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Master thesis

Topic: Phantom decoys in consumer decision making

The Impact of Choosing for Others and Product Familiarity on The Phantom Decoys in an Online Environment

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Abstract

This thesis is conducted to contribute to the body of research on the phantom effect. The phantom effect arises when a third unavailable option (i.e. phantom decoy) is introduced into a choice set of two options, causing an increase in the choice share of one of the two options, which is referred to as the target option. Phantom decoys can be either known or unknown to individuals. This study proposes that the phantom effect also occurs in online consumer decision making. Furthermore, this study is considered first to take choice deferral, perceived choice difficulty and blame into consideration on this topic. Hence, it was expected that the phantom decoys affect consumers' post-choice evaluation and perception in terms of choice difficulty and blame. Besides, this study strived to show the impact of product familiarity and choosing for others on the phantom effect. Specifically, it was hypothesized that the phantom effect should be stronger when the product is unfamiliar to the consumer and when the consumer makes a decision for another person. An online experiment with more than 450 participants was conducted in order to test the proposed hypotheses. However, results obtained from this experiment showed that phantom decoys are stronger when they are unknown than known, which is the opposite of what was expected. Besides, the results did not provide significant evidence for the moderating role of product familiarity on the relationship between phantom choice context and product choice. Nonetheless, choosing for others moderated this relationship conditionally, as it did not act as moderator for all product groups. Lastly, it was also found that phantom decoys can influence post-evaluations and reactions in terms of perceived choice difficulty, store and others blame.

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CHAPTER 1 - INTRODUCTION

1.1 Introduction

Consuming is something all people do on a regular basis, however the way consumers do this has been changed over the years. During the speed development of the Internet, more and more consumers purchase their products online. It is expected that the global E-Commerce sales will continue growing over the five next year's whereas the total global E-commerce sales in 2023 is expected to be almost twice as much as in 2019 (Limpsman, 2019). Furthermore, 14.1% of the total global retail sales in 2019 came from online purchases. This proves that E-commerce is becoming an increasingly important environment for consumers to purchase their products. In other words, there is a shift in the behaviour of consumers with regard to consuming. To survive in this multi-trillion dollar, highly competitive industry, it is needful for marketers and businesses to understand how consumers make purchase decisions in an online environment and which underlying factors determine their decisions (Chen, 2017).

Much literature looks into how consumers perceive product information about available products and which product they eventually choose. However, it often happens that consumers face situations in which information about sold-out products are still present in the decision context. For example, consumers browsing on web stores to buy a product often find out that their product of interest are sold out. However, there are different reasons why the information of these unavailable products is still present. The first possibility is that retailers keep the information unavoidably online. For example, retailers lag in changing the retail displays. The second possibility is that retailers keep the information of the unavailable product intentionally available, because a product has multiple variants and only one of those variants is unavailable. It has been shown that consumers react varied on a stock-out, they can switch to another product, defer the purchase to another shop occasion or drop the purchase altogether (Corstjens, 1995).

There have been many studies in the decision-making literature which proved that adding an alternative into the choice context leads to a shift in the choices that individuals make. These alternatives (or regularly referred to as decoys) are added into these choice contexts to change the choice share of the other options in the choice context. When considering cognitive psychology, context effects are an important aspect of this field of study which describes the influence of other available options on preference changes (Jennifer S. Trueblood, 2013). Context effects are

psychological effects that can influence the decisions of customers to choose or purchase a product. There are several context effects at which the attraction (Joel Huber, 1982), compromise (Simonson, 1989), similarity (Tversky, 1972) and phantom decoy effect (Joel Huber, 1982) are the most important effects in the preferential-choice literature (Jennifer S. Trueblood, 2013). Thus, context effects occur when a third option is being added to a choice context of two options.

This study focuses on phantom decoys. The phantom decoy is an alternative that is superior to another 'target' option, but the phantom decoy is unavailable at the time of the choice (Pettibone J. S., 2015). In value-based decisions involving phantom decoys, individuals often show preference for the similar but inferior target option over a non-dominated competitive option (Pettibone J. S., 2015). However, there are two types of phantom decoys, namely known and unknown phantoms. The presence of these two types of phantom decoys leads to different choices in decision making. Existing literature showed that when consumers had a known phantom decoy in their choice set, they preferred the target option and when consumers are confronted with an unknown phantom choice set, more often opted for the competitor alternative (Scarpi & Pizzi, 2013).

Previous literature shows that the phantom effect occurs in (perceptual) decision making tasks. However, consumers experience decision making in an online environment differently compared to a more psychical setting (Liu, 2016). Since the amount of internet users worldwide and the number of online sales is higher than they have ever been, it is interesting to find out whether the preference of consumers also change in an online environment when adding a phantom decoy alternative to their choice context. Furthermore, most research into the phantom effect focuses on cognitive and emotional factors related to choosing for oneself. However, consumers make choices for others almost every day, from helping a friend choosing a pair of shoes to buying presents for relatives. Although it often happens, choosing for others is not often discussed in the literature. Kray (2000) is one of the researchers who showed that there is a difference between making choices for yourself and for others. In addition, it has also been investigated whether a context effect is greater when choices are made for others. However, this was only about the compromise effect. Previous literature provided evidence that the compromise effect becomes greater when individuals choose for other than themselves (Chang et al., 2012). Furthermore, the compromise effect is weaker when choosing for someone with whom one has a closer relationship. More

specifically, this context effect is the greatest when choosing for classmates followed by family, friends and oneself. Thus, it is interesting to find out whether the phantom effect becomes also greater when choosing for others. Besides, most phantom effect studies generally force consumers to choose between the two available options, while in practice consumers often defer their choice. Nevertheless, there are some studies that examined the effect of phantom decoys on choice deferral. However, these studies showed contradictory results with one side claiming that phantom decoys decrease choice deferral (Ge, Messinger, R., & Li, 2009 ; Scarpi & Pizzi, 2013) and the other side claims an increasie of choice deferral by (known) phantom decoys (Hedgcock, Rao, & Chen, 2016). Moreover, as far as the researcher knows, no one has attempted to examine whether product familiarity has an influence on the phantom effect. Nonetheless, previous literature showed that product familiarity has an impact on the compromise effect (Sheng et al, 2005). Specifically, it was shown that the compormise effect is greater when consumers are less familiar with the product. This leads to the question whether this also applies to the phantom effect.

Lastly, as far as the researcher knows, no one has attempted thus far to examine the effect of perceived choice difficulty on the impact of phantom decoys in (consumer) decision making. Most of the research regarding the presence of a decoy focus on the 'switch' of preference between alternatives. However, when considering phantom decoys, it is important known that restricting a consumer's freedom of choice will usually create an emotional response. When consumers' freedom of choice is threatened because of a choice constraint, they are more likely to experience dissatisfaction, regret or anger (Brehm & Brehm, 1981). Previous literature showed that there is a difference in emotional reactions between known and unknown phantom decoys (Scarpi & Pizzi, 2013). However, it has not yet been investigated whether there is also a difference in perceived choice difficulty when consumers face a phantom choice set. Besides, Payne (1993) showed that decisions can be perceived as difficult and stressful, which can lead that consumers avoid making a choice. Thus, this study investigates whether phantom decoys increase perceived choice difficulty. More specifically, this study investigates whether phantom knowledge (known vs. unknown) play a role in the perceived choice difficulty. As mentioned above, the presence of a phantom decoy has an impact on the consumer response. However, it is unknown who consumers blame for the unavailability of a product and more specific who they blame when they are facing a known or unknown phantom decoy. This situation rises an interesting question, namely 'who blames the consumer for the unavailability of the product: the retailer or other consumers?

1.2 Research problem

Unfortunately, existing literature related to the phantom effect did not examine this effect specifically in an online environment. Besides, as far as the researcher knows, there is no empirical analysis testing the impact of choosing for others, product familiarity and perceived choice difficulty on the phantom effect. As mentioned before, consumers make often choices for others, but although it is a common practice, there are not many studies that consider this effect. The phantom effect has so far only been studied among consumers who make choices for themselves. In other words, it is unknown what the effect of a phantom decoy is when consumers have to make a choice for others. Moreover, it is also unclear what the impact of product familiarity is on the phantom effect. Furthermore, most studies concerning the phantom effect disregard choice deferral, while in practice this decision often occurs. The effect of a known phantom decoy on choice deferral has previously been examined (Hedgcock, Rao, & Chen, 2016). However, no one has attempted to examine the effect of an unknown phantom decoy on choice deferral. Lastly, it has not been investigated to what extent consumers blame the retailer or other consumers for the unavailability of the phantom decoy. Below is stated what the aims of this study are and why they are relevant.

1.3 Research objectives/relevance

The first objective of this study is to investigate whether the phantom effect also occurs in online consumer decision making. Besides, this study will attempt to contribute to this stream of research by providing evidence that choosing for others, product familiarity and perceived choice difficulty are acting as moderators. Furthermore, it is interesting to examine the effect of phantom decoys on choice deferral. As previously stated, choice deferral often occurs in practice, however the effect of unknown phantom decoys on choice deferral has not yet been investigated. Hence, this study will also attempt to examine the effect of phantom decoys on choice deferral. Moreover, this study aims to show who the consumer blames for the unavailability of a product in a known and unknown phantom choice context (the store vs. other consumers). Lastly, this study aims to provide useful insights for practitioners. When the moderating effects will be proven to be present, it would provide marketers with the knowledge that the recipient of the decision, product familiarity and perceived choice difficultly are important to adding a third (unavailable) product into a choice context of two products. This is because, when for example the hypothesis of the known phantom decoy effect is more effective when consumers choose for others found to be true,

it could create sales opportunities for retailers to create marketing campaign that anticipate on this behaviour. Decision making for others is something that often happens. It has been shown that over one-quarter of people make at least 2-3 decisions for others in a single week (Wu, Moore, & Fitzsimons, 2019).

To sum up, if the phantom decoys occur in online decision making, it will create a situation similar to the 'bait and switch'. This is a sales technique that aims to attract customers with an offer to their store of web shop, and then sell them another product with a higher margin (Lazear, 1995) . In other words, this is a situation in which a product with a limited quantity, superior price and quality are advertised with the intent of selling products that are more profitable. Hence, this study on phantom decoys can provide important insights into the contextual dependence of choice and this sales technique. Furthermore, it is for marketers important to know how an unavailable product that is superior to the target alternative, can shift the preference of a consumer to the target alternative. Besides, this study provides marketers useful insights regarding the moderating effect of choosing for others on the impact of phantom decoys on product choice and choice deferral.

The research gap described above leads to the following research question:

Q: What is the effect of choosing for others and product familiarity on the impact of phantom decoys in online consumer decision making and perception?

1.4 Structure of the thesis

The following chapters of this study contain a literature review, methodology, results and discussion of the study. The next chapter, literature review, contains a review of the existing literature on the topics related to this study. The first part of the literature review will be based on the phantom effect. Subsequently, this chapter provides more in-depth information regarding choice difficulty, blame, choosing for others and product familiarity. Besides, hypotheses will be formulated based on the findings from the existing literature. In the methodology part, the methods of data collection, measurements of the variables and research design will be outlined. Following the completion of the proposed experiment, results obtained from this experiment will be analysed. This study concludes with interpretations of the data and a discussion about the theoretical contributions and limitations of this paper, suggestions for future research and a conclusion.

CHAPTER 2 – LITERATURE REVIEW

In this chapter, all relevant theories and prior studies necessary to answer the research question are considered. The research question describes multiple variables. In the first part, the academic literature about the phantom decoy and the different variations of this effect will be reviewed. Subsequently, in the parts that follow the relationship between the phantom effect, choosing for oneself or others and perceived choice difficulty as moderators, and product choice will be described. In the last part, the hypotheses are formulated, and the conceptual model is explained in more detail.

2.1 Phantom effect

2.1.1 Theoretical background

In marketing in terms, it is generally assumed that a new product or brand into the market will lead to an increase of the shares of those already in the market. This assumption is included in the choice model of Luce (1959) which is central to many models of consumer behaviour. Another agreement in the field of rational choice is that a new product will take more share from the products that are similar to it than from dissimilar products. This theory is known as the similarity hypothesis (Tversky A. , 1972). For instance, consider a choice context with the alternatives Q and P. Then a third alternative q is added to the choice context. According to the Tversky's similarity hypothesis, q should take more share from the more similar alternative Q than P which differs from P. Thus, the choice model of Luce and the similarity hypothesis are different in the underlying assumption but share the idea that a new product in the market cannot increase the probability of choosing a product in the original choice context.

However, it has been proved empirically that these two hypotheses can be violated in certain conditions. Hence, a new product can increase the share of an extant product (which is a violation of the regularity hypothesis) and a product to which it is most similar (violation of the similarity hypothesis). One of the first studies that showed that these hypotheses can be violated is a study conducted by Huber, Payne and Puto (1982). They proved that the addition of an asymmetrically dominated alternative can increase the probability of choosing the alternative that dominates it. After that, many studies were conducted that also violated these hypotheses, including studies on the phantom decoy, which will be discussed in more detail below.

There is much evidence for the nature of context-dependent choice. These studies are mostly based on the inclusion of alternatives in a choice context. These contextual alternatives are generally referred to as decoys. Decoys are added into a choice context to shift the choice share for the other alternatives. Pratkanis and Farquhar were the first researchers to identify two kind of decoys: real decoys and the so-called 'phantom decoy' in their paper *A Brief History of Research on Phantom Alternatives: Evidence for Seven Empirical Generalizations About Phantoms* (1992). The term 'phantom' was coined by Farquhar and Pratkanis a few years earlier (1986). There are a few important differences between these two decoys. Firstly, a real decoy is an alternative that is inferior to the target (alternative) in a choice context, and it can be chosen, however the real decoy will generally not be chosen since it is dominated. Secondly, a phantom decoy is an attractive alternative, but is unavailable. In other words, a phantom decoy is superior to the target option but cannot be chosen because it is sold out, for example.

A phantom decoy is an alternative that asymmetrically dominate a targeted alternative and yet lead to increased selection of the target when the decoy is declared to be unavailable (Pettibone & Wedell, 2007). In other words, a phantom alternative is a choice option that looks real but is unavailable at the moment a decision is made (Farquhar A. R., 1992). Consider a situation where an individual needs to decide among three dishes. The dinner options are tilapia, vegetable lasagne, and spaghetti with meatballs. The individual will immediately prefer the spaghetti with meatballs but find out later that this option is unavailable. This person will then choose the vegetable lasagne over the tilapia. This simple example illustrates that preferences between two options (tilapia and vegetable lasagne) are dependent on a third unavailable option (Farquhar A. R., 1992).

However, there have been many studies which showed a different result regarding the inclusion of the phantom decoy effect. Farquhar showed in his study mentioned above that in value-based decision tasks (e.g., consumer choice contexts), individuals often show a preference for the similar, inferior target over a (non-dominated) competitor alternative (Pettibone J. S., 2015). Hence, individuals do not always prefer the similar, inferior alternative in a given choice context. It has been proven that individuals prefer the competitor alternative in perceptual decision-making tasks, which is the opposite of the typically pattern found in consumer choice (Pettibone & Trueblood, 2017). In an experiment using rectangles (as plots of land for growing crops) as alternatives,

Pettibone and Trueblood (2017) demonstrated that the competitor alternative is selected more often than the target in perception decision making.

2.1.2 Phantom decoy types

Furthermore, an important aspect regarding the phantom decoy is whether they are 'known' or 'unknown' (Farquhar, 1992; Scarpi, 2013). As mentioned above, a phantom decoy dominates the target option. Known phantoms are options that are clearly unavailable from the start, because they are presented with a 'sold out' label for example (Scarpi & Pizzi, 2013). Besides, unknown phantoms are options whose unavailability is not noticed until one has tried to buy it (Scarpi & Pizzi, 2013).

Thus, if a phantom is unkown it will make consumers falsely believe that it is available and choose for the phantom. In other words, an unknown phantom is an unavailable alternative that is not noticed until an individual has tried to select this alternative. Thus, if individiuals are confronted with an unknown phantom their choice context starts with a trinary context (target, competitor and phantom) and ends with a binary context (target and competitor). According to the reactance theory (Brehm J. , 1966) reactance becomes stronger when threats to freedom and actions come unexpectedly. Besides, a greater reactance means a greater boomerang-effect (Baumeister et al, 2002). The boomerang effect shows that individuals experience a threat to their (choice) freedom, they will react by doing the opposite of what is expected to show they still got the freedom. Existing literature showed that unkown phantoms provoke greater reactance than known phantoms, because unkown phantoms are unexpectedly discovered to be unavailable (Scarpi & Pizzi, 2013). More importantly, they proved that unkown phantoms work in the opposite way of known phantoms.

In other words, individuals facing a unknown phantom favored the competitor option and the target option when they faced a known phantom. Thus, this is an example of the boomerang effect. Furthermore, phantom decoys can be placed on different locations in the attribute space. Pettibone and Wedell (2007) have divided these phantom decoys into three subclasses: range phantoms (close and distant), frequency phantoms and range-frequency phantoms (close and distant). They found that only the range phantoms had a significant effect. This study will therefore focus on the phantom range decoy. As represented in figure 1, all phantom decoys dominate the target alternative (T).

2.1.3 Product choice and choice deferral

Most context effect studies generally force individuals to choose from a list of options, however in practice people often defer choice. Although most research force individuals to choose, there is a separate stream of research that has examined the effect of the freedom not to choose, which is choice deferral. Dhar (1997b) showed that several factors can affect choice deferral such as perceived attractiveness, decision difficulty, decision strategies and time pressure. Furthermore, Tversky and Shafir (1992) showed that choice deferral increases for difficult decisions, such as when each option has significant advantages and disadvantages. Hence, when an option is better than another in all aspects, there is no conflict which makes the choice easy. This also applies to phantom decoys, and in principle to all context effects, because the phantom decoy is superior to the target on the best attribute of this alternative and scores less on the best attribute of the competitor alternative.

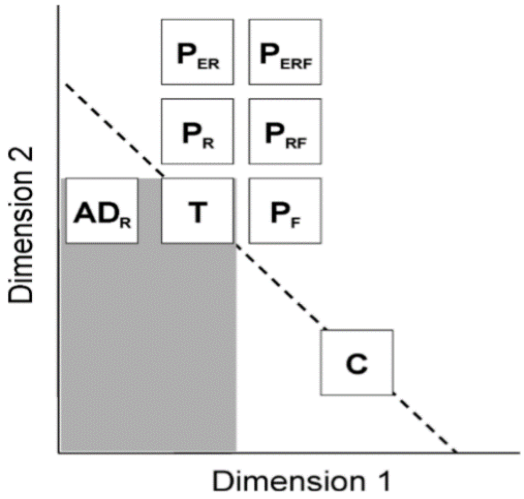

Figure 1. The different locations of the asymmetrically dominated decoy (AD_R), phantom range decoy (P_R), phantom extreme range decoy (P_{ER}), phantom frequency decoy (P_F), phantom range-frequency decoy and phantom extreme range-frequency decoy (P_{ERF}) in the attribute space. These decoys target alternative T over C. Adapted from "Testing Alternative Explanations of Phantom Decoy Effects,"p.325,by J.C. Pettibone and D.H. Wedell, 2007, Journal of Behavioral Decision Making.

Furthermore, as previously stated, the literature provides some studies on context effects that consider choice deferral. To begin with, Hedgcock et al. (2016) Examined the effect of different decoys on choice deferral. They showed that known phantom decoys increase choice deferral. This contradicts with the findings of Hedgcock et al. (2009), who show that the exit of a phantom decoy increases the choice share of the target option. The contradictory results can perhaps be explained by stating that they did not include a no-choice option in the choice set. However, Ge et al. (2009) showed in their study that adding a sold-out product (i.e. known phantom decoy) to a choice set led to a decrease in the choice for the no-choice option (i.e. choice deferral). In other words, both Hedgcock's (2016) and Ge's (2009) study added a no-choice option to their choice sets and both show contradictory results.

Besides, previous literature showed that choice deferral is an important aspect in consumer decision making and specific in research on phantom decoys (Scarpi & Pizzi, 2013). This study included the effect of a known and unknown phantom choice context on choice deferral. It is noteworthy that this study did not include a 'no-choice' option in the choice set, but asked the respondents whether they would have deferred their choice after they made a choice between the available options. This study showed that no participant in the control group and known phantom condition would have deferred their choice, whereas one out of ten of the respondents in the unknown phantom condition would have deferred their decision if it was possible (Scarpi & Pizzi, 2013). Hence, there can be concluded that including the 'no-choice' option could have an influence on the decision making in an unknown phantom condition.

In short, existing literature regarding the phantom effect showed that a known phantom increases the choice for the target alternative and a unknown phantom leads to an increase the choice for the competitor alternative. These effects are also expected to be significant in an online consumer environment. Furthermore, there are conflicting results in the existing literature regarding the effect of phantom decoys on choice deferral. Therefore, it is even more interesting to examine the effect of phantom decoys on choice deferral in this research as well. For this study it is expected that the participants will defer their choice more often in an unknown phantom choice context compared to a known phantom and no effect choice context. Besides, it expected that participants will defer their choice more often in a known phantom choice context compared to a choice context with no effect. Thus, this expectation is in line with existing literature (Scarpi & Pizzi, 2013; Hedgcock, 2016). Hence, the relationship between the independent variable and dependent variable of interest in this study is confirmed. This leads to the first hypotheses of this study:

H_{1a}: *The phantom effect is greater in the known phantom condition than in the unknown phantom condition.*

H_{1b}: *Choice deferral is higher in the phantom conditions than in the no effect condition.*

H_{1c}: *Choice deferral is higher in the unknown phantom condition than in the known phantom condition.*

2.2 Perceived choice difficulty

Decision tasks are sometimes perceived as difficult and stressful which could lead that consumers avoid making a decision (Payne et al., 1993). Hanselmann and Tanner (2008) defined decision difficulty as the level of perceived difficulty or ease of selecting among choice options. According to Luce et al. (2001) decisions can be distinguished in two kinds of difficulties: emotional and cognitive. They used the example of purchasing a car which could be difficult because of the overwhelming amount of technical information which is a mainly cognitive difficult. However, this decision could also be perceived as emotional difficult because the decision maker feels uncomfortable by the idea deciding how much money to spend on protecting the safety of the family who will ride in the car. There have been several studies that identified factors that affect decision difficulty. For example, Luce et al. (1999) have shown that decision difficulty depends on the extent to which choice contexts contain attributes that are difficult to trade off. They came up with the emotional trade-off which is defined as the level of subjective threat a buyer associates with making an explicit trade-off between two attributes (Luce et al. , 1999). Besides, it has been proved that difficult trade-offs increase the perceived choice difficulty and stronger tendencies to avoid these trade-offs (Luce et al., 1999). Choice attributes should be in conflict with each other in order to experience choice difficulty, otherwise it is not necessary to 'trade-off' the options in a choice context (Luce et al., 2001).

Previous studies in decision making have shown that with the presence of a decoy, an individual often 'simply' switch to the target option. For example, consider a choice context with the presence of a attraction or compromise decoy. The addtition of these decoys create a situation where it becomes easier for an individual to make a decision (Simonson I. , 1989). However considering phantom decoys, it is important to know that restricting the individual's freedom of choice creates an emotional response and negative perceptions (Scarpi & Pizzi, 2013; Fitzsimons, 2000). Individuals experience more regret, dissatisfaction and anger when their freedom is threathened because of a choice constraint (Brehm & Brehm, 1981). Furthermore, Scarpi (2008) showed in her research that phantom decoys simplifies the choice task compared to real decoys (e.g. attraction effect), because the choice task including a phantom decoy requires a lesser level of information processing. Besides, according to the consumer, an unknown phantom decoy is initially a real decoy, since it is only found out later (when the decoy is chosen) that it is not available. This and

the aforementioned leads to the expectation that the unknown phantom decoy will lead to the highest perceived choice difficulty.

To sum up, Luce et al. (1999) did not only show that decision difficulty depends on the extent to which contextual effects contain attributes that are difficult to trade off, but also that difficult trade-offs increase perceived choice difficulty. Moreover, Luce et al. (2001) also showed that the choice attributes should be in conflict with each other to experience choice difficulty. Furthermore, Scarpi & Pizzi (2013) showed that phantom decoys provoke more negative emotions because the freedom of consumers are threathened by the choice constraint. These findings lead to the expectation that the perceived choice difficulty is higher in a phantom choice context than in a no effect choice context.

In addition, previous literature provided evidence that an unknown phantom decoy creates a greater reactance than known phantoms in terms of product choice. Besides, it was shown that an unknown phantom decoy provokes more negative emotions compared to known phantom decoys (Scarpi & Pizzi, 2013). Therefore, it is expected that decision making in an unknown phantom choice context results in a higher perceived choice difficulty than in a known phantom choice context. These findings and expectations lead to the following hypotheses.

H_{2a}: *Choice difficulty is higher in the phantom conditions than in the no effect condition.*

H_{2b}: *Choice difficulty is higher in the unknown phantom condition than in the known phantom condition.*

Besides, it has been proved that individuals who are not satisfied with the options or experience difficulty while choosing, will defer to choose (Dhar & Simonson, 2003 ; Bastardi & Shafir, 1998). Furthermore, Dhar (1997b) showed that perceived choice difficulty is one of the variables that affects the deferral of choice. Therefore, it is expected that experiencing more choice difficulty leads to more choice deferral. The following section describes how the phantom decoys affect who the consumer blames for the unavailability of the phantom decoys.

H_3: *Higher perceived choice difficulty leads to more choice deferral.*

2.3 Store & others blame

Out-of-stock is phenomenon that both retailers as consumers have to deal with on a regular basis. This phenomenon can have serious consequences for retailers due to the fact that out-of-stock rates high on consumers' irritation list and decreases the level of consumer satisfaction (CBL, 2000; Fitzsimons, 2000). Moreover, a great number of scienfintic literature have showed that out-of-stock causes several consumer responses (Fitzsimons, 2000; Sloot, C., & Franses, 2005; Kumar et al., 2021). The most common responses are dissatisfaction, choice deferral and changing store-switching behavior (Fitzsimons, 2000). Besides, if consumers decide to switch to another store or brand it will cause a loss of sales. Although out of stock is often a short term problem, it can cause long term consequences for retailers because of the negative impact of consumer satisfaction and word of mouth (Zinn & Liu, 2001). In other words, consumer loyalty is an important factor for the future of retailers, and this can be influenced by the availability of a product. In particular, previous literature showed that phantom decoys have an influence on perceived satisfaction, regret and more emotions (Scarpi & Pizzi, 2013). However, it is unknown who consumers blame for the unavailability of a product and more specific who they blame when they are facing a known or unknown phantom decoy. This situation rises an interesting question for marketing practitioners and retailers, namely 'who blames the consumer for the unavailability of the product: the retailer or other consumers?

To the best knowledge of the researcher, no one has ever attempted to examine the effect of phantom decoys on who consumers blame for the unavailability of a product. However, previous studies on consumer behaviour have identified assertions of blame as a common response. In other words, blame is not new to the marketing literature. According to the attribution theory of Heider (1958) , blame can be placed internally or externally (Reynolds, Folse, & Jones, 2006). Folkes and Kotsos (1986) showed that external blame on firms can occur even it is not their fault. It is also generally accepted that consumers tend to attribute positive outcomes to themselves and negative outcomes to others, which is also known as the self-esteem bias (Folkes & Kotsos, 1986 ; Dong, Evans, & Zou, 2008). Griffin et al. (1996) were one of the first researchers to measure the extent to which consumers place the blame on the manufacturer. Furthermore, Maxham and Netemeyer (2002) showed that customers are more likely to blame the firm when multiple failures occur. Besides, they proved that the increase of blame is larger for customers who report a unsatisfactory

first recovery compared to customers who report a satisfactory first recovery (Maxham III & Netemeyer, 2002).

In short, an unavailable product can cause consumers to choose a different brand or go to a different store. Specifically, if a retailer does not mention clearly why the product is unavailable. Hence, Kumar et al. (2021) showed that consumers' intention to spread negative word of mouth decreases when the cause of out-of-stock is specified. Besides, it is the responsibility of the store to manage the stock, specify the cause of stockout and reduce out-of-stock (Sloot, C., & Franses, 2005). Therefore, it is expected that consumers blame the store more often than other consumers in both phantom conditions. In addition, it is expected that decision making in an unknown phantom choice context results in more blame on other consumers for the unavailability of the product than in a known phantom choice context. Because, in a known phantom choice context it is specified from the start that the decoy is unavailable, whereas in an unknown phantom choice context it is only clear a step later (i.e., after clicking on the product) that the decoy is unavailable. Thus, the product was initially available and because of no specification regarding the storage it suggests that other consumers were faster. Hence, out-of-stock is a phenomenon that often happens because the product is attractive (Kumar, Sharma, & Tapar, 2021). This also applies to the phantom decoy, which is superior to the target option. These findings and expectations described above regarding who consumers blame for the unavailability lead to the following hypotheses. The last part of this chapter describes how choosing for the self and others affects the relationship between phantom decoys on product choice.

H_4: *Store blame is higher than others blame in the phantom conditions.*

H_5: *Others blame is higher in the unknown phantom condition than in the known phantom condition.*

2.4 Choosing for others

Consumers make almost everyday decisions, but there are different kind of decisions. Decisions can be made for the self or for others. Kray (2000) is one of the researchers who has investigated the difference between making choices for yourself or for another person. In practice, it often happens that consumers make choices for others. For example, parents make mainly choices for their children. Besides, when buying a gift for a family member or friend, people choose also for others. There are several theories of why personal decision and advice are different. The first

possibility is that we hold different beliefs about other people than ourselves without even realizing it. For example, visual perspective has an influence on perceptual judgements, and it is expected that one's interpersonal frame influences preferences (Tversky & Kahneman, 1981). This hypothesis is known as the framing hypothesis. An individual who is choosing for others is expected to focus on "which option would make most people satisfied". Thus, an individual who is choosing for others relies on information about utility according to the population at large (Reeves & Lockhart, 1993). On the other hand, a personal decision maker is expected to emphasize utility on one's own preferences (Kray, 2000). People vary in how they think about the self-versus others (Ross, 1977), therefore these two (choice) frames lead to different preferences. In other words, the framing hypothesis suggests that advisors apply their assumptions about others' preferences and when individuals make a decision for themselves, they will apply their own preferences.

Secondly, there is the motivational hypothesis which also explains why personal decision differs from advice. This hypothesis indicates that someone who is choosing for others and personal decision makers have different motivations (Shafir, Simonson, & Tversky, 1993) . For example, an individual can choose between two winter jackets whereby jacket A is expensive with high quality and jacket B which is cheap with a low quality. Jacket A is on the short term the more expensive option, but this jacket can probably last several winters. The opposite is true for the other jacket. In other words, this hypothesis suggests that when individuals choose for themselves, they have to live with the consequences of their decision. Personal decision makers and individuals who are choosing for others differ because the reasons that influence them might differ due to the different levels of accountability across their reference (Tetlock, 1983). Advisors are accountable to their advice-recipients, while personal decision makers are generally accountable to one but themselves. Thus, personal decision makers expect that they will experience the consequences of their decision. Therefore, the advisor might be more concerned about advising a choice or action that is easy to justify compared to personal decision makers (Slovic, 1975).

As mentioned before, most of the research regarding the context effect and specifically the phantom decoy focuses on cognitive and emotional factors related to choosing for oneself. However, existing literature showed that there is a relationship between choosing for others and the compromise effect (Chang, Chuang, Cheng, & Huang, 2012). This study provided evidence

that the compromise effect is greater when individuals make a decision for others, and that the compromise effect is greatest when individuals choose for others with whom they have a distant relationship (Chang, Chuang, Cheng, & Huang, 2012). Nonetheless, it is important to mention that this study considered only products (treadmill and electric drill) with which consumers are generally not familiar with. This was the case, as the more asymmetric an individual's attributed importance is of a product, the less likely the individual is to choose the compromise option (Sheng, Parker, & Nakamoto, 2005).

To sum up, previous research has shown that a trinary choice set including a phantom decoy affects the decision of consumers by showing more preference for the targeted alternative in a known phantom context. However, existing literature proved that consumers choose the competitor alternative more often in an unknown phantom choice context (Scarpi & Pizzi, 2013), because of the 'boomerang effect' (Bhasin, 2019). Research has also shown that there are differences between making a choice for the self or others. When consumers make choices for others, they are making more thought-through decisions. Lastly, Chang et al. (2012) proved that the compromise effect becomes greater when individuals choose for others. These three literature streams combined lead to the expectation that the phantom effect is influenced by the recipient of the decision. Thus, advisors prefer the alternative that would make most people satisfied and take less risk because they are accountable to their advice recipients. Therefore, it is expected that when consumers choose for others, while facing both a known and unknown phantom choice context, they prefer the target alternative more often. In other words, the phantom effect is greater when choosing for others. Considering the lack of information regarding the preferences of the person they choose for, advisors will likely choose a heuristic option such as the target alternative which is the inferior to the unavailable phantom alternative. The choice for the target alternative provides a quick solution and is in accordance with their goal to make a satisfactory choice for others. These findings and expectations lead to the hypothesis formulated below.

H_6: *The phantom effect is greater when consumers choose for others than when choosing for oneself.*

2.5 Product familiarity

Bettman et al. (1990) were one of the first to show that the degree of previous knowledge that an individual brings to a choice task have an impact on the decision-making process. In the past, the terms familiarity, expertise and experience were often used interchangeably. Therefore, Alba and Hutchinson (1987) categorized consumer knowledge into two parts which are familiarity and expertise. According to them product familiarity is defined as product related experiences that the consumer has experienced. Furthermore, Coupey et al. (1998) showed that consumers with less product familiarity were more affected by contextual effects in decision making than consumers with more product familiarity.

Although product familiarity has not been studied before with regard to the phantom decoys. However, it has already been investigated what the relationship is between product familiarity and the compromise effect. Existing literature showed that the more familiar consumers are with the product, the less likely they are to choose the compromise option (Sheng, Parker, & Nakamoto, 2005). Thus, the results obtained by Sheng et al. (2005) are consistent with the claim that consumers are more susceptible for contextual effects if they are less familiar with the product.

As with the compromise effect, it is also true that product familiarity can influence the phantom effect from a perspective that consumers are susceptible for contextual effects. Firstly, product familiarity can influence consumer's information processing. This is because prior knowledge facilitates the new information which increases the search efficiency of a consumer (Brucks, 1985). Thus, consumers who are familiar with the product have more information from both the current shopping environment and their own experiences to make a choice. Because they have more information related to the judgment task, they can create a more extensive evaluation of the product and will therefore be less affected by the phantom effect. Therefore, it is expected that consumers with lower levels of product familiarity are more susceptible for the phantom effect. Based upon these findings and logic the following hypothesis is formulated:

H_7: *The phantom effect is greater when consumers are less familiar with the product.*

2.6 Overview of hypotheses and literature

Table 1 below provides an overview of the formulated hypotheses for this study.

$\mathbf{H_{1a}}$	The phantom effect is greater in the known phantom condition than in the unknown phantom condition.
$\mathbf{H_{1b}}$	Choice deferral is higher in the phantom conditions than in the no effect condition.
$\mathbf{H_{1c}}$	Choice deferral is higher in the unknown phantom condition than in the known phantom condition.
$\mathbf{H_{2a}}$	Choice difficulty is higher in the phantom conditions than in the no effect condition.
$\mathbf{H_{2b}}$	Choice difficulty is higher in the unknown phantom condition than in the known phantom condition.
$\mathbf{H_{3}}$	Higher perceived choice difficulty leads to more choice deferral.
$\mathbf{H_{4}}$	Store blame is higher than others blame in the phantom conditions.
$\mathbf{H_{5}}$	Others blame is higher in the unknown phantom condition than in the known phantom condition.
$\mathbf{H_{6}}$	The phantom effect is greater when consumers choose for others than when choosing for oneself.
$\mathbf{H_{7}}$	The phantom effect is greater when consumers are less familiar with the product.

Table 1. Hypotheses overview

Table 2 gives an overview of the most relevant research that was used in the literature review and the domain of interest this study looked into.

Author	Topic	Sample	Main findings
Pettibone & Wedell (2000)	Phantom effect	83	The target alternative was preferred more often when it was targeted by the phantom decoy.
Hedgcock, Rao, Chen (2016)	Choice deferral ; context effects	734 (151 in phantom condition)	Known phantom decoys increase choice deferral.
Farquhar (1992)	Phantom effect	N/A	Review of 13 domains of research on unavailable alternatives for 60 years.
Trueblood & Pettibone (2017)	Phantom effect	Sample 1: 84 Sample 2:90 Sample 3:77	An opposite pattern of the phantom effect in consumer decision making is found perceptual decision making.
Chang et al. (2012)	Choosing for others	160	Choosing for others leads to a greater compromise effect compared to choosing for oneself.
Pettibone & Wedell (2007)	Phantom effect	Sample 1: 429 Sample 2 :262	Four of the five phantom locations produced significant effects, except of the far phantom location. Thus, making an attractive alternative unavailable will influence choice in the most cases.
Daniele Scarpi & Gabriele Pizzi (2013)	Phantom effect ; consumer perception & evaluation	750	Known phantoms are stronger when close. Whereas unknown phantom is stronger when far. Phantom decoys influence the post-choice evaluation. These are driven by phantom knowledge.
Dhar (1997)	Choice deferral ; Context effects	N/A	The availability of a no-choice option may also influence the preference of the alternatives.
Maxham & Netemeyer (2002)	Others blame	255	Consumers are more likely to blame the firm when multiple failures occur, and the increase of blame is larger for customers who report a unsatisfactory first recovery compared to customers who report a satisfactory first recovery.
Sheng, Parker & Nakamoto (2005)	Product familiarity ; context effect	219	The compromise effect is greater when the consumer is less familiar with the product.

Table 2. Literature overview

2.7 Conceptual framework

As shown in the conceptual model below (figure 2), the independent variable in this research, choice context, consist of either a 'known phantom', 'unknown phantom' or 'no effect (decoy) choice context'. 'The known phantom decoy' refers to an unavailable option that dominates the target option on its best dimension but is clearly not available at the moment of choosing. 'The unknown phantom decoy' refers to an unavailable option that dominates the target option on its best dimension and whose unavailability is not noticed until one has tried to choose it. 'No effect' refers to the absence of a decoy option in the choice context.

Furthermore, the dependent variables in this research are perceived choice difficulty, product choice and (store and others) blame. Besides, this research consists of two moderating variables which are the recipient of the decision and product familiarity on the relationship between choice context and product choice. The dependent variable 'product choice' consists of the choice options: target, competitor and no-choice option (i.e. option to defer the purchase decision). Lastly, the dependent variables 'store blame' and 'others blame' refers to who consumers blame for the unavailability of the product (i.e. phantom decoy).

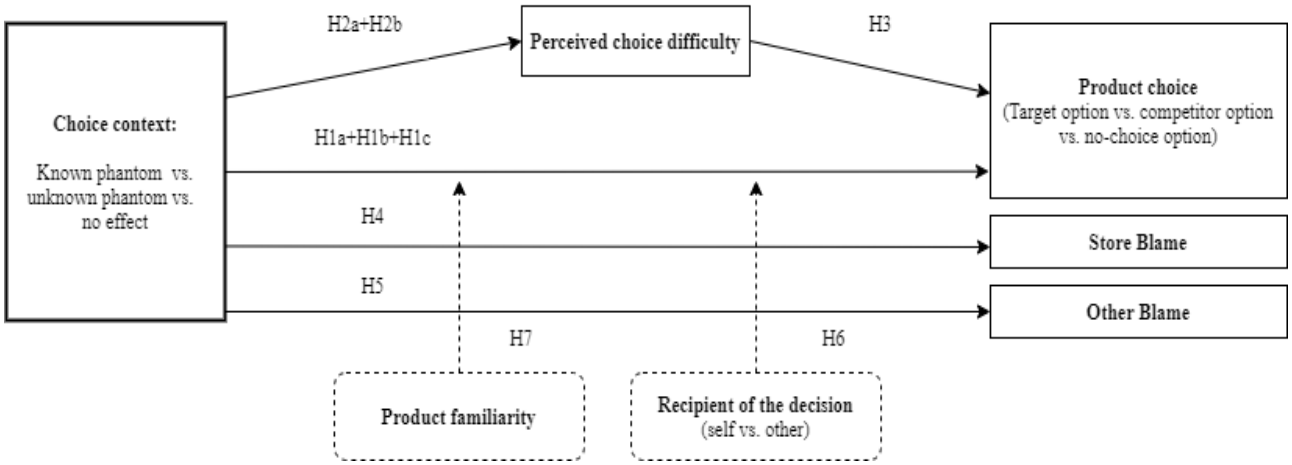

Figure 2. Conceptual framework

CHAPTER 3 - METHODOLOGY

In this chapter the research design and method of data collection for this study are described. The aim of this research is to investigate the hypotheses formulated in the conceptual model and to contribute to the existing literature regarding phantom effects in consumer decision making.

3.1 Research method

This research investigates whether the value of the independent variable, which is (phantom) choice context, causes or determine the value of the dependent variables which are perceived choice difficulty, (product) choice and blame. In order to obtain the required data a 6 groups between-subject design online experiment was conducted. There are several important reasons why an online experiment was used for this research. Firstly, a large group of people can be reached quickly with an online experiment (Mcdaniel & Gates, 2015). Besides, an online experiment enables to isolate a manipulation which is important for this study since a between-subject design is used. More specifically, in case of this study this option allowed to investigate whether there exists a causal relation between the phantom decoys and choosing for others and product familiarity on the effect of product choice, perceived choice difficulty and blame without the influence of external factors. Secondly, an online experiment ensures the anonymity of the respondents easier than in a field experiment. Hence, the guarantee of anonymity reduces the socially desirable answers. Social desirability bias refers to the tendency whereby respondents give socially desirable answers instead of choosing response that are reflective to their true feelings (Grimm, 2010). This study examines sensitive issues such as perceived choice difficulty and blame, therefore it is expected that the answers are more reliable. Furthermore, the respondents were able to decide for themselves when and where they wanted to participate. This is an advantage, because when the respondents need to participate at a specific time and location, they may fill in the questionnaire carelessly, because they are for example in a hurry.

3.2 Research design

The participants of this experiment were recruited through several social media channels. In search of respondents for the experiment, members of Facebook, WhatsApp, Instagram and LinkedIn groups, mostly especially designed for students, were approached to participate. The participants were then randomly and evenly assigned (by the software of Qualtrics) to one of the following scenarios presented below in table 3.

Choice context	Choosing for oneself	Choosing for others
Control group (no context effect)	Group 1	Group 2
Known phantom	Group 3	Group 4
Unknown phantom	Group 5	Group 6

Table 3. Distribution of the test groups

Two factors were manipulated in a 3 (known phantom, unknown phantom and no effect choice set) x 2 (choosing for oneself or others) between participant's design. Participants assigned to the known and unknown phantom choice context made product choices between three alternatives. In these trinary choices set the known or unknown phantom decoy formed the third (unavailable) alternative. Participants assigned to the no effect choice context made product choices from a choice set consisting of two alternatives, because both the known and unknown phantom decoy were absent. In addition, the three context groups mentioned above were also divided into two parts, namely choosing for yourself or someone else, which amounts to a total of six groups (conditions). Furthermore, participants assigned to the choice-for-self condition were told that they planned to buy a product from the web shop for themselves, whereas in the choice-for-others condition, participants were asked to purchase the same products on behalf of others because they were too busy. The no effect condition is included in order to measure and compare how the perceived choice difficulty, choosing for the self or others and the dispersion of product choices or deferral were when the known and unknown phantom were absent from a choice set.

3.3 Measurement

Various scales were used in order to measure the variables included in the conceptual model. These scales are discussed below. This concerns the variables product choice, perceived choice difficulty product familiarity and blame.

3.3.1 Product choice

The product choices of the respondents were measured by one item each time after a choice was made for the target option, competitor option or no-choice option. The last option implies that the consumers defer their choice. The participants were asked which option they would buy if they had to base their choice on the given information.

3.3.2 Perceived choice difficulty

The studies that examined perceived choice difficulty generally use different scales to measure this variable. There are studies that use a scale consisting of one item, while others use a scale consisting three, four or even five items. Hanselmann and Tanner (2008) used in their first experiment a scale of one item in which participants could indicate their perceived choice difficulty on a 7-point scale ranging from 1 (very easy) to 7 (very difficult). The higher the score, the higher the level of perceived choice difficulty (Hanselmann & Tanner, 2008). This scale was also used in this experiment in order to measure the perceived choice difficulty. However, Hanselmann and Tanner (2008) used in their second experiment a scale consisting of five items. This scale measures various aspects of the perceived choice difficulty, such as ambivalence, certainty of decision, readiness to decide, or need for additional time (Hanselmann & Tanner, 2008). However, these scales were ignored for this study since there was no time pressure for the participants in this experiment and because the items regarding readiness to decide and certainty of decision were contradictory.

3.3.3 Blame

As far as the researcher knows, no one has ever attempted to examine who the consumer blames for the unavailability of a product. However, this variable has been examined before in a similar context. Here, as with the previous variable, different scales are used to measure this variable. Maxham and Netemeyer (2002) used a 7-point scale consisting of three items in order to measure the degree to which a consumer places the blame for a problem with a product on the retailer (i.e. the firm). Griffin et al. (1996) examined this variable also by using a 5-point scale consisting of four items to measure the extent to which the consumers places blame on the manufacturer or the consumer. This scale was then further developed by Reynolds, Folse and Jones (2006). Reynolds et al. (2006) combined the original scales of Griffin et al. and Machleit et al. (2001) in order to find out who the consumer considered responsible for the unsuccessful product search: the store, others or themselves. In order to examine who the consumer blames for the unavailability of the third (phantom) product in this study, a scale of six items were used. This scale can also be considered as highly internally consistent ($\alpha = .93$) (Reynolds, Folse, & Jones, 2006). As in the original scale, the participants were asked to indicate their degree of agreement using a 5-point scale on the six statements ranging from 1 (Not at all) to 5 (Extremely). The higher the score, the more they blame the retailer (i.e. web shop) or other consumers.

3.3.4 Product familiarity

In this study, the variable product familiarity is measured using 3 statements. The first statement is about the product itself and the other two statements are about the two attributes of the relevant products. For example, for the laptop, participants indicated their agreement/disagreements on three 7-point scales: "I'm familiar with laptops," "I'm knowledgeable about the meaning of the processing speed (RAM) of a laptop," and "I'm knowledgeable about the meaning of the hard disk capacity of a laptop". This measurement was first used by Sheng et al. (2005). They used these scales to measure the product familiarity among consumers in reference to a different context effect, namely the compromise effect. Furthermore, this scale can also be considered as highly internally consistent (Cronbach's α= .89) (Sheng, Parker, & Nakamoto, 2005).

	Variable	**Description**	**Levels**
Dependent variables	*Product choice*	Choice share of the target option.	-
	Store blame	Extent to which consumers put the blame of the unavailability of the phantom option on the store.	Low; moderate; high
	Others blame	Extent to which consumers put the blame of the unavailability of the phantom option on other consumers.	Low; moderate; high
	Perceived choice difficulty	Participant's level of perceived difficulty in choosing an option.	Low; moderate; high
Independent variables	*Choice context*	Type of choice context presented.	Known phantom; unknown phantom; no decoy
	Recipient of the decision	The person for whom the participants had to choose.	Self; others
Control variables	*Age*	Age of the participants.	-
	Gender	Gender of the participants.	-
	Occupation	Occupation of the participants.	-
	Nationality	Nationality of the participants.	-
Manipulation check	*Product familiarity*	Participant's level of familiarity with the product.	Low; moderate; high

Table 4. Overview of variables

3.4 Procedure

As previously stated, this study examines to what extent consumers are familiar with the product. Therefore, in this experiment, the products chosen (laptop and electric drill) are those with who consumers are generally familiar and not familiar. This study considered laptops based on hard disk capacity and processing speed (RAM) in order to contribute to the existing literature (Scarpi & Pizzi, 2013). HDC and RAM were the most relevant attributes. Price and brand were also seen as important attributes. Although price would be a logical dimension to use, it was decided not to manipulate it for this research. Previous research has sometimes shown asymmetries of decoy effects when price was one of the dimensions used. In addition, the important attribute 'processor' of the laptops has been left out of consideration, because these are also associated with brands. Therefore, all computers used in this experiment were of the same brand and price. In this study Dimension 1 was hard disk capacity and Dimension 2 was RAM. As stated in the previous chapter, the P (phantom) and T (target) option share the same value on Dimension 2 (RAM). As in previous literature (Pettibone & Wedell, 2007; Scarpi & Pizzi, 2013), the phantom alternative was constructed in such a way that the distance between P and T was half the between T and C (competitor option). As a result, P dominated T and T dominated C on Dimension 2 (RAM), whereas option C dominated both on Dimension 1 (HDC).

Furthermore, this study also considers electric drills, because previous research (Chang et al., 2012; Sheng et al., 2005) often used these kinds of products to ensure symmetry in the relative importance of attributes. This is, because consumers are generally not familiar with it. As with the laptops, the prices and brands have been removed. The participants were told that all the products are of the same price and brand so they would not consider these as factors. Chang et al. (2012) showed in their study that the largest chuck size and speed were the most relevant attributes. Therefore, these attributes were also used for this experiment. As with the laptop, the phantom option dominates the target option on Dimension 2 (largest chuck size) and shared the same value on Dimension 1 (speed). The values of the electric drill were constructed in a way that the target option dominates the competitor option on Dimension 2 and vice versa. Table 5 shows an overview of the product categories, attributes and values.

Product	Attribute 1	Attribute 2
Laptop	Hard disk capacity (HDC)	Processing speed (RAM)
Target option	64 GB	8 GB
Competitor option	128 GB	4 GB
Phantom option	64 GB	10 GB
Electric drill	Speed	Largest chuck size
Target option	1300 rpm	14 mm
Competitor option	1700 rpm	10 mm
Phantom option	1300 rpm	16 mm

Table 5. Product categories and attributes

Participants received a link to a questionnaire whose design simulated that of a web shop. The first option was always the target option and the one in the centre was the competitor option. All products were described with the same images and attributes, the only difference were the values of the attributes. Previous researchers (Pettibone & Wedell, 2000 & 2007; Scarpi & Pizzi, 2013), who examined the known phantom effect, presented the alternatives for a short period before the phantom option was made known to the participants. This was done to prevent participants from simply disregarding a known phantom in their decision-making processes. This method was also used for this experiment in the known phantom conditions. All alternatives appeared at the same time on the screen, and after 15 seconds later, a red text with the word 'unavailable' appeared under the phantom and remained there. Figure 4 and 5 (Appendix B) show the 'web store' design of a known phantom choice context. Participants could only at this point click to make a choice, because clicking was deactivated until the red text appeared under the phantom option. This procedure ensured that participants saw the phantom and did not disregard it completely despite knowing that it was not really available to choose (Scarpi & Pizzi, 2013).

Furthermore, participants assigned to the 'unknown phantom' conditions did not see the red 'unavailable' text. As with the known phantom conditions, the alternatives appeared at the same time on the screen, and after 15 seconds, participants could click to make their choice (clicking was deactivated until this point). Thus, in the unknown phantom condition, participants were only informed that the phantom was unavailable if they actually chose this option. See figure 6 and 7 (Appendix B) for the hypothetical 'web store' design of an unknown phantom choice context. Lastly, participants assigned to the 'no effect' conditions saw a web page with two products and a

‘no-choice’ option, while participants assigned to the known and unknown phantom conditions saw three products and a ‘no-choice’ option. The alternatives appeared also at the same time in the no-effect condition, but unlike the other conditions, the alternatives were already clickable after 10 seconds.

3.5 Survey design

The experiment has been drawn up in both English and Dutch, because the experiment was mainly conducted among Dutch people and the questions are easier for them to answer in their native language. The experiment opened with a welcome message briefly describing what this experiment was for and that the answers were anonymous. Following this message, the participants were asked to what extent they are familiar with both product categories: laptops and drills. Subsequently, participants were randomly assigned to one of the six conditions discussed in the ‘research design’ section. Participants were randomly assigned using embedded variables with each respondent assigned a number from 1 to 6 representing one of the six conditions. As mentioned earlier, in the first two conditions (no effect), participants had the choice between three alternatives. In contrast, in the remaining four conditions, participants had the choice between four alternatives (one of which was unavailable). Furthermore, all participants were presented two choice sets: laptops and electric drills. In addition, the participants in the control groups and other 4 groups were only given the option to make a choice after 10 and 15 seconds respectively, until then the radio buttons were hidden. The variables ‘perceived choice difficulty’, ‘store blame’ and ‘others blame’ were measured immediately after each choice. Lastly, the participants were asked about their age, gender, occupation and nationality. All questions in the survey were mandatory in order to prevent incomplete responses.

3.6 Data analysis

As mentioned above, the data that of this experiment were acquired through the platform ‘Qualtrics’. After this was done, the data were imported into IBM SPSS Statistics 26 in order to analyse the collected data. First of all, the obtained data was cleaned up. In this process, new variables were created, and outliers removed from the data set. Subsequently, the sample was tested for normality. This study considers the significance level of 95%. Thus, a hypothesis is significant when the p-value is below 0.05 and it is not significant when the p-value is higher than 0.05.

CHAPTER 4 – RESULTS

In this chapter, the collected research data are analysed in order to test the hypothesis described in the conceptual model. However, this chapter starts with a description of the data collection process and the data preparation of the dataset, followed by the procedure of the hypotheses testing.

Data for the main experiment were collected from 25th of February until 5th of March. The sample for the experiment consisted of 671 respondents, of which 519 completed the experiment. Besides, regarding outliers in the completion time of the experiment, 76 respondents were removed from the final data set. Thus, 455 participants remained in the sample after this group was removed from the analysis.

4.1 Preparing the dataset

Before testing the pre-formulated hypotheses, the dataset was cleaned up first. Regarding outliers in the completion time of the experiment, 76 respondents were removed from the final data set. This group was removed from the analysis, because they took less than two minutes or more than seven minutes to complete the experiment. This duration was considered as a benchmark between a serious and not serious participation. Thus, the reduction of these respondents and the incomplete participations from the original number of respondents resulted eventually in a relevant dataset consisting of 455 participants. Subsequently, the dataset was further prepared by creating several subscales in SPSS. This is discussed in more detail in the next part.

4.1.1 Consistency

In order to include the 'product familiarity', 'store blame' and 'others blame' scales into analysis, these variables first had to be recoded into their underlying factor. This was performed on the basis of a reliability analysis. More specifically, the internal consistency reliability is used in order to assess the reliability of these 'summated' scales. Summated scales consist of several items that are summed to form a total score. In other words, each item of a scale of this type measures an aspect of the construct measured by the entire scale (Malhotra & Birks, 2005). The Cronbach's alpha is used to measure the reliability of the scales. The Cronbach's alpha varies between 0 and 1 with a value of 0.6 or less generally indicating insufficient internal consistency reliability (Malhotra & Birks, 2005). The Cronbach alpha for electric drill familiarity showed a high reliability ($\alpha = 0.840$), whereas laptop familiarity scored slightly lower but sufficient ($\alpha = 0.668$). The Cronbach's alpha for 'store blame' showed also a high reliability ($\alpha = 0.906$). Furthermore, the Cronbach's alpha for

'others blame' showed also a high reliability (α = 0.870). In short, after conducting a reliability analysis, all scales appeared to be high (or high enough) in consistency. This means that the scales were measuring the same concept as initially intended.

All summated scales had a sufficient internal reliability score which meant that creating these new variables could be started. Firstly, a new average product familiarity variable was created for both product groups by computing the mean of all product familiarity items for each participant. This resulted in two new variables 'laptop familiarity' and 'electric drill familiarity'. The same procedure was used for the new store blame and others blame variables. So, instead of two separate items for both variables, two new variables were created by computing the mean score of the two items for store blame and others blame. Next, a new variable was created which indicated the choice share of the target option. This was essential since the main effect of this study could be measured by this variable. In order to accomplish this, a new dummy variable was created for the choice share of target option. Hence, the original data set contained variables for each choice made. The new dummy variable recoded the target option into 1 and the other choice options into 0. Thence, several tests could be made on the choice share of the target option across conditions. The same procedure was used to create a new variable for the choice share of choice deferral.

4.1.2 Normality

Histograms, normality plots and formal methods like the Shapiro-Wilk test can be used to determine if a research sample comes from a normally distributed population. The Shapiro-Wilk test and normality plots were used in this analysis to find out whether parametric tests were justified. Razali and Wah (2011) showed that the Shapiro-Wilk test is the most powerful test for all types of sample sizes. However, the Shapiro-Wilk test is sensitive to a lot of data. This means that this test can find an irrelevant but statistically significant deviation from the normal distribution (Dalen & Leede, 2009). In other words, the statistic can be 0.99 whereas the *p*-value is below 0.05 which is not significant. Hence, this study considered normality by means of the statistic of the Shapiro-Wilk test and not by means of the *p*-value. This test ranges from 0 to 1 whereas 1 indicates a perfect normally distribution. The variable can be considered as normally distributed if it is higher than 0.90. The table 6 below shows the results of the Shapiro-Wilk test for the dependent variables of this study. As shown, all statistics were above 0.90 which indicates

that the data could be considered as normally distributed. Besides, all skewness and kurtosis were between -1 and 1, confirming that the data can be considered normally distributed (Bulmer, 1979).

	Shapiro-Wilk				
	Statistic	**df**	**Sig.**	**Skewness**	**Kurtosis**
Product choice	,915	455	,000	0.153	-0.667
Choice difficulty	,979	455	,000	-0.141	-0.454
Product familiarity	,991	455	,009	-0.072	-0.385
Others blame	,939	260	,000	0.490	-0.087
Store blame	,960	260	,000	-0.414	-0.095

Table 6. Shapiro Wilk test for normality

4.1.3 Sample description

The final sample consisted of 455 participants after the dataset was cleaned up. The sample consisted of 149 males and 306 females. The mean age of the participants was 25 years old (SD=8.101). The most common nationality was, as expected, Dutch (389 participants). Besides, 66 participants had an 'Other' nationality. The sample was composed of mainly students (with a part-time job), namely 318 participants were a student. Besides, 97 participants were full-time employed, 26 participants were part-time employed, seven participants were unemployed and seven participants had an 'Other' employment status.

In addition, it was tested whether the age and gender of the participants did not significantly differ across the experimental conditions. First, a One-Way ANOVA test showed that age did not significantly differ between the experimental conditions (F = (2, 451) = 0.329), p = 0.720). Next, a Chi-Square test showed that gender also did not significantly differ across the experimental conditions (χ^2 (2, N = 454) = 3.016, p = 0.221). In other words, these factors have no effect on the relationship with the dependent variables. As mentioned in chapter 'Methodology', participants were randomly distributed to one of the six conditions by the survey flow of Qualtrics. All conditions in this study had at least 67 respondents which is considered as a sufficient number of observations per condition. Simmons et al. (2013) advised researchers to have at least 50 participants per 'cell' (i.e. condition), because otherwise their studies are likely to be

underpowered which can lead to a situation where researchers cannot learn or publish. This study has six conditions with a number of participants varying between 67 and 86.

4.1.4 Manipulation check

First, it was tested whether the used products were perceived differently on familiarity. As expected, there was a variation in the familiarity of participants between different product categories (Table 7). Participants were on average more familiar with laptops (M = 3.59, SD = 0.857) than with electric drills (M = 2.69, SD = 1.097). Results showed that this difference was significant (Appendix C, Table 13).

	Mean	**Standard deviation**
Familiarity laptop	3.59	0.857
Familiarity electric drill	2.69	1.097

Table 7. Participants' mean levels of familiarity with the product categories

In addition, it was tested participants' level of familiarity with both products differed between genders (Table 8). Males (M = 3.960, SD = 0.803) were on average more familiar with laptops than females (M = 3.416, SD = 0.830). In addition, males (M = 3.119, SD = 1.09) were also more familiar with electric drills than females (M = 2.497, SD = 1.047),. Results showed that these differences were both significant (Appendix C, Table 14). Thus, this study will consider laptop as a familiar product and electric drill as unfamiliar product.

	Gender	**Mean**	**Std. Deviation**
Familiarity laptop	Male	3,960	,803
	Female	3,416	,830
Familiarity electric drill	Male	3,119	1,090
	Female	2,497	1,047

Table 8. Familiarity with the product categories across genders

4.2 Hypotheses testing

The proposed hypotheses in Chapter 2 (Literature review) are tested in this section. Before testing these hypotheses, it was checked whether the obtained data supports the assumptions of the test.

4.2.1 Differences in product choice (hypotheses H1a, H1b and H1c)

This part discusses the differences in product choice between decision making in a known phantom, unknown phantom and no-effect choice context. In particular, it was hypothesized that

decision making in a known phantom choice context results in a significant higher choice share for the target option compared with decision making in an unknown phantom choice context (H1a). Besides, it was hypothesized that decision making in a phantom choice context results in a significant higher choice deferral compared with decision making in a no-effect choice context (H1b). Lastly, it was hypothesized that decision making in an unknown phantom choice context results in a significant higher choice deferral compared with decision making in a known phantom choice context (H1c).

The dependent variables in these hypotheses are choosing the target option and choice deferral. Both dependent variables are measured binary. Therefore, a logistic regression is most suitable to test these hypotheses. A logistic regression shows the probability that an observation falls into one of the two categories of a binary dependent variable caused by one or more independent variables. First, it had to be checked whether the data support this test. The first assumption was met, as the dependent variables were measured on a dichotomous scale (yes or no). 'Yes' means that the participants had deferred their choice or chosen the target option. 'Yes' was for both dependent variables labelled as the desired option (=1), whereas no choice deferral and not choosing the target option were labelled as 0. The second assumption was also met, as the independent variable for all the hypotheses was the choice context (e.g. 3 groups: no effect, known phantom and unknown phantom) which is a nominal variable. The third assumption is that the observations should be independent. This assumption is met, as this study is based on a between-subject design. The last assumption of the logistic regression is that there should be a linear relationship between the continuous independent variables and the dependent variable. However, the independent variables are nominal or ordinal. Thus, this assumption was met. The data met all the assumptions of a logistic regression which means that the logistic regression could be performed.

First, the choice share of the target option across the experimental conditions were compared in order to obtain exploratory insights. In figure 3, the differences in the percentage of participants who chose the target option per product group can be observed for the three experimental conditions. As shown, the choice share of the target option for laptops is the highest in the unknown phantom condition (42%). Besides, it is noteworthy that the choice share of the target option for laptops in the known phantom condition (29%) is slightly lower than in the control condition (33%). About the same result can be observed for electric drills. The unknown phantom condition

(36%) has the highest choice share for the target option. However, the choice share for the target option in the known phantom condition (30%) is here slightly higher than in the control condition (27%).

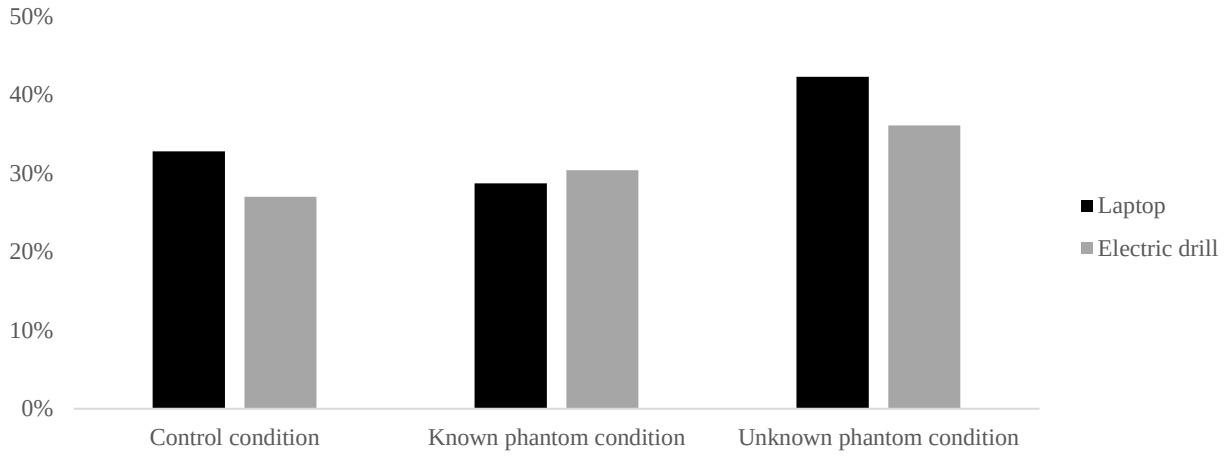

Figure 3. Choice share for the target option per product group across conditions

Subsequently, Pearson Chi-square tests were conducted in order to test whether the choice share for the target option is statistically different between the experimental conditions. This test was chosen because the data passed the two assumptions of this test. Hence, the dependent variable in this test is binary and the independent variable consisted of two or more independent groups. The output of the Pearson Chi-square tests can be found in Appendix C (Table 15 & 16). Results showed that there are significant differences between the three experimental conditions in the laptop choice share for the target option ($\chi^2 = 6.595$, $p = 0.037$). However, results showed that the differences between the experimental conditions in the electric drill choice share for the target option were not significant ($\chi^2 = 2.785$, $p = 0.248$).

The logistic regression model was statistically significant ($\chi^2 = 6.543$, $p = 0.038$) (Appendix C, Table 17). Results of the logistic regression (Appendix C, Table 18) showed that compared to the unknown phantom choice context, the known phantom choice context ($\beta = -0.597$, $p = 0.012$) is a significant predictor of the likelihood that participants chose the target option in a laptop choice task. More specifically, the odds of choosing the target option in the known phantom condition decreased by 45% (1 - 0.551) compared to the unknown phantom condition. In other words, participants in the unknown phantom condition were 1.8 times more likely to choose the target option in a laptop choice task than participants in the known phantom condition. Thus, hypothesis

H1a is rejected for laptops. In addition, the same test was used to examine the phantom effect for the electric drill choice task. However, the logistic regression model was statistically not significant for electric drills ($\chi^2 = 2.775$, $p = 0.250$) (Appendix C, Table 19). Results (Appendix C, Table 20) showed that compared to the unknown phantom choice context, the known phantom choice context ($\beta = -0.255$, $p = 0.286$) is not a significant predictor for the likelihood that participants chose the target option in an electric drill choice task. Hypothesis H1a is therefore rejected, as the opposite of what was expected occurred for both product groups. In other words, the phantom effect was significantly greater in the unknown phantom condition than in the known phantom condition during a laptop choice task.

Next, as with the previous hypothesis, logistic regressions were performed in order to investigate whether the choice deferral was higher in the phantom conditions than in the no effect condition. The logistic regression was performed per product group, with the results for laptops discussed first. The logistic regression was significant ($\chi^2 = 21.575$, $p = 0.000$) (Appendix C, Table 21). Results (Appendix C, Table 22) showed that compared to the no effect choice context, the known phantom choice context ($\beta = 1.112$, $p = 0.000$) is a significant predictor of the likelihood that participants defer their choice during a laptop choice task, whereas the unknown phantom choice context is not ($\beta = 0.341$, $p = 0.228$). Therefore, hypothesis H1b is conditionally confirmed. Next, the same test was performed for electric drills. The logistic regression was, in this case, not significant ($\chi^2 = 4.464$, $p = 0.107$) (Appendix C, Table 23). However, results (Appendix C, Table 24) showed that compared to the no effect choice context, the known phantom choice context ($\beta = 0.708$, $p = 0.046$) is a significant predictor of the likelihood that participants defer their choice during an electric drill choice task. Nevertheless, the unknown phantom choice context was not a significant predictor ($\beta = 0.571$, $p = 0.123$). Therefore, hypothesis H1b is conditionally confirmed as choice deferral was only significantly higher in the known phantom condition than in the no effect condition.

Lastly, it was tested whether choice deferral was higher in the known phantom than in unknown phantom condition. Logistic regressions were performed to ascertain the effect of phantom knowledge on choice deferral. This test was performed per product group, with the results for the laptops discussed first below. The logistic regression was significant ($\chi^2 = 21.575$, $p = 0.000$). Results (Appendix C, Table 25) showed that compared to the unknown phantom choice context,

the known phantom choice context ($\beta = 0.772$, $p = 0.001$) is a significant predictor of the likelihood that participants defer their choice during a laptop choice task. Participants in a known phantom choice context were 2.163 times more likely to defer their choice than participants in an unknown phantom choice context. Hypothesis H1c is therefore rejected for laptops. Hence, the opposite effect of what was expected occurred. Next, the same test was performed for electric drills. The logistic regression was, in this case, not significant ($\chi^2 = 4.464$, $p = 0.107$). Results (Appendix C, Table 26) showed that compared to unknown phantom choice context, the known phantom choice context ($\beta = 0.137$, $p = 0.651$) was not a significant predictor of the likelihood that participants defer their choice during a laptop choice task. Therefore, hypothesis H1c is rejected for both product groups.

4.2.2 Differences in perceived choice difficulty (hypotheses H2a and H2b)

This part discusses the differences in perceived choice difficulty between decision making in a known phantom, unknown phantom and no effect choice context. Hypotheses H2a and H2b were formulated for this part. It was hypothesized decision making in a phantom choice context results in a higher perceived choice difficulty than decision making in a no effect choice context. Furthermore, it was hypothesized that decision making in a known phantom choice context is perceived as less difficult compared to decision making in an unknown phantom choice context. A One-Way ANOVA and independent sample t-test were used to test these hypotheses.

Before running the statistical tests, the assumptions for a One-Way ANOVA and an independent t-test had to be checked. These two statistical tests have the same assumptions and checking the assumptions will therefore apply to both tests. The first assumption was met, as the dependent variable (perceived choice difficulty) is measured on a continuous level. Furthermore, the second assumption was also met, as the independent variable (choice context) consists of three main groups. Thirdly, the observations should be independent. This is met, as this study is based on a between-subject design. The fourth assumption is that there should be no significant outliers. The Boxplot (in Appendix C, Figure 8) revealed one outlier. However, excluding the outlier did not result in a significant different result. Therefore, it was not needed to exclude the outlier from the full dataset. Furthermore, both tests require that the dependent variable should be approximately normally distributed for each category for each group (Appendix C, Figure 9 - Figure 11). This was tested by performing a Shapiro-Wilk test (Appendix C, Table 27). The test showed that each group had a value of 0.9 or higher and all skewness and kurtosis were between -1 and 1, confirming

that the data can be considered as normally distributed (Bulmer, 1979). The last assumption of these two tests is that there should be homogeneity of variances. This assumption was tested by performing a Levene's test in SPSS. Results of this test (Appendix C, Table 28) showed that the variances are homogenous (p = 0.631). Thus, all assumptions for a One-Way ANOVA and an independent sample t-test were confirmed. Next, a One-Way ANOVA was conducted on the influence of choice context on perceived choice difficulty.

As a result of the One-Way ANOVA test (Appendix C, Table 29), it appeared that there were no significant differences between the experimental conditions (F (2, 452) = 0.639, p = 0.528). In addition, to further examine what this implied a Post Hoc test across the three experimental conditions was conducted. Results (Appendix C, Table 30) showed that the average perceived choice difficulty of the unknown phantom condition (M = 4.19, SD = 1.24) was not significantly higher than for the no effect condition (M = 4.13, SD = 1.23) (p = 0.690). Besides, the average perceived choice difficulty in the known phantom condition (M = 4.29, SD = 1.26) was also not significantly higher than for the control condition (p = 0.269). Therefore, hypothesis H2a is rejected. Nonetheless, there was a pattern in the data that supported the hypothesis.

Subsequently, it was tested whether the perceived choice difficulty for the known phantom condition was higher than the unknown phantom condition. An independent t-test was conducted to test this effect. As mentioned above, the data met all assumptions of an independent t-test. Therefore, the test could be conducted. As a result of the independent t-test (Appendix C, Table 31) it appeared that the mean of perceived choice difficulty for the known phantom condition (M = 4.29, SD = 1.26) was not significantly (p = 0.483) higher than the mean of perceived choice difficulty for the unknown phantom condition (M = 4.19, SD = 1.24). Therefore, hypothesis H2b is rejected, as the opposite pattern of what was expected appeared.

4.2.3 The effect of perceived choice difficulty on choice deferral (hypothesis H3)

This part discusses whether perceived choice difficulty is a predictor for choice deferral. Hypothesis H3 was formulated for this part. Specifically, it was hypothesized that higher perceived choice difficulty leads to more choice deferral in decision making. A binary logistic regression was performed in order to test whether higher perceived choice difficulty leads to more choice deferral. As stated earlier, all assumptions of the logistic regression were met for the dependent variable choice deferral. The first assumption was met as the dependent variable in this test was

choice deferral and was measured binary (yes or no). This test had one independent variable (perceived choice difficulty) which was measured categorical. Furthermore, the observations were independent as this study is based on a between-subject design. Lastly, the independent variable in this case was measured categorical and therefore the last assumption was not relevant for this test. Next, a logistic regression was performed on the influence of perceived choice difficulty on choice deferral. The logistic regression was performed two times as participants were placed in two choice tasks and could therefore opted twice for choice deferral. First, the results of the logistic regression on the influence of perceived choice difficulty on choice deferral for laptops are discussed.

The logistic regression for laptops (Appendix C, Table 32) was statistically significant (χ^2 = 14.226, p = 0.000), whereas the model for electric drills was not significant (χ^2 = 2.997, p = 0.083) (Appendix C, Table 34). The odds ratio (Exp(B)) was for both laptops (0.760) as electric drills (8.868) less than one, indicating that a negative relationship between perceived choice difficulty and choice deferral (Appendix C, Table 33). More specifically, for every unit increase of perceived choice difficulty, the odds of choice deferral decrease by 24% (1 - 0.760) in a laptop choice task. In addition, a one-unit increase of perceived choice difficulty leads to a decrease of choice deferral by 13.2% (1 - 0.868) in an electric drill choice task, controlling for other predictors (Appendix C, Table 35). Therefore, hypothesis H3 is rejected. Hence, this was contrary to what was proposed in H3, because a higher level of perceived choice difficulty led to less choice deferral.

4.2.4 Differences in store and others blame (hypotheses H4 and H5)

This part discusses the impact of choice context on store and others blame. It was hypothesized that participants who were presented a (known and unknown) phantom decoy would put the blame for the unavailability of the decoy more often on the store than on other consumers (H4). In addition, it was hypothesized that store blame would be higher in the unknown phantom condition than in the known phantom condition (H5). Hypothesis H4 was tested using a paired t-test whereas an independent t-test was used for testing hypothesis H5. Next, the assumptions for a paired t-test are tested in order to check whether the data passed these assumptions.

Both store and others blame were measured on a continuous level and therefore the first assumption of the independent t-test was met. Secondly, the independent variable in this test was choice context and was measured categorical. In addition, the independent variable consisted of

'related groups' which refers to the presence of the same participants in both groups. Therefore, the second assumption was met. Next, there should be no outliers. This was not the case as six outliers were detected for store blame and three outliers for others blame. However, excluding the outliers did not result in a significant different result. Therefore, the outliers were not excluded. The last assumption of the paired t-test is that the data should be approximately normally distributed. This was tested by using a Shapiro-Wilk test. Table 6 shows the results of the Shapiro-Wilk test for the dependent variables of this test. Both statistics were above 0.90 which indicates that the data could be considered as normally distributed. Besides, both dependent variables had a skewness and kurtosis between -1 and 1, confirming that the data can be considered normally distributed (Bulmer, 1979). Next, the results for hypothesis H4 are discussed.

A paired t-test was conducted with store blame and others blame as dependent variables in order to test whether there is a significant difference between the two variables. Control conditions were disregarded for both hypothesis H4 and H5 testing. The participants in these conditions had no (phantom) decoy in their choice set. Therefore, they could not be asked whether they blamed the store or other consumers for the unavailability of the third product (phantom decoy). This statistical test (Appendix C, Table 36) showed that the store blame (M = 3.35, SD = 0.890) was higher than others blame (M = 2.08, SD = 0.810). Besides, results showed that this difference was significant (t = 18.340, df = 259, p = 0.000). In other words, participants in the phantom conditions blamed the store more for the unavailability of the phantom decoy than other consumers. Therefore, hypothesis H4 is confirmed.

Next, an independent t-test was conducted to test whether others blame was higher in the unknown phantom condition than in the known phantom condition. First, it was checked whether the obtained data met the assumptions of this statistical test. The dependent variable (others blame) was measured on a continuous scale. Secondly, the independent variable consisted of two categorical groups. Thirdly, the observations are independent as this study is based on a between-subject design. Fourthly, there were three outliers detected for others blame. However, excluding these outliers did not result in a significant different result. Therefore, outliers were not excluded in this case. Fifth, as mentioned earlier, the dependent variable could be considered as normally distributed. Lastly, a Levene's test (Appendix C, Table 37) showed that the variances were homogeneous. Thus, all assumptions were met and therefore this test could be conducted. The

independent t-test (Appendix C, Table 38) showed that others blame was higher in the unknown phantom condition (M = 2.12, SD = 0.812) than in the known phantom condition (M = 2.06, SD = 0.810). However, this difference was not significant (p = 0.567). Therefore, hypothesis H5 is rejected. Nonetheless, there was a pattern here that was consistent with the hypothesis.

4.2.5 The moderating role of choosing for others

This part discusses whether choosing for others moderates the relationship between phantom choice context and product choice. In particular, it was tested whether choosing for others significantly moderate the relationship between the addition of a third unavailable alternative (trinary choice set) versus no addition (binary choice set) to the product choice. Specifically, it was hypothesized that the phantom effect is greater when individuals choose for others than when choosing for oneself (H6). The moderating effect of choosing for others on the relationship between phantom choice context and product choice was tested by using a logistic regression. However, first a Chi-Square test was conducted to test whether the choice share for the target option is statistically different between the experimental conditions. The obtained data for this hypothesis is the same as for the tested hypotheses H1a, H1b and H1c. As mentioned in paragraph 4.2.1, the obtained data meets the assumptions for logistic regression and therefore this test could be conducted next.

	Choosing for self			**Choosing for others**			
Product	No-effect condition	Phantom conditions	ΔP_s (%)	No-effect condition	Phantom conditions	ΔP_o (%)	X^2
Electric drill	30%	27.6%	-2.4%	23.9%	38.7%	14.8%	14.076
Laptop	35.7%	38%	2.3%	29.9%	31.6%	1.7%	19.787

Table 9. Phantom effect under self-versus others condition

As shown in table 9, results show a difference of the phantom effect between the choosing for oneself and others conditions. In the case of the electric drill, the relative share of the target option increases by 14.8% under the choose for others condition while it decreases by 2.4% under the choose for self-condition. Thus, the gap between choosing for others and self is 17.2% (χ^2 = 14.076, p = 0.026). However, this was not case for the laptop, because the relative share of the target option increased by 1.7% under the choose for others condition whereas it increased by 2.3%

under the choose for self-condition. This means that the difference between choosing for others and self is negative for the laptop.

Next, a logistic regression was performed to test whether the phantom effect was greater when participants chose for others than when they chose for themselves. This statistical test was performed by product group. First, it was tested whether phantom effect was greater when choosing for others in a laptop choice task and next in an electric drill choice task. The logistic regression for laptops was not significant (χ_2 = 1.446, p = 0.229) (Appendix C, Table 39). Therefore, hypothesis H6 is rejected for laptops. The logistic regression for electric drills was significant (χ_2 = 4.437, p = 0.035). Results showed that compared to the phantom-self conditions, the phantom-others condition was a significant predictor of the likelihood that participants choose the target option during an electric drill choice task. The odds ratio (Exp(B)) was 1.656, which indicates that participants who chose for another person were 1.656 times more likely to choose the target option than participants who chose for themselves (Appendix C, Table 42). Therefore, hypothesis H6 is confirmed for electric drills.

4.2.6 The moderating role of product familiarity

This part discusses whether product familiarity is a moderator in the relationship between phantom choice context and product choice. Specifically, it was hypothesized that the phantom effect is greater when consumers are less familiar with the product (H7). Moderation analysis were conducted for each product group in order to test whether product familiarity moderates the relationship between choice context and product choice. The dependent variable in this test was dichotomous and therefore a logistic regression was the most appropriate statistical test. Hence, the first assumption of a logistic regression was met, as the dependent variable is binary. The independent variables were categorical or continuous and therefore the second assumption was also met. The third assumption was met, as this study is based on between-subject design.

The known phantom condition and unknown phantom condition were considered as one group for this analysis, as these two groups had a choice set including a phantom decoy whereas the no effect condition had a choice set where a decoy was absent. A dummy variable (Dcondition) was created to indicate whether the participant was presented a known or unknown phantom decoy (Dcondition = 1) or no decoy (Dcondition = 0). Furthermore, the variables laptop familiarity and electric drill familiarity were centralized by subtracting the mean score of these variables by a participant's

score on these variables. Lastly, an interaction variable was created by multiplying the value of the centred laptop and electric drill familiarity with the dummy variable.

Results showed that the logistic regression model for laptops ($\chi_2 = 1.568$, $p = 0.211$) and electric drills ($\chi_2 = 2.318$, $p = 0.128$) were both not significant. In the case of laptops, the interaction effect of Dcondition*LP_familiarity was not significant ($p = 0.209$). This indicates that product familiarity does not act as moderator on the relationship between choice context and product choice. In addition, the interaction effect of Dcondition*ED_familiarity was also not significant ($p = 0.128$), but the significance did increase by the addition of the moderating effect. However, hypothesis H7 is rejected for both product groups as product familiarity did not significant moderate the relationship between choice context and product choice. However, in the case of electric drills, results showed a pattern that was in line with the proposed hypothesis.

4.2.7 Overview of the findings

Based on the analysis above, two of the formulated hypotheses have been supported while the other hypotheses are rejected. The table below provides an overview of the findings.

Hypotheses overview		**Supported / not supported / conditionally supported**
$H1_a$	The phantom effect is greater in the known phantom condition than in the unknown phantom condition.	Not supported
$H1_b$	Choice deferral is higher in the phantom conditions than in the no effect condition.	Conditionally supported
$H1_c$	Choice deferral is higher in the unknown phantom condition than in the known phantom condition.	Not supported
$H2_a$	Choice difficulty is higher in the phantom conditions than in the no effect condition.	Not supported
$H2_b$	Choice difficulty is higher in the unknown phantom condition than in the known phantom condition.	Not supported
H3	Higher perceived choice difficulty leads to more choice deferral.	Not supported
H4	Store blame is higher than others blame in the phantom conditions.	Supported
H5	Others blame is higher in the unknown phantom condition than in the known phantom condition.	Not supported
H6	The phantom effect is greater when consumers choose for others than when choosing for oneself.	Conditionally supported
H7	The phantom effect is greater when consumers are less familiar with the product.	Not supported

Table 10. Overview of all tested hypotheses

CHAPTER 5 - CONCLUSION

In this chapter, the results of the formulated hypothesis are discussed. Next, limitations and suggestions are discussed for further research, followed by the academic and administrative implications.

5.1 Summary of findings

The most important results per variable are discussed and briefly explained below. In the paragraph 'Limitations and suggestions for future research' that follows, it is explained in more detail why certain results were not as expected.

5.1.1 Product choice

First of all, the main effect tested in this experiment did surprisingly not arise in this experiment. Specifically, it was hypothesized that the phantom effect would be greater in the known phantom condition than in the unknown phantom condition. However, the opposite of what was hypothesized was true, because a logistic regression showed that the phantom effect was significantly greater in the unknown phantom condition than in the known phantom condition. In other words, the phantom effect was not greater in the known phantom choice context. This result is not in line with the existing theory stating that consumers prefer the competitor option in an unknown phantom choice context, because of the boomerang effect (Scarpi & Pizzi, 2013). Apparently, this does not apply to this study and not only known phantom decoys increase the choice share of the target option in online decision making, but also unknown phantom decoys.

Furthermore, it was examined whether the addition of a choice deferral (i.e. no choice) option would have an impact on decision making in phantom choice contexts. In particular, it was hypothesized that choice deferral would be higher in the phantom conditions than in the control condition without decoys. Previous literature showed contradictory results regarding the effect of adding a no choice option into a (known) phantom choice context (Scarpi & Pizzi, 2013; Ge, Messinger, R., & Li, 2009). A logistic regression provided partly evidence to support this hypothesis. More specifically, decision making in a known phantom choice context results in significant higher choice deferral than decision making in a no effect choice context. This result is in line with existing theory stating that decision making in a known phantom choice context leads to more choice deferral than in a no effect choice context (Hedgcock, Rao, & Chen, 2016). However, decision making in an unknown phantom choice context did not result in a significant

higher choice difficulty than in a no effect choice context. Hence, this study is considered first to examine this effect which makes it hard to compare with existing literature.

In addition, it was hypothesized that decision making in an unknown phantom choice context would result in higher choice deferral than decision making in a known phantom choice context. However, it is not found that decision making in a choice context in which the phantom decoy is unknown leads to more choice deferral than in a choice context containing a known phantom decoy. In contrast to what was hypothesized, results provided evidence that decision making in a known phantom choice context leads to significantly higher choice deferral than in a unknown phantom choice context. This is surprisingly, because it is not in line with existing literature (Scarpi & Pizzi, 2013). However, this result can be explained by the fact that this study included a 'no-choice' option in the choice set, whereas the previous study asked participants, only after they had chosen, whether they had deferred their choice if that was possible.

5.1.2 Perceived choice difficulty

Next, this study examined whether the perceived choice difficulty differed across the phantom and no effect conditions. More specifically, it was hypothesized that decision making in the phantom choice contexts would be perceived as more difficult than in a no effect choice context. In addition, it was expected that decision making in an unknown phantom choice context would be perceived as more difficult than in a known phantom choice context. However, the conducted tests did not provide the expected results. The findings of this study indicate that there is no significant difference in perceived choice difficulty between a choice context including a phantom decoy and without a decoy. However, the pattern of the results was in line with the hypothesis, but not significant. This might be explained by the fact that this study used a scale that consists of one statement to measure the perceived choice difficulty whereas previous studies used scales varying between three, four or even five statements. Therefore, this study might not consider all aspects of choice difficulty which causes not significant results. Furthermore, this study proposed that decision making in an unknown phantom choice context results in a higher perceived choice difficulty than in a known phantom choice context. However, results showed that the perceived choice difficulty did not significantly differ between the known and unknown phantom choice context. Surprisingly, the perceived choice difficulty was slightly higher in the known phantom choice context than in the unknown phantom choice context, but not significant. As previously

stated, this study is considered as the first one to include perceived choice difficulty as variable in the context of the phantom effect which makes it complicated to compare with existing literature. However, this result is not in line with existing literature stating that decision making in an unknown phantom context results in more dissatisfaction, regret and anger (Scarpi & Pizzi, 2013). This result might be explained by the presentation of the options that was used in this experiment. Hence, the phantom option was presented at the same time as the other options in the choice set, whereas previous literature presented the (known) phantom option first and a few seconds later the other options. The method used in this study might have influenced the evaluation of decision making in a known phantom choice context. This will be discussed in more detail in the section '*limitations and suggestion for future research*'.

5.1.3 Blame

This study is considered to be the first one to include blame as variable in the context of the phantom effect. There was a distinction made in this study between store and others blame. It was tested whether decision making in the known and unknown phantom choice contexts resulted in different blames for the unavailability of the phantom decoy. In particular, it was hypothesized that decision making in both phantom choice context results in higher store blame than others blame for the unavailability of the decoy. In addition, it was hypothesized that decision making in an unknown phantom choice context leads to higher others blame than in a known phantom choice context. Paired sample t-test provided evidence that decision making in a phantom choice context indeed significantly leads to higher store blame than others blame. Although, there is no prior research regarding this effect, this result is line with the theory that retailers are responsible for their storage, reduce out-of-stock and mention clearly why the product is unavailable (Kumar et al., 2021; Sloot, C., & Franses, 2005). Hence, this experiment did not explicitly specified why the phantom decoy was unavailable. This explains why the store was more often blamed for the unavailability of the decoy. Furthermore, results did not confirm the expectation that decision making in an unknown phantom choice context leads to higher others blame than in a known phantom choice context. Although the data showed a pattern in line with this hypothesis, because others blame was higher in the unknown phantom choice context than in the known phantom choice context. However, the difference was not significant.

5.1.4 Choosing for others

As for the variable 'blame', it also holds for the variable 'choosing for others' that this research is considered as the first to investigate this variable in the context of the phantom effect. More specifically, it was examined whether choosing for others would have a moderating effect on the relationship between phantom decoys and product choice. It was hypothesized that choosing for others results in a greater phantom effect than choosing for oneself.

Results provided partly evidence to support this hypothesis. This study considered two products which are a laptop and electric drill. Results showed that when an electric drill was chosen for another, the phantom effect is significantly greater than when the same product is chosen for oneself. However, the moderating effect was not verified for the laptop. In other words, choosing for others was only a significant moderator for the phantom effect for the electric drill. Therefore, it can be concluded that choosing for others causes a greater phantom effect for unfamiliar products and not for familiar products. This is in line with the existing theory stating that the more asymmetric an individual's attributed importance is of a product, the less likely the individual is to choose the compromise option (Sheng, Parker, & Nakamoto, 2005). Therefore, this study confirmed this theory also for the phantom effect. Hence, choosing for others resulted only in a greater phantom effect than choosing for oneself in the case of a unfamiliar product. Thus, this result can be explained by the fact this study considered both a familiar and unfamiliar product.

5.1.5 Product familiarity

Lastly, this study examined whether product familiarity moderated the relationship between the phantom decoys and product choice. This study is considered the first one to include product familiarity as moderator in the context of the phantom effect. Specifically, it was examined whether the phantom effect becomes greater when consumers are less familiar with the product. Therefore, this study used an electric drill and laptop as product groups, because the former is generally considered as a low familiar product and the latter as a high familiar product. Results did not provide significant evidence that less familiarity of a product results in a greater phantom effect. A logistic regression showed that participants' familiarity with electric drills somewhat moderated the phantom effect. Simply stated, if a participant is not familiar with electric drills, it results in a greater phantom effect. However, this effect was not significant in this study. This is

in line with existing theory stating that higher familiarity of the product results in a less impact of contextual effects (Sheng et al. , 2005; Chang et al., 2012; Coupey et al., 1998).

On the other hand, the same test was conducted for laptops. Results showed that the participants' familiarity with laptops did also not significantly moderate the phantom effect. However, there was pattern at which higher laptop familiarity leads to a greater phantom effect which is not in line with the existing literature. This difference might be explained by the theory that laptops are considered as a product with which consumers are generally familiar (Sheng et al., 2005). They pointed out that familiarity influences the compromise effect via information processing. In other words, if consumers are very familiar to a product they may gain much information from their own experiences and memory. This causes an evalution of the product which is asymmetrically regarding the relative importance of the products' attributes (Sheng et al., 2005; Chang et al., 2012).

5.2 Limitations and suggestions for future research

This study was conducted with a high level of precision. Nonetheless, this study has also a number of limitations. The first limitation of this study is the duration of participation of this study. As mentioned before, a benchmark time was set between a serious and not serious participation with outlier analysis. However, it cannot be ensured that everyone that participated was completely serious. This could be prevented by a number of attention questions or hiding the 'next button' for a few seconds at pages where an instruction was given.

An important limitation of this study is that, in contrast to existing literature regarding the phantom effect, the dimensions of the products used in this experiment were realistic. Previous studies (Scarpi & Pizzi, 2013; Pettibone & Wedell, 2000) used fictious dimensions to create the desired phantom effect. Adjusting the value of the dimensions ensures that size of the phantom effect can easily increase or decrease. Furthermore, it is also worth mentioning that the product attributes in this study were also somewhat subjective selected. This was the case, because it was decided to continue somewhat on previous literature on the phantom effect. Nonetheless, consumers who are used to trade-off their own set of attributes for a product in order to make a choice, could be unable to use a trade-off choice rule in a situation where they have to make a choice with other (irrelevant) attributes (Ratneshwar, Schocker, & Stewart, 1987). Simply stated, individuals who are used to base their decision of a laptop on price, brand, processor or other relevant attributes, are unable to

use a consciously trade-off rule in making a decision of laptop based on RAM and hard disk capacity which was the case in this experiment. Hence, this might partly account for the cases where the phantom effect did not arise. Because it is remarkable that the phantom effect was the least strong in the known phantom condition and at the same time the choice deferral was the highest in this condition, whereas it was expected that the phantom effect would be the greatest in this condition.

The following limitation is about the products used in this study. Participants were asked to choose a laptop and an electric drill. These two products were selected for this study in order to contribute to existing literature on the phantom effect and choosing for others (Scarpi & Pizzi, 2013; Chang et al., 2012). These two products were also selected as these studies showed that laptops and electric drills are generally considered as respectively familiar and unfamiliar products. However, these two products are also generally considered as products that require more involvement during decision making, whereas this study did not consider products which have a lower degree of involvement. For example, when a consumer purchases a 'fast moving consumer good (FMCG)' such as a soda drink, the consumer feels less involved compared to purchasing a laptop. Thus, the statements made concerning the phantom effect in online decision making are limited to more high involvement products. Therefore, it is recommended for future research to examine also low involvement products such as FMCG's.

Moreover, it is also noteworthy that in this study 'others' included only a classmate. Simply stated, this study only investigated the difference between making a choice for a classmate and oneself. The main reason for considering only a classmate was to contribute to prior literature on the moderating effect of choosing for others on context effects. Hence, Chang et al. (2012) showed that the compromise effect was found to be greatest when choosing for a classmate, then a family member, a friend and oneself. Therefore, it was decided to only consider a classmate in this study, because the phantom effect was expected to be greatest when choosing for someone with whom one has a more distant relationship. Another reason for including only a classmate was the limited time and size of this study. Hence, if it was decided to include groups that had to choose for family and friends, more conditions would be needed in a between-subject design and therefore more participants. However, it would be interesting to further investigate the moderating effect of choosing for others on the phantom effect by including choosing for a family member and friend.

The next limitations of this study concern the choice context where participants were placed in. First, participants were asked to imagine themselves in an online consumer decision making context where they had to choose for a classmate or themselves depending on the experimental condition, they were in. In addition, they were also asked to imagine that the brand and price of the products were the same and they only knew the values of the two provided attributes. However, this question can cause a bias, as everyone can imagine it differently. Besides, it also ensures participants to use their trade-off rule in decision making. This problem could be avoided by conducting a field experiment with a realistic environment. For future research, it is therefore recommended to test the phantom effect in a 'real' web shop. Next, the position of the phantom decoy in the choice set was limited due to the limitations of the program. More specifically, it was not possible to position the unavailable product (i.e. phantom decoy) on different places, because the programming language required for this was not accepted by Qualtrics. Therefore, the phantom decoy could only be added as the last option in the choice set. As a result, after having made the first choice (for a laptop), participants could expect the last option in the electric drill choice set to be unavailable and therefore not to consider it as an option. Hence, the phantom effect may have been less strong because of this. For future research it is recommended to use a program which is able to position an unavailable option at every place to prevent possible side effects.

Another limitation regarding the choice context of this study were the limitations of the program used for the experiment. This study proposed to investigate to what extent the phantom effect arises in an online consumer environment. Therefore, a fictional web shop was created with the program 'Qualtrics'. Nonetheless, although it has been tried to create a fictive web shop, it is of course not exactly the same as in practice. In addition, before the participant had to make a product choice, a page was presented with some instructions and a case description. This page consisted of a red attention text to make participants aware of what they have to do. However, there was a possibility that the participant would click through this page immediately without reading the case. This could be prevented by hiding the next button for a few seconds.

Furthermore, the variable perceived choice difficulty in this study was measured by single item scale whereas previous studies used scales consisting of more items. For example, the scale used for this study was from Hanselmann and Tanner (2008). However, in their second study they extended that scale with four items. Their extended scale measured various aspects of the perceived

choice difficulty, such as ambivalence, certainty of decision, readiness to decide, or need for additional time (Hanselmann & Tanner, 2008). Nonetheless, the added items were ignored for this study since there was no time pressure for the participants in this experiment and because the items regarding readiness to decide and certainty of decision were contradictory. Using only one statement to measure such an important variable can be considered as a limitation of this research, since choice difficulty can consist of several aspects. Therefore, it is recommended for future research to use a scale that measures various aspects of choice difficulty.

The last limitations of this research are related to demographics. First, most of the participants were students. It was decided to let mainly students participate to contribute to previous research concerning the phantom effect. The question is, to what extent do students truly represent the entire population. Besides, the majority of the participants in this study were Dutch. Therefore, these results do not contribute to the generalizability on a global scale. Hence, participants from another continent in the world might have a different frame of reference and could therefore react different to the phantom decoys.

Next, it is also noteworthy that the age and gender of the participants in this study were not representative for the population. First, almost twice as many females than males participated to this study whereas the Dutch university population consists of more males than females. Besides, the gender of the participants is significantly different from the Dutch population. Furthermore, the average age of the participants was also significantly different from both the Dutch and Dutch university population. Mainly the gender of the participants had some influence on the results as males were significantly more familiar with electric drills and laptops than females. Therefore, it is recommended for future research to use a more varied sample in order to prevent the limitations mentioned above.

In addition to the limitations, a number of suggestions for future research have already been mentioned above. However, based on the discussed limitations and results of this study, some concrete suggestions for future research are provided below. First, it is noteworthy that the phantom effect is a relatively unexplored topic compared to other contextual effects such as the attraction and compromise effect. Therefore, there is still much to be researched on this topic. In future research, it would be interesting to conduct a cross-cultural study to examine whether individualistic versus collectivistic cultures, have different phantom effects when they have to

choose for others instead of themselves. As mentioned above, the products used in this experiment are generally considered as high involved and consisted of realistic values for attributes whereas previous studies used more fictive values. Therefore, future research could investigate whether product involvement moderates the phantom effect.

In addition, phantom decoys not only differ on knowledge, but can also differ on location. This study considered only 'close' phantoms decoys, as existing literature showed that known phantoms are strongest when close whereas unknown phantom are strongest when far (Scarpi & Pizzi, 2013). Hence, future research could investigate whether this is also true for online consumer decision making. Lastly, this study examined the phantom effect in online consumer decision making. An important aspect of online decision making is the device on which the consumer is making the decision. Previous studies showed that consumers perceive a difference between decision making on a computer and smartphone. In this vein, future research could investigate whether type of interface act as a moderator in the relationship between phantom decoys and product choice, perception and evaluation.

5.3 Managerial implications

This section discusses which findings from this research have relevant implications for which parties. The findings of this study and their implications are discussed separately for academics and managers.

5.3.1 Academics

First, this study contributes to the existing literature on the phantom effect in consumer decision making. The findings of this study showed again that the phantom knowledge is important for differences in choice share. However, this study demonstrated that unknown phantoms cause a greater phantom effect than known phantoms. This is not in line with previous research (Scarpi & Pizzi, 2013) stating that the known phantoms create a higher preference for the target option. As mentioned in the previous part, this difference might be explained by the type of products (high involved) and realistic value of the product attributes in this study. Now that it is known in which situations the phantom effect is not significant in an online consumer environment, academics could explore the magnitude of the phantom effect with low-involved products and fictitious attribute values in an online consumer environment.

Furthermore, existing literature on the phantom effect in relation to choice deferral showed conflicting results (Ge et al., 2009; Hedgcock et al., 2016; Scarpi & Pizzi, 2013). This study included a no-choice option in the known and unknown phantom choice sets and this resulted in an increase of choice deferral compared to the choice context without decoy. Academics could further investigate whether the addition of a no choice option affects the post-evaluation and perception in phantom choice contexts.

5.3.2 Managers and retailers

First of all, it is noteworthy that contextual effects are very sensitive for circumstances. This was probably reflected in the choice share of the target option. Assuming that out-of-stock situations occur from time to time, managers should be careful when trying to apply the phantom effect. The findings of this study showed that the addition of a known phantom decoy increases choice deferral. This means that managers should be aware using the phantom effect because it could cause on the long term a reduction of sales and customers. In addition, managers should attentively consider on which product attributes they apply the phantom effect. Hence, this study showed that the value of product attributes might influence the magnitude of the phantom effect. In other words, it is important to consider on which attribute the phantom decoy is superior to the target option, because if a consumer has much product knowledge the effect is expected to decrease. Furthermore, retailers should display the unavailable product choices as clear as possible since consumers blame the retailer for the unavailability of the product. This could be prevented by specifying precisely why the product is unavailable and when it will be available again.

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APPENDICES

Appendix A: Measurement Scales

Decision difficulty measurement (Hanselmann & Tanner, 2008)

Note. This item is followed by a 7-point scale ranging from 1 [very easy] to 7 [very difficult]. .Please rate your level of agreement with the following statement, with respect to the current decision situation.

1. For me, this decision is... (7-point scale ranging from 1 [very easy] to 7 [very difficult])

Blame measurement (Reynolds, Folse, & Jones, 2006)

1. To what degree do you blame others for the unavailability of the third product?
2. To what degree do you believe others were responsible for the unavailability of the third product?
3. To what degree do you blame the web shop for the unavailability of the third product?
4. To what degree do you believe the web shop was responsible for the unavailability of the third product?

Product familiarity (Sheng, Parker, & Nakamoto, 2005)

1. I'm familiar with lawn mowers.
2. I'm knowledgeable about the meaning of horse-power of a lawn mower.
3. I'm knowledgeable about the warranty of a lawn mower.

Appendix B: Practical examples

The two consideration sets of the experiment are presented below in the table 11 and 12.

Choice context	Target option	Competitor option	Choice deferral	Phantom option
No decoy (choosing for the self)	Hard Disk Capacity: 64 GB RAM: 8 GB	Hard Disk Capacity: 128 GB RAM: 4 GB	Don't buy from this web shop / visit another web shop	Hard Disk Capacity: 64 GB RAM: 10 GB
No decoy (choosing for others)	Hard Disk Capacity: 64 GB RAM: 8 GB	Hard Disk Capacity: 128 GB RAM: 4 GB	Don't buy from this web shop / visit another web shop	Hard Disk Capacity: 64 GB RAM: 10 GB
Known phantom decoy (choosing for the self)	Hard Disk Capacity: 64 GB RAM: 8 GB	Hard Disk Capacity: 128 GB RAM: 4 GB	Don't buy from this web shop / visit another web shop	Hard Disk Capacity: 64 GB RAM: 10 GB
Known phantom decoy (choosing for others)	Hard Disk Capacity: 64 GB RAM: 8 GB	Hard Disk Capacity: 128 GB RAM: 4 GB	Don't buy from this web shop / visit another web shop	Hard Disk Capacity: 64 GB RAM: 10 GB
Unknown phantom decoy (choosing for the self)	Hard Disk Capacity: 64 GB RAM: 8 GB	Hard Disk Capacity: 128 GB RAM: 4 GB	Don't buy from this web shop / visit another web shop	Hard Disk Capacity: 64 GB RAM: 10 GB
Unknown phantom decoy (choosing for others)	Hard Disk Capacity: 64 GB RAM: 8 GB	Hard Disk Capacity: 128 GB RAM: 4 GB	Don't buy from this web shop / visit another web shop	Hard Disk Capacity: 64 GB RAM: 10 GB

Table 11. Laptop choice sets across conditions

Choice context	Target option	Competitor option	Choice deferral	Phantom option
No decoy (choosing for the self)	Chuck Size: 14 mm Speed: 1300 rpm	Chuck Size: 14 mm Speed: 1300 rpm	Don't buy from this web shop / visit another web shop	Chuck Size: 16 mm Speed: 1300 rpm
No decoy (choosing for others)	Chuck Size: 14 mm Speed: 1300 rpm	Chuck Size: 14 mm Speed: 1300 rpm	Don't buy from this web shop / visit another web shop	Chuck Size: 16 mm Speed: 1300 rpm
Known phantom decoy (choosing for the self)	Chuck Size: 14 mm Speed: 1300 rpm	Chuck Size: 14 mm Speed: 1300 rpm	Don't buy from this web shop / visit another web shop	Chuck Size: 16 mm Speed: 1300 rpm
Known phantom decoy (choosing for others)	Chuck Size: 14 mm Speed: 1300 rpm	Chuck Size: 14 mm Speed: 1300 rpm	Don't buy from this web shop / visit another web shop	Chuck Size: 16 mm Speed: 1300 rpm
Unknown phantom decoy (choosing for the self)	Chuck Size: 14 mm Speed: 1300 rpm	Chuck Size: 14 mm Speed: 1300 rpm	Don't buy from this web shop / visit another web shop	Chuck Size: 16 mm Speed: 1300 rpm
Unknown phantom decoy (choosing for others)	Chuck Size: 14 mm Speed: 1300 rpm	Chuck Size: 14 mm Speed: 1300 rpm	Don't buy from this web shop / visit another web shop	Chuck Size: 16 mm Speed: 1300 rpm

Table 12. Electric drill choice sets across conditions

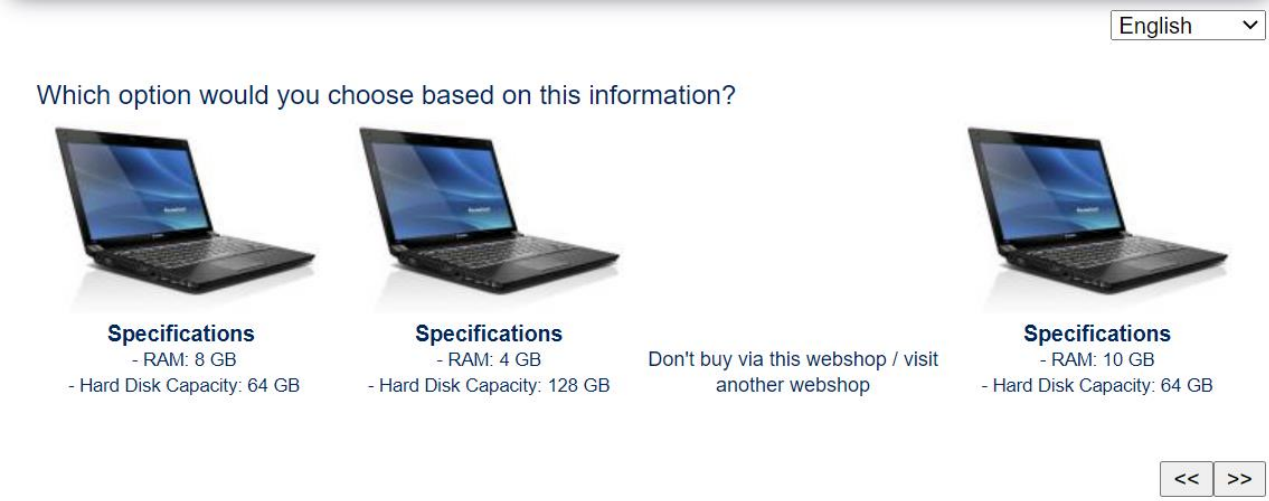

Figure 4. Store design known phantom choice context (before selecting was possible)

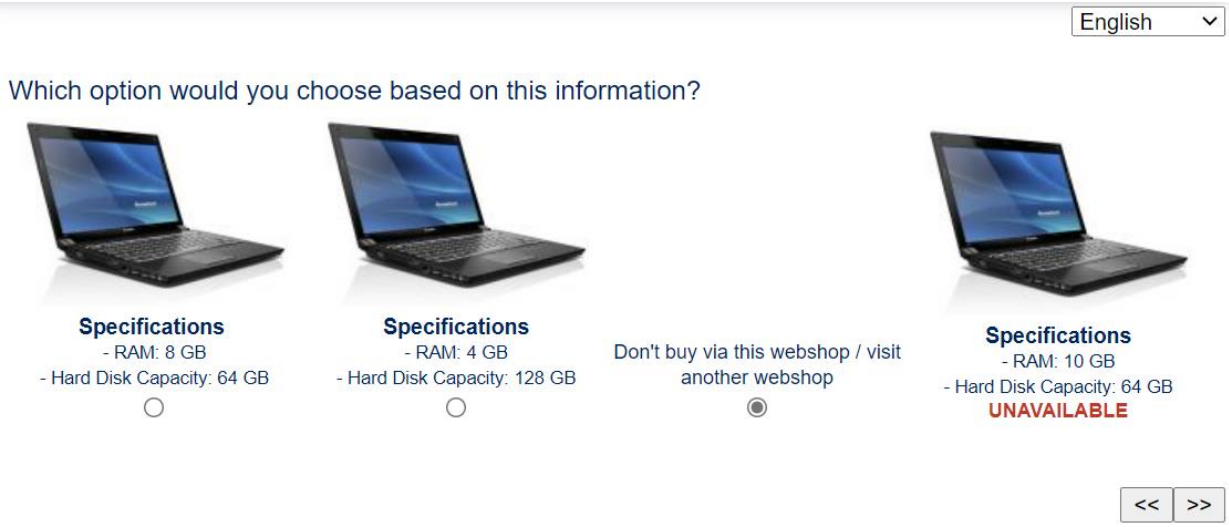

Figure 5. Store design known phantom choice context (after selecting was possible)

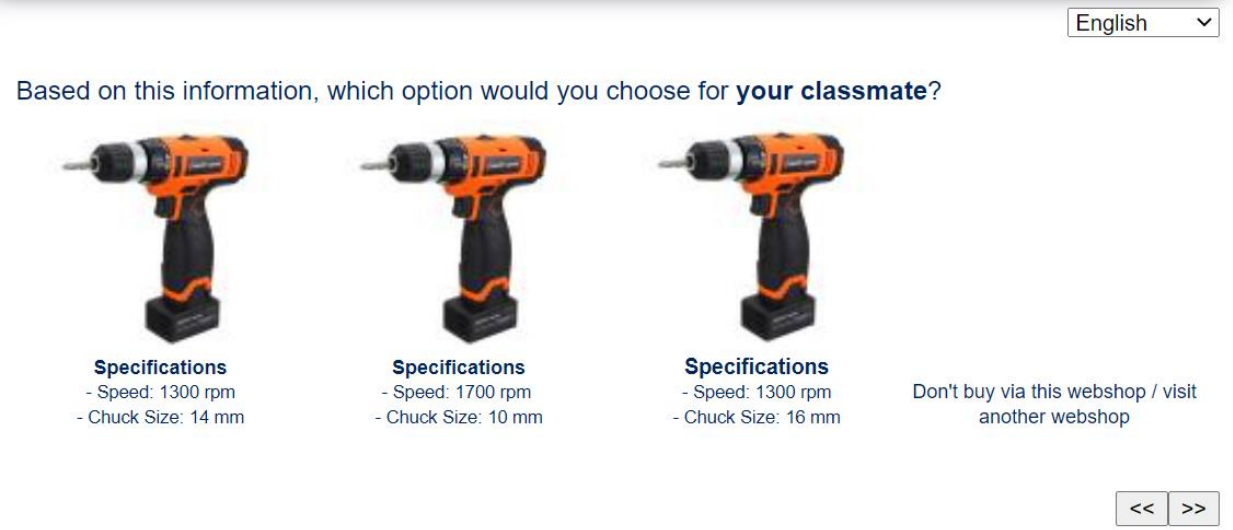

Figure 6. Store design unknown phantom choice context (before selecting was possible)

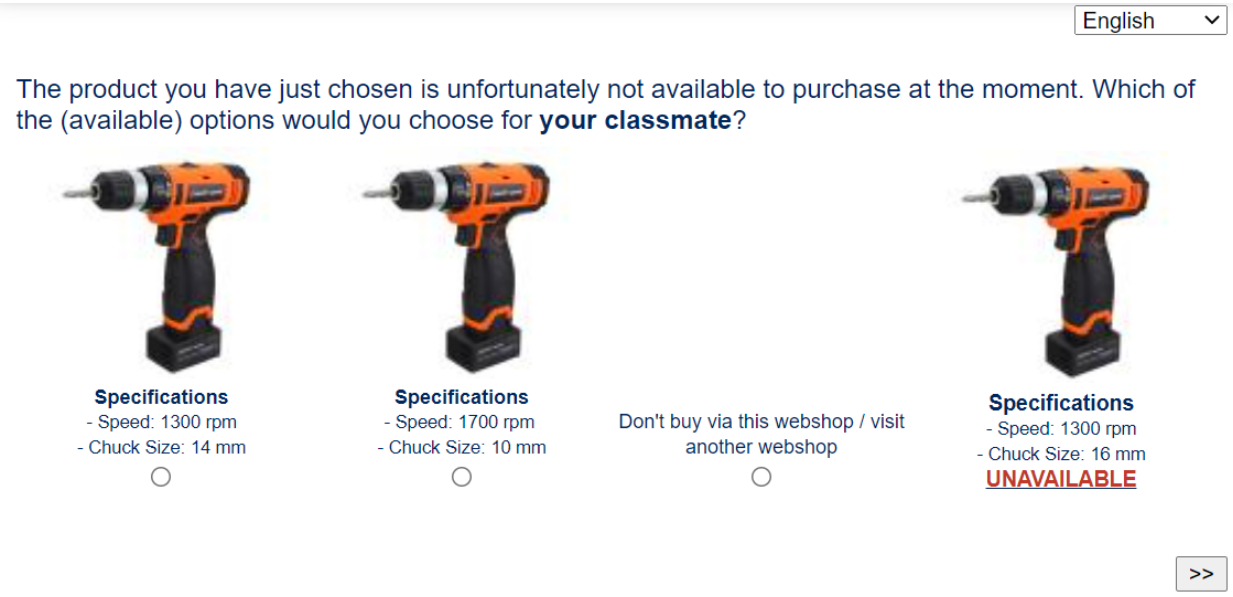

Figure 7. Store design unknown phantom choice context (after selecting was possible)

Appendix C: SPSS output

Output manipulation check

		Sum of Squares	df	Mean Square	F	Sig.
Laptop familiarity	Between Groups	29,612	1	29,612	43,886	,000
	Within Groups	305,661	453	,675		
	Total	335,273	454			
Drill familiarity	Between Groups	38,748	1	38,748	34,413	,000
	Within Groups	510,069	453	1,126		
	Total	548,817	454			

Table 13. ANOVA test (product familiarity across product groups)

		F	t	df	Sig. (2-tailed)	Mean Difference
Laptop familiarity	Equal variances assumed	,745	6,625	453	,000	,54361
	Equal variances not assumed		6,704	302,656	,000	,54361
Drill familiarity	Equal variances assumed	,005	5,866	453	,000	,62184
	Equal variances not assumed		5,783	282,891	,000	,62184

Table 14. Independent sample t-test for product familiarity across genders

Hypothesis H1a output

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	6,595[a]	2	,037
Likelihood Ratio	6,543	2	,038
Linear-by-Linear Association	2,874	1	,090
N of Valid Cases	455		

Table 15. Chi-Square test of choice context and product choice (laptop)

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	2,785[a]	2	,248
Likelihood Ratio	2,775	2	,250
Linear-by-Linear Association	2,717	1	,099
N of Valid Cases	455		

Table 16. Chi-Square test of choice context and product choice (electric drill)

		Chi-square	df	Sig.
Step 1	Step	6,543	2	,038
	Block	6,543	2	,038
	Model	6,543	2	,038

Table 17. Omnibus test for logistic regression of choice context on product choice for laptops (target option)

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Condition			6,535	2	,038	
	Condition(1)	-,400	,247	2,618	1	,106	,671
	Condition(2)	-,597	,238	6,302	1	,012	,551
	Constant	-,316	,167	3,569	1	,059	,729

Table 18. Logistic regression of choice context on product choice for laptops (target option)

		Chi-square	df	Sig.
Step 1	Step	2,775	2	,250
	Block	2,775	2	,250
	Model	2,775	2	,250

Table 19. Omnibus test for logistic regression of choice context on product choice for electric drills (target option)

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Condition			2,772	2	,250	
	Condition(1)	-,421	,258	2,667	1	,102	,656
	Condition(2)	-,255	,239	1,137	1	,286	,775
	Constant	-,573	,172	11,128	1	,001	,564

Table 20. Logistic regression of choice context on product choice for electric drills (target option)

Hypothesis H1b output

		Chi-square	df	Sig.
Step 1	Step	21,575	2	,000
	Block	21,575	2	,000
	Model	21,575	2	,000

Table 21. Omnibus test for logistic regression of choice context on choice deferral (laptops)

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Condition			20,992	2	,000	
	Condition(1)	1,112	,262	18,024	1	,000	3,041
	Condition(2)	,341	,282	1,454	1	,228	1,406
	Constant	-1,359	,212	41,152	1	,000	,257

Table 22. Logistic regression of choice context on choice deferral (laptops)

		Chi-square	df	Sig.
Step 1	Step	4,464	2	,107
	Block	4,464	2	,107
	Model	4,464	2	,107

Table 23. Omnibus test for logistic regression of choice context on choice deferral (electric drills)

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Condition			4,099	2	,129	
	Condition(1)	,708	,354	3,994	1	,046	2,029
	Condition(2)	,571	,370	2,384	1	,123	1,769
	Constant	-2,255	,292	59,850	1	,000	,105

Table 24. Logistic regression of choice context on choice deferral (electric drills)

Hypothesis H1c output

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Condition			20,992	2	,000	
	Condition(1)	-,341	,282	1,454	1	,228	,711
	Condition(2)	,772	,242	10,154	1	,001	2,163
	Constant	-1,019	,187	29,727	1	,000	,361

Table 25. Logistic regression of choice context on choice deferral (laptops)

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Condition			4,099	2	,129	
	Condition(1)	-,571	,370	2,384	1	,123	,565
	Condition(2)	,137	,303	,205	1	,651	1,147
	Constant	-1,685	,227	55,071	1	,000	,185

Table 26. Logistic regression of choice context on choice deferral (electric drills)

Hypothesis H2a output

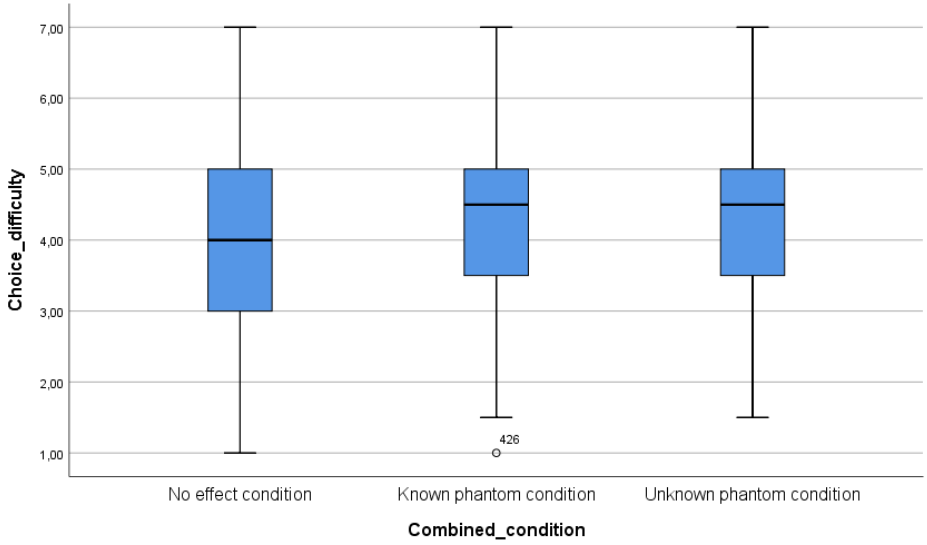

Figure 8. Boxplot of choice difficulty across experimental conditions

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Condition	Statistic	df	Sig.	Statistic	df	Sig.
Choice difficulty	No effect condition	,112	137	,000	,979	137	,037
	Known phantom condition	,123	171	,000	,974	171	,003
	Unknown phantom condition	,122	147	,000	,972	147	,004

Table 27. Shapiro-Wilk test

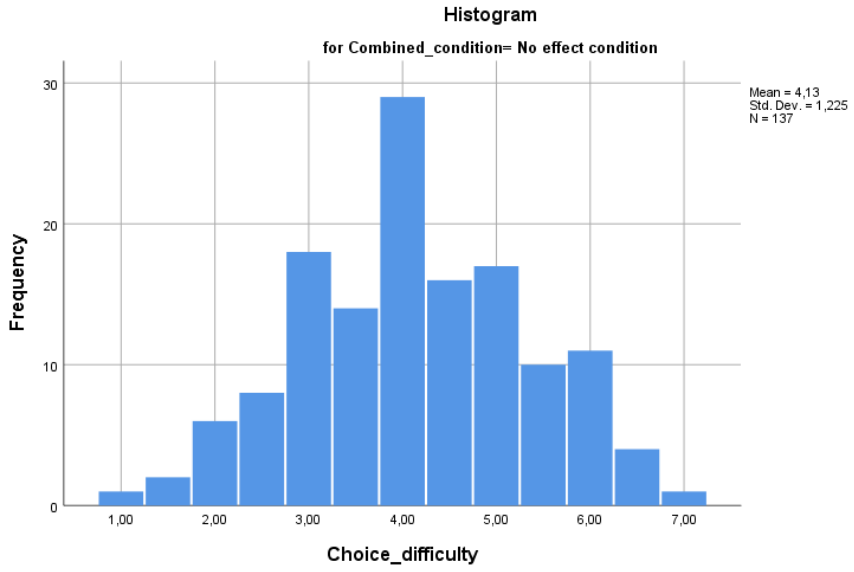

Figure 9. Histogram of normal distribution for perceived choice difficulty in no effect condition

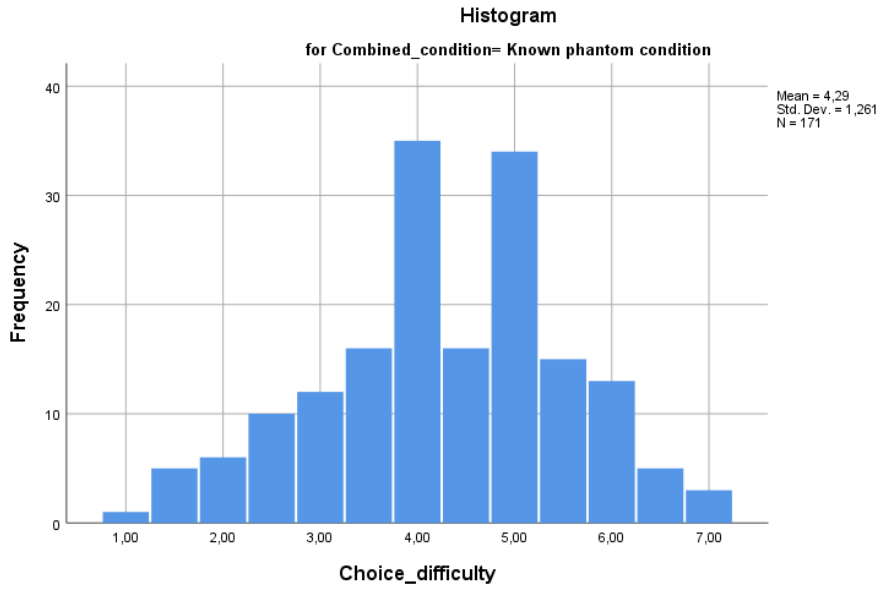

Figure 10. Histogram of normal distribution for perceived choice difficulty in known phantom condition

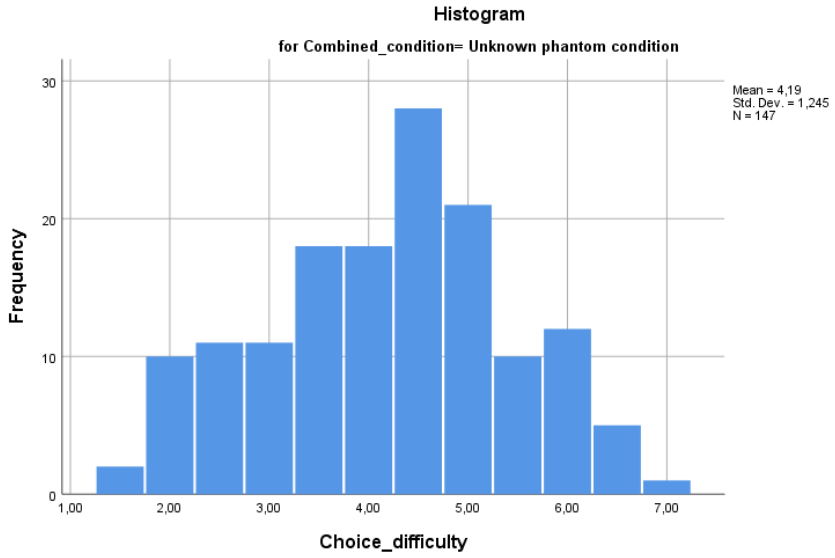

Figure 11. Histogram of normal distribution for perceived choice difficulty in unknown phantom condition

		Levene Statistic	df1	df2	Sig.
Choice difficulty	Based on Mean	,230	1	453	,631
	Based on Median	,359	1	453	,549
	Based on Median and with adjusted df	,359	1	452,818	,549
	Based on trimmed mean	,215	1	453	,643

Table 28. Levene's test of homogeneity of variances

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1,983	2	,991	,639	,528
Within Groups	700,723	452	1,550		
Total	702,705	454			

Table 29. ANOVA test (choice difficulty across conditions)

(I) Condition	(J) Condition	Mean Difference (I-J)	Sig.
No effect condition	Known phantom condition	-,15809	,269
	Unknown phantom condition	-,05909	,690
Known phantom condition	No effect condition	,15809	,269
	Unknown phantom condition	,09900	,480
Unknown phantom condition	No effect condition	,05909	,690
	Known phantom condition	-,09900	,480

Table 30. ANOVA Post Hoc test (choice difficulty across the experimental conditions)

Hypothesis H2b output

		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference
Choice difficulty	Equal variances assumed	,000	,994	,702	316	,483	,09900
	Equal variances not assumed			,703	310,042	,483	,09900

Table 31. Independent sample t-test (choice difficulty between the known and unknown phantom conditions)

Hypothesis H3 output

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	14,226	1	,000
	Block	14,226	1	,000
	Model	14,226	1	,000

Table 32. Omnibus test for logistic regression of perceived choice difficulty on choice deferral (laptops)

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Difficulty laptop	-,275	,074	13,668	1	,000	,760
	Constant	,229	,288	,637	1	,425	1,258

Table 33. Logistic regression of perceived choice difficulty on choice deferral (laptops)

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	2,997	1	,083
	Block	2,997	1	,083
	Model	2,997	1	,083

Table 34. Omnibus test for logistic regression of perceived choice difficulty on choice deferral (electric drills)

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Difficulty electric drill	-,142	,082	3,011	1	,083	,868
	Constant	-1,139	,380	9,007	1	,003	,320

Table 35. Logistic regression of perceived choice difficulty on choice deferral (electric drills)

Hypothesis H4 & H5 output

		Mean	Std. Deviation	Std. Error Mean	t	df	Sig.
Pair 1	Store blame – Others blame	1,27115	1,11762	,06931	18,340	259	,000

Table 36. Paired sample t-test between the variables store blame and others blame

Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Others blame	Based on Mean	,143	1	258	,705
	Based on Median	,309	1	258	,579
	Based on Median and with adjusted df	,309	1	255,048	,579
	Based on trimmed mean	,169	1	258	,681

Table 37. Levene's test of homogeneity of variances

		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference
Others blame	Equal variances assumed	,143	,705	-,573	258	,567	-,06073
	Equal variances not assumed			-,572	177,859	,568	-,06073

Table 38. Independent sample t-test (others blame across the phantom conditions)

Hypothesis H6 output

		Chi-square	df	Sig.
Step 1	Step	1,446	1	,229
	Block	1,446	1	,229
	Model	1,446	1	,229

Table 39. Omnibus test for logistic regression of product familiarity on product choice (laptops)

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Condition(1)	-,284	,236	1,440	1	,230	,753
	Constant	-,488	,161	9,148	1	,002	,614

Table 40. Logistic regression of product familiarity on product choice (laptops)

		Chi-square	df	Sig.
Step 1	Step	4,437	1	,035
	Block	4,437	1	,035
	Model	4,437	1	,035

Table 41. Omnibus test for logistic regression of product familiarity on product choice (electric drills)

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Condition(1)	,504	,241	4,396	1	,036	1,656
	Constant	-,964	,175	30,275	1	,000	,381

Table 42. Logistic regression of product familiarity on product choice (electric drills)

Hypothesis H7 output

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Dummy condition(1)	,075	,218	,119	1	,730	1,078
	Laptop familiarity	-,019	,212	,008	1	,929	,981
	Moderator	,275	,219	1,576	1	,209	1,316
	Constant	-,648	,769	,711	1	,399	,523

Table 43. Moderation analysis of laptop familiarity on the relationship between choice context and product choice

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Dummy condition(1)	,277	,227	1,490	1	,222	1,320
	Drill familiarity	,071	,177	,161	1	,689	1,073
	Moderator	-,349	,229	2,318	1	,128	,706
	Constant	-1,184	,514	5,309	1	,021	,306

Table 44. Moderation analysis of electric drill familiarity on the relationship between choice context and product choice