	-.054	.006	-.020	.023	-.047	.039	-.039	-.001	.021	-.001	-.033
	3																	
	Emotional	-.113	-.088	-.537	.765 <sup>a</sup>	-.088	.015	.065	.016	-.154	-.060	.060	-.034	.066	-.094	.048	-.022	.084
	4																	
	Time 1	-.002	-.055	.092	-.088	.924 <sup>a</sup>	-.086	-.280	-.067	-.048	.032	.027	-.013	.002	-.128	.096	-.110	-.226
	Time 2	-.010	.037	.040	.015	-.086	.932 <sup>a</sup>	.036	-.098	-.013	-.056	.008	-.046	.085	-.137	.033	-.217	-.238
	Time 3	-.024	.114	-.054	.065	-.280	.036	.924 <sup>a</sup>	-.076	-.126	.023	-.088	-.011	.005	-.027	.054	-.224	-.064
	Time 4	-.109	.055	.006	.016	-.067	-.098	-.076	.925 <sup>a</sup>	.020	.007	.020	.058	-.108	.076	.022	-.302	-.227
	Time 5	.073	.023	-.020	-.154	-.048	-.013	-.126	.020	.917 <sup>a</sup>	.135	-.005	-.091	-.002	.006	-.084	-.173	-.296
	Uncertainty 1	-.054	.068	.023	-.060	.032	-.056	.023	.007	.135	.681 <sup>a</sup>	-.495	-.328	.047	.048	-.070	-.012	-.034
	Uncertainty 2	-.023	-.022	-.047	.060	.027	.008	-.088	.020	-.005	-.495	.699 <sup>a</sup>	-.322	-.009	-.089	.034	.025	-.028
	Uncertainty 3	-.012	-.036	.039	-.034	-.013	-.046	-.011	.058	-.091	-.328	-.322	.763 <sup>a</sup>	-.074	.014	.047	.009	.026

Complexit	-.033	-.066	-.039	.066	.002	.085	.005	-.108	-.002	.047	-.009	-.074	.715*	-.297	-.368	.021	-.007
y 1																	
Complexit	-.017	.059	-.001	-.094	-.128	-.137	-.027	.076	.006	.048	-.089	.014	-.297	.661*	-.456	.037	.110
y 2																	
Complexit	.030	.052	.021	.048	.096	.033	.054	.022	-.084	-.070	.034	.047	-.368	-.456	.675*	-.063	-.013
y 3																	
Willingnes	.061	-.064	-.001	-.022	-.110	-.217	-.224	-.302	-.173	-.012	.025	.009	.021	.037	-.063	.909*	-.247
s 1																	
Willingnes	-.012	-.032	-.033	.084	-.226	-.238	-.064	-.227	-.296	-.034	-.028	.026	-.007	.110	-.013	-.247	.901*
s 2																	

a. Measures of Sampling Adequacy(MSA)

**Table 21**  
*Communalities*

	Initial	Extraction
Emotional 1	.468	.566
Emotional 2	.618	.744
Emotional 3	.676	.780
Emotional 4	.590	.719
Time 1	.608	.628
Time 2	.545	.548
Time 3	.569	.579
Time 4	.622	.657
Time 5	.568	.594
Uncertainty 1	.535	.682
Uncertainty 2	.533	.682
Uncertainty 3	.442	.531
Complexity 1	.422	.535
Complexity 2	.488	.604
Complexity 3	.508	.675
Willingness 1	.754	.815
Willingness 2	.759	.819

Extraction Method: Principal Axis Factoring.

**Table 22**  
*Rotated Factor Matrix<sup>a</sup>*

	Factor				
	1	2	3	4	5

Emotional 1		.710		
Emotional 2		.846		
Emotional 3		.869		
Emotional 4		.789		
Time 1	.791			
Time 2	.733			
Time 3	.757			
Time 4	.796			
Time 5	.744			
Uncertainty 1			.824	
Uncertainty 2			.822	
Uncertainty 3			.724	
Complexity 1				.724
Complexity 2				.771
Complexity 3				.813
Willingness 1				.902
Willingness 2				.902

Extraction Method: Principal Axis Factoring.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

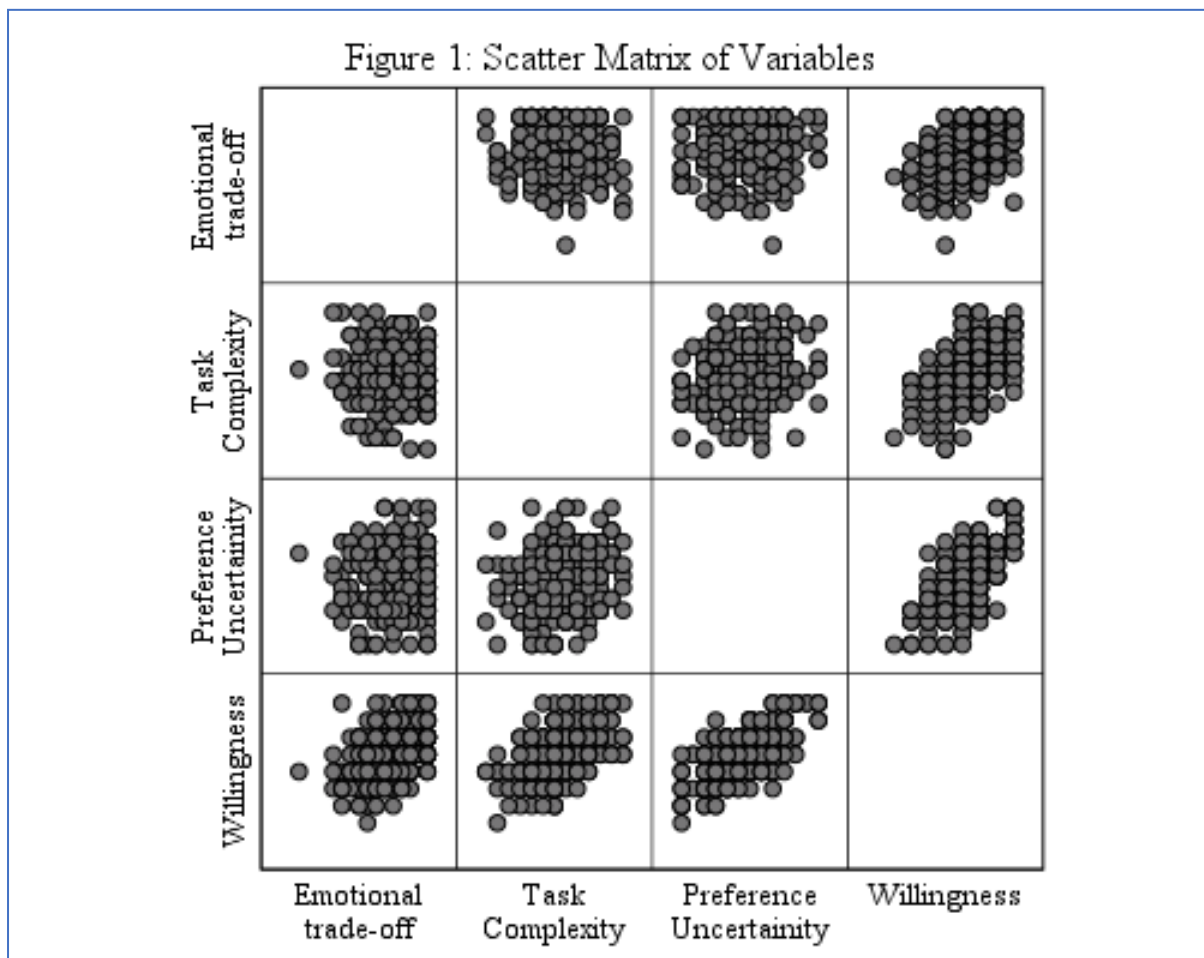
**Table 23**

*Total Variance Explained*

Factor	Initial Eigenvalues			Extraction Sums of Squared			Rotation Sums of Squared		
	Total	% of Variance	Cumulative %	Loadings			Loadings		
				Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.885	28.735	28.735	4.563	26.838	26.838	4.555	26.793	26.793
2	3.000	17.646	46.381	2.703	15.901	42.740	2.639	15.521	42.314
3	2.347	13.807	60.188	1.975	11.618	54.358	1.907	11.220	53.534
4	2.028	11.932	72.121	1.654	9.727	64.085	1.790	10.528	64.061
5	.621	3.655	75.776	.263	1.548	65.634	.267	1.572	65.634
6	.527	3.100	78.876						
7	.499	2.935	81.810						
8	.443	2.606	84.416						
9	.415	2.440	86.856						
10	.364	2.141	88.997						
11	.337	1.982	90.979						
12	.334	1.963	92.942						
13	.321	1.887	94.829						
14	.273	1.608	96.437						

15	.216	1.271	97.708		
16	.206	1.212	98.920		
17	.184	1.080	100.000		

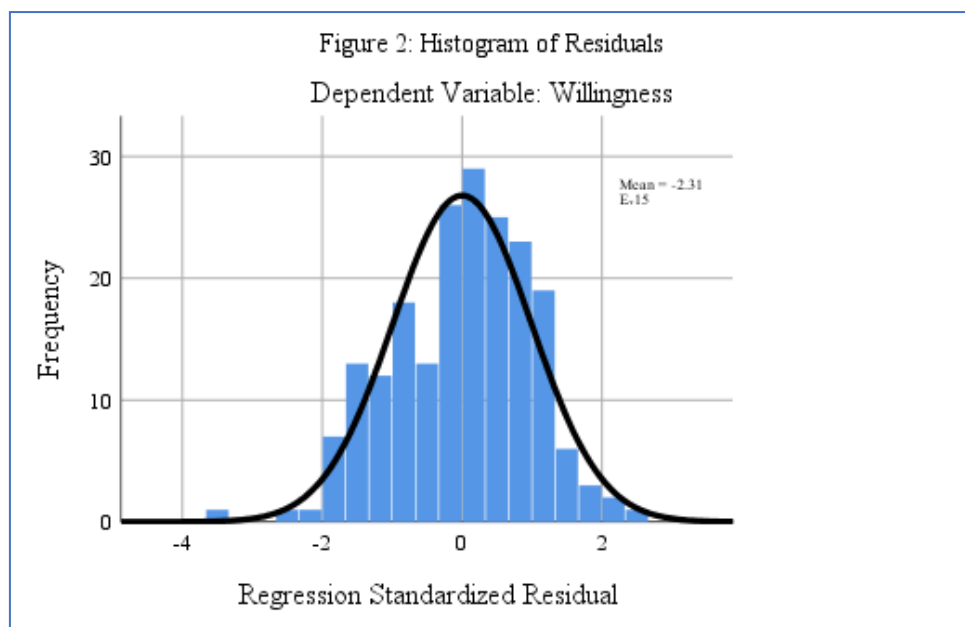
Extraction Method: Principal Axis Factoring.

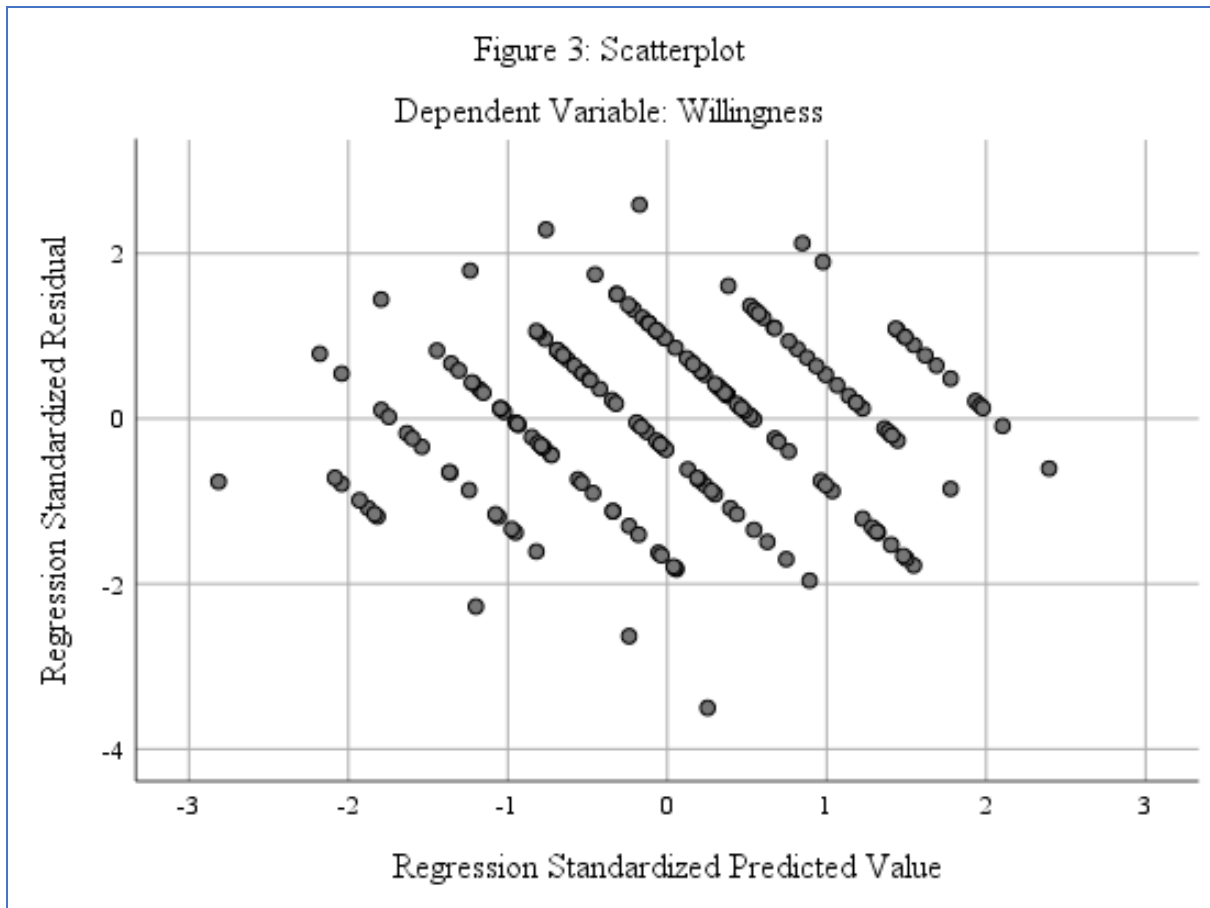


**Table 24**  
*Correlations*

		Emotion al trade- off	Task Complex ity	Preferenc e Uncertai nity	Willing ness
Emotional trade- off	Pearson	1	-.043	.076	.424**
	Correlation				
	Sig. (2-tailed)		.547	.287	.000
	N	200	200	200	200
Task Complexity	Pearson	-.043	1	.197**	.509**
	Correlation				
	Sig. (2-tailed)	.547		.005	.000
	N	200	200	200	200
Preference Uncertainty	Pearson	.076	.197**	1	.674**
	Correlation				
	Sig. (2-tailed)	.287	.005		.000
	N	200	200	200	200
Willingness	Pearson	.424**	.509**	.674**	1
	Correlation				
	Sig. (2-tailed)	.000	.000	.000	
	N	200	200	200	200

\*\* . Correlation is significant at the 0.01 level (2-tailed).





**Table 25**

*Model Summary*

Model	R	Adjusted R Square	Std. Error of the Estimate
1	.871 <sup>a</sup>	.756	.37460

a. Predictors: (Constant), Preference Uncertainty, Emotional trade-off, Task Complexity

**Table 26**

*ANOVA<sup>a</sup>*

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	86.792	3	28.931	206.174	.000 <sup>b</sup>
	Residual	27.503	196	.140		
	Total	114.295	199			

a. Dependent Variable: Willingness

b. Predictors: (Constant), Preference Uncertainty, Emotional trade-off, Task Complexity

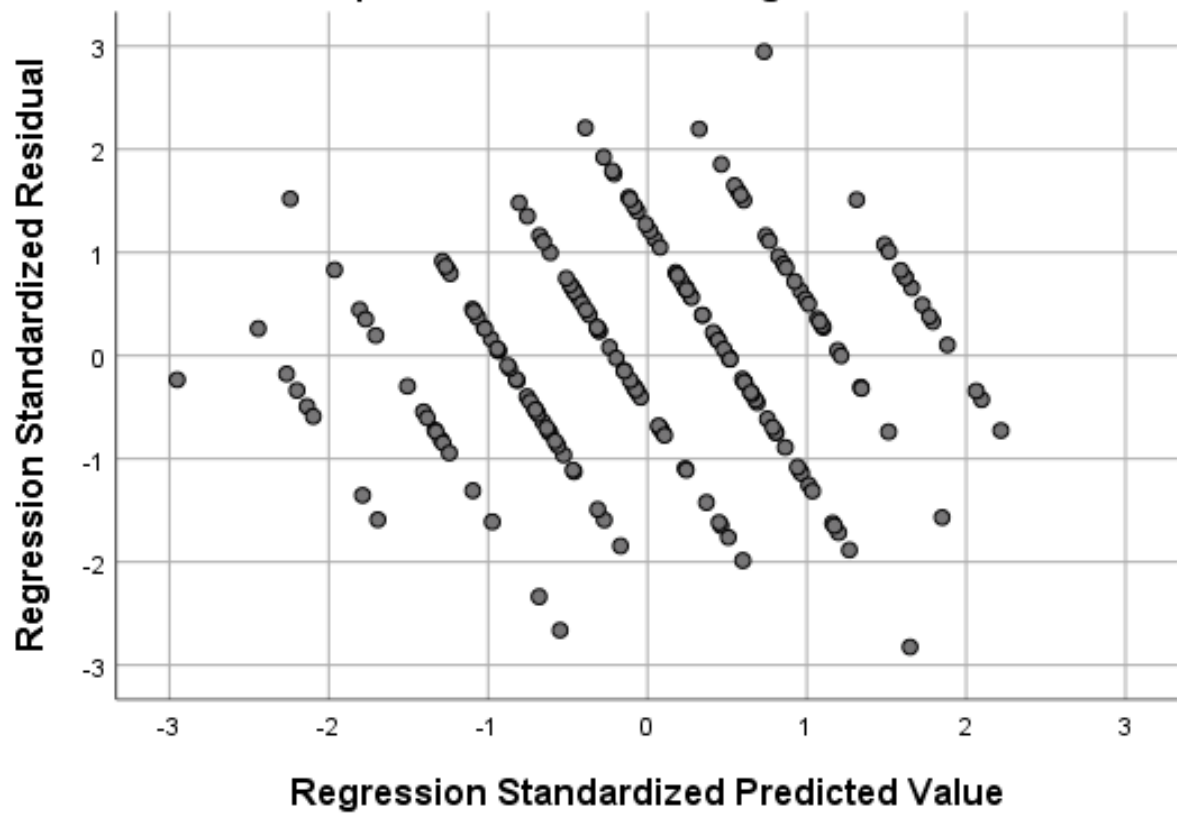
**Table 27**  
*Coefficients<sup>a</sup>*

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-.431	.183		-2.356	.019		
	Emotional trade-off	.391	.034	.400	11.353	.000	.991	1.009
	Task Complexity	.365	.031	.415	11.593	.000	.958	1.044
	Preference Uncertainty	.458	.029	.562	15.657	.000	.954	1.048

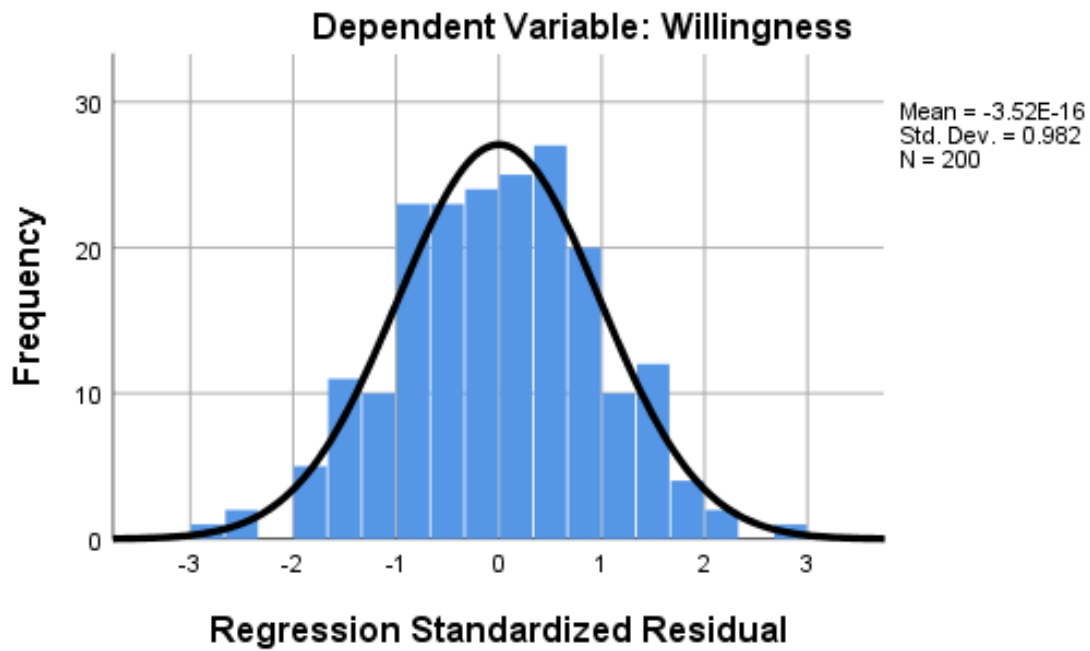
a. Dependent Variable: Willingness



**Figure 4: Scatterplot of residuals with control variable**  
**Dependent Variable: Willingness**



**Figure 5: Histogram of residuals with control variable**



**Table 28**

*Model Summary<sup>b</sup>*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.929 <sup>a</sup>	.863	.859	.28508

a. Predictors: (Constant), Time pressure x uncertainty, Emotional trade-off, Task Complexity, Preference Uncertainty, Time Pressure, Time pressure x complexity, Time pressure x trade- off

b. Dependent Variable: Willingness

**Table 29**

*ANOVA<sup>a</sup>*

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	98.692	7	14.099	173.485	.000 <sup>b</sup>
	Residual	15.603	192	.081		
	Total	114.295	199			

a. Dependent Variable: Willingness

b. Predictors: (Constant), Time pressure x uncertainty, Emotional trade-off, Task Complexity, Preference Uncertainty, Time Pressure, Time pressure x complexity, Time pressure x trade- off

**Table 30**  
*Coefficients<sup>a</sup>*

Model		Unstandardized		Standardized			Collinearity	
		Coefficients		Coefficients			Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	-1.789	.435		-4.110	.000		
	Time Pressure	.656	.146	.881	4.488	.000	.018	54.190
	Task Complexity	.488	.078	.555	6.252	.000	.090	11.090
	Emotional trade-off	.546	.090	.557	6.076	.000	.085	11.821
	Preference	.304	.070	.372	4.351	.000	.097	10.303
	Uncertainty							
	Time pressure x trade- off	-.066	.031	-.432	-2.169	.031	.018	55.929
	Time pressure x complexity	-.038	.025	-.220	-1.499	.136	.033	30.404
	Time pressure x uncertainty	.003	.022	.018	.122	.903	.033	30.558

a. Dependent Variable: Willingness

Dear Participants,

Thank you so much for taking part in this study. This survey will be utilized for my Master's thesis in marketing at Erasmus University in Rotterdam, which I am now focusing on. The findings will enhance the understanding of how choice difficulty interacts with and affects a consumer's willingness to use recommendation agents.

The research will last approximately 5 minutes to perform. All answers are anonymous, the data will remain confidential and will be used for research purposes only.

Your participation is entirely voluntary, and you are free to leave the experiment at any time. If you have any questions about this study, please contact me by email at **578503cc@eur.nl**



## Introduction page

I understand the above and I wish to participate on this experiment.

Yes

No



## Consent form

In preparation for the next situation I would like you to pretend that you are looking for a new mobile phone. You are looking at a complete list of mobile phones while purchasing on an online electronics retailer.

Please take a minute to carefully consider the **variety of mobile phones available and their features**, and then decide **which cell phone you would choose** in a **real-life** circumstance based on this information.



### **Proposal of shopping situation**

You have 5 minutes to make your choice



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At 23:59 hours ordered, tomorrow free delivery Free returns 11 real shops Our app Best webshop 2019/2020 Business Stores Customer Service

Smartphones Samsung smartphones Apple iPhone Refurbished smartphones Business telephony Phone cases Phone repair

**Too much choice?** Answer 5 short questions and find your article Help me choose

---

**Apple iPhone 12 64GB Zwart + Apple Usb C Oplader 20W**  
365 reviews  
64GB storage | 6.1" | Camera quality very good  
**SAR value 1,29**  
840,99  
Delivered tomorrow  
Pick up even faster in 11 stores  
 Compare

**Apple iPhone 12 mini 128GB Blue + Apple Usb C Charger 20W**  
326 reviews  
128GB storage | 5.4" | Camera quality very good  
**SAR value 1,23**  
803,99  
Delivered tomorrow  
Nog sneller op te halen in 10 winkels  
 Compare

**Apple iPhone SE 64GB Black**  
962 reviews  
64GB storage | 4.7" | Camera Quality Good  
**SAR value 1,78**  
477,-  
Delivered tomorrow  
Pick up even faster in 11 stores  
 Compare

**Apple iPhone 11 128GB Black + ZENS Slim Line Wireless Charger**  
1344 reviews  
128GB storage | 6.1" | Camera quality very good  
**SAR value 1,63**  
750,99 ~~753,99~~  
Delivered tomorrow  
 Compare

**OnePlus Nord 128GB Grey 5G**  
958 reviews  
128GB storage | 6.44" | Camera quality very good  
**SAR value 1,97**  
Adviesprijs: 399,- ~~379,-~~  
Delivered tomorrow  
 Compare

**Samsung Galaxy S21 128GB Grey 5G + Samsung Smart Led View Cover Black**  
95 reviews  
128GB storage | 6.2" | Camera Quality excellent  
**SAR value 1,65**  
800,99 ~~775,25~~  
Delivered tomorrow  
 Compare

**Apple iPhone SE 64GB RED**  
962 reviews  
64 GB storage capacity | 4.7 inch LCD screen | iOS 13  
**SAR value 1,78**  
476,-  
Delivered tomorrow  
Pick up even faster in 11 stores  
 Compare

**OPPO A53s 128GB Black**  
15 reviews  
128 GB storage capacity | 6.5 inch HD screen | Android 10  
**SAR value 1,99**  
Recommended retail price 199,- ~~169,-~~  
Online temporarily sold out  
Pick up even faster in 1 store  
 Compare

**Samsung Galaxy A32 128GB Black 4G + Samsung Galaxy A 32 4G S View Book Case Black**  
73 reviews  
128 GB storage capacity | 6.5 inch full hd screen | Android 11  
**SAR value 1,59**  
~~300,99~~ **283,49**  
Delivered tomorrow  
 Compare

**Apple iPhone 12 mini 128GB Blue**  
326 reviews  
128GB storage capacity | 5.4 inch OLED screen | Dual camera  
**SAR value 1,22**  
779,-  
Delivered tomorrow  
 Compare

**OnePlus 9 128GB Black 5G**  
26 reviews  
128 GB storage capacity | 6.55 inch full hd screen | Android 11  
**SAR value 1,31**  
697,-  
Online temporarily sold out  
 Compare

**Apple iPhone Xr 128 GB Black + Apple Usb C Charger 20W**  
773 reviews  
128 GB storage capacity | 6.1 inch Liquid Retina screen | iOS 14  
**SAR value 1,27**  
~~643,99~~ **638,99**  
Delivered tomorrow  
 Compare

---

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Condition 1. (low time pressure x high decision difficulty)

You have 5 minutes to make your choice



coolblue.com

Search...

English Account

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Business Stores Customer Service

Smartphones Samsung smartphones Apple iPhone Refurbished smartphones Business telephone phone cases Phone repair

Too much choice? Answer: 5 short questions and find your article [Help me choose](#)

<p><b>Samsung Galaxy A52 128GB Black 5G + Samsung Smart 5 View Wallet Cover Black</b></p> <p>334 reviews</p> <p>128GB storage   6.5 inches   Very large size</p> <p><b>448.99</b></p> <p>Temporarily sold out</p> <p><input type="checkbox"/> Compare</p>	<p><b>Apple iPhone Xr 64 GB Black</b></p> <p>772 reviews</p> <p>64GB storage   6.1 inches   Big format</p> <p><b>574,-</b></p> <p>Delivered tomorrow</p> <p>Pick up even faster in 1 store</p> <p><input type="checkbox"/> Compare</p>	<p><b>Apple iPhone 12 Pro Max 128GB Pacific Blue</b></p> <p>270 reviews</p> <p>128GB storage   6.7 inches   Very large size</p> <p><b>1,199,-</b></p> <p>Delivered tomorrow</p> <p>Pick up even faster in 1 store</p> <p><input type="checkbox"/> Compare</p>
<p><b>Apple iPhone 12 128GB Purple</b></p> <p>362 reviews</p> <p>128GB storage   6.1 inches   Medium size</p> <p><b>866,-</b></p> <p>Delivered tomorrow</p> <p>Pick up even faster in 1 store</p> <p><input type="checkbox"/> Compare</p>	<p><b>Motorola Moto G9 Plus 128GB Blue</b></p> <p>134 reviews</p> <p>128GB storage   6.8 inches   Camera quality</p> <p><b>199,-</b></p> <p>Delivered tomorrow</p> <p>Pick up even faster in 1 store</p> <p><input type="checkbox"/> Compare</p>	<p><b>Apple iPhone 12 mini 128GB Black + Otterbox Symmetry Back Cover Black</b></p> <p>323 reviews</p> <p>128GB storage   5.4 inches   Small format</p> <p><b>813.99</b></p> <p>Delivered tomorrow</p> <p><input type="checkbox"/> Compare</p>

Condition 2. (low time pressure x low decision difficulty)



You have 2 minutes to make your choice.

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Smartphones | Samsung smartphones | Apple iPhone | Refurbished smartphones | Business telephony | phone cases | Phone repair

Too much choice? Answer 5 short questions and find your article. Help me choose

<p>Apple iPhone 12 64GB Zwart + Apple Usb C Oplader 20W 363 reviews 64GB storage   6.1"   Camera quality very good SAR value 1,29 840,99 Delivered tomorrow Pick up even faster in 11 stores</p>	<p>Apple iPhone 12 mini 128GB Blue + Apple Usb C Charger 20W 326 reviews 128GB storage   5.4"   Camera quality very good SAR value 1,23 803,99 Delivered tomorrow Nog sneller op te halen in 10 winkels</p>	<p>Apple iPhone SE 64GB Black 362 reviews 64GB storage   4.7"   Camera Quality Good SAR value 1,78 477,- Delivered tomorrow Pick up even faster in 11 stores</p>
<p>Apple iPhone 11 128GB Black + ZENS Slim Line Wireless Charger 1344 reviews 128GB storage   6.1"   Camera quality very good SAR value 1,63 758,99 753,99 Delivered tomorrow</p>	<p>OnePlus Nord 128GB Grey 5G 958 reviews 128GB storage   6.44"   Camera quality very good SAR value 1,97 Adviesprijs 399,- 379,- Delivered tomorrow</p>	<p>Samsung Galaxy S21 128GB Grey 5G + Samsung Smart Led View Cover Black 55 reviews 128GB storage   6.2"   Camera Quality excellent SAR value 1,65 800,99 775,25 Delivered tomorrow</p>
<p>Apple iPhone SE 64GB RED 962 reviews 64 GB storage capacity   4.7 inch LCD screen   iOS 13 SAR value 1,78 476,- Delivered tomorrow Pick up even faster in 11 stores</p>	<p>OPPO A53s 128GB Black 15 reviews 128 GB storage capacity   6.5 inch HD screen   Android 10 SAR value 1,99 Recommended retail price 499,- 169,- Online temporarily sold out Pick up even faster in 1 store</p>	<p>Samsung Galaxy A32 128GB Black 4G + Samsung Galaxy A 32 4G S View Book Case Black 73 reviews 128 GB storage capacity   6.5 inch full hd screen   Android 11 SAR value 1,59 300,99 283,49 Delivered tomorrow</p>
<p>Apple iPhone 12 mini 128GB Blue 326 reviews 128GB storage capacity   5.4 inch OLED screen   Dual camera SAR value 1,22 779,- Delivered tomorrow</p>	<p>OnePlus 9 128GB Black 5G 26 reviews 128 GB storage capacity   6.55 inch full hd screen   Android 11 SAR value 1,31 697,- Online temporarily sold out</p>	<p>Apple iPhone Xr 128 GB Black + Apple Usb C Charger 20W 773 reviews 128 GB storage capacity   6.1 inch Liquid Retina screen   iOS 14 SAR value 1,27 643,99 638,99 Delivered tomorrow</p>

Condition 3. (high time pressure x decision difficulty)





You have 2 minutes to make your choice.

cool blue Your whole Product Range Search... English Account

At 23:35 hours ordered, tomorrow free delivery free returns 11 real shops Our app Best webshop 2019/2020 Business Stores Customer Service

Smartphones Samsung smartphones Apple iPhone Refurbished smartphones Business telephony phone cases Phone repair

Too much choice? Answer 5 short questions and find your article Help me choose

<p><b>Samsung Galaxy A52 128GB Black 5G + Samsung Smart 5 View Wallet Cover Black</b> 334 reviews 128GB storage   6.5 inches   Very large size <b>448.99</b> Temporarily sold out Compare</p>	<p><b>Apple iPhone Xr 64 GB Black</b> 772 reviews 64GB storage   6.1 inches   Big format <b>574,-</b> Delivered tomorrow Pick up even faster in 1 store Compare</p>	<p><b>Apple iPhone 12 Pro Max 128GB Pacific Blue</b> 270 reviews 128GB storage   6.7 inches   Very large size <b>1,199,-</b> Delivered tomorrow Pick up even faster in 1 store Compare</p>
<p><b>Apple iPhone 12 128GB Purple</b> 362 reviews 128GB storage   6.1 inches   Medium size <b>866,-</b> Delivered tomorrow Pick up even faster in 1 store Compare</p>	<p><b>Motorola Moto G9 Plus 128GB Blue</b> 134 reviews 128GB storage   6.8 inches   Camera quality <del>good MSRP 249.99</del> <b>199,-</b> Delivered tomorrow Pick up even faster in 1 store Compare</p>	<p><b>Apple iPhone 12 mini 128GB Black + Otterbox Symmetry Back Cover Black</b> 323 reviews 128GB storage   5.4 inches   Small format <b>813.99</b> Delivered tomorrow Compare</p>

Condition 4. (high time pressure x low decision difficulty)

How negatively emotional (stressful) do you think it would be for you to give up safety in order to save money?

Not at all <input type="radio"/>	Slightly stressful <input type="radio"/>	Fairly stressful <input type="radio"/>	Stressful <input type="radio"/>	Extremely Stressful <input type="radio"/>
-------------------------------------	---	---	------------------------------------	--

Safety was a significant priority while making the decision?

Strongly disagree <input type="radio"/>	Disagree <input type="radio"/>	Neither agree or disagree <input type="radio"/>	Agree <input type="radio"/>	Strongly agree <input type="radio"/>
--	-----------------------------------	--	--------------------------------	---

Saving money was not a major factor in my purchase decision

Strongly disagree <input type="radio"/>	Disagree <input type="radio"/>	Neither agree or disagree <input type="radio"/>	Agree <input type="radio"/>	Strongly agree <input type="radio"/>
--	-----------------------------------	--	--------------------------------	---

I felt emotionally stressed while making the decision

Strongly disagree <input type="radio"/>	Disagree <input type="radio"/>	Neither agree or disagree <input type="radio"/>	Agree <input type="radio"/>	Strongly agree <input type="radio"/>
--	-----------------------------------	--	--------------------------------	---

I felt pressured when making this decision.

Strongly disagree <input type="radio"/>	Disagree <input type="radio"/>	Neither agree or disagree <input type="radio"/>	Agree <input type="radio"/>	Strongly agree <input type="radio"/>
--	-----------------------------------	--	--------------------------------	---

I would need more time to make a similar decision in the future

Strongly disagree <input type="radio"/>	Disagree <input type="radio"/>	Neither agree or disagree <input type="radio"/>	Agree <input type="radio"/>	Strongly agree <input type="radio"/>
--	-----------------------------------	--	--------------------------------	---

The task was overwhelming

Strongly disagree <input type="radio"/>	Disagree <input type="radio"/>	Neither agree or disagree <input type="radio"/>	Agree <input type="radio"/>	Strongly agree <input type="radio"/>
--	-----------------------------------	--	--------------------------------	---

For me choosing a phone was not simple and direct

Strongly disagree <input type="radio"/>	Disagree <input type="radio"/>	Neither agree or disagree <input type="radio"/>	Agree <input type="radio"/>	Strongly agree <input type="radio"/>
--	-----------------------------------	--	--------------------------------	---

I would ponder for a long time on this decision

Strongly disagree <input type="radio"/>	Disagree <input type="radio"/>	Neither agree or disagree <input type="radio"/>	Agree <input type="radio"/>	Strongly agree <input type="radio"/>
--	-----------------------------------	--	--------------------------------	---

How certain are you of your choice?

Very uncertain <input type="radio"/>	Uncertain <input type="radio"/>	Somewhat uncertain <input type="radio"/>	Neither uncertain nor certain <input type="radio"/>	Somewhat certain <input type="radio"/>	Certain <input type="radio"/>	Very certain <input type="radio"/>
---	------------------------------------	---	--	---	----------------------------------	---------------------------------------

I feel very confident about my decision

Strongly disagree <input type="radio"/>	Disagree <input type="radio"/>	Neither agree or disagree <input type="radio"/>	Agree <input type="radio"/>	Strongly agree <input type="radio"/>
--	-----------------------------------	--	--------------------------------	---

The choices presented aligned with my preference on phones

Strongly disagree <input type="radio"/>	Disagree <input type="radio"/>	Neither agree or disagree <input type="radio"/>	Agree <input type="radio"/>	Strongly agree <input type="radio"/>
--	-----------------------------------	--	--------------------------------	---

I found this to be a complex task.

Very simple <input type="radio"/>	Simple <input type="radio"/>	Neutral <input type="radio"/>	Complex <input type="radio"/>	Very Complex <input type="radio"/>
--------------------------------------	---------------------------------	----------------------------------	----------------------------------	---------------------------------------

Completing the task using the scenario was straight forward

Strongly disagree <input type="radio"/>	Disagree <input type="radio"/>	Neither agree or disagree <input type="radio"/>	Agree <input type="radio"/>	Strongly agree <input type="radio"/>
--	-----------------------------------	--	--------------------------------	---

I could imagine myself doing the things described in this scenario

Strongly disagree <input type="radio"/>	Disagree <input type="radio"/>	Neither agree or disagree <input type="radio"/>	Agree <input type="radio"/>	Strongly agree <input type="radio"/>
--	-----------------------------------	--	--------------------------------	---

Please indicate your gender

Male

Female

Non-binary / third gender

What is your age?

Under 18

18 - 24

25 - 34

35 - 44

45 - 54

55 - 64

65 +

What is your nationality?

Dutch

Other country in Europe

Other country outside of Europe

What is the highest level of education you have completed?

High school graduate

Some college, no degree

Bachelor Degree

Master Degree

PhD

Questionnaires