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Scarcity Effects on Consumer Purchase Intention in the context of E-commerce

Marketing

Master's thesis

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ABSTRACT

Objectives of the Study

The purpose of this study is to examine effects of different types of scarcity messages on consumer purchase intention in the context of electronic commerce. The study also investigates the moderating roles of several individual-difference variables.

Academic background and methodology

Prior research has demonstrated effects of scarcity on consumer purchase intention in many aspects. Only a few studies, however, have examined scarcity effects in the context of electronic commerce, where the ease of searching for alternative online deals may change the effectiveness of scarcity messages. Thus, it is critical to gain insights into how different types of scarcity messages influence consumer purchase intention in online shopping. Specifically, the study compares effects of scarcity between two contexts of e-commerce: high versus low ease of searching for deals. Accordingly, an online-survey experiment was conducted. The participants of the survey were exposed to two contexts. In each context, they were randomly allocated into one of six conditions containing different types of scarcity messages. Their purchase intentions were measured and investigated in order to figure out variances between conditions in each searching-ease context and the differences between two contexts. Additionally, the study examined the interaction between scarcity and three potential moderators of scarcity effects: uncertainty avoidance, need for cognitive closure, and product familiarity, of which their moderating roles were demonstrated in prior research.

Findings and conclusions

The study results showed that in the context of electronic commerce, scarcity messages became less effective. In the context of high searching-ease, no significant effect of scarcity was found. In the context of low searching-ease, only the scarcity message in form of intensive time limit, in association with a signal of price promotion, presented a significant effect on consumer purchase intention. Additionally, contrary to the findings of prior research, three investigated moderators showed no significant interaction with scarcity. This outcome suggested that to explain the underlying factors of scarcity effects in the context of e-commerce, other mediators should be considered. This finding is significant for managers who intend to use scarcity as a marketing tool for their online businesses. The result also contributes to the research area of scarcity effects.

Keywords

Scarcity, e-commerce, online shopping, ease of searching, purchase intention.

ACKNOWLEDGEMENTS

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1. INTRODUCTION

Brazil 2004, the passionate designer Jum Nakao introduced his collection of paper dresses[1] for the first time in the Sao Paolo fashion week, making the audience astonished because of its exquisite beauty. However, the astonishment quickly turned into a shock when more than 700 hours of his meticulous work was simultaneously torn by the models, right in front of the audience, at the end of the show. No word could describe all the emotions of the viewers on that night, from excitement to tears, when the breathtaking masterpieces were destroyed in minutes, and then the name Jum Nakao was mentioned more than ever in the fashion industry.

Responding to the audiences' admiration and desire to see the collection one more time, Nakao opened another exhibit of his collection, this time on small size mannequins, along with a mouse. The exhibition lasted merely twenty minutes, while the hungry mouse continuously nibbled every single piece of the costumes. Many people crammed in just to take a quick, final look before the magnificent patterns were again vanished. The wise strategy of creating an illusion of scarcity caused a shock to the fashion industry. It not only created a new trend of white-lace designs, but also influenced the styles of famous fashion brands and celebrities. (Hatt, 2014)

The effect of scarcity could be simply explained as an increase in the desirability of something of which the availability is limited. People often overestimate rare things, yet they underestimate excessive-supply items. From very beginning, economic lessons have preached this phenomenon

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[1] Source of the illustrating picture: The affair of paper cutting & Couture fashion, Lingerissimi.com.

in association with the equilibrium between supply and demand: the scarcer the product, the more valuable it is. Although the commodity scarcity is thought to be the default assumption existing only in the 1800s, not in this abundant 21st century, the psychological effect of scarcity still exists in the hands of the magical marketers, as in the case of Jum Nakao.

Why does scarcity have such a power? According to Maslow's hierarchy of human needs, such basic needs as physiological needs and safety needs have to be satisfied before people move to a higher level of needs. (Parhizgar, 2013; Arts & Halman, 2004). In the context of scarcity, people face a threat of losing something. This potential loss triggers the safety needs and encourages people to satisfy those needs before reaching the needs of self-actualization (Hatt, 2014).

Figure 1: Maslow's Hierarchy of Needs (Values)

Cialdini (2001) found that people react more aggressively toward a threat of potential loss than toward a chance of achieving something of equal value. The message to smokers could be an example. Messages that emphasize the number of years in life they may lose if they continue to smoke seem to be more effective than messages that describe the number of years they may gain if they quit smoking. From a psychological perspective, Cialdini explained that people often react aggressively to scarcity because of a fact that items that are difficult to obtain are normally more valuable than those that are easy to achieve. Based on this fact, people create an assumption that scarce items typically have higher quality, helping them to assess quickly and properly an item's quality and thus to make a proper purchasing decision. The psychologists also argued that scarcity communicates a restriction of freedom. Whenever the availability of an item

becomes limited, people tend to avoid the threat of losing their freedom and attempt to retain the freedom by desiring that scarce item considerably more than before.

Marketers widely adopt the effect of scarcity as a marketing tool to increase consumer's subjective desirability towards their products (Jung & Kellaris, 2004). Concorde is one of the most powerful and fastest aircrafts in the history of the aviation industry. Its flight from London to New York took only three and a half hours instead of eight hours on normal flights. (Celebrating Concorde) In February 2003, after British Airways announced to withdraw Concorde and closed the only supersonic transportation service in the world, tickets of the last flight were sold out immediately. Eight months later, the feeling of losing something caused thousands of people to stop their vehicles and jam a highway just to watch the last departure of the legendary aircraft, a sight that had been familiar for the last twenty-seven years. (Goldstein et al., 2008)

Nowadays, the scarcity effects appear on many e-commerce channels. Such messages as "limit one per customer", "limited quantities" or "special deal, one day only" are practiced frequently in commodity sales (Jung & Kellaris, 2004; Lee, 2012). Amazon typically displays the remaining number of products in stock, while eBay and Groupon embed a countdown timer on their websites showing the exact remaining selling time up to seconds. Airlines are selling their flight ticket together with a line "only three seats left". Similar tricks are "discount for the first one hundred people", promotion on a specific day, a sudden price cut down in one hour. The common feature of these techniques is the emphasis on the limitation of time, quantity or benefits that the customer may have, in order to persuade them to respond immediately. Some online services, which equip websites with embedded scarcity techniques, even advertise that they may help retailers to increase the conversion rate 2 up to 80% and boost their sales up to 450% (Scarcity Samurai).

Scarcity effects have received interests of many researchers for decades and its applications have long been practiced in marketing, in both online and offline business. Many studies have been

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[2] Conversion rate is the percentage of customers who visit an online store and make a purchase (Matzle *et al.*, 2010).

conducted in various aspects of scarcity by applying different analyzing methods. Surprisingly, only a few studies have been done on the effects of scarcity in the context of electronic commerce. While online businesses are growing strongly and scarcity techniques are employed widely, a practical study examining the actual effects of those techniques is quite critical. This study aims to fill in this gap in the research area of scarcity, by examining the effectiveness of different types of scarcity messages in the context of electronic commerce. Moreover, several moderators would be tested, in an attempt to reveal the underlying factors of scarcity effects on consumer purchase intention. The result of this study is expected to provide managers a proper view on the application of scarcity messages. [3]

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[3] This introduction is inspired by the article "Ao giac khan hiem, ton tai hay khong ton tai" on Gik.vn, which is available at http://beta.gik.vn/marketing/ao-giac-khan-hiem-ton-tai-hay-khong-ton-tai (Hatt, 2010)

2. THEORETICAL BACKGROUND

Since 1990s, many researchers have examined scarcity effects from various aspects. Several of them focused on comparing the effectiveness of different types of scarcity, or examining scarcity effects on different types of products, while some other researchers were interested in revealing the moderating factors of scarcity effects on consumer behaviors. The objective of this research is to examine the efficiency of different types of scarcity messages, in different degrees of scarcity, in order to gain an understanding of and to apply the old-school scarcity instruments in the new circumstance of electronic commerce. Considering this research objective, it is beneficial to evaluate prior research in the field of scarcity. Section 2.1 provides an overview of scarcity effects, their existing theories and their classification. Section 2.2 examines prior research on scarcity effects. Finally, section 2.3 constructs the conceptual framework of this thesis.

2.1. Effects of scarcity

2.1.1. Theories of scarcity

The concept of scarcity originates from a simple fact: products are perceived to be more attractive, more valuable when their availability is limited or reduced. Researchers have long studied the role of scarcity effects on product evaluation. Psychologists Worchel, Lee and Adewole were the pioneers in this research area. In 1975, they conducted a study to prove the theory of scarcity. They gave people cookies from two jars - one with only two cookies and another one with ten cookies inside - and asked which ones they value more. Although cookies are identical in those two jars, people tended to value cookies in the nearly empty jar more highly. Their perception of value had been somehow affected by a hidden power that we call scarcity. (Worchel *et al.*, 1975)

Brock's (1968) commodity theory deals with the premise that "any commodity will be valued to the extent that it is unavailable". The theory states that the more restricted and less available an item is, the more it will be valued.

Verhallen (1982) performed two experiments to verify the hypothesis of the commodity theory. The results suggested that the theory is only valid for the participants who were interested in the experimental subjects, which were recipe books in this study. Therefore, the research rejected the hypothesis that attainable items are less valued than unattainable items. The research also mentioned the reactance theory (Brehm, 1966) as a complementary to the commodity theory, clarifying the effect of unattainability. The reactance theory, related to Cialdini's theory of freedom restriction discussed in the introduction, assumed that an item's value and desirability increases when people's freedom to possess that item is limited or eradicated.

Lynn (1991) provided a more comprehensive understanding of the commodity theory by defining three of its principal concepts: commodity, value and unavailability. In which, commodity was defined as anything that satisfies three criteria: useful, transferable and able to be possessed. The second concept, value, was described as a characteristic of commodity that may affect the attitude and behavior of consumers. He stated that value might be perceived as equivalent with "utility" and "desirability", because improvement in a commodity's value increased perceived utility and made the commodity more desirable. It was argued that the theory's assumption of the scarcity effects on value was meaningful and relevant to the marketers because they always want their products and services to be more desirable. The final concept of the commodity theory, unavailability, referred to the scarcity and any limits of the availability of commodities. According to Lynn, Brock (1968) hypothesized that the "unavailability" situation could be explained by several reasons: the limited supply, costs of acquiring and providing the commodity, restriction on possession of the commodity, or the interruption in supplying process. The author stated that Brook did not specify the mechanism behind the scarcity effects on commodity value. Instead, Brook suggested one of the reasons that people might prefer limited commodities to equivalent available commodities could be the perceived distinctiveness or uniqueness of consumers when possessing scarce items. It can be noted that this assumption later became the subject in some studies on scarcity.

Based on this assumption in Brook's commodity theory, Lynn (1991) conducted a meta-analysis of the studies working on the topic and discussed the marketing implications of the theory. Such discussion has been the theoretical background for further marketing research. The meta-analysis

comprised 41 studies that examined the commodity theory. The result of the analysis reported that the individual need for uniqueness reliably played a mediating role on the effects of scarcity on a commodity's value. Lynn suggested that scarcity strategy would be more effective when being practiced on people who expressed high level of need for uniqueness. Moreover, the analysis verified the existence of scarcity main effect, which was the enhancement of commodity's value. Another contribution of Lynn's meta-analysis study is the suggestion of a potential mediator of scarcity effects, the assumed expensiveness. At this stage, the positive effects of scarcity on value were confirmed, but the psychological factors underlying this phenomenon were not revealed thoroughly.

Robert B. Cialdini is a professor of Psychology and Marketing at Arizona State University. He is well known for his best-seller book "Influence: Science and Practice" in 1985. In the fourth edition of this book, Cialdini (2001) described scarcity as one of the eight principles of influence. He defined the scarcity principle as an increase in the evaluation of an opportunity when it becomes less available. He explained two reasons for scarcity effects. The first reason is that the availability of an item can be perceived for its quality, since items that are difficult to achieve are normally more valuable, such as artifacts. The second reason is the threat of losing freedom. Conforming to the theory of psychological reactance, the loss of freedom causes people to desire the possession of products and services more than before. The author illustrated the theory by a fascinating phenomenon known as the "Romeo and Juliet effect". Such phenomenon proved that the parental interference would not reduce, but increase the degree of love among young couples. Cialdini raised a question whether the love between Romeo Montague and Juliet Capulet would have been so romantic and became immortal without the feud between two families and all of their attemps to keep two star-crossed lovers apart. The parental interference, in some aspects, is a factor causing the threat of freedom loss. The finding of a study done with 140 couples in Colorado showed that although the control and pressure from families caused some relationship obstacles, they actually intensified the degree of love and desire for a wedding at the end. However, when the family interference was weakened, the passion of love indeed declined. (Cialdini, 2009)

Believing that assumed expensiveness is a mediator of scarcity's positive effect on desirability, Lynn (1992) further proposed the Scarcity-Expensiveness-Desirability (S-E-D) model (Figure 2), in order to explain the psychological factor underlying scarcity effects.

Firstly, the model suggested that people consider products and services more expensive when their availability is low than when their availability is high. Based on the naïve economic theory, the model assumed that people associate scarcity with expensiveness. The naïve economic theory stated that people somehow have incorrect beliefs and expectations about the relationships between economic factors. Such beliefs are learned by people's long-term experience on the market, but were constrained by individual level of cognition. Interestingly, the study found that the association between scarcity and expensiveness is learned in the early adulthood, since children do not see scarcity as a source of higher value.
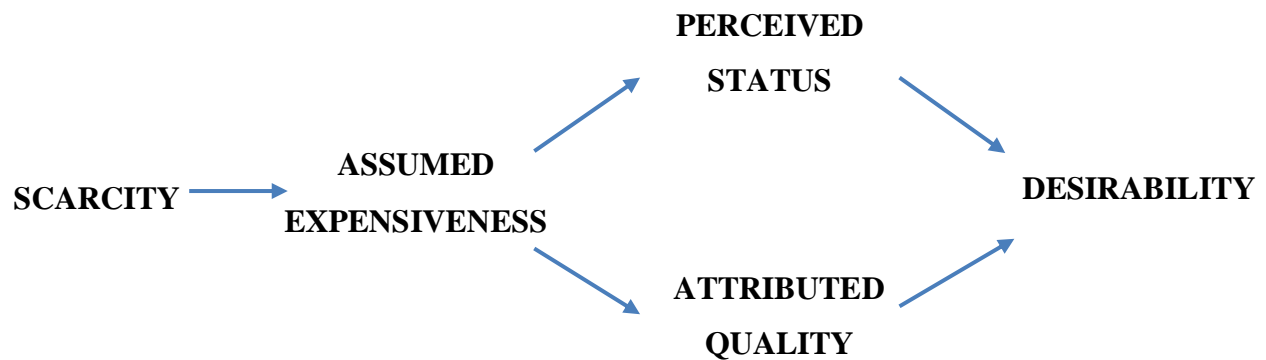
Figure 2: The S-E-D model (Lynn, 1992)

Secondly, Lynn argued that the assumed expensiveness increases the desirability of a commodity by increasing its perceived status and attributed quality. The author defined the perceived status as a phenomonon that people desire expensive products to improve their social status. Such phenomenon was named as the "conspicuous consumption" by Veblen (1899/1965) (Lynn, 1992). Next, attributed quality was explained as people assume that expensive commodities have high quality. This assumption was corresponding with Cialdini (2001)'s argument that "scarcity is a heuristic cue to value".

Those two factors, social status and attributeed quality, were expected to connect assumed expensiveness and commodity desirability by a hypothesis that people desire a scarce product or service more because they believe that it has a good quality and it is a good investment for their status. However, Lynn emphasized that assumed expensiveness was only one possible factor among many psychological factors that could explain the scarcity's enhancement of desiability. He recommended that there could be other explanations for the scarcity effects, which could be revealed by examining the phenomenon from many aspects.

Noticeably, before 1990s, the role of scarcity has been examined primarily in the field of psychology. However, most studies in this area have examined unfamiliar products with little consideration of scarcity effects on consumer behavior or have been conducted in intense conditions; and the studies' theories contributed no application to commercial promotions (Inman *et al.*, 1997). The phenomenon of scarcity has just gained attention of economic researchers since 1990s. Since then, many studies have evaluated scarcity effects systematically from many aspects. Within the scope of this section, several highlights in the empirical research would be reviewed in section 2.2.

2.1.2. Types of scarcity

Most of the studies in the field of scarcity are based on an assumption that different types of scarcity cause different effect on consumer's desirability of a commodity. Hence, it is beneficial to understand different approaches in the classification of scarcity.

Gierl and Huettl (2010) classified product scarcity into two categories: scarcity caused by limited supply and scarcity caused by high demand. The authors took the cases of "limited edition" items and "restricted volume per outlet" as illustrations for scarcity due to supply, while attached messages like "nearly sold out" and "few items left in stock" were used as typical examples for scarcity due to excess demand.

According to Herpen *et al.* (2009), although product scarcity generated by excess demand is observed extensively in actual business, it has received moderately little research consideration. In their experiment of recipe books in 1994, Verhallen and Roben mentioned another special

type of supply scarcity – "limited availability as due to accidental circumstances", in which the shortage in supply is due to a malfunction in supplying process. However, within the scope of this research, this distinct type of scarcity is not discussed, as it is not observed frequently in actual commercial circumstances.

Noticeably, this method of classification primarily is based on the perception of the consumer when observing a scarcity message. The message itself does not explain explicitly that there are only "a few items left in stock" because many people have purchased the product; instead, it implies that the restriction on the number of the remaining products is due to high demand. Obviously, it could also be interpreted that there are just a few items remaining because the retailer has a problem with the source of supply. However, in such a case, most consumers understand that high demand is the source of scarcity.

The dissimilarity between limited supply and limited demand scarcity would be observed in the discussion of the research design in section 3.2, when two different messages could be seen in two treatment conditions, one message is "3 items left in stock", and another one is "Low in stock, available for 2 more days". Within the scope of this research, it is assumed that although both messages indicate limited number of products remaining in stock, consumers would interpret them differently. Typically, consumers would perceive that the scarcity in the first message is caused by high demand, while the scarcity in the latter message is triggered by limited supply. Depending on the nature of the product and specific situations, retailers may employ an appropriate type of scarcity message, limited supply or high demand, to convey the product's limited availability.

The second approach to scarcity classification is about the limitation in time or in quantity. The limitation in time normally indicates the amount of time remaining to place an order for a product, whereas the limitation in quantity specifies the restricted number of products available for purchase (Gierl *et al.*, 2008). In the previous example of two research treatment conditions, the first message is a quantity limit signal, while the second message is obviously a time limit signal. Additionally, Inman et al. (1997) recommended another type of scarcity generated by

establishing a precondition for consumer to purchase a product (e.g. "Only available with purchase of…").

Discussing the relation of two classifying approaches, Gierl *et al.* (2008) argued that the cause of a limitation in quantity – or quantitative scarcity – could be either limited supply or excessive demand, while scarcity in time can be caused only by the supply side. Such perception was formed due to the fact that in time limit messages, retailers usually define a precise margin of availability – for example "the product is only available until…". This argument supports the assumption mentioned previously. Figure 3 clarifies the association of two classification approaches and examples in each category.

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                            ┌─────────────┐
                            │  Scarcity   │
                            └──────┬──────┘
                 ┌─────────────────┴─────────────────┐
        ┌────────┴────────┐                  ┌────────┴────────┐
        │   Quantitative  │                  │      Time       │
        │    limitation   │                  │   limitation    │
        └────────┬────────┘                  └────────┬────────┘
        ┌────────┴────────┐                           │
┌───────┴──────┐  ┌───────┴──────┐           ┌────────┴───────┐
│ Due to supply│  │Due to demand │           │  Due to supply │
└──────────────┘  └──────────────┘           └────────────────┘
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Example:
- "Limited edition"
- Restricted volume per outlet

Example:
- Publication of sales volume, e.g. "Already 90% sold"
- Ostentatious few units of an article in the shelf
- "Only…units in stock"

Example:
- Seasonal restriction of supply
- "Only temporary available"
- "Only available until"
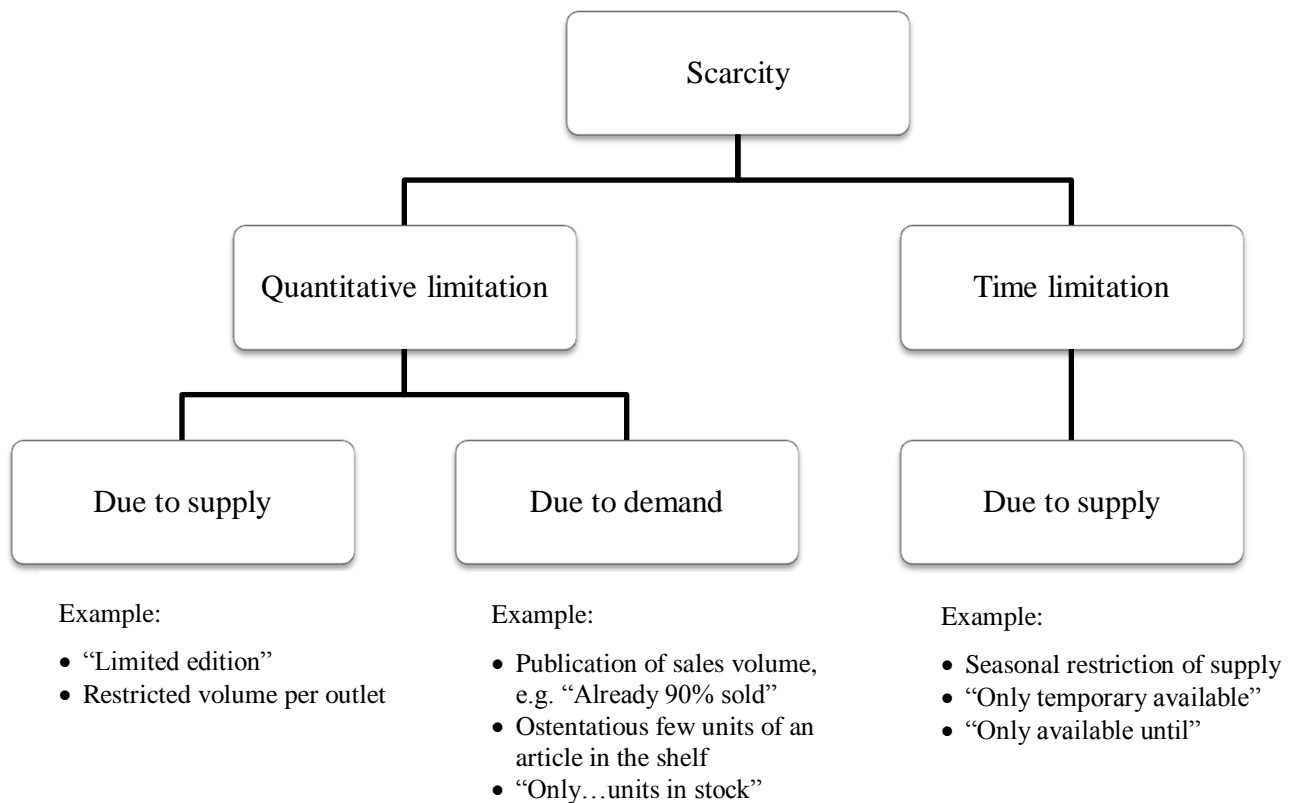
Figure 3: Types of scarcity (Gierl *et al.,* 2008)

Quantitative limitation due to supply communicates simultaneously the shortage from the supply side and the restriction to the consumer side. Different from other two categories, this type of scarcity could be perceived by consumers as a marketing trick used by retailers. The "limited edition" message is a classical application of this category, in which the market quantity is set initially by vendors before launching the product. On the contrary, quantitative limitation due to demand emerges during the trading process. In this case, retailers simply reveal the forthcoming sell-out of the product – for example "only... units left in stock" – to communicate the scarcity to consumers. Another notable point is that the degree of scarcity in quantitative limitation increases with each marginal unit sold, while the degree of scarcity in time limitation escalates by the time passed (Gierl *et al.,* 2008). Given the idea of different approaches to scarcity classification, the next section examined prior research on scarcity.

2.2. **Prior research on scarcity effects.**

In section 2.1, the initial ideas about scarcity, constructed by the pioneering researchers in the area – many of whom were psychologists , were introduced. Continuing with those preliminary concepts, this section reviews the prominent research on scarcity from 1990s, in order to gain an overview of this field from a more business perspective. Table 1 summarizes the studies that discussed the relative effects of scarcity.

Table 1: Summary of empirical research on scarcity effects

(Adopted and developed from Ku *et al.* (2013))

Article	Type of Scarcity	Dependent variable	Moderators	Findings
Verhallen and Robben (1994)	Supply scarcity Demand scarcity "Accidental" scarcity	Book choice Perceived uniqueness Cost evaluation	Social constraints	The effects of product availability on consumer's preference for recipe books varied according to whether the presence of other consumer is emphasized
Inman *et al.* (1997)	Quantity limit Time limit	Purchase intention	Deal evaluation Depth of discount	Restriction increases choice probability of promoted brand, underlying by function of

				contextual variables and individual difference variables
Van Herpen *et al.*(2005)	Supply scarcity Demand scarcity	Purchase likelihood	Need for uniqueness	The moderator enhances quality inferences only when scarcity is attributed to limited supply
Gierl *et al.*(2009)	Supply scarcity Demand scarcity	Purchase intention	Conspicuous or non-conspicuous consumption	The product category is a relevant factor, influencing the direction of scarcity effects on product desirability
Van Herpen *et al.*(2009)	Supply scarcity Demand scarcity	Perceived Product Popularity Perceived Exclusiveness Preference	Spatial distance	The preference for a scarce product with high prior demand reverses when individuality is threatened by the proximity of fellow consumers
Gierl and Huettl (2010)	Supply scarcity Demand scarcity	Purchase intention	Conspicuous or non-conspicuous consumption	The existence of a positive scarcity effect depends on the product's suitability for conspicuous consumption
Ku *et al.* (2011)	Supply scarcity Demand scarcity	Purchase intention	Utilitarian or hedonic product Self-monitor	Demand scarcity increases purchase intention of utilitarian products, while supply shortage encourages consumption of hedonic ones.

Verhallen and Robben (1994) were interested in evaluating the effects of different types of the product unavailability. Specifically, they conducted an experiment of recipe books, in which participants observed different causes of the unavailability of books: scarcity due to accidental circumstances, scarcity due to high demand, scarcity due to limited supply and scarcity due to high demand and limited supply in combination. The experimental results demonstrated that participants reacted differently to causes of the limited availability of commodity. More specifically, scarcity due to market causes increased the perceived uniqueness and cost evaluation.

Van Herpen et al. (2005) proposed consumers' need-for-uniqueness as a potential mediator of the scarcity effect on product quality valuation. However, the authors hypothesized that such mediation only exists when a limitation in supply is the cause of the scarcity, not when the scarcity is due to the excessive demand. They argued that when consumers perceive that a product is unavailable due to supply restriction, they would value it more since they think that

the possession of that exclusive product would make them distinctive from other people. In contrast, when a product is limited because it was purchased by many people, consumers perceive it as being so popular.

Two experiments were conducted to examine the hypotheses: the first one tested the effects of both scarcity due to excessive demand and scarcity due to limited supply in a virtual shopping context, the second one manipulated the availability of products on a shelf space in a liquor store, the degree of emptiness and the reasons for the product unavailability. The need-for-uniqueness was measured in the second experiment. The results confirmed that both types of scarcity have effects on product evaluation but the need-for-uniqueness only mediates the scarcity effect due to restriction in supply. Such finding of this study is quite practical in the fields of inventory management and sales forecasting.

Van Herpen *et al.*'(2009) research focused on examining the effect of scarcity due to excessive demand, in connection with bandwagon effects. The study first introduced bandwagon effects, in contrast with uniqueness theory, as its theoretical framework. Uniqueness theory stated that consumers prefer limited products because the product limited availability implies exclusiveness, and possessing those products would help them to express a unique social status. The exclusiveness of scarce items encourages a snob effect, which is an increase in product desirability because the item is not consumed by many people (Leibenstein, 1950). Following findings in Lynn's (1991) study, Van Herpen *et al.* (2009) argued that although uniqueness theory has considerably contributed to the interpretation of scarcity effects, it could not explain all circumstances of scarcity. Moreover, in some cases, the scarcity effects are observed to follow an opposite direction to which the uniqueness theory would predict, as in an example of a bottle of wine, when people tend to choose the option selected by many other people. The authors therefore related to an alternative theory, the bandwagon effects, to explain those cases.

The bandwagon effects were defined as the majority sentiment, in which consumers tend to purchase what others have selected, since they believe that the choice of the majority reveals the optimal product. Such effects could be triggered not only by direct observation of other consumers' behaviors, but also by the traces of those behaviors, such as an empty shelf space.

Stating that, the authors implied that a scarcity message could be another kind of those behavioral traces of consumption, which could be explained by the bandwagon effects. Consumers supposed that scarcity due to excessive demand indicates product quality, and thus they desire scarce products more. It was stated that, in this case, consumers "readily follow the trail of the bandwagon".

Moreover, the authors were questioned whether the spatial distance could moderate the scarcity effects, since consumers feel that the uniqueness of the products which they purchase and thus, their social statuses, are threatened if the same products may be purchased by the people around them – in other words, "spatially close" consumers, rather than by people who they hardly know. The results showed that bandwagon effects could be applied in the case of scarcity generated by excessive demand, which could not be explained solely by uniqueness theory in prior research. However, when the "spatially close others" were taken into account, the demand scarcity generate a negative effect on consumer behavior. The authors metaphorically regarded this phenomenon as when the consumers "avoid jumping on the bandwagon", since there is a threat to their unique status.

Gierl and Huettl (2010) were interested in investigating effects of two typical types of scarcity signals, scarcity due to supply and scarcity due to demand, on product evaluation. Moreover, they categorized products into two groups- conspicuous and non-conspicuous consumption commodities. Thus, an interaction between two different types of scarcity messages and two different types of goods was examined in a high-sample experiment, with a hypothesis of the effectiveness of scarcity messages. The authors hypothesized that consumers respond positively to scarcity signals embedded in conspicuous goods – products consumed in order to communicate a certain status of consumers to their friends and colleagues, and thus satisfy their social needs.

Regarding the relationship between scarcity and types of consumption commodities, the authors emphasized a lack of theoretical discussion in the literature, described in three points: (a) whether scarcity due to limited supply has positive effects on conspicuous commodities and even on non-conspicuous commodities; (b) whether scarcity due to excessive demand has positive

effects on conspicuous commodities; (c) the interaction between types of scarcity and types of product's suitability for conspicuous consumption.

Scarcity effects have attracted the attention of many researchers from the 50s of the last century. Specifically, many studies have been done in the business area from the 1990s. Although numerous empirical studies have been conducted by many methods and on many aspects of scarcity, few studies have been done on the effects of scarcity in the context of electronic commerce. The limited number of studies done on the effects of scarcity in the context of e-commerce deserves special attention. Furthermore, it was suggested that in online shopping, the ease of searching for alternative offers might affect the efficacy of scarcity messages (Aggarwal *et al.*, 2011). While online businesses are growing strongly and scarcity techniques are employed widely, a practical study examining the actual effects of those practices is quite critical.

2.2.1. Purchase Intention

Purchase intention is a concept that has been commonly used in the literature to predict sales of current and new consumer products. The data of consumer purchase intention have been preferably collected by many organizations all over the world, including government administration. The correlation between purchase intention and consumer behavior, which has been proved by many researchers, is one of the reasons for the term to be used popularly. Another reason for its widespread use is that the data is inexpensive to acquire and understandable for managers. (Armstrong, Morwitz, & Kumar, 2000). Marketing managers employ scarcity instruments in order to influence consumer behavior. Consequently, it would be beneficial to explore the effects of scarcity on consumer behaviors. However, to a certain extent, the term of consumer behavior is rather vague and general. Therefore, purchase intention has been used as an alternative dependent variable in most of academic research, as it is measurable. Following the trend, purchase intention is used in this study as the only dependent variable.

2.2.2. Scarcity and Price Promotion

Consumers make their purchase decisions only after considering many sources of relevant information, such as the amount of discount, promoted brand, and the product display and features (Inman *et al.*, 1997). Verhallen and Robben (1994) stated that there is an association

between scarcity and prices in consumer perception. They found that a book of limited availability due to a market cause was perceived as more expensive. Moreover, when other essential product information is deficient, price is regularly perceived as an indicator of quality (Olson, 1974; Monroe & Pretroshius, 1981). When consumers have to decide between alternatives, features such as consumption experience and reference price would affect their product assessment and consumption behavior (Monroe & Pretroshius, 1981). Therefore, the product price should be taken into account when examining the relationship between scarcity and consumer behavior, or purchase intention. Moreover, in e-commerce, the scarcity messages are often used accompanied by price promotion, for example "This 30% price discount only last for 2 days". Consequently, this study examines the difference between the scarcity messages with and without price promotion.

2.3. **Conceptual Framework**

To summarize the previous sections: sellers assume that scarcity effect would help their products and services become more desirable, while academic literature about scarcity is based on the same hypothesis (Gierl & Huettl, 2010).

Gierl and Huettl (2010) stated, following Brehm's (1966; 1972) theory of psychological reactance, that people react positively to scarcity when they have a feeling of being restricted. If the cause of restriction cannot be excluded, it is predicted that consumers will regard scarce items as attractive items. Illustrative examples for this argument are consumers' desires for legal-restricted product categories such as alcohol, tobacco or phosphate detergents (Mazis, Settle, & Leslie, 1973). However, Gierl and Huettl argued that when consumers have multiple options to purchase a product, their positive responds to scarcity signals are unlikely to occur, as people will barely perceive the scarcity of a single option as a significant restriction of their freedom. This theory could be applied in the context of electronic commerce, when consumers have many options.

In electronic commerce, with the help of search engines, consumers may find a product on many retail sites. This feature significantly reduces the perceiving of freedom restriction if scarcity signals are employed. Consequently, scarcity instruments are expected to be less or not effective at all if consumers can easily find alternative offers for the product they want to purchase. In other words, the ease of searching for online deals may modify the effects of scarcity on consumer purchase intention. A contrary circumstance could be assumed, in which consumers encounter low ease of searching for deals, for instance, if the product is distinctively distributed by its producer. An example could be a hand-made iPhone cover sold exclusively by an Amazon retailer. In such context, scarcity messages are predicted to be more effective than those employed in the context of high ease of searching for deals, but less effective than those employed in offline business.

Based on those assumptions, this research attempts to explore the effectiveness of scarcity effects in the context of electronic commerce. Moreover, past research demonstrated that different types

of scarcity messages have different effects on consumer purchase intention. The question is whether those differences remain in e-commerce. This research represents a systematic effort to discover the effects of different types of scarcity signals in digital marketing. Considering that quantitative scarcity generated by limited supply is not popularly employed in electronic commerce, the research focuses on investigating the effects of two other types of scarcity: quantitative scarcity generated by excessive demand and time-limit scarcity. Moreover, Lessne and Notarantonio (1988) found that different intensities of scarcity produce different effects on consumer's purchase likelihood. They conducted an experiment comparing the purchasing restriction of two and four bottles of soda per customer to no-limit condition. The results showed that the four-bottle-limit condition significantly increased purchase likelihood compared with two other conditions. Considering the implication of scarcity intensity, in addition to scarcity classification, two degrees of scarcity are tested for each type of scarcity. Additionally, a special type of scarcity message including price promotion is also examined. Consequently, the main question of this research is:

"What are the effects of different types of scarcity messages on consumer purchase intention in the context of e-commerce?"

According to Inman *et al.* (1997), scarcity can stimulate either positive or negative consumer purchase likelihood, since consumers determine the attractiveness of product offerings by perceiving sale restrictions in affiliation with other value-related information. Consequently, the effectiveness of scarcity instruments is hardly predicted, especially in an unfamiliar circumstance. Therefore, the research does not provide any explicit hypothesis regarding the research question. Instead, the collected data would be analyzed using *post-hoc* methods. The research employs altogether an exploratory approach to discover the effects of different types of scarcity.

Aggarwal et al. (2011) suggested that "the ease of searching for online deals is likely to affect the effectiveness of scarcity messages". They recommended further reseach to examine scarcity in the context of online shopping. Considering the ease-of-searching feature of electronic commerce, this research attempts to answer the research question in two specific contexts of

online consumption: the high ease of searching for online deals and the low ease of searching for online deals.

Many studies have examined the moderating role of the variables of differences in individual perception, such as perceived expensiveness (Lynn, 1992), need for uniqueness (Fromkin, 1970), need for cognition (Cacioppo & Petty, 1982; Haugtvedt et al., 1992; Maheswaran & Chaiken, 1991), product familiarity, need for cognitive closure, uncertainty avoidance (Jung & Kellaris, 2004), and salience of persuasion knowledge (Lee, 2012). However, individual variations underlying scarcity effects, in association with contextual factors under which scarcity strategy may or may not influence consumer behaviors, have not been discovered thoroughly (Inman *et al.*, 1997). Individual preference variables play an important role in consumer reaction to scarcity effects (Verhallen & Robben, 1994). Hence, it is beneficial to examine if the moderators of scarcity effects, of which the influence has been demonstrated in normal circumstances of general business, remain their leveraging roles in the circumstance of digital business. Within the scope of this research, several moderators of scarcity effects, which are capable to be assessed in condition of a lab experiment, are examined. Three underlying factors – Uncertainty Avoidance, Need for Cognitive Closure and Product Familiarity, of which the moderating roles in effects of scarcity on purchase intention were verified in general business contexts (Jung & Kellaris, 2004), would be investigated in this research. The main effects of scarcity on consumer purchase intention and the mediating effects would be tested in the first context of high ease of searching for online deals, and then in the second context of low ease of searching for online deals. The conceptual framework is modeled in Figure 4.
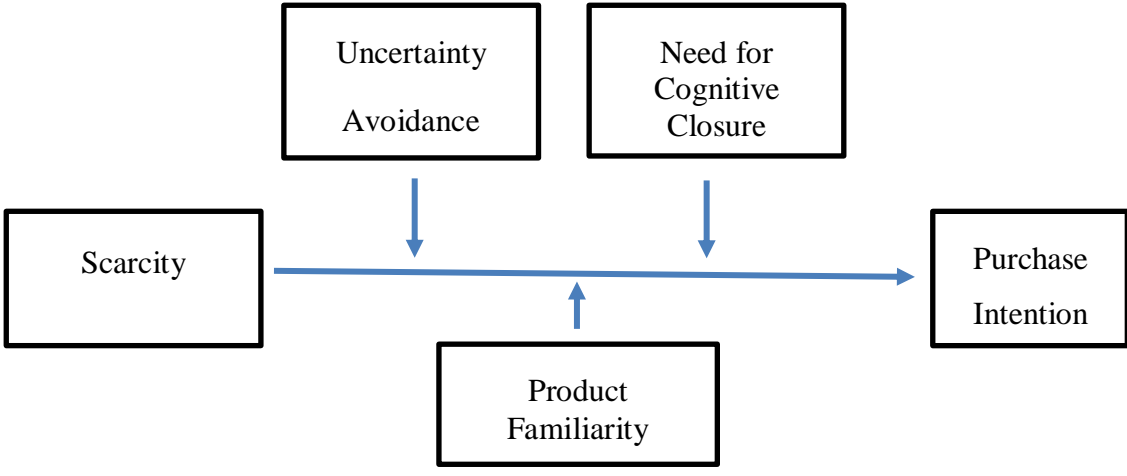
Uncertainty Avoidance

Need for Cognitive Closure

Scarcity → Purchase Intention

Product Familiarity

Figure 4: Conceptual framework

3. RESEARCH DESIGN

This section reports the experimental procedure and its associated issues. It first describes a pre-test conducted to select the appropriate products and their attributes to the research experiment. Next, the experimental design and the questionnaire are defined. Finally, the research measures would be described.

Based on the pre-test result, two products (a tablet and a travel bag) were selected for the final questionnaire, corresponding with two contexts of the ease of searching for online deals: high versus low. In the high searching-ease context, the consumers would find the product sold by many retailers, in different prices and offers. In the low searching-ease context, the consumers would find it difficult to search for many deals of the product on the Internet, perhaps because it is distributed by an exclusive retailer, or the product is manually produced and sold by a manufacturer. In each context, there were six conditions of scarcity (no scarcity, high quantity limit, low quantity limit, high time limit, high time limit with price promotion, and low time limit).

Theoretically, the experiment has a mixed factorial design consisting of 2 (ease of searching: high vs. low) x 6 (scarcity conditions), in which six scarcity conditions are between-subjects and the two contexts are within-subjects. However, in the first context, survey respondents were randomly allocated into one of six scarcity conditions, and in the second context, they were again allocated randomly into one of six conditions. In other words, the probability that a respondent would face the same scarcity condition in both contexts is 1/6. This design would significantly reduce the possible suspicion of respondents over the research purpose, comparing with the common 6x2 mixed factorial design in which respondents meet the same scarcity condition in both contexts.

3.1. Pretest and pilot study

A pretest was conducted to select the most suitable products for the experiment, based on the following criteria: the attractiveness of the product and the effectiveness of the price promotion

to online shoppers, the ease of searching online and the balance of responses from both male and female. There were 75 respondents to the test, in which 45% are female, and 63% aged from 18 to 25. The respondents were asked to rate several statements regarding the mentioned criteria. The pretest also includes an open question asking participants' opinion about the questions in general, in order to improve the main questionnaire. The pre-test could be reviewed in Appendix 6.

For the first criterion, the products should be sensible to be sold online and attractive to online shoppers. This criterion avoids the situation in which participants have no interest in the products at all regardless of the existence of scarcity signals and the price promotion. Verhallen (1982) found that participants who have no interest in the experimental product category did not select the option that was favored most by attracted participants. It is explained that these participants did not select the option of limited availability because they think that interested people may need it more than they need. Another situation, which should be avoided, is that the participants may feel that it is not common to purchase a type of product online instead of buying it from a normal store (Verhallen, 1982). In six products that were tested: tablet, digital camera, wristwatch, handbag, blender and box of protein bars, the box of protein bars seems to fall into this case since its rate for the statement "If I intend to buy this item, there is a possibility that I would buy it from Internet" is quite low. Participants also commented in the open question that they do not frequently purchase it online.

The ease-of-online-searching criterion confirms that the products could be used to illustrate the circumstances in which there are many online retailers selling the products. The balance of genders criterion ensures that the selected products are attractive to both male and female, in order to analyze the difference between genders towards scarcity effects later. The results of the pretest show that tablet and handbag are the most suitable products for the experiment.

The pre-test also includes an open question in order to decide the suitable prices of the products, avoiding the circumstance in which the scarcity has no effect due to the extremely high price. The participants were asked to give six products a reasonable price, neither too low nor too high, between 0 and 200 euros. The results show that a suitable price for the 7-inch tablet is 160 euros

and 52 euros for the handbag. The actual prices used in the final experiment are 149 and 49 euros respectively, to make it closer to reality.

3.2. **Experimental design**

This research aims to reveal the effects of different categories of scarcity on consumer purchase intention in the context of e-commerce. Specifically, scarcity effects would be tested in two opposite circumstances that consumers often encounter when shopping online: low ease of searching versus high ease of searching. The study has a 6 (scarcity conditions) x2 (searching ease contexts) mixed factorial design. Separately, in each context, participants were randomly allocated into one of six experimental conditions.

Stimuli

There were two circumstances of the ease of searching online: low versus high. In each circumstance, six different categories of product scarcity were tested:

- "In stock". This is the control condition.
- "Only 3 left in stock". This message contains a signal of scarcity in quantity due to demand, with high intensity
- "Only 42 left in stock". This message contains a signal of scarcity in quantity due to demand, with lower intensity.
- "Low in stock. Available for 2 more days". This message contains a signal of scarcity in time, with high intensity.
- "Low in stock. Available for 2 more days", with 20% discount, but the discounted price is equal to the normal price in other conditions. In other words, the original price is 1.25 higher than the product price in other conditions, then the discounted price = original price x 0.8. The purpose of this is to measure exclusively the effect of scarcity, regardless of the effect of price promotion. (See Appendix 1 for the difference of two advertisements).

- "Low in stock. Available for 7 more days". This message contains a signal of scarcity in time, but the intensity is lower than the "available for 2 more days" message.

Every participant went through two circumstances of the ease of searching. However, in each circumstance, each participant was allocated randomly into one of six types of scarcity messages. After reviewing the sale of the product, embedded with a scarcity message, the participants were asked to rate 4 statements (7 points Likert scale), to measure their purchase intention towards the deal. The dependent variable, consumer purchase intention, will be discussed later in 3.4.2. Figure 5 summarizes all the treatment conditions.

The randomness of the allocation of treatment condition in both contexts of ease of searching prevented any possible suspicion of the participants about the manipulation. If a respondent faced the same kind of scarcity message in both contexts, they may raise a question about the actual purpose of the study, different from the cover story. Within the current research design, the possibility that a survey participant encountered the same scarcity message in both contexts is 1/6.

High ease of searching

No scarcity

Quantitative scarcity
High intensity

Quantitative scarcity
Low intensity

Scarcity in time
High intensity

Scarcity in time (+Price promotion)
High intensity

Scarcity in time + Price promotion
Low intensity

Low ease of searching

No scarcity

Quantitative scarcity
High intensity

Quantitative scarcity
Low intensity

Scarcity in time
High intensity

Scarcity in time (+Price promotion)
High intensity

Scarcity in time + Price promotion
Low intensity

Purchase
Intention

Figure 5: Research Design

3.3. **Procedure**

Figure 6 demonstrates the procedure of the questionnaire. The questionnaire started with a short message explaining the purpose of the study and the acknowledgment of the respondents for their participation. However, the actual purpose of the research was concealed; instead, the participants were told that the questionnaire aims to study people's attitudes towards different products in holiday shopping situations, preventing participants from being concentrated on the aspects under research. Following the introduction, the respondents were asked to read carefully the description of the first context. (The main-survey could be reviewed in Appendix 7)

| Introduction | **Condition 1**
High ease of searching | Checking the moderators | **Condition 2**
Low ease of searching | Manipulation check and Demographic Data questions |

Figure 6: Questionnaire Procedure

Condition 1 – High ease of searching for online deals

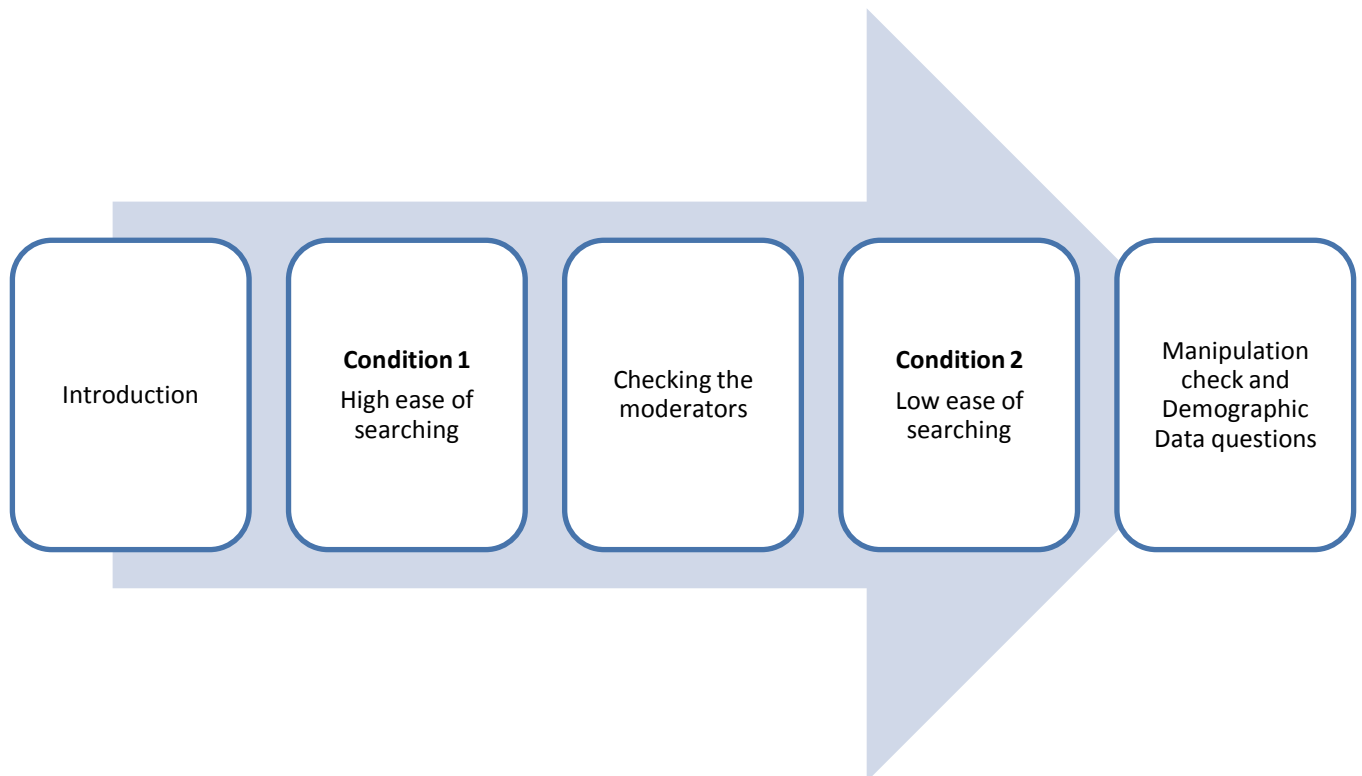Participants were asked to imagine a context in which they are looking to buy Christmas gifts on the Internet for their families. In the context of Christmas, it is reasonable for commodities to be low in stock due to the increase in purchasing demand. The imagination of shopping context in the Christmas would remove any possible doubts of the participants about the scarcity of the products. Wochel et al. (1975) revealed in their research that subjects with suspicion to the experimental manipulations reacted uncooperatively, which is in an opposite way to the overall trends of scarcity.

The first part of the experiment is the circumstance of high ease of searching, when they are looking to buy a tablet, which can be found being sold by many online retailers with different offers. The following cover story was used to direct participants to such a situation:

"Imagine that Christmas is coming, and you are looking to buy some Christmas gifts for your family. You already have some idea for the gifts but you don't want to find yourself jostling in the crowds at the shopping malls (plus you hesitate to walk outside in this cold weather, instead of laying on your couch, having a hot chocolate), so you decide to go shopping online, just as it's so easy and convenient these days.

The first thing on your shopping list is a tablet. After an hour reading reviews on the Internet, you choose a new 7-inch tablet called Z1, which is rated as one of the best performing tablets on the market. The combination of its design, features and performance would make it a perfect gift for some member in your family.

You type its name on Google to search for some retailer, and the search engine quickly shows many online sellers of the tablet. You click on the first search result to see the retailer's deal, which will appear on the next page."

There were six pictures of a tablet, corresponding with six conditions of scarcity. All pictures showed the same tablet, with the same specification details, but each of them contained a specific message of scarcity, and one of them had a price promotion, as described in 3.2. To avoid any bias due to different brand knowledge or brand impact, a fictional brand name – "Z1" – was used

for the tablet. Every participants was told that "*There would be several statements following the deal, please rate each statement regarding that sale*" and each of them was shown randomly one of six those six pictures. Next, they were required to rate four statements revealing their purchasing intention. The four-item measurement scale, as can be seen in Appendix 7, was adopted from Wu *et al.* (2012) and Dodds *et al.* (1991).

After reviewing the first product, the participants were required to answer several questions revealing the moderating factors: *Uncertainty avoidance*, *Need for cognitive closure* and *Internet using frequency,* before continuing with the second context. This order of questions aimed at distracting the respondents from the first context, avoiding any suspicion might happen if showing continuously two advertisements containing scarcity messages.

Condition 2 – Low ease of searching for online deals

Finishing the first context and moderation questions, research participants continued with a second context, in which the product was produced manually by a sole fashion brand and was not distributed widely by retailers:

"After placing an order for the tablet on a retail site, you take a quick glance at the online store of your favorite fashion brand, just to see if you may find something to lengthen your Christmas-present list. This local fashion brand focuses mainly on clothing and bags with trendy manual designs. Although having several brick-and-mortar stores around the city, they also sell their products through their website.

Happily, you find an eye-catching travel bag that could be a great gift for a member of your family, who is going on a vacation soon. You would see the bag on the next page"

Similar to the first product, there were six pictures of the bag with different scarcity signals, and each respondent was shown randomly one of them and was required to answer a four-item measurement scale regarding the purchase intention. To avoid any bias due to different brand knowledge or brand impact, as well as to emphasize the distinctiveness of the product, a fictional model name – "J'Norris canvas travel bag" – was used for the bag. An example of the advertisement could be seen in Appendix 7.

In the last part of the questionnaire, there were several questions dealing with the manipulation check, Product Familiarity and respondents' demographic data. It took the respondents approximately ten minutes to finishing the entire survey.

3.4. **Measures**

3.4.1. Independent variables

Scarcity condition is the central independent variable of this research. The variable has five categories. Respondents in the control condition were not exposed to any sale limitation, while respondents in experimental conditions were exposed to either a quantity limit, or a time limit. The control group is coded with 0; while the other groups: "3 items left", "42 items left", "2 days left", "2 days left with 20% discount" and "7 days left" are coded with 1, 2, 3, 4, 5 respectively. The control group acts as the base category and other categories would be compared with this one, by *post hoc* tests, to reveal the scarcity effect of each kind of message comparing to no-scarcity condition. There are two independent variables indicating scarcity, corresponding to two contexts of searching ease.

3.4.2. Dependent variables

This study has one dependent variable, namely: the consumer purchase intention. Purchase intention was measured by a four-item measurement scale adopted from Dodds *et al.* (1991) and Wu *et al.* (2012). The scale contains four statements which are rated on seven-point Likert scales (from *Very low* to *Very high* and from *Strongly disagree* to *Strongly agree*). The scale could be reviewed in Appendix 7. The Cronbach's alpha coefficients for this scale are 0.871 for the "tablet" section and 0.932 for the "bag" section, both above the generally accepted threshold of 0.70. However, since its "corrected item - total correlation" is just slightly above average, the third item "If I going to buy this tablet/bag, I would consider buying it at the price shown" were negated to improve the Cronbach's alpha coefficients to 0.911 and 0.957 respectively (see Appendix 2 for the results of the Cronbach's alpha analyses). As a result, the new measurement scale of purchase intention consists of three items left.

3.4.3. Moderating variables

In this section, three main moderators were tested. Additionally, several questions regarding respondents' frequency of using Internet to perform normal activities were examined. Those questions could be reviewed in Appendix 7.

Need for Cognitive Closure

A heuristic is a "mental shortcut" that helps people to save time and increase efficiency in decision-making and problem-solving (Cherry, 2014). Individuals are more likely to apply decision heuristics when they are motivated to resolve a problem in a limited period of time. The motivation could derive from time pressure, internal force, or any circumstantial sources (Jung & Kellaris, 2004). Moreover, Kruglanski (1989) demonstrated that people could be charaterized by different degrees of their Need for Cognitive Closure. Cognitive closure is defined as people's preference to a precise answer for a question rather than an ambiguous one (Houghton & Grewal, 2000) Thus, individuals with high need for closure are motivated to make quick judgments. Consequently, they tend to apply heuristics in making purchasing decision. Since scarcity is an heuristic, those people with high Need for Cognitive Closure (NFCC) are evidently expected to be affected by scarcity to a greater extent (Jung & Kellaris, 2004).

Need for Cognitive Closure was measured by a multi-item scale adopted from Jung and Kellaris (2004). The scale includes 13 statements, each statement was rated by a seven-point Likert scale (from *Strongly disagree* to *Strongly agree*). The Cronbach's alpha coefficient for this scale is 0.851, above the generally accepted threshold of 0.70. Low/high groups were formed via median split.

Uncertainty Avoidance

Hofstede (1980) suggested that cultures could be characterized by different levels of uncertainty avoidance. He defined uncertainty avoidance as "the extent to which the members of a culture feel threatened by uncertain or unknown situation". Similar to NFCC, Jung and Kellaris (2004) argued that people with high levels of uncertainty avoidance, or people originating from strong

uncertainty avoidance cultures, would tend to rely more on decision heuristics, and thus, they are expected to be affected by scarcity more significantly.

Uncertainty Avoidance was measured by multi-item scale adopted from Jung and Kellaris (2004). The scale includes seven statements, each statement was rated by a seven-point Likert scale (from *Strongly disagree* to *Strongly agree*). The Cronbach's alpha coefficient for this scale is 0.835, above the generally accepted threshold of 0.70. Low/high groups were formed via median split.

Product Familiarity

Jung and Kellaris (2004) demonstrated that "when an individual is familiar with a product, he or she should be less likely to rely on heuristics and therefore be less prone to the scarcity effects". Product Familiarity was measured by a single statement "I am familiar with/ have knowledge of this product category" for each product, tablet and bag. The statement was rated by a seven-point Likert scale (from *Strongly disagree* to *Strongly agree*). Low/high groups were formed via median split.

4. DATA ANALYSIS AND FINDINGS

4.1. Sample

Because the nature of this research focuses on the product's sale and advertising in digital commerce, its population are all the online shoppers, who have experience or intent to purchase any commodities from the Internet. The data was collected in approximately three weeks.

For the main research study, the data was collected from 293 respondents of the online survey, which was distributed via universities' social-networking websites. Thus, the majority of the participants were university students. 57 percent of the sample are female and 77 percent of the sample are youngers from 18 to 25 years old (see Appendix 3). In each context of the ease of searching for online deal, each respondent was assigned to one of six experimental groups at random. Because unbalanced designs cause statistical complication (Field, 2009), there was an effort to obtain equal sample sizes in six scarcity conditions. Table 2 summarizes the sample sizes of six treatment conditions in two contexts.

Table 2: Sample sizes of experimental conditions

	Control	3 items left	42 items left	2 days left	2 days 20% discount	7 days left
N (Tablet)	49	49	50	50	49	46
N (Bag)	49	49	48	49	49	49

4.2. Manipulation checks

The manipulation check tests whether the advertisement messages cause different perception of the product availability, by asking the participants to rate two 7-point Likert scale statements "I think the availability of that bag is limited" and "I think the availability of that tablet is limited" (From *Strongly disagree* to *Strongly agree*). The ANOVA results provide evidence that the advertisement messages were perceived as the initial purpose in both contexts of searching-ease,

as all means of scarcity conditions are higher than mean of control condition. However, the results only show significant differences in the context of low searching-ease. This could be explained that the nature of the context causes participants to perceive the product as widely available. The outputs of the tests could be reviewed in Appendix 4.

4.3. **Main effects of scarcity**

High ease of searching

Firstly, the context regarding high ease of searching is examined. To provide a general overview of the results, the table below shows the output of descriptive statistics form the one-way ANOVA; it describes the means, standard deviations and standard errors of the means for each scarcity condition. To help visualize the differences between the means, the error bar chart of the tablet shows the mean sizes in each condition, and the confidence interval of these means. The error bar shows that there is very little variance across samples. This supports the reliability of the results.

Table 3: ANOVA Descriptive analysis - scarcity conditions in high searching ease context

Descriptives

T_Combi

| | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | | Minimum | Maximum |
					Lower Bound	Upper Bound		
Control	49	4.4218	1.27253	.18179	4.0563	4.7873	1.67	7.00
3item	49	4.1565	1.36948	.19564	3.7631	4.5498	1.00	6.67
42item	50	4.3000	1.12132	.15858	3.9813	4.6187	1.67	6.67
2days	50	4.3733	1.51731	.21458	3.9421	4.8045	1.00	6.33
2days20%	49	4.4082	1.53548	.21935	3.9671	4.8492	1.00	7.00
7days	46	4.1087	1.19061	.17555	3.7551	4.4623	1.33	6.00
Total	293	4.2969	1.33882	.07821	4.1430	4.4509	1.00	7.00

34
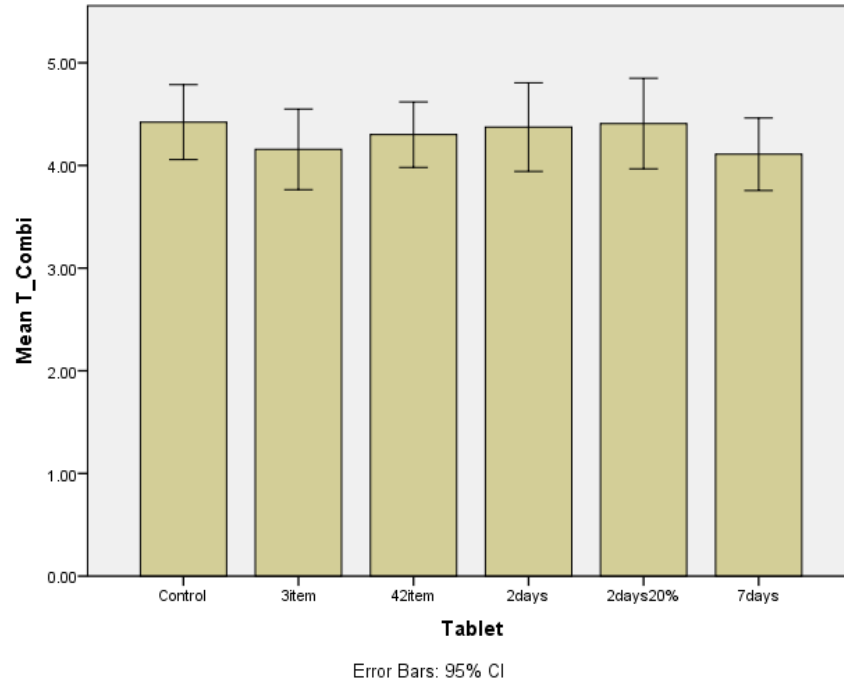
Figure 7: Error bar chart of scarcity conditions in high searching ease context

Levene's test indicates that the assumption of homogeneity of variance had been met (F (5,287) =2.209, p>.05)

Table 4: Levene's test of homogeneity of variances - high searching ease context

Test of Homogeneity of Variances

T_Combi

Levene Statistic	df1	df2	Sig.
2.209	5	287	.053

The main ANOVA summary table below shows that there is no significant effect of scarcity on consumer purchase intention (F (5,287) = 0.471, p> 0.05). This result was confirmed by the Games-Howell post hoc tests (p>.05 for all tests) (Appendix 3)

Table 5: ANOVA output - scarcity conditions in high searching ease context

ANOVA

T_Combi

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.259	5	.852	.471	.798
Within Groups	519.130	287	1.809		
Total	523.389	292			

Low ease of searching

Table 6 shows the output of descriptive statistics form the one-way ANOVA; it describes the means, standard deviations and standard errors of the means for each scarcity condition. To help visualize the differences between the means, the error bar chart of the tablet shows the mean sizes in each condition, and the confidence interval of these means. The error bar shows that there is very little variance across samples.

Table 6: ANOVA Descriptive analysis - scarcity conditions in low searching ease context

Descriptives

B_Combi

|	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Control	49	3.6735	1.47744	.21106	3.2491	4.0978	1.00	6.67
3items	49	4.0408	1.60097	.22871	3.5810	4.5007	1.00	7.00
42items	48	3.3333	1.46673	.21170	2.9074	3.7592	1.00	6.67
2days	49	3.8639	1.47811	.21116	3.4394	4.2885	1.00	7.00
2days20%	49	4.7075	1.14591	.16370	4.3783	5.0366	2.00	6.33
7days	49	3.9728	1.62138	.23163	3.5071	4.4385	1.00	7.00
Total	293	3.9340	1.51910	.08875	3.7594	4.1087	1.00	7.00

36
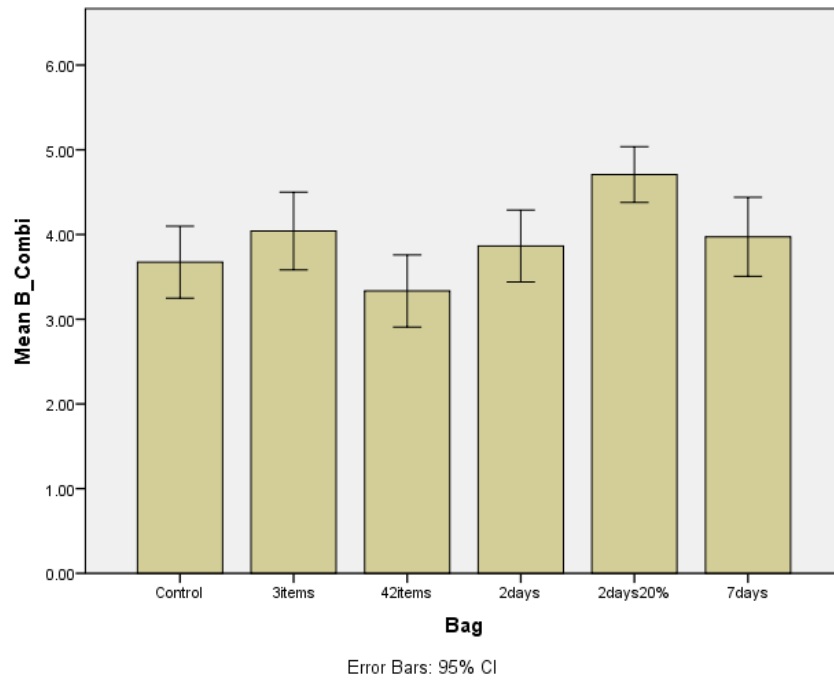
Figure 8: Error bar chart of scarcity conditions in low searching ease context

Levene's test indicates that the assumption of homogeneity of variance had been met (F (5,287) =1.463, p>.05).

Table 7: Levene's test of homogeneity of variances - low searching ease context

Test of Homogeneity of Variances

B_Combi

Levene Statistic	df1	df2	Sig.
1.463	5	287	.202

The main ANOVA summary in Table 8 shows that there is significant effect of scarcity on consumer purchase intention, F (5,287) = 4.683, p<0.001, ω^2=0.06.

Table 8: ANOVA output - scarcity conditions in high searching ease context

ANOVA

B_Combi

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	50.833	5	10.167	4.683	.000
Within Groups	623.002	287	2.171		
Total	673.835	292			

Taking a closer look at the post hoc test output (Appendix 4), Dunnett (2-sided) *post hoc* test reveals non-significant differences between all scarcity groups and the control group ($p > 0.05$ for all tests), except the "2 days left and 20% discount" group. The result indicates a significant difference between "2days-20%discount" and the control group (mean difference = 1.034, CI = 0.282, 1.786, $p < .05$), revealing that participants observed an offer with 20 percent discount in combination with high time limit scarcity expressed higher purchase intention than those observed the offer with no scarcity effect.

In addition, subsequent pairwise comparison (with Games-Howell *post hoc* test) reveals that purchase intention in "2 days left and 20% discount" condition is also significantly higher than purchase intention in "42 items left" condition (mean difference = 1.374, CI = 0.595, 2.154, $p < .001$) and "2 days left" condition (mean difference = 0.844, CI = 0.066, 1.622, $p < .05$).

Discussion

In summary, in the context of high ease of searching for online deals, different tested types of scarcity messages have no effect on consumer purchase intention, while in the context of low ease of searching for online deals, the result are the same except for the high time-limit scarcity message in combination with price promotion. The result reveals that an offer contains a price promotion in combination with a short time limit scarcity signal encouraged consumer purchase intention.

It can be noted that in this study the price promotion signal is only symbolic, in which the displayed discounted price are equal to displayed prices in all other scarcity treatment conditions. It reveals that the higher purchase intention is not due to lower price, but the interaction between time-limit scarcity and "a sign" of price promotion.

4.4. **Moderating effects**

In the second part of the questionnaire, the participants were asked to answer several questions revealing their Uncertainty Avoidance, Need for Cognitive Closure and Product Familiarity. This part presents the results of the moderating effect tests.

4.4.1. Moderating influence of Uncertainty Avoidance

High ease of searching context

The means, standard deviations and number of participants in all conditions of the experiment, separated by two conditions of the Uncertainty Avoidance (UA), could be seen in Appendix 8.

As could be seen in Table 9, there is a non-significant interaction effect between scarcity and Uncertainty Avoidance, on consumer purchase intention (F (5,281) =0.991, p > .05). This indicates that participants in different levels of Uncertainty Avoidance are not affected differently by scarcity. However, figure X shows a difference in scarcity effects between two groups of Uncertainty Avoidance. Low UA respondents seem to have higher purchase intention when observing "42 items left" "2days left" and "2 days left 20% discount" scarcity messages than when there is no scarcity effect, while High UA respondents reveals lower purchase intention towards those three types of scarcity than towards the control condition.

Table 9: ANOVA output - moderating effect of Uncertainty Avoidance in high searching ease context

Tests of Between-Subjects Effects

Dependent Variable: T_Purchase

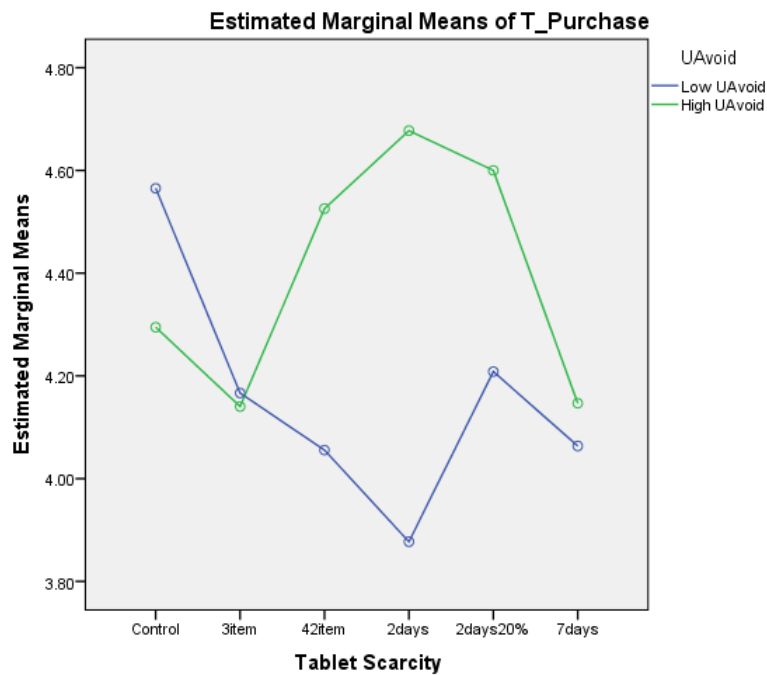| Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	17.418[a]	11	1.583	.879	.561
Intercept	5244.611	1	5244.611	2912.683	.000
UAvoid	4.178	1	4.178	2.320	.129
Scar_Tablet	4.001	5	.800	.444	.817
UAvoid * Scar_Tablet	8.923	5	1.785	.991	.423
Error	505.972	281	1.801		
Total	5933.222	293			
Corrected Total	523.389	292			

a. R Squared = .033 (Adjusted R Squared = -.005)

Figure 9: Scarcity*Uncertainty Avoidance – high searching ease context

Low ease of searching context

The means, standard deviations and number of participants in all conditions of the experiment, separated by two conditions of the Uncertainty Avoidance, could be seen in Appendix 8.

As could be seen in Table X, there is a non-significant interaction effect between scarcity and Uncertainty Avoidance, on consumer purchase intention ($F_{(5,281)} = 0.579$, $p > .05$). This indicates that participants in different levels of Uncertainty Avoidance are not affected differently by scarcity.

Table 10: ANOVA output - moderating effect of Uncertainty Avoidance in high searching ease context

Tests of Between-Subjects Effects

Dependent Variable: B_Purchase

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	59.503[a]	11	5.409	2.474	.006
Intercept	4391.380	1	4391.380	2008.650	.000
UAvoid	2.232	1	2.232	1.021	.313
Scar_Bag	48.522	5	9.704	4.439	.001
UAvoid * Scar_Bag	6.330	5	1.266	.579	.716
Error	614.332	281	2.186		
Total	5208.444	293			
Corrected Total	673.835	292			

a. R Squared = .088 (Adjusted R Squared = .053)

Figure 10 shows a little difference in scarcity effects between two groups of Uncertainty Avoidance. High UA respondents seem to have higher purchase intention when observing "42 items left", "2days left", "2 days left 20% discount" and "7 days left" scarcity messages than when there is no scarcity effect, while Low UA respondents reveals lower purchase intention towards those four types of scarcity than towards the control condition. However, the differences are not significant.
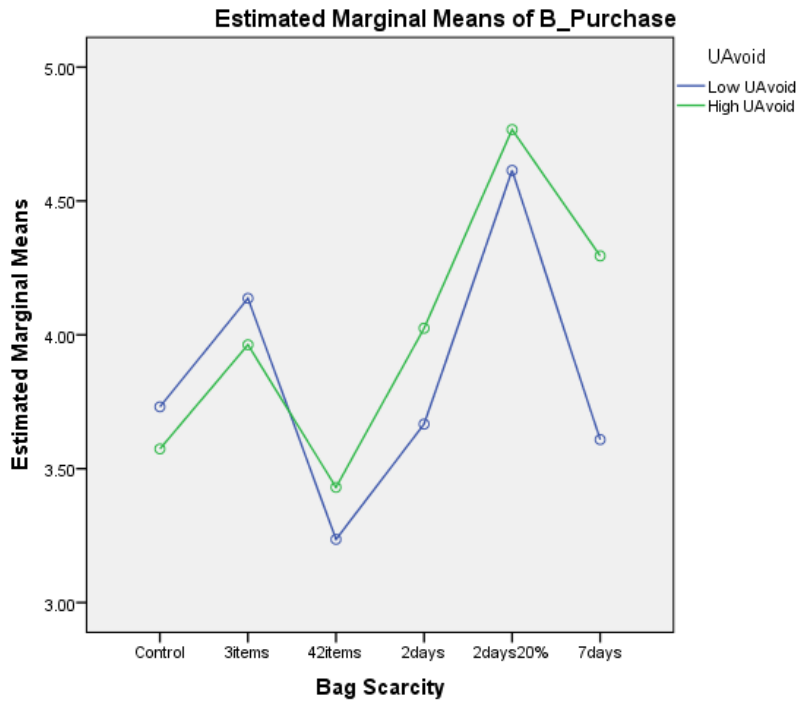
Figure 10: Scarcity*Uncertainty Avoidance – low searching ease context

4.4.2. Moderating influence of Need for Cognitive Closure

The means, standard deviations and number of participants in all conditions of the experiment, separated by two conditions of Need for Cognitive Closure (NFCC), could be seen in Appendix 8.

As could be seen in Table 11, there is a non-significant interaction effect between scarcity and Need for Cognitive Closure, on consumer purchase intention ($F_{(5,281)} = 0.256$, $p > .05$). This indicates that participants in different levels of NFCC are not affected differently by scarcity.

Table 11: ANOVA output - moderating effect of NFCC in high searching ease context

Tests of Between-Subjects Effects

Dependent Variable: T_Purchase

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	6.872[a]	11	.625	.340	.976
Intercept	5172.012	1	5172.012	2813.718	.000
Tablet	4.194	5	.839	.456	.809
NFCC	.240	1	.240	.131	.718
Tablet * NFCC	2.355	5	.471	.256	.936
Error	516.518	281	1.838		
Total	5933.222	293			
Corrected Total	523.389	292			

a. R Squared = .013 (Adjusted R Squared = -.026)

However, Figure 11 shows a difference in scarcity effects between two groups of Need for Cognitive Closure. High NFCC respondents seem to have higher purchase intention when observing "42 items left", "2days left", "2 days left 20% discount" and "7 days left" scarcity messages than when there is no scarcity effect, while Low NFCC respondents reveals lower purchase intention towards those four types of scarcity than towards the control condition. Comparing with no-scarcity condition, High NFCC participants react most negatively with the high quantity-limit message, while Low NFCC participants react most negatively with the low time-limit message.
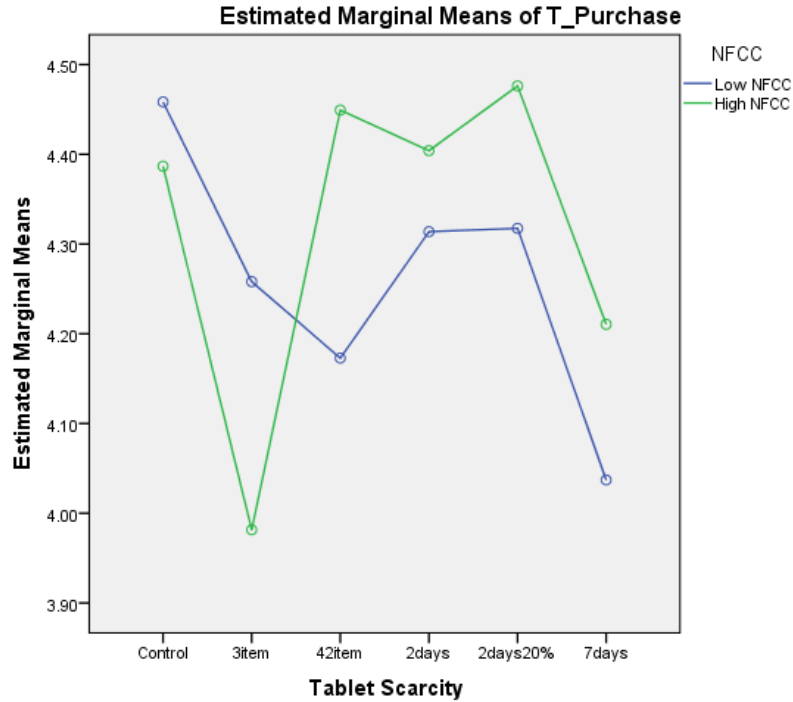
Figure 11: Scarcity*NFCC – high searching ease context

Low ease of searching

The means, standard deviations and number of participants in all conditions of the experiment, separated by two conditions of the Uncertainty Avoidance, could be seen in Appendix 8.

As could be seen in Table 12, there is a non-significant interaction effect between scarcity and Need for Cognitive Closure, on consumer purchase intention ($F_{(5,281)} = 0.129$, $p > .05$). This indicates that participants in different levels of NFCC are not affected differently by scarcity. This result is confirmed in Figure 12.

Table 12: ANOVA output - moderating effect of NFCC in low searching ease context

Tests of Between-Subjects Effects

Dependent Variable: B_Purchase

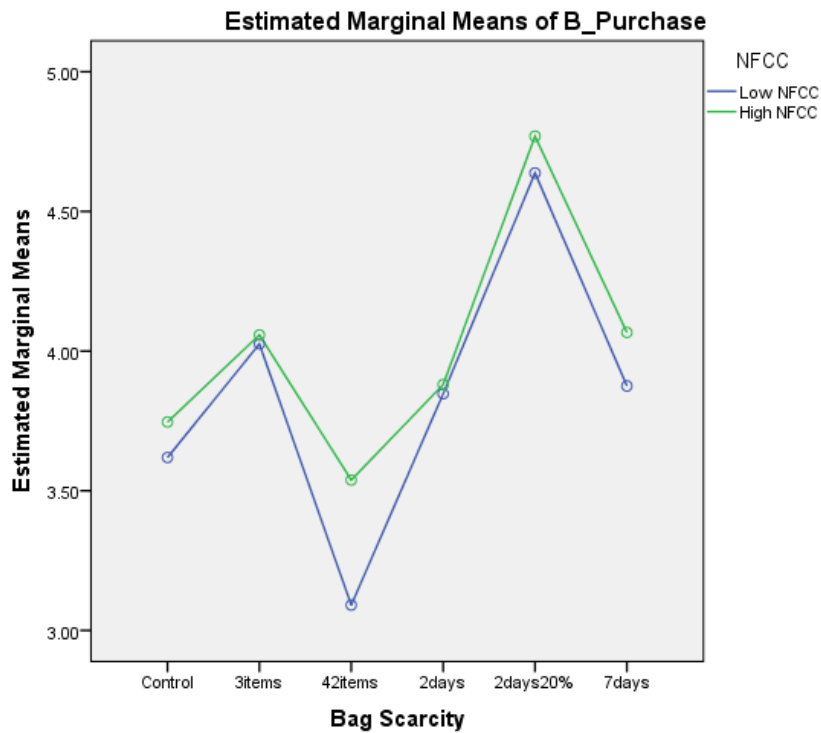| Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	54.101[a]	11	4.918	2.230	.013
Intercept	4496.777	1	4496.777	2038.927	.000
Bag	51.096	5	10.219	4.634	.000
NFCC	1.875	1	1.875	.850	.357
Bag * NFCC	1.418	5	.284	.129	.986
Error	619.735	281	2.205		
Total	5208.444	293			
Corrected Total	673.835	292			

a. R Squared = .080 (Adjusted R Squared = .044)

Figure 12: Scarcity*NFCC – low searching ease context

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4.4.3. Moderating influence of Product Familiarity

High ease of searching context

Estimated Marginal Means of T_Purchase
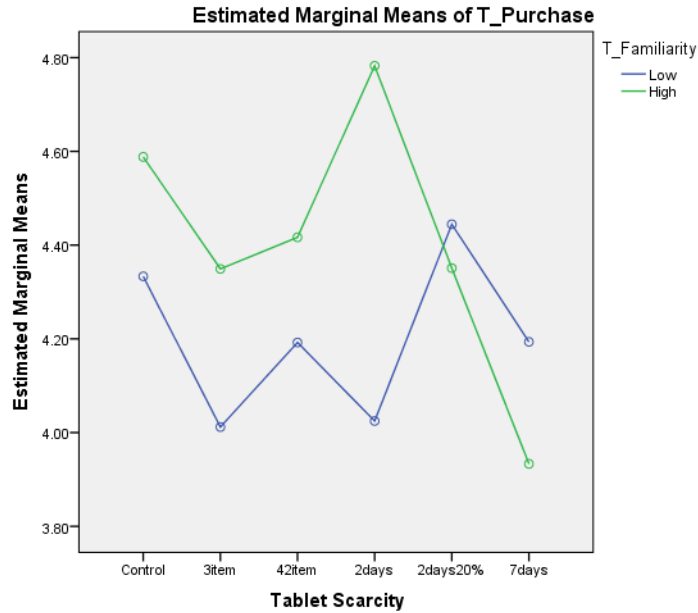
As could be seen in Table 13, there is a non-significant interaction effect between scarcity and Product Familiarity, on consumer purchase intention (F (5,281) =0.801, p > .05). This indicates that participants in different levels of Product Familiarity are not affected differently by scarcity.

Figure 13: Scarcity*Product Familiarity – high searching ease context

Table 13: ANOVA output - moderating effect of Product Familiarity in high searching ease context

Tests of Between-Subjects Effects

Dependent Variable: T_Purchase

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	14.895[a]	11	1.354	.748	.691
Intercept	5134.975	1	5134.975	2837.645	.000
Scar_Tablet	5.063	5	1.013	.560	.731
T_Familiarity	2.871	1	2.871	1.587	.209
Scar_Tablet * T_Familiarity	7.248	5	1.450	.801	.550
Error	508.495	281	1.810		
Total	5933.222	293			
Corrected Total	523.389	292			

a. R Squared = .028 (Adjusted R Squared = -.010)

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Low ease of searching context

As could be seen in Table 14, there is a non-significant interaction effect between scarcity and Product Familiarity, on consumer purchase intention (F $(5,281)$ =0.271, p > .05). This indicates that participants in different levels of Product Familiarity are not affected differently by scarcity.

Table 14: ANOVA output - moderating effect of Product Familiarity in low searching ease context

Tests of Between-Subjects Effects

Dependent Variable: B_Purchase

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	74.449[a]	11	6.768	3.173	.000
Intercept	4153.192	1	4153.192	1947.069	.000
Scar_Bag	37.254	5	7.451	3.493	.004
B_Familiarity	20.569	1	20.569	9.643	.002
Scar_Bag * B_Familiarity	2.888	5	.578	.271	.929
Error	599.387	281	2.133		
Total	5208.444	293			
Corrected Total	673.835	292			

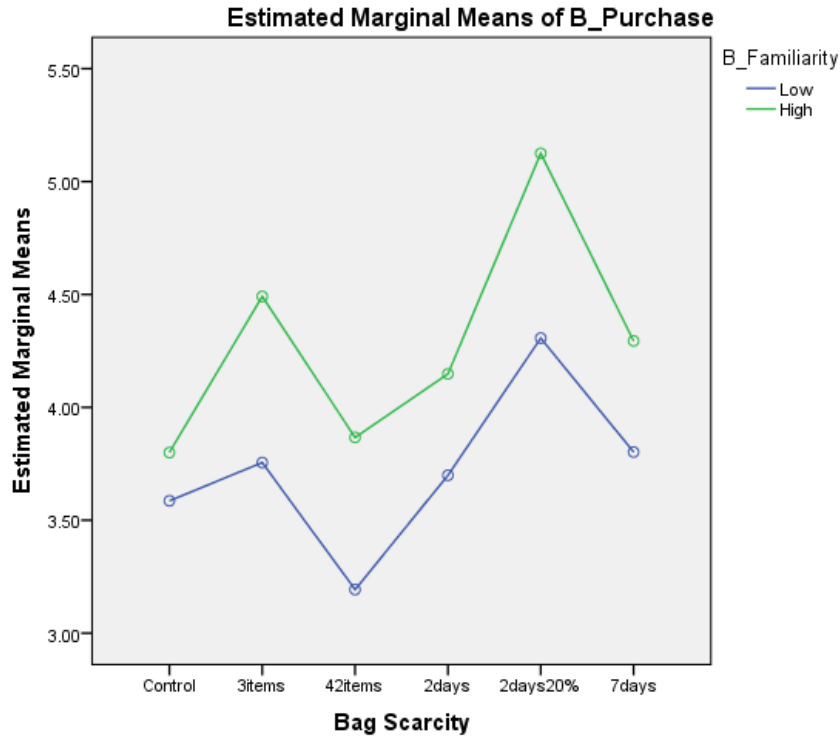a. R Squared = .110 (Adjusted R Squared = .076)

Figure 14: Scarcity*Product Familiarity – low searching ease context

4.4.4. Demographical influence of gender

High ease of searching context

As could be seen in Table 15, there is a non-significant interaction effect between scarcity and gender, on consumer purchase intention (F $(5,281)$ $=0.630$, p $>$ .05). This indicates that participants in both genders are not affected differently by scarcity. Figure 15 shows that although male and female do react differently in various scarcity conditions, the differences are not significant.

Table 15: ANOVA output – demographical influence of gender in high searching ease context

Tests of Between-Subjects Effects

Dependent Variable: T_Purchase

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	11.004[a]	11	1.000	.549	.869
Intercept	5144.058	1	5144.058	2821.082	.000
Sex	1.128	1	1.128	.619	.432
Scar_Tablet	3.458	5	.692	.379	.863
Sex * Scar_Tablet	5.745	5	1.149	.630	.677
Error	512.385	281	1.823		
Total	5933.222	293			
Corrected Total	523.389	292			

a. R Squared = .021 (Adjusted R Squared = -.017)
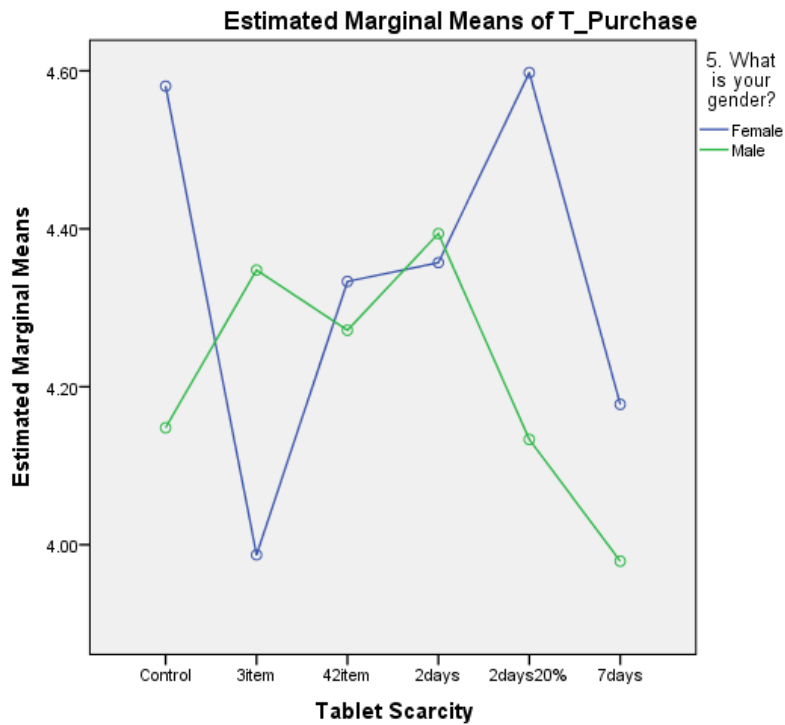
Figure 15: Scarcity*Gender – high searching ease context

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Low ease of searching context

As could be seen in Table 16, there is a non-significant interaction effect between scarcity and gender, on consumer purchase intention (F (5,281) =0.665, p > .05). This indicates that participants in both genders are not affected differently by scarcity. This result is confirmed in Figure 16, when male and female react quite similarly in various scarcity conditions, although male's purchase intention is a little higher than female's purchase intention in no-scarcity condition.

Table 16: ANOVA output – demographical influence of gender in low searching ease context

Tests of Between-Subjects Effects

Dependent Variable: B_Purchase

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	66.631[a]	11	6.057	2.803	.002
Intercept	4079.093	1	4079.093	1887.707	.000
Scar_Bag	34.753	5	6.951	3.217	.008
Sex	8.858	1	8.858	4.099	.044
Scar_Bag * Sex	7.189	5	1.438	.665	.650
Error	607.205	281	2.161		
Total	5208.444	293			
Corrected Total	673.835	292			

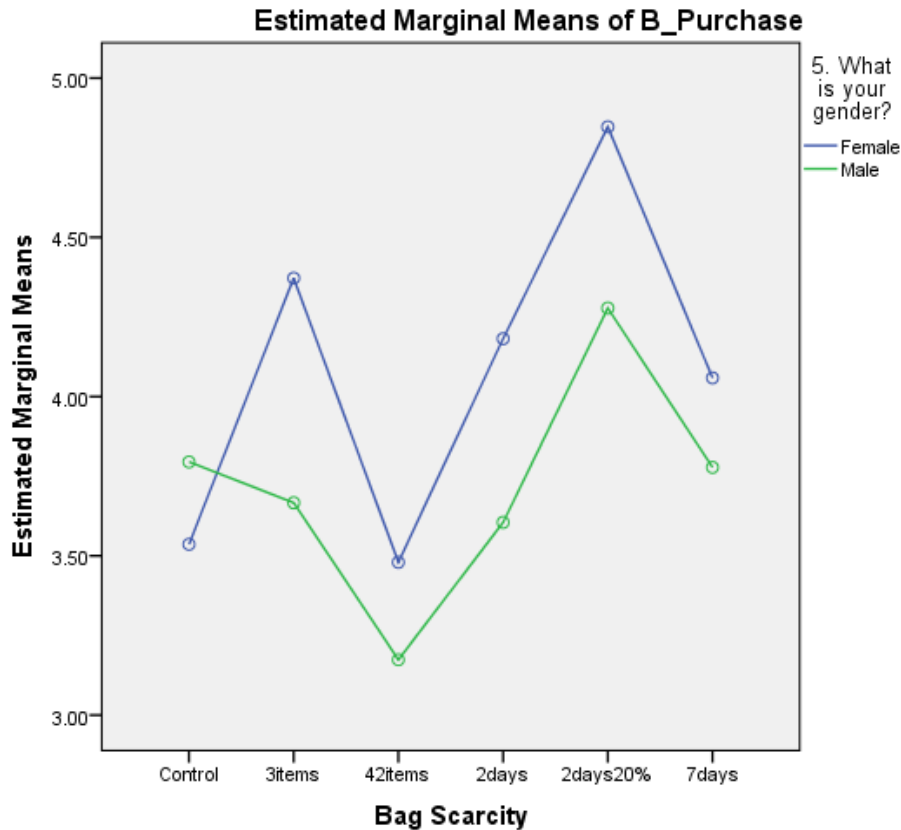a. R Squared = .099 (Adjusted R Squared = .064)

Figure 16: Scarcity*Gender – low searching ease context

Discussion

The analyses examine the relationships between scarcity effects and Uncertainty Avoidance, Need for Cognitive Closure and Product Familiarity. In contrast to findings of Jung and Kellaris' (2004) study, two-way independent ANOVA shows that purchase intentions towards different scarcity conditions do not differ statistically in terms of Uncertainty Avoidance, Need for Cognitive Closure and Product Familiarity. Consequently, Uncertainty Avoidance, Need for Cognitive Closure and Product Familiarity play no role in explaining the scarcity effects in the context of e-commerce.

Additionally, gender is also examined as a moderator of scarcity effect. The result shows that male and female are not affected differently by scarcity effects.

5. CONCLUSION AND RECOMMENDATIONS

The purpose of this research is to investigate scarcity effects in the context of electronic commerce. Past research has demonstrated effects of scarcity on consumer purchase intention in various categories of commodities and attempted to explain the factors underlying such effects. However, there is little study on scarcity effects in an electronic commerce environment, although online shopping is growing significantly as a new trend in doing business. Therefore, this study attempts to fill in the gaps by examining the effects of different scarcity conditions on consumer purchase intention, when consumers are positioned in different contexts of shopping online. Experimental participants were randomly allocated into six conditions of scarcity, which cover different types of scarcity with different intensity. In each condition, consumption purchase intention was measured. The analysis reveals differences in purchase intention between different groups of scarcity, revealing the effectiveness of scarcity instruments in the context of e-commerce.

The main finding of this research is that scarcity effects, when being placed in the context of electronic commerce, are not as effective as in offline consumption situations. Specifically, the study investigated two different contexts of selling a product online: high versus low ease of searching for online deals. In the context of high ease of searching, consumer may exploit the ease of searching and comparing products of electronic commerce to find offers for the product from many online retailers. In the context of low ease of searching, when there are not many retailers of the product or the product is sold by a unique seller, consumer may find it hard to search for many online offers for the product.

The research results show that in the context of high ease of searching, examined types of scarcity messages have no significant effect on consumer purchase intention; while in the context of low ease of searching, scarcity has significant effect only when it is employed in the form of intensive time limit, in combination with a signal of price promotion.

Furthermore, Uncertainty Avoidance, Need for Cognitive Closure, Product Familiarity and gender are also examined to see if they have any mediating effects on the relationship between

scarcity and purchase intention. However, no significant mediating influence of those variables was found. The result is not consistent with findings in Jung and Kellaris's (2004) study, indicating that in the context of e-commerce, other factors should be examined in order to explain the effects of scarcity.

Generally, this research shows that the scarcity effect, which has been long assumed by sellers to have impact on their customer purchase intention, may not be so effective, or just be effective in specific context of e-commerce when a specific type of scarcity message is employed.

5.1. **Managerial Implication**

The main takeaway from this study for managers is the insight that scarcity instruments in the context of e-commerce are not as effective as in offline circumstance. The research result indicates that in the context of high ease of searching for online deals, scarcity messages have no significant effect on consumer purchase intention. In some cases, scarcity messages even cause negative effects on consumer behavior. It is noteworthy that in most product categories sold on the Internet, the degree of searching is rather high; thus, this finding has a significant implication. However, if the product is unique, scarcity messages, in form of time limit in combination with the price promotion, tend to have a significant effect on consumer behavior. Utilizing this point, online retailers could employ this specific type of scarcity to increase the conversion rate. It is recommended that online retailers, who want to employ scarcity messages on their websites, should attempt to make their products unique by seeking for exclusive sources of product supply, or by providing their products with exclusive features, to reduce the ability to find alternative products from other retailers.

The finding of this study is particularly useful for online retailers, as the research imitated the context of e-commerce. Because the scarcity instruments are broadly used in all types of e-commerce business, the implications of this study are widespread. However, the study setting was not extensive enough to infer comprehensive generalizations across all product categories. The main implication of this study for managers is that in the context of e-commerce, scarcity

has relatively different effects compared to in brick-and-mortar business. Thus, the scarcity strategy should be employed with caution.

5.2. **Limitations and further research**

The first limitation lies in the sample. Due to the method of collecting the data, the sample was not completely random. In 4.1, the study's population was stated to be all online shoppers, but in fact, a large proportion of the sample are students, mostly from business schools. This imperfection of sampling somehow may affect the result of the study, because the participants may have suspicion over the purpose of the study. Verhallen and Robben (1994) observed such obstacle in their pilot study, as the cover story for the experiment caused the suspicion over the student sample. Moreover, the students aware of the experimental manipulation want to express their knowledge by attempting to answer in a way in contrast with what they consider the study's objectives (Worchel *et al.*, 1975). The second issue is that the research assumes that all survey participants, which are mostly young, are familiar with e-commerce. There was a lack of control variables for such an assumption. A better-designed research should have a filter for questionnaire respondents, for example, making at least two online purchases in a typical three-month period.

Another limitation is the dependent variable. The only dependent variable of the research is the purchase intention. Although it was well-measured by multi-item scales adopted from other studies, the purchase intention may not reflect the consumer behavior in e-commerce context. There was not an obvious connection between consumer purchase intention and conversion rate or any other indexes that might actually increase revenue of an e-commerce business. Future research may include other relevant dependent variables such as product evaluation or conversion rate. The nature of a field experiment and the limitation of the study time may not allow testing the conversion rate, but further research may embed the scarcity in an actual e-commerce site, measure the real conversion rate, and collect time series data. Moreover, other variables such as word-of-mouth or price sensitivity could be potential dependent variables. The inclusion of those variables would have increased the amount of information in the outcome.

Finally, mobile is becoming a popular means of online shopping. However, this research focuses on online shoppers who purchase from websites. In the context of mobile shopping, for example using an application, the ease of searching may be very different. Therefore, further research could examine the effects of scarcity within the context of shopping via mobile devices.

REFERENCES

Books and reports

Arts, W. A., & Halman, L. (2004). *European Values At The Turn Of The Millennium.* BRILL.

Brehm, J. W. (1966). *A theory of psychological reactance.* New York: Academic Press.

Brehm, J. W. (1972). *Responses to loss of freedom: A theory of psychological reactance.* Morrison, NJ: General Learning Press.

Brock, T. C. (1968). *Implication of commodity theory for value change.* New York: Academic Press.

Cialdini, R. B. (2001). *Influence:: Science and Practice, 4th edition.* Massachusetts: Allyn & Bacon .

Cialdini, R. B. (2009). *Influence: The psychology of persuation.* New York: HarperCollins.

ComScore. (2013). *2013 UPS Pulse of the Online Shopper.* UPS.

Field, A. (2009). *Discovering statistics using SPSS (and sex and drug and rock 'n' roll).* London: Sage.

Goldstein, N. J., Martin, S. J., & Cialdini, R. B. (2008). *Yes!: 50 Scientifically Proven Ways to Be Persuasive.* New York: Simon and Schuster.

Lee, S. Y. (2012). *The effects of scarcity on product evaluation.* Montreal: McGill University.

Monroe, K., & Pretroshius, S. (1981). *Buyer's perception of price: An update of the evidence*.

Parhizgar, K. D. (2013). *Multicultural Behavior and Global Business Environments.* Routledge.

Articles

Aggarwal, P., Jun, S. Y., & Huh, J. H. (2011). Scarcity messages: A consumer competition perspective. *Journal of Advertising*, 19-30.

Armstrong, J. S., Morwitz, V. G., & Kumar, V. (2000). Sale forecasts for existing consumer products and services: do purchase intentions contribute to accuracy?. *International Journal of Forecasting, vol. 16, issue 3*, 383-397.

Cacioppo, J. T., & Petty, R. E. (1982). The need for cognition. *Journal of personality and Social Psychology, 42 (January)*, 116-131.

Dodds, W., Monroe, K., & Grewal, D. (1991). Effects of price, brand, and store information on buyers' product evaluations. *Journal of Marketing Research. 28*, 307-319.

Fromkin, H. (1970). Effects ofexperimentally aroused feelings of undistinctiveness upon valuation of scarce and novel experiences. *Journal of Personality and Social Psychology, 16 (November)*, 521-529.

Gierl, H., & Huettl, V. (2010). Are scarce products always more attractible? The interaction of different types of scarcity signals with products' suitability for conspicous consumption. *Intern. J. of Research in Marketing, 27*, 225-235.

Gierl, H., Plantsch, M., & Schweidler, J. (2008). Scarcity effects on sales volume in retail. *The International Review of Retail, Distribution and Consumer Research, 18:1*, 45-61.

Haugtvedt, C. P., Petty, R. E., & Cacioppo, J. T. (1992). Need for cognition and advertising: Understanding the role of personality variables in consumer behavior. *Journal of Consumer Psychology, 1 (3)*, 239-260.

Herpen, E. v., Pieters, R., & Zeelenberg, M. (2005). How product scarcity impacts on choice: Snob and Bandwagon effects. *Advances in Consumer Research, 32*, 623-624.

Herpen, E. v., Pieters, R., & Zeelenberg, M. (2009). When demand accelerates demand: Trailing the bandwagon. *Journal of Consumer Psychology, 19*, 302-312.

Houghton, D., & Grewal, R. (2000). Please, let's get an answer – any answer: need for consumer cognitive closure. *Psychology & Marketing, 17*, 911 -934.

Inman, J. J., Peter, A. C., & Raghubir, P. (1997). Framing the deal: the role of restrictions in accentuating deal value. *Journal of Consumer Research, Vol. 24*.

Jung, J. M., & Kellaris, J. J. (2004). Cross-national Differences in Proneness to Scarcity Effects: The Moderating Roles of Familiarity, Uncertainty Avoidance, and Need for Cognitive Closure. *Psychology & Marketing, Vol. 21(9)*, 739-753.

Ku, H.-H., Kuo, C.-C., Yang, Y.-T., & Chung, T.-S. (2013). Decision - contextual and individual influences on scarcity effects. *European Journal of Marketing, Vol. 47 No. 8*, 1314-1332.

Leibenstein, H. (1950). Bandwagon, snob, and Veblen effects in the theory of consumers' demand. *The Quaterly Journal of Economics, 64*, 183-207.

Lessne, G. J., & Notarantonio, E. M. (1988). The effect of limits in retail advertisements: A reactance theory perspective. *Psychology & Marketing, 5 (Spring)*, 33-44.

Lynn, M. (1991). Scarcity effects on value: A quantitative review of the commodity theory literature. *Psychology & Marketing, 8(1)*, 43-57.

Lynn, M. (1992). Scarcity's enhancement od desirability: The role of naive economic theories. *Basic & Applied Social Psychology, 13(1)*, 67-78.

Maheswaran, D., & Chaiken, S. (1991). Promoting systematic processing in low motivation settings: effects of incongruent information on processing and judgment. *Journal of Personality and Social Psychology, 61(July)*, 13-25.

Matzle, K., T. A., King, L., Linder, A., & Bailom, F. (2010). Converting browser to buyers: an approach to measure and increase conversion rate in retailing. *Innovative Marketing, Volume 6, Issue 1*.

Mazis, M., Settle, R., & Leslie, D. (1973). Elimination of phosphate detergents and psychological reactance. *Journal of Marketing Research, 10(4)*, 390-395.

Olson, J. (1974). Cue properties of price: Literature review and theoretical considerations. *Working paper series in marketing reseach No. 20, Pennsylvania State University*.

Verhallen, T.M. (1982). Scarcity and consumer choice behavior. *Journal of Economic Psychology 2*, 299-321.

Verhallen, T.M., & Robben, H.S. (1994). Scarcity and preference: an experiment on unavailability and product evaluation. *Journal of Economic Psychology 15*, 315-331.

Worchel, S., Lee, J., & Adewole, A. (1975). Effects of supply and demand on ratings of object value. *Journal of Personality and Social Psychology 32*, 906-914.

Wu, W.-Y., Lu, H.-Y., Wu, Y.-Y., & Fu, C.-S. (2012). The effects of product scarcity and consumers' need for uniqueness on purchase intention. *International Journal of Consumer Studies 36*, 263-274.

Internet-references

Celebrating Concorde. British Airways. Online. Available at: https://www.britishairways.com/en-fi/information/about-ba/history-and-heritage/celebrating-concorde, [09.05.2014]

Hatt (2013). Online. Ao giac khan hiem, ton tai hay khong ton tai?. Available at: http://beta.gik.vn/marketing/ao-giac-khan-hiem-ton-tai-hay-khong-ton-tai [04.02.2014]

Scarcity Samurai. Online. Available at: http://www.scarcitysamurai.com/, [15.3.2014]

The affair of paper cutting & Couture fashion (2014). Online. Available at:

      http://lingerissimi.com/20-01-2011/the-affair-of-paper-cutting-couture-fashion

      [23.04.2014]

Values (2010). Online. Philosophy of Nature. Available at:

      http://physicalspace.wordpress.com/2010/10/ [09.05.2014]

APPENDICES

Appendix 1:   Time limit messages

High time limit

High time limit with Price promotion

Appendix 2: Purchase Intention scale - Cronbach's alpha analysis

Tablet's Purchase Intention Scale

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.871	.871	4

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Please rate each of the following statements respecting your opinion on this sale: My willingness to purchase this tablet is:	13.03	14.170	.769	.653	.818
The probability that I would consider buying this tablet is:	13.21	13.661	.781	.719	.812
If I were going to buy this tablet I would consider buying it at the price shown:	12.89	16.132	.524	.347	.911
The likelihood of purchasing this tablet is high:	13.13	12.979	.844	.726	.785

Bag's Purchase Intention Scale

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.932	.932	4

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Please rate each of the following statements respecting your opinion on this sale: My willingness to purchase this bag is:	12.09	19.263	.873	.822	.900
The probability that I would consider buying this bag is:	12.15	18.715	.894	.868	.893
If I were going to buy this bag, I would consider buying it at the price shown:	11.80	20.769	.693	.514	.957
The likelihood of purchasing this bag is high:	12.18	18.012	.908	.841	.887

Appendix 3: Descriptive Statistics

4. How old are you?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	13-17	6	2.0	2.0	2.0
	18-25	226	77.1	77.1	79.2
	26-34	42	14.3	14.3	93.5
	35-54	13	4.4	4.4	98.0
	55-64	4	1.4	1.4	99.3
	65 or over	2	.7	.7	100.0
	Total	293	100.0	100.0	

5. What is your gender?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	167	57.0	57.0	57.0
	Male	126	43.0	43.0	100.0
	Total	293	100.0	100.0	

6. What is the highest level of education you have completed?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	High School	107	36.5	36.5	36.5
	College Degree	121	41.3	41.3	77.8
	Masters Degree	60	20.5	20.5	98.3
	Doctoral Degree	3	1.0	1.0	99.3
	Professional Degree (JD, MD)	2	.7	.7	100.0
	Total	293	100.0	100.0	

Appendix 4:   Manipulation check – ANOVA outputs

Descriptives

Regarding the sale of the bag you have just seen, to which extend do you agree with the following statements?-I think the availability of that bag is limited

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Control	49	3.02	1.493	.213	2.59	3.45	1	6
3items	49	4.24	1.762	.252	3.74	4.75	1	7
42items	48	3.85	1.429	.206	3.44	4.27	1	7
2days	49	4.04	1.670	.239	3.56	4.52	1	7
2days20%	49	4.41	1.485	.212	3.98	4.83	2	7
7days	49	4.18	1.439	.206	3.77	4.60	1	6
Total	293	3.96	1.604	.094	3.77	4.14	1	7

ANOVA

Regarding the sale of the bag you have just seen, to which extend do you agree with the following statements?-I think the availability of that bag is limited

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	60.387	5	12.077	5.015	.000
Within Groups	691.122	287	2.408		
Total	751.509	292			

Multiple Comparisons

Dependent Variable: Regarding the sale of the bag you have just seen, to which extend do you agree with the ...

Dunnett t (2-sided)[,a]

(I) Bag Scarcity	(J) Bag Scarcity	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
3items	Control	1.224[*]	.314	.001	.43	2.02
42items	Control	.834[*]	.315	.036	.04	1.63
2days	Control	1.020[*]	.314	.006	.23	1.81
2days20%	Control	1.388[*]	.314	.000	.60	2.18
7days	Control	1.163[*]	.314	.001	.37	1.96

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

a. Dunnett t-tests treat one group as a control, and compare all other groups against it.

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Descriptives

Regarding the sale of the tablet in the sale you have seen at the beginning, to which extend do you agree with the following statements?-I think the availability of that tablet is limited

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Control	49	2.84	1.375	.196	2.44	3.23	1	6
3item	49	3.53	1.827	.261	3.01	4.06	1	7
42item	50	2.88	1.624	.230	2.42	3.34	1	7
2days	50	3.30	1.787	.253	2.79	3.81	1	7
2days20%	49	2.98	1.521	.217	2.54	3.42	1	6
7days	46	3.33	1.687	.249	2.83	3.83	1	6
Total	293	3.14	1.650	.096	2.95	3.33	1	7

ANOVA

Regarding the sale of the tablet in the sale you have seen at the beginning, to which extend do you agree with the following statements?-I think the availability of that tablet is limited

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	19.497	5	3.899	1.443	.209
Within Groups	775.766	287	2.703		
Total	795.263	292			

Multiple Comparisons

Dependent Variable: Regarding the sale of the tablet in the sale you have seen at the beginning, to which extend ...

Dunnett t (2-sided)[,a]

(I) Tablet Scarcity	(J) Tablet Scarcity	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
3item	Control	.694	.332	.142	-.15	1.53
42item	Control	.043	.330	1.000	-.79	.88
2days	Control	.463	.330	.488	-.37	1.30
2days20%	Control	.143	.332	.991	-.70	.98
7days	Control	.489	.338	.455	-.36	1.34

a. Dunnett t-tests treat one group as a control, and compare all other groups against it.

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Appendix 5: Main effects of scarcity - ANOVA outputs

Post Hoc Tests Output of Tablet

Multiple Comparisons

Dependent Variable: T_Combi

	(I) Tablet	(J) Tablet	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Games-Howell	Control	3item	.26531	.26706	.919	-.5114	1.0420
		42item	.12177	.24124	.996	-.5799	.8235
		2days	.04844	.28123	1.000	-.7696	.8665
		2days20%	.01361	.28489	1.000	-.8155	.8427
		7days	.31307	.25271	.817	-.4223	1.0485
	3item	Control	-.26531	.26706	.919	-1.0420	.5114
		42item	-.14354	.25184	.993	-.8764	.5894
		2days	-.21687	.29038	.975	-1.0613	.6275
		2days20%	-.25170	.29392	.956	-1.1067	.6033
		7days	.04777	.26285	1.000	-.7172	.8128
	42item	Control	-.12177	.24124	.996	-.8235	.5799
		3item	.14354	.25184	.993	-.5894	.8764
		2days	-.07333	.26682	1.000	-.8503	.7036
		2days20%	-.10816	.27067	.999	-.8968	.6805
		7days	.19130	.23657	.965	-.4972	.8799
	2days	Control	-.04844	.28123	1.000	-.8665	.7696
		3item	.21687	.29038	.975	-.6275	1.0613
		42item	.07333	.26682	1.000	-.7036	.8503
		2days20%	-.03483	.30686	1.000	-.9270	.8574
		7days	.26464	.27724	.931	-.5423	1.0716
	2days20%	Control	-.01361	.28489	1.000	-.8427	.8155
		3item	.25170	.29392	.956	-.6033	1.1067
		42item	.10816	.27067	.999	-.6805	.8968
		2days	.03483	.30686	1.000	-.8574	.9270
		7days	.29947	.28095	.894	-.5187	1.1176
	7days	Control	-.31307	.25271	.817	-1.0485	.4223
		3item	-.04777	.26285	1.000	-.8128	.7172
		42item	-.19130	.23657	.965	-.8799	.4972
		2days	-.26464	.27724	.931	-1.0716	.5423
		2days20%	-.29947	.28095	.894	-1.1176	.5187
Dunnett t (2-sided)[a]	3item	Control	-.26531	.27172	.790	-.9518	.4211
	42item	Control	-.12177	.27035	.989	-.8048	.5612
	2days	Control	-.04844	.27035	1.000	-.7315	.6346
	2days20%	Control	-.01361	.27172	1.000	-.7001	.6729
	7days	Control	-.31307	.27611	.681	-1.0106	.3845

a. Dunnett t-tests treat one group as a control, and compare all other groups against it.

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Mean Plot of Tablet
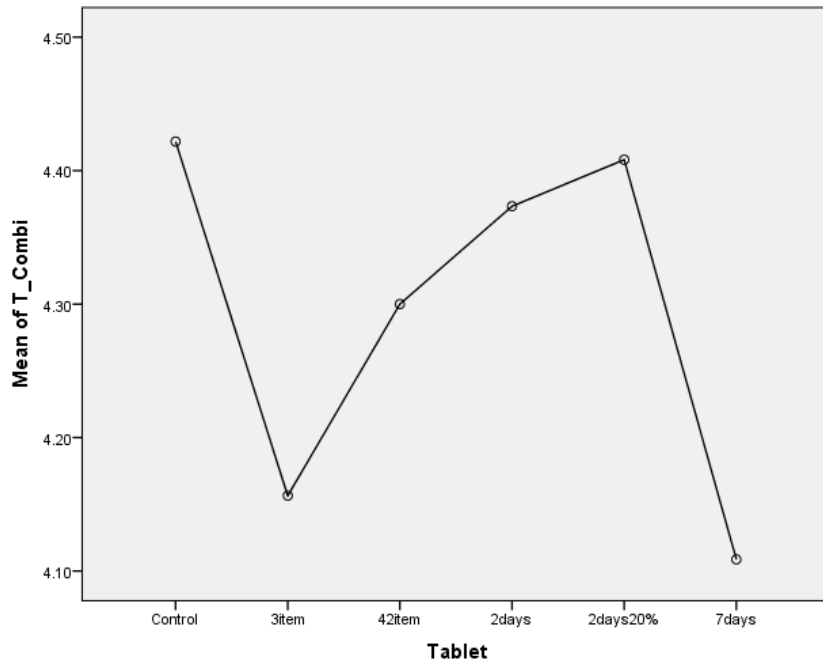
Post Hoc Test Output of Bag

Multiple Comparisons

Dependent Variable: B_Combi

	(I) Bag	(J) Bag	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Games-Howell	Control	3items	-.36735	.31122	.845	-1.2725	.5378
		42items	.34014	.29894	.864	-.5294	1.2097
		2days	-.19048	.29856	.988	-1.0587	.6777
		2days20%	-1.03401*	.26711	.003	-1.8118	-.2563
		7days	-.29932	.31337	.931	-1.2108	.6121
	3items	Control	.36735	.31122	.845	-.5378	1.2725
		42items	.70748	.31165	.217	-.1991	1.6141
		2days	.17687	.31128	.993	-.7285	1.0822
		2days20%	-.66667	.28126	.178	-1.4863	.1530
		7days	.06803	.32551	1.000	-.8786	1.0147
	42items	Control	-.34014	.29894	.864	-1.2097	.5294
		3items	-.70748	.31165	.217	-1.6141	.1991
		2days	-.53061	.29901	.487	-1.4003	.3391
		2days20%	-1.37415*	.26761	.000	-2.1537	-.5946
		7days	-.63946	.31380	.329	-1.5523	.2734
	2days	Control	.19048	.29856	.988	-.6777	1.0587
		3items	-.17687	.31128	.993	-1.0822	.7285
		42items	.53061	.29901	.487	-.3391	1.4003
		2days20%	-.84354*	.26718	.026	-1.6215	-.0656
		7days	-.10884	.31343	.999	-1.0205	.8028
	2days20%	Control	1.03401*	.26711	.003	.2563	1.8118
		3items	.66667	.28126	.178	-.1530	1.4863
		42items	1.37415*	.26761	.000	.5946	2.1537
		2days	.84354*	.26718	.026	.0656	1.6215
		7days	.73469	.28363	.111	-.0920	1.5614
	7days	Control	.29932	.31337	.931	-.6121	1.2108
		3items	-.06803	.32551	1.000	-1.0147	.8786
		42items	.63946	.31380	.329	-.2734	1.5523
		2days	.10884	.31343	.999	-.8028	1.0205
		2days20%	-.73469	.28363	.111	-1.5614	.0920
Dunnett t (2-sided)[b]	3items	Control	.36735	.29766	.608	-.3846	1.1193
	42items	Control	-.34014	.29921	.679	-1.0960	.4158
	2days	Control	.19048	.29766	.953	-.5615	.9425
	2days20%	Control	1.03401*	.29766	.003	.2820	1.7860
	7days	Control	.29932	.29766	.771	-.4527	1.0513

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

b. Dunnett t-tests treat one group as a control, and compare all other groups against it.

Mean Plot of Bag
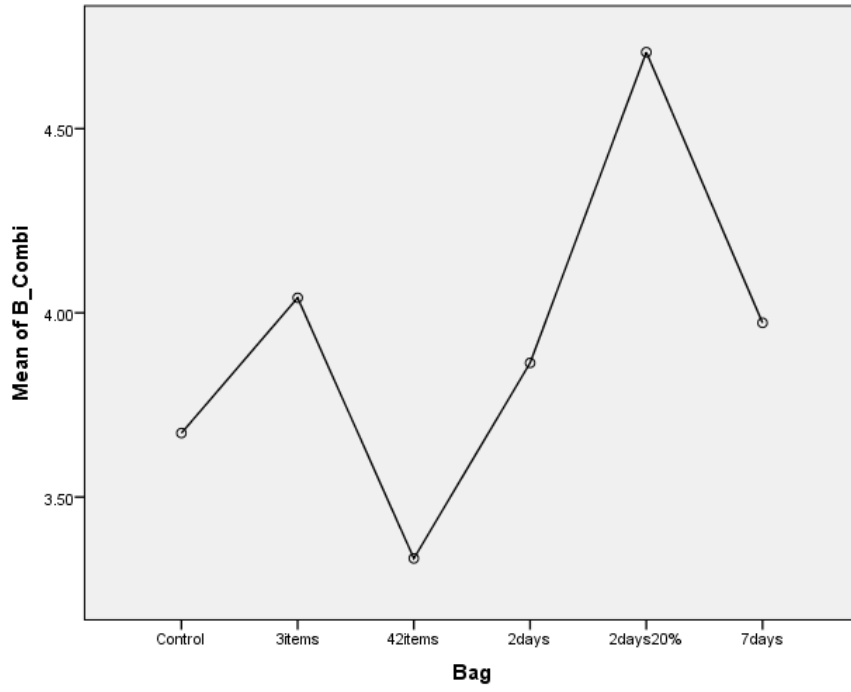
Appendix 6:   Research Pre-test

Please take a look at 6 items below and rate each item by telling us how much you agree with each statement

1.Tablet

2. Handbag

3.Digital camera

4. Wrist watch

5. Blender

6. Box of 15 protein bars

1. The probability that I would consider buying this item is high:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Tablet	○	○	○	○	○
Handbag	○	○	○	○	○
Digital camera	○	○	○	○	○
Wrist watch	○	○	○	○	○
Blender	○	○	○	○	○
Box of protein bars	○	○	○	○	○

2. If I intend to buy this item, there is a possibility that I would buy it from Internet

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Tablet	○	○	○	○	○
Handbag	○	○	○	○	○
Digital camera	○	○	○	○	○
Wrist watch	○	○	○	○	○
Blender	○	○	○	○	○
Box of protein bars	○	○	○	○	○

3. If I buy this item from Internet, it would be very likely that I could find it being sold on many websites:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Tablet	○	○	○	○	○
Handbag	○	○	○	○	○
Digital camera	○	○	○	○	○
Wrist watch	○	○	○	○	○
Blender	○	○	○	○	○
Box of protein bars	○	○	○	○	○

4. If I see those things sold on Internet, I think that their reasonable prices (neither too low nor too high) would be about (from 0 to 200 euros):

Item	Value
Tablet	55
Handbag	86
Digital camera	102
1 Wrist watch	78
Blender	117
Box of 15 protein bars	52
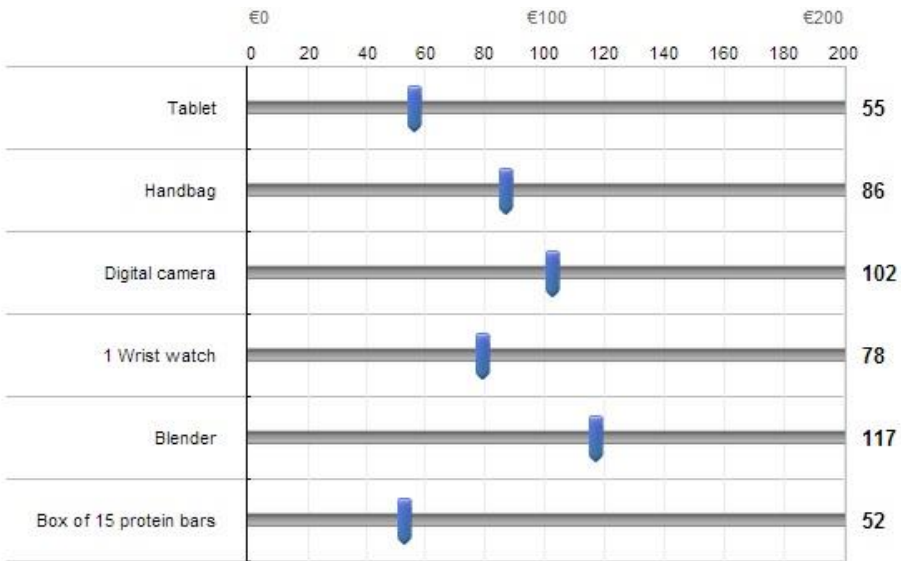
5. If there is a 10% discount offered for these prices from an online retailer, my likelihood of purchasing that item is:

	Very Unlikely	Unlikely	Undecided	Likely	Very Likely
Tablet	○	○	○	○	○
Handbag	○	○	○	○	○
Digital camera	○	○	○	○	○
Wrist watch	○	○	○	○	○
Blender	○	○	○	○	○
Box of protein bars	○	○	○	○	○

6. Do you have any other comments on the questions above? If so, please state them in the space below

7. What is your gender?

○ Male
○ Female

8. How old are you?

○ Under 13
○ 13-17
○ 18-25
○ 26-34
○ 35-54
○ 55-64
○ 65 or over

This is the end of the study. Thank you very much for participation. Please click through to the next page so that all responses are recorded! Thank you!

Appendix 7:   Research Questionnaire

Thank you very much for taking part in this questionnaire. This research is for my Master Thesis in Service and Information Management.

The questionnaire aims to study people's attitudes towards different products in holiday shopping situations.

All of the results will be treated anonymously and will be used for research purpose only. It should take you about 10 minutes to fill out this survey. There is neither right nor wrong answer. I would be very happy to hear your sincere opinion.

Thank you very much for your participation.

Please read this description carefully, as the following questions would be based on this context:

Imagine that Christmas is coming, and you are looking to buy some Christmas gifts for your family. You already have some idea for the gifts but you don't want to find yourself jostling in the crowds at the shopping malls (plus you hesitate to walk outside in this cold weather, instead of laying on your couch, having a hot chocolate), so you decide to go shopping online, just as it's so easy and convenient these days.

The first thing on your shopping list is a tablet. After an hour reading reviews on the Internet, you choose a new 7-inch tablet called Z1, which is rated as one of the best performing tablets on the market. The combination of its design, features and performance would make it a perfect gift for some member in your family.

You type its name on Google to search for some retailer, and the search engine quickly shows *many online sellers* of the tablet. You click on *the first search result* to see the retailer's deal, which will appear on the next page. There would be several statements following the deal, please rate each statement regarding that sale.

Z1 7-inch Wifi 3G Tablet

Retail Price: €149

⭐⭐⭐⭐☆ (218 customer reviews)

Buy it now   Add to basket

Only 3 left in stock.

Shipping: Worldwide

Technical specifications:
Quad-core processor, 2GB RAM, 8MP camera and a
7. ˝ HD display in this light, slim tablet
7. ˝ HD Reality Display
Fast 1.5GHz Snapdragon S4 Pro processor
Built-in 8MP Exmor R camera
See more product details

Please rate each of the following statements respecting your opinion on this sale:

1.My willingness to purchase this tablet is:

○ Very low
○ Somewhat low
○ Moderate
○ Somewhat high
○ High
○ Very high

2.The probability that I would consider buying this tablet is:

○ Very low
○ Low
○ Somewhat low
○ Moderate
○ Somewhat high
○ High
○ Very high

3.If I were going to buy this tablet I would consider buying it at the price shown:

○ Strongly Disagree
○ Disagree
○ Somewhat Disagree
○ Neither Agree nor Disagree
○ Somewhat Agree
○ Agree
○ Strongly Agree

4.The likelihood of purchasing this tablet is high:

○ Strongly Disagree
○ Disagree
○ Somewhat Disagree
○ Neither Agree nor Disagree
○ Somewhat Agree
○ Agree
○ Strongly Agree

Next, please answer a few questions reflecting yourself

1. Please indicate the extent to which you agree with each of the following statements:

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
1. I prefer structured situations to unstructured situations.	○	○	○	○	○	○	○
2. I prefer specific instructions to broad guidelines.	○	○	○	○	○	○	○
3. I tend to get anxious easily when I don't know an outcome.	○	○	○	○	○	○	○
4. I feel stressful when I cannot predict consequences.	○	○	○	○	○	○	○
5. I would not take risks when an outcome cannot be predicted.	○	○	○	○	○	○	○
6. I believe that rules should not be broken for mere pragmatic reasons.	○	○	○	○	○	○	○
7. I don't like ambiguous situations.	○	○	○	○	○	○	○

2. Please indicate the extent to which you agree with each of the following statements:

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
1. I find that establishing a consistent routine enables me to enjoy my life.	❍	❍	❍	❍	❍	❍	❍
2. I enjoy having a clear structured mode of life.	❍	❍	❍	❍	❍	❍	❍
3. I like to have a place for everything and everything in its place.	❍	❍	❍	❍	❍	❍	❍
4. I find that a well-ordered life with regular hours suits my individuality.	❍	❍	❍	❍	❍	❍	❍
5. I dislike unpredictable situations.	❍	❍	❍	❍	❍	❍	❍
6. I don't like to be with people who are capable of unexpected actions.	❍	❍	❍	❍	❍	❍	❍
7. I prefer to socialize with familiar friends because I know what to expect from them.	❍	❍	❍	❍	❍	❍	❍
8. I would describe myself as indecisive.	❍	❍	❍	❍	❍	❍	❍
9. I tend to struggle with most decisions.	❍	❍	❍	❍	❍	❍	❍
10. I dislike it when a person's statement could mean many different things.	❍	❍	❍	❍	❍	❍	❍
11. I feel uncomfortable when someone's meaning or intentions are unclear to me.	❍	❍	❍	❍	❍	❍	❍
12. I feel uncomfortable when I don't understand the reason why an event occurred in my life.	❍	❍	❍	❍	❍	❍	❍
13. When I am confused about an important issue, I feel very upset.	❍	❍	❍	❍	❍	❍	❍

3. How often do you perform each of the following activities using the Internet?

	Less than Once a Month	Once a Month	2-3 Times a Month	Once a Week	2-3 Times a Week	Daily
Check or send e-mail messages	❍	❍	❍	❍	❍	❍
Read online news or magazines	❍	❍	❍	❍	❍	❍
Visit Internet sites related to my hobbies	❍	❍	❍	❍	❍	❍
Visit auction sites	❍	❍	❍	❍	❍	❍
Visit other retail sites looking for merchandise	❍	❍	❍	❍	❍	❍

After placing an order for the tablet on a retail site, you take a quick glance at the online store of your favorite fashion brand, just to see if you may find something to lengthen your Christmas-present list. This local fashion brand *focuses mainly on clothing and bags with trendy manual designs.* Although having several brick-and-mortar stores around the city, *they also sell their products through their website*.

Happily, you find an eye-catching travel bag that could be a great gift for a member of your family, who is going on a vacation soon. You would see the bag below.

Please rate each of the following statements respecting your opinion on this sale:

1. My willingness to purchase this bag is

○ Very low
○ Low
○ Somewhat low
○ Moderate
○ Somewhat high
○ High
○ Very high

2. The probability that I would consider buying this bag is:

- ❍ Very low
- ❍ Low
- ❍ Somewhat low
- ❍ Moderate
- ❍ Somewhat high
- ❍ High
- ❍ Very high

3. If I were going to buy this bag I would consider buying it at the price shown:

- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Somewhat Disagree
- ❍ Neither Agree nor Disagree
- ❍ Somewhat Agree
- ❍ Agree
- ❍ Strongly Agree

4. The likelihood of purchasing this bag is high:

- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Somewhat Disagree
- ❍ Neither Agree nor Disagree
- ❍ Somewhat Agree
- ❍ Agree
- ❍ Strongly Agree

Regarding the sale of the bag you have just seen, to which extend do you agree with the following statements?

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
I think the availability of that bag is limited	❍	❍	❍	❍	❍	❍	❍
That bag is a rare product	❍	❍	❍	❍	❍	❍	❍
There are many offers for that bag	❍	❍	❍	❍	❍	❍	❍
I can find that bag sold at many online stores	❍	❍	❍	❍	❍	❍	❍
I am familiar with/ have knowledge of this product category (bag)	❍	❍	❍	❍	❍	❍	❍

Regarding the sale of the tablet in the sale you have seen at the beginning, to which extent do you agree with the following statements?

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
I think the availability of that tablet is limited	○	○	○	○	○	○	○
That tablet is a rare product	○	○	○	○	○	○	○
There are many offers for that tablet	○	○	○	○	○	○	○
I can find that tablet sold at many online stores	○	○	○	○	○	○	○
I am familiar with/ have knowledge of this product category (tablet)	○	○	○	○	○	○	○

How old are you?

○ Under 13
○ 13-17
○ 18-25
○ 26-34
○ 35-54
○ 55-64
○ 65 or over

What is your gender?

○ Female
○ Male

What is your nationality?

What is the highest level of education you have completed?

○ High School
○ College Degree
○ Master's Degree
○ Doctoral Degree
○ Professional Degree (JD, MD)

Participants of this research have a chance to win one of three $30 gift cards (Amazon, eBay, Steam, ITunes or Apple store). Please leave your e-mail address below if you want to take part in the lottery. All information will be kept confidential and just for the purpose of the lottery)

Do you have any comment? If so, please state them in the space provided below:

Appendix 8:   Moderating effects – ANOVA descriptive outputs

Uncertainty Avoidance – High searching ease

Descriptive Statistics

Dependent Variable: T_Purchase

Tablet Scarcity	UAvoid	Mean	Std. Deviation	N
Control	Low UAvoid	4.5652	1.22859	23
	High UAvoid	4.2949	1.32103	26
	Total	4.4218	1.27253	49
3item	Low UAvoid	4.1667	1.44304	30
	High UAvoid	4.1404	1.28292	19
	Total	4.1565	1.36948	49
42item	Low UAvoid	4.0556	1.22639	24
	High UAvoid	4.5256	.98510	26
	Total	4.3000	1.12132	50
2days	Low UAvoid	3.8772	1.75404	19
	High UAvoid	4.6774	1.28951	31
	Total	4.3733	1.51731	50
2days20%	Low UAvoid	4.2083	1.68486	24
	High UAvoid	4.6000	1.38444	25
	Total	4.4082	1.53548	49
7days	Low UAvoid	4.0635	1.01991	21
	High UAvoid	4.1467	1.33708	25
	Total	4.1087	1.19061	46
Total	Low UAvoid	4.1655	1.40273	141
	High UAvoid	4.4189	1.26915	152
	Total	4.2969	1.33882	293

Uncertainty Avoidance – Low searching ease

Descriptive Statistics

Dependent Variable: B_Purchase

Bag Scarcity	UAvoid	Mean	Std. Deviation	N
Control	Low UAvoid	3.7312	1.41007	31
	High UAvoid	3.5741	1.62419	18
	Total	3.6735	1.47744	49
3items	Low UAvoid	4.1364	1.51416	22
	High UAvoid	3.9630	1.69296	27
	Total	4.0408	1.60097	49
42items	Low UAvoid	3.2361	1.65789	24
	High UAvoid	3.4306	1.27586	24
	Total	3.3333	1.46673	48
2days	Low UAvoid	3.6667	1.59364	22
	High UAvoid	4.0247	1.38652	27
	Total	3.8639	1.47811	49
2days20%	Low UAvoid	4.6140	1.11257	19
	High UAvoid	4.7667	1.18143	30
	Total	4.7075	1.14591	49
7days	Low UAvoid	3.6087	1.73686	23
	High UAvoid	4.2949	1.47068	26
	Total	3.9728	1.62138	49
Total	Low UAvoid	3.7991	1.55169	141
	High UAvoid	4.0592	1.48235	152
	Total	3.9340	1.51910	293

NFCC – High searching ease

Descriptive Statistics

Dependent Variable: T_Purchase

Tablet Scarcity	NFCC	Mean	Std. Deviation	N
Control	Low NFCC	4.4583	1.28466	24
	High NFCC	4.3867	1.28625	25
	Total	4.4218	1.27253	49
3item	Low NFCC	4.2581	1.40557	31
	High NFCC	3.9815	1.32582	18
	Total	4.1565	1.36948	49
42item	Low NFCC	4.1728	1.03927	27
	High NFCC	4.4493	1.21692	23
	Total	4.3000	1.12132	50
2days	Low NFCC	4.3137	1.55220	17
	High NFCC	4.4040	1.52242	33
	Total	4.3733	1.51731	50
2days20%	Low NFCC	4.3175	1.62096	21
	High NFCC	4.4762	1.49465	28
	Total	4.4082	1.53548	49
7days	Low NFCC	4.0370	1.04731	27
	High NFCC	4.2105	1.39315	19
	Total	4.1087	1.19061	46
Total	Low NFCC	4.2494	1.30206	147
	High NFCC	4.3447	1.37766	146
	Total	4.2969	1.33882	293

NFCC – Low searching ease

Descriptive Statistics

Dependent Variable: B_Purchase

NFCC	Bag Scarcity	Mean	Std. Deviation	N
Low NFCC	Control	3.6190	1.38693	28
	3items	4.0256	1.56325	26
	42items	3.0909	1.45908	22
	2days	3.8472	1.68821	24
	2days20%	4.6377	1.22645	23
	7days	3.8750	1.69344	24
	Total	3.8503	1.55184	147
High NFCC	Control	3.7460	1.62243	21
	3items	4.0580	1.67770	23
	42items	3.5385	1.46993	26
	2days	3.8800	1.27976	25
	2days20%	4.7692	1.09044	26
	7days	4.0667	1.57821	25
	Total	4.0183	1.48597	146
Total	Control	3.6735	1.47744	49
	3items	4.0408	1.60097	49
	42items	3.3333	1.46673	48
	2days	3.8639	1.47811	49
	2days20%	4.7075	1.14591	49
	7days	3.9728	1.62138	49
	Total	3.9340	1.51910	293