The joint effect of goal framing and anchoring on online shopping behavior

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Tri Dung, Huynh
aus Vietnam
Matrikel-Nr. 33368272

bei
Dr. Christian Bühren
und
Prof. Dr. Ralf Wagner

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Abstract

It has been established in the customer psychology literature that customer behavior effected by a combination of sensory factors. This study takes into account of two terms of cognitive psychology: anchor and goal framing which influence on sensory factors in decision-making process. These are cognitive factors to help consumers to simplify information and generate quicker decisions. But, however, they could lead to many errors and consider as cognitive bias. By evaluating the customer's interest, intention and willingness to buy targeted products, the study has provided additional evidence to prove the impact of these factors on the customer's final decision along with previous studies. The experiment used 36 Amazon website layouts: 18 in English, 18 in Vietnamese for 3 different products: orange juice, electronic translator, in-ear headphone. Using the acquired data from 380 respondents, the study hopes to shed some light on researching the influence of joint effect in cognitive psychology. The study found that, in short, the joint effect of anchor and goal framing enhance the impact of each single factors on attitude and intention and willingness to pay of consumer in decision-making. This study also impacts and opens many practical applications to increase the selling ability of shopping online websites.

Keywords: joint effect, framing, goal framing, anchoring, customer behavior, cognitive bias, shopping online

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1. Introduction

According to the United Nations Conference on Trade and Development prediction, online consumers reach 1.623 billion in 2018 from 1.079 billion in 2013. The retail e-commerce sales worldwide amounted to 2.3 trillion US dollars in 2017 and e-retail revenues are forecasted to grow to 4.88 trillion US dollars in 2021 (Statista, 2019). Shopping online can not replace, however, be becoming dominate the traditional consumption. It is the present and future of consumption. In an effort to pursue academic research, online shopping became a phenomenon containing of consumer acceptance, behavior characteristic and theoretical aspects of consumer decision making (Smith & Rupp, 2003). In fact, however, the first attemps is from researchers in marketing field and following with psychology and cognitive science. The topics is ranging from interation between customers and website design (e.g. Ganguly et al., 2010; Hasan, 2016; Cyr & Bonanni, 2005;…) to the influence of trust to online shopping(e.g. Gefen et al., 2003; Hoffman et al., 1999;…), and the role of knowledge on e-commerce activities (e.g. Wang et al., 2009) etc.

The behaviour of online shopping customers is the result of the combination of influencing factors such as marketing efforts, socio-cultural influences, psychological factors, experience (Smith & Rupp, 2003). Numerous studies have taken into account the customer behavior to explore the relationship between customer and online interaction. However, there are no way to measure and analysis the effects of all possible influencing factors at the same time. Besides the raising of new perspective of cognitive psychology research on the impact of information on website to customer behavior. Therefore, psychological factors especially which can be applied in website design and directly somehow changing the buying behavior of customers are chosen to be mainly focus in this study.

In the scope of this paper, customer behavioral research is inherited and developed from the study by Wu & Cheng (2011) on the basis of eliminating the gap between a laboratory experiment and field experiment. The effect and joint effect of goal framing and anchoring is studied through survey with information design based on Amazon website and using real information about products. This study aims to narrow the gap of marketing research, customer psychology and cognitive psychology on shopping online.

The remaining part of the thesis is structured as followed. Section 2 reviews the relevant literature on consumer behavior, decision-making model, consumer psychology in the relation of

factors affect online consumer decision, and two cognitive factors: framing and anchoring. The hypothesis for this study also presented in section 2. Section 3 discuss about the methodology of this study including graphic design, experiment design and the model to measure the tested effects. Section 4 presents the collected data and hypothesis analysis before coming with discussion in section 5. Section 6 is the final conclusion for this study.

2. Literature review

My research in this thesis is based on the theories of marketing, psychology, behavioral economics…So there will be differences in the definition of concepts used in different fields. Therefore, explaining concepts will be unified in a field to avoid confusion. It will go through the definition and literature to narrow the gap between marketing, customer psychology and cognitive psychology.

2.1. Consumer behavior

Consumer Behavior

In the mid-to-late 1960s, consumer behavior was a very new field and initially drew the attention of researcher (Karimi, 2013). The first perceptions of customer behavior are based on economic theories which assume that customer will make decision rationally to maximize their utility or their satisfaction but increasingly behavioural economist and psychologists have recognized that human behaviour is more complex and focus on the contexts of decisions (Szmigin and Piacentini, 2015). It has emerged the theory concepts from other disciplines such as economics, marketing and behavioral sciences (Engel, Blackwell and Miniard, 1995). In 2010, the establish of Behavioural Insight Team in the UK government and similar initiatives followed by Canada, Australia and the USA marked a new milestone for the applying of behavioral economics. The emerging of economics and psychology enable us to understand the factors that shape and influence people's consumption behavior in different environments (Szmigin and Piacentini, 2015, p.40).

A raising question among professionals is how the consumers make decisions. Marketing professionals embrace with the new approach to consumer behavior which allow them to understand the consumption activities and relate these to their social contexts. Therefore, consumer behavior becomes the fundamental knowledge for anyone who want to research and reach the field of marketing.

Belch, G. and Belch, M. (2009) defined consumer behavior as "the process and activities people engage in when searching for, selecting, purchasing, using, evaluating, and disposing of products and services so as to satisfy their needs and desires". Meanwhile, Hoyer, W. and MacInnis, D. (2010) believe that "consumer behavior reflects the totality of consumers' decisions with respect to the acquisition, consumption, and disposition of goods, services, activities, experiences, people, and ideas by (human) decision-making unit". Although there are many ways to define consumer behavior, most of researchers concur that consumer behavior is containing a wide range of domains which is much more than just purchasing products. The model of Hoyer and MacInnis, 2010 indicates that consumer behavior covers four basic domains: the psychological core, the process of making decisions, the consumer's culture, and consumer behavior outcome and issues. The psychology process is the internal consumer processes basing on prior knowledge and acquiring information.

The following researches also discover that consumer decisions are impulsive and are a result of complex synthesis of influencing factors such as family, friends, advertising, mood, situation and emotion (Smith & Rupp, 2003). They make decisions based on the related information like brand choice, product usage, ... but making these decisions are sometimes difficult due to the huge amount of unfiltered information and limited of time (Moon, 2004).

Decision-making model

The process of making decisions is a part of psychology core involving problem recognition, information search, decision making and post-purchase evaluation (Hoyer and MacInnis, 2010). This is a complex process that takes place over time and involve many individuals (Charles, Gafni & Whelan, 1999). Therefore, there are many different models, but they share the same basic points as explained in the figure 1. *Involvement*[1] is a very important factor to identify decision-making model. High involvement decisions are those which will affects important aspects of our life such as buying a house or car. They will require more scrutiny and evaluation. While others (i.e. toilet papers) are less important and required lower involvement.

[1] Involvement is the perceived relevance of a purchase to the consumer (Szmigin and Piacentini, 2015).

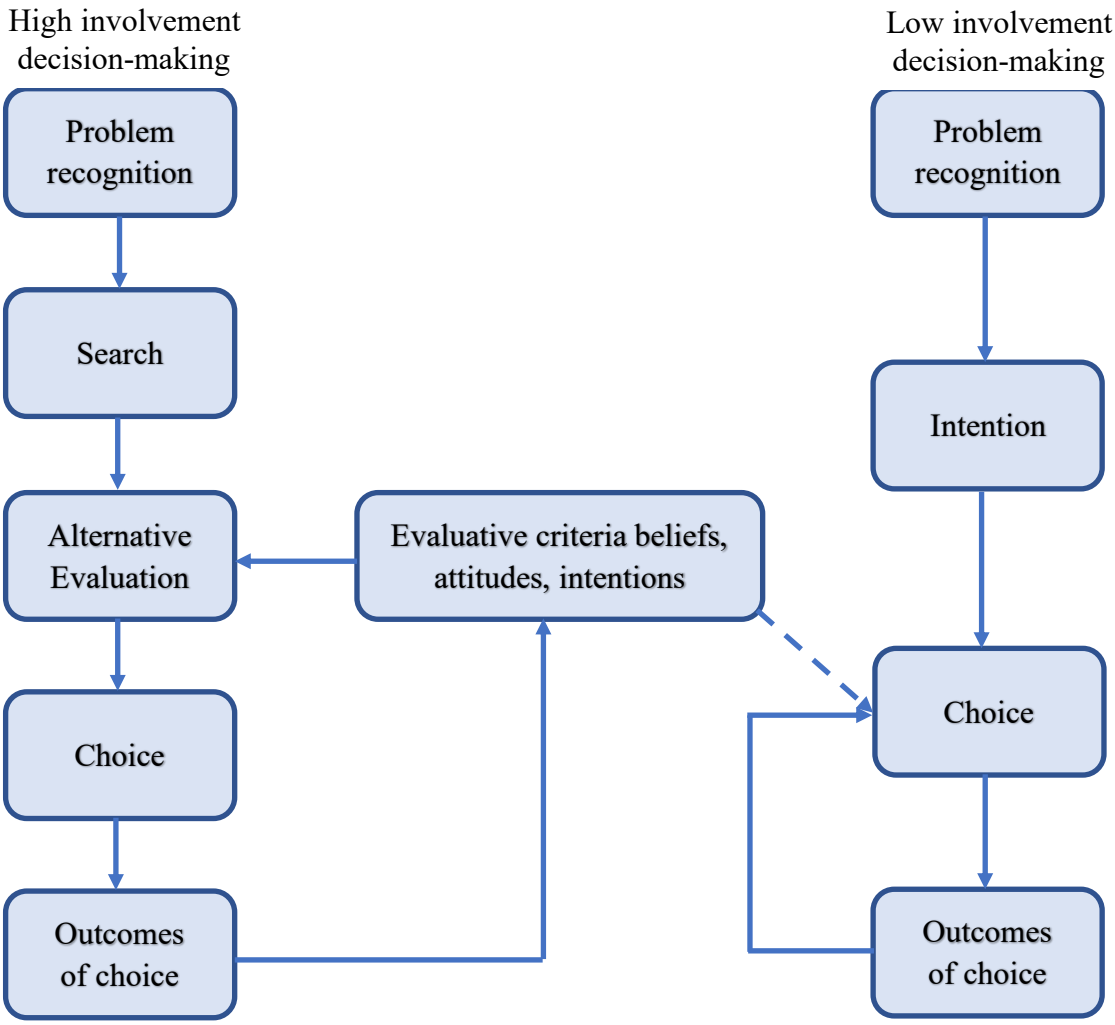


Figure 1: High and low involvement decision-making (Szmigin and Piacentini, 2015)

Szmigin and Piacentini have outlined the process of customer decision-making as in the figure above. Depending on the importance of the decision, people will go through different stages, but they all start from recognizing the problem need to be solved through purchase. Then they will search for appropriate information to help aid their decision. The brands and information collected would put into different categories in alternative evaluation stage such as *the evoked set*[2], *the consideration set*[3], *the inept set*[4], *the inert set*[5] (Narayana and Markin, 1975). They will continuously use evaluative criteria to help them make a choice in high involvement decision-

[2] The evoked set includes the possible brands already known to the consumer from which to choose.
[3] The consideration set includes brands from the evoked set that you might actually consider buying.
[4] The inept set are those brands that the consumer may have come across during their search or from previous experience but would not consider for this decision.
[5] The inert set includes those brands not under consideration at all.

making. Obviously, the process in low involvement decision-making is simpler by lacking "alternative evaluation" based on "criteria beliefs, attitudes, intentions". In shopping online, the customer could use both kinds of decision-making. The key difference between high and low involvement from a marketing perspective is that in high-involvement consumers are in an active manner. Therefore, some researchers call these two statuses as high-effort decision-making and low-effort decision-making (Hoyer and MacInnis, 2010). It will not be able to determine which decision-making method is applied for which kind of products. This is a term of consumer psychology and it is different for each customer at different point of time. Nevertheless, using experiment research could provide the basic understanding for specific factors in this process. We especially interested in the process before making a choice of customer and aiming to test the effect of two important psychology factors at that period.

2.2. Consumer Psychology

2.2.1. Foundation for understanding consumer psychology

Consumer psychology is a remarkable important field which is covering a wide range of research areas. Contemporary consumer can be found in any academic departments of advertising, marketing, psychology, human ecology, sociology, anthropology, etc. To reach closer to the human behavior, researchers have to take psychology factors into their consideration especially in consumer behavior. However, the term "consumer psychology" was not used at the first place, instead, it was "applied psychology" and then develop to the term as "scientific advertising". The reasons for hiding the interest on customer psychology of some early pioneer applied psychologists are their leaders of the parent discipline feeling that consumer psychology school need to be more mature to apply to the business world. The early research about customer psychology is often focused to the respond to advertising but it was only getting accepted by professional advertising community in the early 1990s. However, the term "consumer psychology" was official appeared at the late 1950s (Schumann, Haugtvedt & Davidson, 2008).

It is hard to figure out who is the true forefathers of consumer psychology. However, with the project published in 1895 and 1900, Edward Wheeler Scripture and Harlow Gale are considered as the first psychologists who were fascinated in consumer related issues and specifically consumer response to advertising (Schumann et al., 2008). Scripture revealed the sensation of people with the surrounding environment such as signage and lighting in stores and theaters or the in tensity of

a sensation regulate attention to commercial promotion. While Gale conducted many scientific studies of advertising and consumer behavior. He is also the first scientist using the order-of-merit technique to discover the urgency of messages. The Psychology of Advertising (1908) of Alter Dill Scott combined new irrational aspects of consumer behavior with the mentalist perspective. Hollingworth, Watson and Poffenberger are considering as early scientists who add consumption-related research in the early 1900s (Jansson-Boyd, 2010). Up to the present time, we witness the development of customer psychology from the very first notions of instincts, emotions, interest etc. in a mentalistic outlook to in-depth studies focusing on media differences, mechanical features of print and poster advertisements, effectiveness of employees, etc. Building on the foundations of psychology and absorbing theories of other fields, customer psychology is gradually evolving into a unique system that effectively implements human insights into the business environment.

2.2.2. Factors affect online consumer decision

There are many factors influencing on consumer decision. It has been proved that tastes, smells, sounds, touch have a crucial impact on customer decision in variety way depending on product categories (Peck and Childers, 2008). However, with the development of shopping website and the conveniences they brought to, more and more people decide to sit in front of their computer or mobile device to choose what they need. This eliminates the influence of some *sensory factor*[6] in making decision process. The remaining sensory factors are sight and hearing which are fully utilized to improve the efficiency of sales on internet. Therefore, the product brand image and online store image are carefully invested and become crucial to impact purchase intention (Aghekyan-Simonian, Forsythe, Suk Kwon & Chattaraman, 2012). In similar terms, web design raises its position in building customer relationships, facilitating customer support and especially converting visitors into customers (Ghose and Dou, 1998). The web interface features motivate on consumer online purchase intentions (Hausman & Siekpe, 2009).

Knowledge in purchase decisions

The impact of knowledge on human behavior is recognized early in the process of studying human behavior. The central constituent of almost every theoretical formulation of social information processing is the role of knowledge accessibility ranging from general formulations of judgement and behavior, attitude formation, attitude-behavior relations, goal-directed behavior to

[6] The primary human senses consist of smell, state, hearing, touch and sight (Peck and Childers, 2008)

cultural influences on behavioral decisions (Wyer, 2008). The effects of knowledge on consumer behavior are significant and important (Alba and Hutchinson, 2000; Bearden, Hardesty, and Rose 2001; Brucks 1985). The consumers will use their objective knowledge (Bettman and Park, 1980) or subjective knowledge (Park and Lessig, 1981) to calibrate possible options for their choices.

Risk aversion in purchase decisions

To the extent that a consumer cannot be certain of achieving all of their buying goals, risk is perceived in most purchase decisions (Cox, 1967). Comparing between shopping in store and shopping via telephone or online, customers in remote shopping perceive higher risk level because of "a fear of not getting what was wanted" (Cox, Stuart and Rich, 1967). Lacking opportunity to examine the products is one of the main barriers and generate more risk perceived for customers of mail shopping (Spence, Engel & Blackwell, 1970). The explosion of online purchases and competition has helped to improve customer service, for instance, the policy for changing and returning goods is convenient for customers. However, the risk aversion level of individual is still a major influence on their online shopping behavior. I look forward to see the impact of risk aversion on framing and anchoring customers. I believe the individual with higher risk aversion will tend to doubt and not trust the given information to frame and anchor customers.

2.2.3. Choosing is a problem

Before 2000s, there are more than 30,000 items in American supermarket and more than 20,000 new products hit the shelves every year (Cross, 2000). It is 19 years from that time and the explosion of shopping online makes us trapped in a matrix of products and choices. Herbert Simon (1955, 1956, 1957) suggested a rational model of choosing a "satisfice" option instead of attempting to optimize and find the best possible choice. A "satisfice" option will be chose based on a strategy of evaluating possible piece of available information (Schwartz et al., 2004). More products help satisfy the diverse needs of customers however Iyengar and Lepper (1999, 2000) provided evident that too many choices could demotivate and lead consumers to choose and buy less-available-option products.

Heuristics are methods to aid decision-making to reach the satisfactory options by simplifying the complexity of assessing the probability and prediction in a choice situation (Szmigin and Piacentini, 2015). Shah and Oppenheimer (2008) proposed a framework explained the process of heuristics to help reducing the effort and aiding decision making. This method had been categorized

into four types: *prediction*[7], *persuasion*[8], *choice*[9] and *compliance*[10] by Jansson-Boyd (2010). Satisficing and heuristics were used to aid decision-making in complex situations whilst anchoring was used to determine how consumers prepare to pay for a product (Szmigin and Piacentini, 2015). Additionally, framing is another psychological factor that helps customers make decisions in presented choices scenario. Framing, anchoring and their root theories presented in section 2.3 are fundamental for the efforts to understand and manipulate consumers' behavior in this thesis.

2.3. Framing and Anchoring

2.3.1. Prospect theory

The prospect theory is known as the most formal theory to explains the framing a in term of the value function for goods derived utility from gains and losses measured relative to a reference point (Kahneman & Miller,1986b; Kahneman & Tversky,1979). The prospect theory distinguishes the decision process in two different phases: framing and valuation. Within the framing section, the decision maker considers relevant factors: a representation of the acts, contingencies, and outcomes. In the valuation section, the decision maker evaluates the outcome of each choices and make the decision (Tversky & Kahneman, 1992).

In 1992, Kahneman and Tversky published a modified version for the original version in 1979. This is known as "cumulative prospect theory" and used to fix some limitations of the former one: it can be applied to gambles with at most two nonzero outcomes, and it predicts that people will sometimes choose dominated gambles (Barberis, 2013). The theory is briefly described in a notation of a gamble:

$$(x; p) = (x_{-m}, x_{-m+1}, \ldots, x_{-1}, x_0, x_1, x_2, \ldots, x_n; p_{-m}, p_{-m+1}, \ldots, p_{-1}, p_0, p_1, p_2, \ldots, p_n)$$

in the notion (x; p) stands for the *simple lottery* that pay $x_i \in \mathbf{R}$ with probability $p_i \in [0,1]$, where $\sum_{i=-m}^{n} p_i = 1$ and $x_{-m} \leq x_{-m+1} \leq \ldots \leq x_{-1} \leq x_0 = 0 \leq x_1 \leq x_2 \leq \ldots \leq x_n$. Al-Nowaihi et al. (2008) collected and presented a note on the utility function under prospect theory contain 5 main preliminary definitions.

[7] Prediction heuristics are where the consumer is trying to predict an outcome such as "If I buy a new phone now, when will I need to update it".
[8] Persuasion heuristics refer to how consumers take short cuts when processing advertiser' messages.
[9] Choice heuristics allows us to reduce the number of attributes to be considered for the possible alternative choices.
[10] Compliance heuristics are those built around the likelihood of choosing something based on complying with a request (Szmigin and Piacentini, 2015)

Definition 1. (Tversky and Kahneman, 1992) The decision maker exhibits *preference homogeneity* if, for all lotteries, (**x**; **p**), if c is the certainty equivalent of (**x**, **p**) then, for all $k \in$ R+, kc is the certainty equivalent of (k**x**; **p**).

Definition 2. (Kahneman and Tversky, 1979) υ: **R**→**R** is a value function over riskless outcomes, if $\upsilon(0) = 0$ (reference dependence) and v is strictly increasing (monotonicity). Furthermore, if $|\upsilon(-x)| > \upsilon(x)$ for $x > 0$ then υ exhibits *loss aversion*.

Definition 3. By *a probability weighting* function we mean a strictly increasing function w: $[0,1] \xrightarrow{onto} [0,1]$, $w(0) = 0$, $w(1) = 1$.

Definition 4. (Tversky and Kahneman, 1992) Let the probability weighting function for gains be w_+ and let the probability weighting function for losses be w_-. For cumulative prospect theory, the *decision weights*, π_i, are defined as follows:

$\pi_n = w_+(p_n)$,
$\pi_{n-1} = w_+(p_{n-1+} + p_n) - w_+(p_n)$,
…
$\pi_i = w_+\left(\sum_{j=i}^{n} p_j\right) - w_+\left(\sum_{j=i+1}^{n} p_j\right)$,
…
$\pi_1 = w_+\left(\sum_{j=1}^{n} p_j\right) - w_+\left(\sum_{j=2}^{n} p_j\right)$,
$\pi_0 = w_+\left(\sum_{j=0}^{n} p_j\right) - w_+\left(\sum_{j=1}^{n} p_j\right)$,
$\pi_{-m} = w_-(p_{-m})$,
$\pi_{-m+1} = w_-(p_{-m} + p_{-m+1}) - w_-(p_{-m})$,
…
$\pi_j = w_-\left(\sum_{i=-m}^{j} p_i\right) - w_-\left(\sum_{i=-m}^{j-1} p_i\right)$,
…
$\pi_{-1} = w_-\left(\sum_{i=-m}^{-1} p_i\right) - w_-\left(\sum_{i=-m}^{-2} p_i\right)$

The value of the lottery to the decision maker is given by $V(x;p) = \sum_{i=-m}^{n} \pi_i \upsilon(x_i)$.

Definition 5. Loss aversion holds for positive lotteries if, for some $\lambda > 1$, $\frac{|V(-x^r; p^r|}{V(x;p)} = \lambda$, for all positive lotteries. We call λ *the coefficient of loss aversion*.

According to the prospect theory, people, in general, or consumers in shopping derive utility from *gains and losses*, measured from some referent points when they make a decision under risk. The value function υ (.), however, captures *loss aversion* which mean people are much more sensitive to losses than the gains. Consequently, for loss-averse individual it feels more painful when they loss a same magnitude than feel happy when gaining. Numerically, the value placed on $20 gains is much smaller than the value placed on a $20 loss in the figure 2 illustrated below. For this reason, the value function is concave in the area of gains, in contrast, convex in the area of losses.

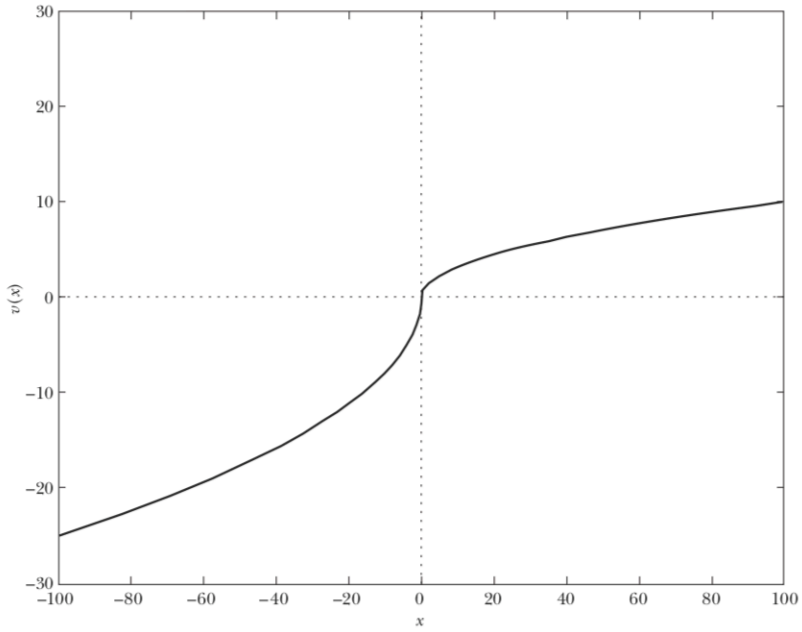


Figure 2: The Prospect theory value function

Note: The graph plots the value function proposed by Tversky and Kahneman (1992) as part of cumulative prospect theory, namely $\upsilon(x) = x^{\alpha}$ for $x > 0$ and $\upsilon(x) = -\lambda(-x^{\alpha})$ for $x < 0$, where x is a dollar gain or loss. The authors estimate $\alpha = 0.88$ and $\lambda = 2.25$ from experimental data. The plot uses $\alpha = 0.5$ and $\lambda = 2.5$ so as to make loss aversion and diminishing easier to see (Barberis, 2013).

This theory is widely used to explain how people make decisions based on the potential of losses and gains rather than the final outcome.

2.3.2. Framing Effect

Framing Effect

Albeit no formal theory of framing available, there are some rules that govern the representation of acts, outcomes, and contingencies which observed through experiments. These experiments observed the people's choices when facing with consequentially identical decision upon a set of options described (Tversky & Kahneman, 1986). Some scientist tried to use cognitive information-processing principles explaining framing effect. Sher & McKenzie (2008) stated that framing effect occur when *equivalent descriptions of a decision problem lead to systematically different decisions.* Framing effect are often taken as proof for ambiguity in human decision making, and for empirical inapplicability of the rational actor models in experimental psychology and economics.

In the psychological principles, the perception of decision problem and the evaluation of probabilities and the outcomes produce shifts of preference when the same problem is framed in different ways (Tversky & Kahneman, 1981).

According to Levin, Schneider & Gaeth (1998), there are three different types of framing manipulation involving valence framing which are risky choice framing, attribute framing and goal framing.

Risky choice framing is firstly introduced by Tversky and Kahneman (1981). In this form of framing, the level of risk of the outcome options are described in different way. The typical example for risky choice framing is presented in the work of Tversky and Kahneman (1981) called "Asian disease problem". In which, the students were asked to choose between the problem A or problem B to solve an unexpected Asian disease which supposed to kill 600 people in U.S. The consequences of the solutions were described as follow. (1) If Problem A is adopted, 200 people will be saved. (2) If problem B is adopted, there is 1/3 probability that 600 people will be saved, and 2/3 probability that no people will be saved. Facing with people live, most of participants chose riskless option. Since Tversky and Kahneman studies, many researchers used different studies to test the original prediction. The critical form of the risky choice framing paradigm contains a hypothetical decision scenario with two choices or option: sure thing option and risky choice option. Those scenarios can be presented in positive outcome (like in the example above) or in negative outcome in which we can use negative words such as: 400 people will die or 2/3 probability that 600 people will die.

In contrast, some characteristic of an object or event are used to manipulate the behavior in *attribute framing*. In which it is also contain positive frame and negative frame, notwithstanding the evaluation for the object or event described in the percentage of success for positive frame and percentage of failure for negative frame. Hence, this may be the simplest case of framing. The most famous study for this frame is the study of Levin and Gaeth in 1988. In their experiment, they framed consumers by qualitative attributes of ground beef as either "75% lean" or "25% fat". Based on result, the consumers clearly favored with the beef labeled with positive information rather than negative information. In the prototypical research of joint effect of framing and anchoring, Wu & Cheng (2011) used attribute framing to measure framing effect. The electric translator in the study were labeled either as "80% translation accuracy" or "20% error rate". Describing the situations using success versus failure rates is a familiar application of attribute framing. The applicability of this type is not limited in narrow range of field but it was also used in job placement programs (Davis & Bobko, 1986), industry project teams (Dunegan, 1993), medical treatments (Levin, Schnittjer, & Thee, 1988; Marteau, 1989; Wilson, Kaplan, & Schneiderman, 1987), and condom use (Linville, Fischer, & Fischhoff, 1993).

Goal Framing

Goal framing is also one type of framing and can be used efficiency in marketing and product design. Explaining the theory of goal framing is not only to distinguish the types of framing but also to provide fundamental understading for my hypothesis later. In goal framing, the goal of an action, decision or behavior will be framed. The impact of a persuasive message has been shown either the positive consequences or the negative consequences of choices (Levin, Schneider & Gaeth, 1998). In positive goal framing, the outcome of decision is described with "gaining words"[11] and avoid any negative meaning words. On the other hand, negative goal framing will emphasize the loss of not choosing a solution. Krishnamurthy et al. (2001) described positive goal framing condition as "By taking Treatment A (B, C, D or E), you get a 50% (10%, 90%, 70% or 30%) chance of getting better results." And negative goal framing condition described as "By not taking Treatment A (B, C, D or E), you give up a 50% (10%, 90%, 70% or 30%) chance of getting better results.".

At this point, we can clearly recognize the relationship of goal framing with prospect theory in general and explained in the value function. In the decision making, people will compare all or

[11] These are the words emphasized the meaning of achieving something or gaining some positive consequences.

major possible outcomes to decide the final decision. The prospect theory suggest that consumers will fear for loss rather satisfying for gaining at the same amount. Hence, it could explain why negative goal framing got dominant with positive goal framing in selection. Banks *et al.* (1995), Block & Keller (1995) provided more evidences that negative framing message are more persuasive than positive one. Applying this theory into banking, Ganzach & Karsahi (1995) also observed a similar effect when the impact of the loss-flamed message was much stronger than the impact of the gain-flamed message.

It is important to mention about the unique features of goal framing which is the susceptibility of goal frames to linguistic and contextual variations. In goal framing, the message to manipulate subjects is a pair consequence of obtain gain A- avoid loss B or forego gain C – suffer loss D. Those could be a simple negation (i.e., not providing enough vitamin C) or alternative terminology (i.e., rich vitamin C nutrition). The variety of words may impact the strength of framing effect. For this reason, goal framing message are more complex than other type of frames. Hence, the evidence for this frame is also less homogeneous than attribute framing and risky choice framing (Levin, Schneider & Gaeth, 1998). The linguistic variation of manipulated messages in goal frame could be an opportunity when we look in the point of view for marketing content. It provides more flexibility for copywriter to frame customers using their words. However, in my experiment I used both simple negation and alternative terminology in a very limited way to possibly measure the significant effect of positive and negative goal framing.

Heretofore, there was no direct study of the impact of goal framing on the decision-making process in online shopping. Hence, this study hopes to make some contributions to the literature on the research of decision-making and cognitive biases.

2.3.3. Anchoring

In order to make a decision, people tend to find an initial point and set it as a reference to make their judgments. This is called as anchor point. However, the adjustments are usually insufficient. Customers are likely to stick on their anchor point and will not add many options to change their product configuration (Tversky and Kahneman, 1974; Simonson and Drolet, 2004; Epley and Gilovich, 2006; Biswas, 2009). The anchoring and adjustment model are usually used to predict the customers' decision. Under uncertainty and insufficient information, it could make the decision of customers be more vulnerable by intentional changing their anchor point. Conversely, consumer's anchor point could be adjusting by the willingness and ability to continue adjusting

after reaching the initial satisfactory value and they tend to stop after reaching their satisfactory value (Epley and Gilovich, 2006). However, not all anchoring effects comes from the same psychological mechanism, it is a need to simulate other scenarios to apprehend anchoring effects on online shopping.

Providing reference price and observe the customer behavior is a popular research method in customer behavioral research for anchoring. Bokhari & Geltner (2011) tested the behavior of house buyers in real estate market by setting them at different asking price and analyze the final transaction price. This study indicates that the residual will be positive and larger in cases the asking price is higher than normal and vice versa. Schröder, Lüer & Sadrieh (2015) were anchor customer by the price of product and then allow them to reduce the price comparing with allowing customer to decide their own prices. The pricing mechanism was proved affect to customers' willingness to pay and significant different between anchoring groups. Besides Weisstein et al., (2013) show that we can induce price-disadvantaged consumers to perceive their ostensibly similar transactions differently relative to their comparative other parties.

Using pricing strategy to induce customer is prevalent in marketing and consumer psychology. Notwithstanding no research has been done to consider the effect of anchor particularly in price in real simulation enviroment of online shopping. This study not only aims to the impact of using prices to anchor customers on a popular shopping website but also considers its joint effect with another cognitive bias which is goal framing.

2.4. Hypothesis

In 2009, Chin-Shan Wu, and Fei-Fei Cheng did a study to observe the joint effect of attribute framing and anchoring on internet buyers' decision-making, but they don't have any follow-up research on this interested topic. Furthermore, their research was using the very basic form of website and straightforwardly it is just a standard simulation of online shopping and not realistic. Therefore, to develop the understanding of joint effect of anchoring and framing especially goal framing in shopping online decision, I simulated purchase behavior on a real and familiar shopping layout. The hypothesis was used to predict the behavior of consumers. The behavior of customers will be measure by 3 key factors: interest of customer on product attribute, purchase intention and how they are willing to pay for that product. Hypothesis for my research divide into 3 groups to test the effect related to goal framing, anchoring and their joint effect.

Hypothesis 1: Effect of Goal framing on buying behavior

1a. Consumers have more positive attitude for the product provided positive goal information than for the product with negative goal information.

1b. Consumers have more intention to buy the product provided positive goal information than for the product with negative goal information.

1c. Consumers are willing to pay for the product provided negative goal information than for the product with positive goal information.

Hypothesis 2: Effect of Anchoring on buying behavior

2a. Consumers in high anchor condition will have more positive attitude toward the target product than their counterparts in the low anchor condition or with no anchor condition.

2b. Consumers in high anchor condition will reveal a higher intention to buy the target product than their counterparts in the low anchor condition or with no anchor condition.

2c. Consumers in high anchor condition will reveal a higher willingness to pay than their counterparts in the low anchor condition or with no anchor condition.

Hypothesis 3: The joint effect of goal framing and anchoring

3a. The joint effect of goal framing message and anchoring point are positive significant on online-shopping consumers' behavior attitude toward the target product.

3b. The joint effect of goal framing message and anchoring point are positive significant on intention to buy on online-shopping consumers' behavior toward the target product.

3c. The joint effect of goal framing message and anchoring point are positive significant on willingness to pay on online-shopping consumers' behavior toward the target product.

3. Methodology

3.1. Experiment design

Obviously, buying behavior is a difficult-to-observe behavior however we can infer from observing how they spend money. Using survey question for measuring interest of customers is a strong social desirability bias method (Glennerster & Takavarasha, 2013). However, using purchase decisions in which participants have to spend their own money if they decide to buy the products is useful to avoid that bias. Therefore, in this experiment the participants were experienced the same feeling as buying on online shopping websites.

3.1.1. Graphic design

The graphic design for this experiment has to answer following questions: (1) how to reduce the effect of nonsense effects on customer's choices, (2) which products to choose, (3) how to decide price for anchoring the products, (4) which messages to use for goal framing customers.

(1) In the designing process, I face with a challenge that is how to reduce influence on the choice of customers by website layout and create a sense of familiarity when shopping online. In that case, the potential customers do not pay attention to the small details and focus on the purchase as well as the information is intentionally change by the author in the design. Therefore, instead of designing the whole new website, I use the layout of the most popular shopping online website in the world which is Amazon. I assume that to reach the level of one of the most popular online shopping in the world beside services and products, their website is also well-designed based on design standards and customer psychology. I only change the needed information for experiment purposes. The website will be making with 2 languages: English and Vietnamese for 2 languages experiment.

(2) In 2009, Chin-Shan Wu, and Fei-Fei Cheng did a study to observe the joint effect of attribute framing and anchoring on internet buyers' decision-making. The translator is chosen in their experiment. Therefore, translator is also a product in my experiment to replicate the prior research. However, it would be more objective if the hypothesis is tested on different products. Chosen products should belong to different categories and be usually purchased online. Among common products on online shopping, I choose orange juice and in-ear headphone for my experiment. As discussed in the previous section, the knowledge of customer effect on their decision of choosing product, to avoid this effect I am using the products in Amazon for US's market. That comes from the fact that the participants for my experiment who are from my network will be in Vietnam and in Europe. I will analyze the price range of orange juice, translator and in-ear headphone on Amazon and pick the brands at median price. All information of those products will be kept or translated for Vietnamese version.

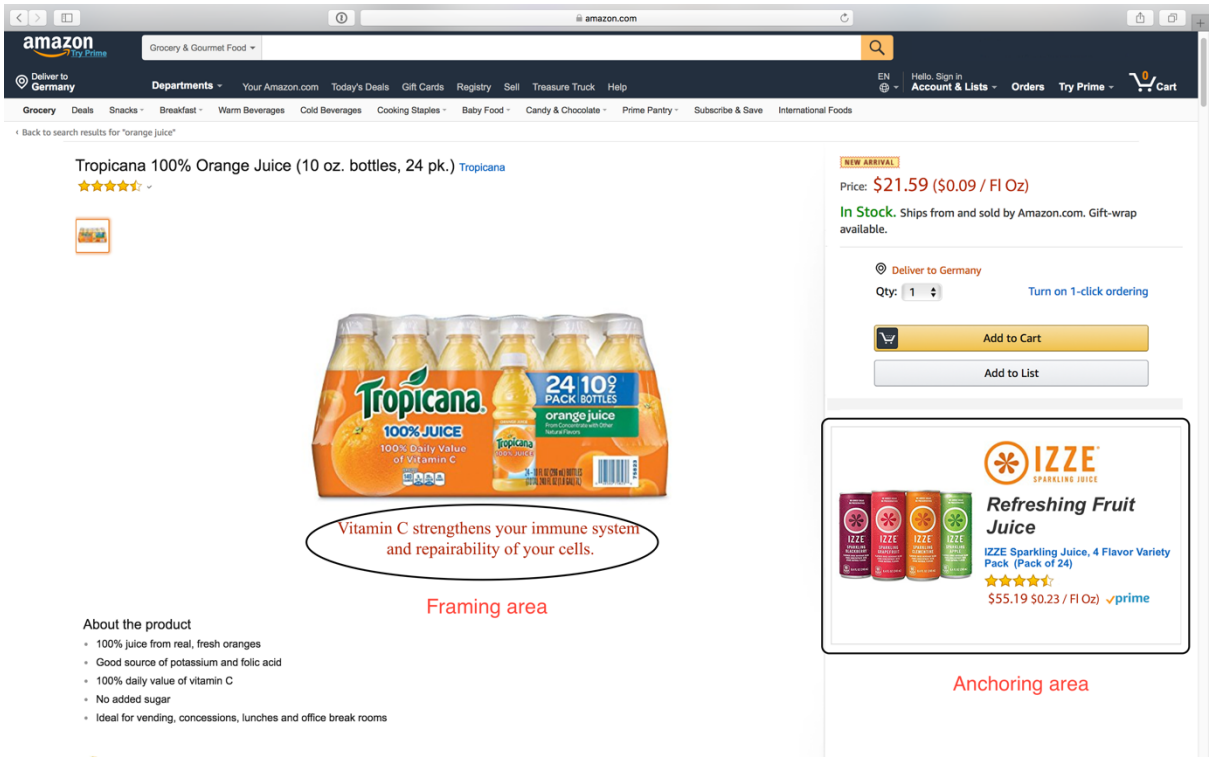


Figure 3: Tropicana Orange Juice (positive goal framing and high anchoring)

(3) There are 2 price values will appear on the website. The first one is the main price of product and the second one is the price using for anchor customers. To be objective for high anchoring and low anchoring value, I analyze all prices of the chosen products on Amazon US. The value at quartile 10% will be used for low anchoring. The value at quartile 90% will be used for high anchoring. The value and product at quartile 50% will be used as main products. If we ask about existing brands at Europe or Vietnam market, we find out only about the existing perception of customers on that products at those markets. Using the brand at other markets will help us manipulate the behavior with the new product.

Table 1: *Prices used to anchor in experiment*

	Product	Orange Juice	Electronic translator	In-ear headphone
English Version	Product's price	$21.59 ($0.09/Fl Oz)	$118.99	$13.99
	Low anchor price	$11.99 ($0.05/Fl Oz)	$72.99	$6.99
	High anchor price	$55.19 ($0.23/Fl Oz)	$278.99	$27.59
Vietnamese	Product's price	492,000 vnd	2,713,000 vnd	319,000 vnd
	Low anchor price	273,000 vnd	1,664,000 vnd	159,000 vnd

	High anchor price	1,158,000 vnd	6,361,000 vnd	629,000 vnd

The price and information of the main product will be displayed as original design of Amazon. However, anchoring price will be appeared at the position for advertising product. The image of anchoring product is remained the same for both high and low anchoring to diminish the effect of visualization of product design on customer choice.

(4) The messages for framing customers will be as the below table.

Table 2: *Messages used to frame customers*

		Positive	Negative
English version	Orange Juice	Vitamin C strengthens your immune system and repairability of your cells.	Lacking Vitamin C weakens your immune system and repairability of your cells.
	Electronic translator	Using local language helps avoid problems with misunderstanding, scamming, or transportation while traveling.	Not using local language could bring problems with misunderstanding, scamming, or transportation while traveling.
	In-ear headphone	Using good headphones will enable you to have the best sounding experience and comfort.	Not using good headphones will prevent you from having the best sounding experience and comfort.
Vietnamese version	Orange Juice	Bổ sung Vitamin C giúp tăng cường sức đề kháng và khả năng phục hồi của tế bào.	Thiếu hụt Vitamin C làm giảm sức đề kháng và khả năng phục hồi của tế bào.
	Electronic translator	Thiếu hụt Vitamin C làm giảm sức đề kháng và khả năng phục hồi của tế bào	Không sử dụng ngôn ngữ bản địa có thể dẫn đến mâu thuẫn, lừa gạt hay những rắc rối trong di chuyển khi đi du lịch.

	In-ear headphone	Sử dụng chiếc tai nghe tốt giúp bạn trải nghiệm sự thoải mái cùng những âm thanh tuyệt vời.	Không sử dụng chiếc tai nghe không tốt sẽ ngăn cản bạn trải nghiệm sự thoải mái cùng những âm thanh tuyệt vời.

3.1.2. Online experiment

- **Structure of the experiment**

To test the hypotheses presented above, a 3x2 factorial experimental design was constructed. The two experimental factors are (1) framing messages including positive and negative goal framing and (2) anchoring in prices with low anchor and high anchor price. Control design for anchoring was also included to explore any manipulative concomitants in which the advertising with anchoring price is eliminated.

It is important of measuring *causal impact*[12] and I am also ambitious to measure the nearest *counterfactual*[13] as much as possible. Therefore, in each survey for every participant, it is designed to make sure that it contains the designs of all three products, both kind of goal framing (negative and positive) and with high anchor, low anchor and without anchor price. After reading the instruction for the online experiment, participants will be randomized into 6 different groups in which they will required to open the layout website containing products' information and answer related questions to evaluate their attitude, intention and willingness to pay for those products.

After answering the questions for each treatment and control groups, participants will answer questions about their personal information and briefing question to assess their level of comprehension.

- **Tools for online experiment and data collection process**

The experiment was designed in Google form platform with the questions as presented in Appendix A. The link to the survey was distributed on my personal Facebook account and Dr. Bühren network. The responders randomized into one of six experiment groups depending on a

[12] Causal impact is the difference in outcomes that is caused by the program (Glennerster & Takavarasha, 2013).
[13] Counterfactual is a hypothetical condition in which we estimate the impact of a program to examine how the people who participated in the program fared com- pared to how they would have fared if they had not participated in the program (Glennerster & Takavarasha, 2013).

number they randomly received. All collected data was saved and processed initially in Excel before transferred for in-depth analysis in Stata.

3.2. Model and variables selection

3.2.1. Proportional Odds Models for ordinal response variables

The Proportional Odds models (PO) is a generalization of a binary logistic regression model when the response variable has more than two ordinal categories (Liu, 2016). This is a popular model to analysis of ordinal categorical data and called as the cumulative odds model (Ananth & Kleinbaum, 1997; Armstrong & Sloan, 1989; Glonek & McCullagh, 1995). The PO model estimate the odds of being at or below a particular level of the response variable. This makes j-1 predictions from j levels of ordinal responses and estimate the cumulative probabilities at or below the *j*th level (Liu, 2016). When the responses have only two levels, this model will become the original logistic regression.

The ordinal logistic regression model can be expressed in the logit form as follows:

$$\ln(\mathrm{Y'j}) \;=\; \mathrm{logit}[\pi(\mathrm{x})] \;=\; \ln\left(\frac{\pi_i(\mathrm{x})}{1-\pi_j(\mathrm{x})}\right) = \;\alpha_j + (-\beta_1 X_1 \;-\beta_2 X_2 - \ldots - \beta_p X_p)$$

where $\pi_i(\mathrm{x}) = \pi\big(\mathrm{Y} \le j \mid x_1,\; x_2, \ldots, x_p\big)$, which is the probability of being at or below category *j* given a set of predictors, *j*= 1, 2, 3, …, *j-1*. α_j are the cut points, and $\beta_1, \beta_2 \ldots, \beta_p$ are the logit coefficients (Liu, 2016). The assumption for this PO model is that the odds ratio of any predictor is constant across all categories. To estimate the ln(odds) of being at or below the *j*th category, the PO model can be rewritten as:

$$logit(\pi\big(\mathrm{Y} \le j \mid x_1, x_2, \ldots, x_p\big) = \;\ln\left(\frac{\pi\big(\mathrm{Y} \le j \mid x_1,\; x_2, \ldots, x_p\big)}{\pi\big(\mathrm{Y} > j \mid x_1,\; x_2, \ldots, x_p\big)}\right)$$

$$= \;\alpha_j + (-\beta_1 X_1 \;-\beta_2 X_2 - \ldots - \beta_p X_p)$$

Using this PO model, we can estimate the significant effect of the predictor variables and dependent variables. By observing the positive or negative of the logit coefficient, we can know the direction in relationship between estimated variables.

3.2.2. Variables selection

The willingness to purchase the product of some customers is really sensitive with minuscule change in price (Jagdip Singh, 1990). Meanwhile, other customers are insensitive with the changes in price of a product. Willingness to pay is most susceptible variable to measure anchoring effects

under uncertainty (Simonson and Drolet, 2004). Therefore, the dependent variables were measured by $Interest_i$, $Intention_i$, $Willingness\_to\_pay_i$. $Interest_i$, $Intention_i$ are the scale questions when the participants were asked to identify their interest and intention to buy the products presented following with the questionnaire from scale 1 to 7. The participants were asked "*How do you like the product in the picture above?"* and "*How do you intend to buy the orange juice/ translator / in-ear headphone in picture above from the scale from 1 to 7?"* to measure the level of variable $Interest_i$ and $Intention_i$. Whereas $Willingness\_to\_pay_i$ is a binary variable measuring final decision of potential customers of buying (received value 1) or not buying (received value 0) regarding to the question of "*Do you add this orange juice/ translator /in-ear headphone to your cart to buy today?"*.

The price of product may have a critical impact on customers' acquisition, usage and disposition decision (Hoyer and MacInnis, 2010). The sensitivity of the customers to the different price levels of the product and in the different product line are also considered by researchers as the inevitable part of the studies of customer behavior. To test our hypothesis, the participants were anchored intentionally in the website design for experiment product. Therefore, the observations were grouped into 3 categories of anchor: high price anchoring, low price anchoring and no anchoring. To measure the effect of anchoring to dependent variable, we generated two dummy variables AH_i, AL_i as in the table 3 where no anchoring is a base group. As per H2, we expect to observe the differences in the recognition of consumer between 3 groups. Correspondingly, the coefficient value of AL_i are expected to be lower AH_i and negatively signed.

Table 3: *Generated value for AH_i, AL_i based on anchoring group*

Group: No anchoring	$AH_i = 0$	$AL_i = 0$
Group: High price anchoring	$AH_i = 1$	$AL_i = 0$
Group: Low price anchoring	$AH_i = 0$	$AL_i = 1$

Dummy variable $Framing_i$ for the experimental groups were included which take the value 1 and 0 if the responders were framed positively and negatively with goal framing information respectively. This variable used to test H1 and H3 which we expect to observe the significant different in each way of frame and significant coefficient in chosen model.

The hypothesis were tested in 3 different products in various categories. Based on the interview before the experiment conducted with 10 students in Kassel University about their shopping online

behavior, it is likely to have a connection between their different decision-making model and product categories. Although, this experiment was not designed to observe the how different in decision making of different product categories, we also want to examine whether the connection exist. The variable $Product_i$ is used and received the value 1,2,3 in order to represent for orange juice, electronic translator, in-ear headphone. It is expected to see significant differences which could be new research questions for follow studies.

Knowledge of customers about buying product was measured by the scale from 1 to 7 regarding self-assessment of the statement "*This is a product that I could talk about for a long time*" for each mentioned product. Similarly, risk aversion was also calculated by *"Identify yourself from 1 to 7 about how risk loving you are from 1 (extremely hate taking risk) to 7 (love gambling).* Variable $Knowledge_i$, $Risk\_aversion_i$ represent for those values respectively. Those are expected to have significant coefficient. Furthermore, we are expected to have evidences for the statement that the behavior of customers is hardly affected when they have good understanding about the products. Besides, we also consider whether people with higher risk aversion are more likely invulnerable with anchor and frame information.

Along with the main variables serving for analyzing effects, demographic variables and personality called as covariates (or also known as control variables) were used in the model to control the possible effects on the latent dependent variable. The effect of variable Age_i on consumer behavior (Yoon & Cole, 2008) is measured by coding the age range from 15-20, 21-25, 26-30, 31-35 and from 36 to 1, 2, 3, 4, 5 respectively as in table 4. The variable $Gender_i$ and $Ethnicity_i$ are dummy variables which are coded 0 for male, 1 for female and 0 for Vietnam, 1 for others respectively. Those covariates have been taken into account due to noticeable research on their impact on consumer behavior. As proof, efforts to eliminate age differences with decision aids have not been entirely successful (e.g. Yoon & Cole, 2008; Moschis, 1994; Gregoire, 2003; Carpenter & Yoon, 2015). Furthermore, males and females are likely approaching differently to decision making of products (Fischer & Arnold, 1994; Mitchell & Walsh, 2004; Bakewell & Mitchell 2003, 2006). Conversely, ethnicity indicates the various impact toward studies (Burton, 2000; Potgieter et al., 2013)

4. Results

4.1. Descriptive statistics

The final data set contains 380 respondents. The specific respondents had been randomized in each experiment groups is 74, 50, 62, 55, 66, 73 respectively. 86.84% participants are Vietnamese and the remaning 13.16% of respondents are German and other countries. As can be seen in the table 4, there were 239 (62.89%) males and 141 (37.11%) females with their age raging from 15 to 45. However, the majority of respondents is in between 21 to 30 years old taking 73.02% of total respondents.

Table 4: *Experiment respondents*

Experiment Subjects: 380

Ethnicity			Gender		Age				
Vietnamese	German	Others	Male	Female	15-20	21-25	26-30	31-35	36 or above
330	17	30	239	141	71	125	151	23	8
86.84%	4.47%	7.89%	62.89 %	37.11%	18.78%	33.07%	39.95 %	6.08 %	2.12 %
Variable codes									
0	1	1	0	1	1	2	3	4	5

As is discussed in section 3.2, each experiment group will be presented with the seriated Amazon layout of orange juice, electric translator, in-ear headphone and related questions in between. Each respondent faced with product either framed by positive messages or negative messages and anchor by high or low price or without it (control group). The particular number of observations for each combination is as follows: N_1*(Positive, High anchor)*= 202*;* N_2*(Negative, High anchor)*= 178; N_3*(Positive, Low anchor)*= 178; N_4*(Negative, Low anchor)*= 202; N_5*(Positive, No anchor)*= 195; N_6*(Negative, No anchor)*= 185. Table 5 below delineates received observation for each factor.

Table 5: *Distribution of observations in Testing groups*

	Orange juice	Electric Translator	Earphone
No Anchoring	139	117	124

High Anchoring	124	139	117
Low Anchoring	117	124	139
Positive Goal Framing	202	178	195
Negative Goal Framing	178	202	185

The provided data on table 6 depict the number of observations, mean, standard deviation, min, max of 12 variables in analysis model. In which, $Interest_i$, $Intention_i$, $Willingness\_to\_pay_i$, $Knowledge_i$, $Risk\_aversion_i$ are rank ordered variables with the value from 1 to 7. AH_i, AL_i, $Framing_i$, $Gender_i$, $Ethnicity_i$ are dummy variable coded with 1 and 0. Age_i was coded as displayed in table 4.

Table 6: *Descriptive statistics of the relevant variables*

Variable	Obs	Mean	Std. Dev.	Min	Max
$Interest_i$	1,140	4.33	1.68	1	7
$Intention_i$	1,140	3.66	1.83	1	7
$Willingness\_to\_pay_i$	1,140	0.29	0.45	0	1
$Product_i$	1,140	2.00	0.82	1	3
AH_i	1,140	0.33	0.47	0	1
AL_i	1,140	0.33	0.47	0	1
$Framing_i$	1,140	0.50	0.50	0	1
$Knowledge_i$	1,113	3.87	1.80	1	7
$Risk\_aversion_i$	1,140	3.94	1.52	1	7
$Gender_i$	1,140	0.63	0.48	0	1
Age_i	1,140	2.40	0.93	1	5
$Ethnicity_i$	1,140	0.15	0.35	0	1

- **The relationship of Anchoring groups**

The clustered columns in figure 4 illustrate the frequency of *Interest, Intention level* and *Willingness to pay* decision of observations in various scenarios. The bar charts on the left side of figure 4 demonstrate the divergence of *Interest, Intention level* and *Willingness to pay* decision among anchoring experiment situations.

When considering the level of interest of responders on products, we discovered that most customers asked about the level of their interest choose a neutral value of 4 (between 1 is "don't like" and 7 is "really like"). From this point, we witness an interesting reversal in the behavior of low and high anchor groups. There are more responders who are "don't like" the products in *low anchor* comparing with *high anchor groups* – choosing interest level from 1 to 4. Otherwise, more responders are "like" the products – choosing interest level from 4 to 7- in *high anchor* rather than *low anchor groups.*

Conversely, the differences in the intention to buy the products are not evident when assessing customers' behavior among anchoring groups. This indicates that the customer has begun to hesitate and conduct a more thorough analysis of related information when considering the purchase of the product. This is *alternative evaluation stage* in decision-making model of Szmigin and Piacentini. However, one noticeable difference between *low anchor* and *high anchor groups* is at "don't want to by it" – value 1. Whilst, many customers prefer the product, the customers anchored with a lower price of similar product are obvious about their intention *not to buy the product* compared to the number of customers anchored with a higher priced product.

The differene between *low anchor* and *high anchor groups* is most clearly expressed when participants are forced in making-final-decision situations of buying or not buying. There is a minor difference in frequency of "not buy" or "buy" in high anchored price group. On the contrary, in the opposite group most choose to "not buy" the product. This provided us the evidence to expect a significant difference of *low anchor group* compared to others in the main model. In other words, we could say that people become more sensitive to the possibility of buying an overpriced product or their potential losses which explained in the prospect theory.

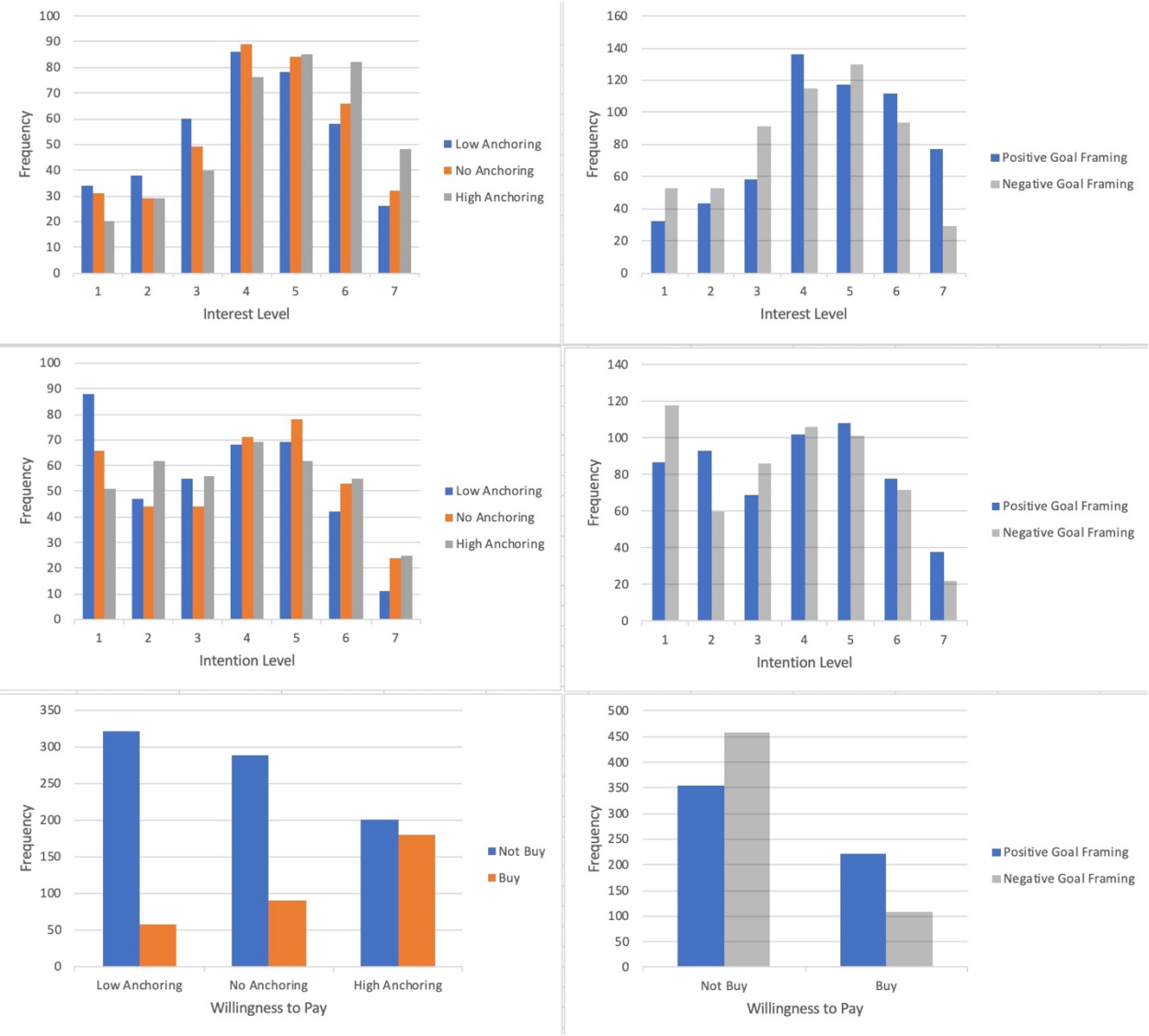


Figure 4: The relation of Interest level, Intention level, Willingness to pay with Anchoring and Goal Framing situation

- **The relationship of goal framing groups**

The charts on the right side of figure 4 indicate the variance of *Interest, Intention level* and *Willingness to pay* decision between positive and negative goal framing groups. Interestingly, we recognize the similarity in customers' reaction about their interest and intention to buy product between anchoring groups and goal framing groups. The incentive is predictable for the perception of responders about the products. There are high frequency of observations choosing neutral value around 4 and 5. Coming to *"like",* there are higher frequency of people who had been framed by positive goal information rather than negative goal information. In contrast, more *negative-goal-framing* people are unlike – value from 1 to 3- comparing with the ones receiving positive

information. However, it turns to unpredictable in economic incentive scenario when asking intention to buy of responders. At making final decision stage, higher frequency of responders will buy the products in case framed by positive goal framing information comparing with negative information and vice versa.

4.2. Inferential statistic for hypothesis 1 and 2

The research questions will be tested in various statistic methods to draw the closest understanding to answer hypothesis questions. The received data meet the assumptions about random selection, distribution and homogeneity for independent samples t-test and analysis of variance. Therefore, the basis t-test and anova test will be applied to test the hypothesis 1 and 2 in section 4.2 and 4.3. Moreover, the models of the Proportional odds models presented in section 4.3 took into account key factors in the relationship with each other to measure the impact on consumer behavior.

- **Hypothesis 1: Effect of goal framing on buying behavior**

In the research design, participants are randomly in negative or positive goal framing situation and then we measure the dependent variable of *Interest, Intention and Willingness to pay*. By comparing the differences of average value of *Interest, Intention and Willingness to pay* statistically between responders' groups, we investigate whether the mean of dependent variable for each group is significantly different from other. The independent t test conducted, and the results presented in the table 7.

The result for the independent t-test found that there was a statistically significant mean difference of *Interest* in the positive framing and negative framing $t(1138) = -4.9968$, $p<.001$. The greater value of mean of positive framing $M_{Interest\ (positive)} = 4.58$ comparing with $M_{Interest\ (negative)}=4.09$ indicates that the consumers have more positive attitude for the product provided positive goal information than for the product with negative goal information (hypothesis 1a).

In the test for evaluate the *Intention* to buy the product, the $t(1138) = -1.8498$, $p=0.065<0.1$ indicates that the difference between positive and negative group is statistically significant. It also reveals that consumers have more intention to buy the target product in positive framing condition ($M_{Intention\ (positive)} = 3.76$) rather than negative framing condition ($M_{Intention\ (negative)}= 3.56$). It supports hypothesis 1b.

A statistic significant mean difference of *willingness to pay* is proved by $t(1138) = -7.3607$, $p<.001$ in the t-test between two group. With $M_{willingness\_to\_pay\ (positive)} = 0.38$ greater than

$M_{willingness\_to\_pay\ (negative)} = 0.19$, it is clearly that consumers have a higher willingness to pay for the target product provided positive goal framing than negative goal framing information (hypothesis 1c)

Table 7: *Independent sample t-test of Interest, Intention, Willingness_to_pay by Framing*

		Positive Framing	Negative Framing	*t-value*	*prob*
Obs		575	565		
Interest	Mean	4.58	4.09	-4.9968	0.000***
	Std. Dev.	0.07	0.07		
Intention	Mean	3.76	3.56	-1.8498	0.065*
	Std. Dev.	1.84	1.82		
Willingness to pay	Mean	0.38	0.19	-7.3607	0.000***
	Std. Dev.	0.49	0.39		

** $p < 0.1$, **$p < 0.05$, *** $p < 0.01$*

- **Hypothesis 2: Effect of Anchoring on buying behavior**

To test the hypothesis 2, we conducted one-way Anova and post hoc comparisons with the Bonferroni adjustment (table 8 and 9) to answer for the questions whether there is a significant mean difference in attitude, intention to buy and willingness to pay for targeted products among three anchoring groups including high price anchor, low price anchor and no anchoring groups.

Considering on customers' attitude among anchoring groups, there was a statistic significant different among groups with F statistic equals to 9.78 at the degrees of freedom at 1137 and $p<0.01$. It means that the participants who had been anchor with different information perform their interest differently. The comparison in mean difference in table 9 illustrate that there is significant lower interest of low-price anchoring group comparing to high price anchoring group (negative sign). Similarly, the interest level in no anchoring group is 0.32 lower than high anchoring group. However, there was no statistic significant between no anchoring and low anchoring group. These results support for the hypothesis that the consumers in high anchor condition will have more positive attitude than other conditions (H2.a).

The analysis results of intention and willingness to buy continue to confirm the influences of the use of prices of a random product on the same category influence consumer's behavior with $F_{Intention}(2,1137)=5.71$, $p<0.01$ and $F_{WTP}(2,1137)=55.92$, $p<0.01$ respectively. The post hoc

comparisons in table 9 provide the evidence to support hypothesis 2b and 2c. Correspondingly, consumers expressed a higher desire to purchase goods with the proviso that they realize another product being sold at a higher price than the considering product although they are different. By contrast, consumers react negatively when another product being sold at a cheaper price appears at adverting position albeit there is no more information available for advertising product. This result opens a great practical application opportunity to increase customer purchase rates on online shopping website by developing criteria to deliver ads appropriately for each selling product.

Table 8: *One-way Analysis of Variance of Interest, Intention, Willingness_to_pay by Anchoring (high anchoring, low anchoring and no anchoring)*

	Source	*df*	*SS*	*MS*	*F*	*p*
Interest	Between groups	2	54.05	27.02	9.78	0.0001***
	Within groups	1137	3141.62	2.76		
	Total	1139	3195.67	2.81		
	Between groups	2	38.1	19.05	5.71	0.0034***
Intention	Within groups	1137	3791.52	3.33		
	Total	1139	3829.62	3.36		
Willingness	Between groups	2	20.96	10.48	55.92	0.0000***
to pay	Within groups	1137	213.09	0.19		
	Total	1139	234.05	0.21		

** $p < 0.1$, **$p < 0.05$, *** $p < 0.01$*

Table 9: *The mean differences analysis between two groups in each comparison with Bonferroni adjustment*

Mean		High Anchoring	Low Anchoring
Low	Interest	-0.528947***	
Anchoring	Intention	-0.371053**	
	Willingness_to_pay	-0.321053***	
No	Interest	-0.323684**	0.205263
Anchoring	Intention	0.031579	0.402632***
	Willingness_to_pay	-0.234211***	0.086842**

** $p < 0.1$, **$p < 0.05$, *** $p < 0.01$*

4.3. Hypothesis testing with the Proportional odds models

To clarify the role of each element and joint effect of goal framing and anchoring on consumer behavior, econometric models are built and taken those factors into account. Model 1, 3 and 5 are simple model which are only considering the impact of anchoring, framing and their joint effects. Whereas model 2, 4, 6 takes account of not only main factors of anchoring, framing but also knowledge about targeted products, risk aversion and demographic and personality variables.

The econometric models to test Hypothesis are as followed:

(1) $\Pr(Interest_i \leq j|1,2,..,7) = \Lambda(AH_i, AL_i, Framing_i, AH_i * Framing_i, AL_i * Framing_i)$

(2) $\Pr(Interest_i \leq j|1,2,..,7) = \Lambda(AH_i, AL_i, Framing_i, AH_i * Framing_i, AL_i * Framing_i, Knowledge_i, Risk\_aversion_i, Gender_i, Age_i, Ethnicity_i, Product_i)$

(3) $\Pr(Intention_i \leq j|1,2,..,7) = \Lambda(AH_i, AL_i, Framing_i, AH_i * Framing_i, AL_i * Framing_i)$

(4) $\Pr(Intention_i \leq j|1,2,..,7) = \Lambda(AH_i, AL_i, Framing_i, AH_i * Framing_i, AL_i * Framing_i, Knowledge_i, Risk\_aversion_i, Gender_i, Age_i, Ethnicity_i, Product_i)$

(5) $\Pr(Willingness\_to\_pay_i = 1) = \Lambda(AH_i, AL_i, Framing_i, AH_i * Framing_i, AL_i * Framing_i)$

(6) $\Pr(Willingness\_to\_pay_i = 1) = \Lambda(AH_i, AL_i, Framing_i, AH_i * Framing_i, AL_i * Framing_i, Knowledge_i, Risk\_aversion_i, Gender_i, Age_i, Ethnicity_i, Product_i)$

Table 10: *Results of the Proportional Odds models*

	(1)	(2)	(3)	(4)	(5)	(6)
Variable	Coef. (Std. Err.)	Coef. (Std. Err.)	Coef. (Std. Err.)	Coef. (Std. Err.)	Coef. (Std. Err.)	Coef. (Std. Err.)
AH_i	0.488 (0.185)***	0.584 (0.191)***	-0.270 (0.185)	-0.189 (0.189)	-0.379 (0.249)	-0.314 (0.274)
AL_i	-0.362 (0.177)**	-0.390 (0.181)**	-0.685 (0.179)***	-0.744 (0.185)***	-1.109 (0.280)***	-1.247 (0.304)***
$Framing_i$	0.447 (0.181)**	0.499 (0.185)***	-0.186 (0.181)	-0.208 (0.186)	-0.330 (0.241)	-0.350 (0.266)
AH_i*$Framing_i$	-0.261 (0.257)	-0.237 (0.264)	0.437 (0.256)*	0.479 (0.263)*	2.612 (0.342)***	3.117 (0.388)***
AL_i*$Framing_i$	0.369 (0.256)	0.511 (0.261)**	0.632 (0.257)**	0.865 (0.263)***	1.060 (0.380)***	1.273 (0.416)***
$Knowledge_i$		0.464 (0.034)***		0.483 (0.034)***		0.501 (0.052)***
$Risk\_aversion_i$		0.079 (0.037)**		0.130 (0.036)***		0.274 (0.056)***
$Gender_i$		0.013 (0.112)		-0.017 (0.111)		-0.115 (0.167)
Age_i		-0.125 (0.059)**		-0.089 (0.058)		0.152 (0.087)*
$Ethnicity_i$		0.399 (0.157)**		0.015 (0.157)		0.020 (0.249)
$Product_i$		0.179 (0.066)***		0.126 (0.065)**		0.036 (0.100)
Number of obs	1140	1113	1140	1113	1140	1113
LR chi2	(5) 47.74	(11) 282.82	(5) 20.06	(11) 283.51	(5) 213.76	(11) 373.85
Prob > chi2	0.000	0.000	0.001	0.000	0.000	0.000
Pseudo R2	0.011	0.068	0.005	0.067	0.156	0.279

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

- **Low anchoring takes a major influence on customer decision**

In the section 4.2, we concluded there were a statistic significant differences among anchoring experiment groups howbeit their role in decision making process were not clear. The variables AH_i, AL_i were generated from anchoring conditions and the base group are no anchoring group. The analysis results presented in table 10 for variables AH_i, AL_i revealed that anchoring customer with a product selling at higher price is not an effective way to motivate the customer to make decision to buy the product being considered. Evidence for that conclusion is coefficients of AH_i in model 3, 4, 5, 6 are not significant. In the model 1 and 2, when the predictor is dichotomous, a positive sign of the logit coefficient indicates that it is more likely for high anchor group to be at or beyond a particular category than others. The positive logit coefficient indicates the odds of model 1 and 2 are greater than 1. It means using high anchoring makes customers feel more positive about considering product.

Whilst AH_i does not perform a consistence effect through models, AL_i has proven its influence on customer decisions. The logit coefficients for AL_i are highly statistical significant in all 6 tested models and perceived the negative signs. It indicates that the predictor and responder are opposite direction. The consumer will reduce their interest, intention to buy as well as willingness to buy for considering product when they are anchored with a product selling at lower price. This once again confirmed the theory of *loss aversion* in which people are much more sensitive to losses than the gains (Kahneman & Tversky, 1979,1992).

- **Goal framing is not essential factors in decision making in real life environment**

With a positive sign in the logit coefficient of model 1 and 2, it is easy to deduce that the positive framing has statistically significant effect on customer attitude in positive direction. It supports hypothesis 1a. Notwithstanding the impact on customer attitude, the regression results showed there are no significant effect of framing to intention to buy and willingness to buy for target products. This is an interesting finding for online shopping. It is consistent with the reported results Krishnamurthy el al.(2001), Zickar and Highhouse (1998), Wang (1996) which proposed framing effects are more pronounced when a decision maker's preferences are weak and less pronounced when a decision maker is highly involved in the decision task. In the scenario of designed experiment, participants were put into a real form website with related information therefore framing does not affect customer actions alone and demonstrates its effect is weaker than other factors.

- **Joint effect of Goal framing and anchoring**

As mentioned above both high-price anchor and goal framing do not show significant impact on the process of making decision of customers (model 3, 4, 5, 6), but the combination of these two elements shows the significant impact on customers' decisions. The logistics coefficients for joint effect of high-price anchor and goal framing are significant in model 3, 4 and highly significant in model 5 and 6. It means their joint effect take the important role in deciding whether or not buy the product of customers at *willingness to pay* stage. These results supported for hypothesis 3b and 3c but rejected hypothesis 3a. Although AH_i and $Framing_i$ are not significant in model 3, 4, 5, 6, both high-price anchor and positive goal framing reveal positive consequences on decision making in inferential statistic (t-test and anova test) in section 4.2. Consequently, the associate of two positive factors generate a strong significant effect.

From that point, I suspect that the joint effect of low-price anchor and negative goal framing is also significant. To answer for this question the results in the table 10 cannot be used, but I run the models again with recode value of $Framing_i$ to $Framing\_n_i$ from 1 to 0 and 0 to 1. In order to ensure the results are reasonable and analytical, I have replaced all variable $Framing_i$ to $Framing\_n_i$ in 6 models. The results reported in table 11 are the outcome of these regression for joint effect of low-price anchor and negative goal framing.

Table 11: *The effect of low-price anchor and negative goal framing on customer behavior*

	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
	Coef. (Std. Err.)	Coef. (Std. Err.)	Coef. (Std. Err.)	Coef. (Std. Err.)	Coef. (Std. Err.)	Coef. (Std. Err.)
AL_i* $Framing\_n_i$	-0.369 (0.256)	-0.511 (0.261)**	-0.632 (0.257)**	-0.865 (0.263)***	-1.060 (0.380)***	-1.273 (0.416)***

** $p < 0.1$, **$p < 0.05$, *** $p < 0.01$*

The results in table 11 confirm our conjecture about the impact of the joint effect of two negative factors on customer decision making. It clearly indicates that customers significantly reduce their interest, desire to purchase targeted products and willingness to pay for those products in which they are anchor with another product selling at lower price and the negative consequences of not using those products.

- **Knowledge about products and risk aversion**

The regression results again confirm the findings of previous studies of customers' knowledge about product and their risk aversion on their decision-making. The variable $Knowledge_i$ are highly significant in the tested proportional odds models (model 2, 4 and 6). It endorses that the more knowledge consumers have about a certain product, the easier it is for them to make purchasing decisions. When customers have a certain amount of knowledge about products, they tend to choose base on their own understanding and information rather than the additional information.

We identify the risk aversion level indirectly through risk loving concerning to the question: "Identify yourself from 1 to 7 about how risk loving you are: 1: extremely hate taking risk -7: love gambling". Therefore, the higher value of risk loving indicates for the lower risk aversion level and vice versa. The coefficient results for $Risk\_aversion_i$ is statistically significant with positive sign. This result provides that people with higher risk loving level are easier to make purchase decision. In other words, people with higher risk aversion are considering the information more carefully and harder to make purchase decision.

- **Demographic and personality**

We measured the effects of demographic and personality by variables $Gender_i$, Age_i, $Ethnicity_i$. Despite the fact that the coefficients of Age_i, $Ethnicity_i$ are significant effect on the attitude of consumers, they showed no significant effect in decision-making stage except for weak effect of Age_i in model 6. Hence, we do not have enough evidence to conclude the influence of selected variables for demographic and personality on consumer's decision.

4.4. How well do the models fit?

In table 10, the associated *p* value with the log likelihood ratio chi-square test *Prob > chi2 =0.000* in model 1, 2, 4, 5, 6 and *Prob > chi2 =0.001* in model 3, which indicate that the models with predictor are better fit than the null model. The Pseudo R^2 in the model 1, 2, 3 and 4 are small which suggests that the relationship between response variables, interest/ intention / willingness to pay, and the predictors are small.

For a closer assessment of the relevance of the models, the calculation in Stata of Long & Freese (2014) is used and reported in table 12. The *p-value* for Chi-square in deviance statistic test is significant for all 6 models. The McFaddend R^2 and McFaddend R^2 adjusted are small for model 1, 2, 3, 4 which suggest that those models are well fit for measuring the interest and intention to buy targeted products. On the other hand, the larger value of R^2 in model 5 and 6 indicate that the model is still fit for measuring willingness to pay but not the ideal model. The smaller value of

AIC and BIC in model 2, 4, 6 comparing with model 1, 3, 5 respectively indicates the full models is better fit to represent for respond variable.

Table 12: *Assumption of Proportional Odds Models for Ordinal response variable*

	(1)	(2)	(3)	(4)	(5)	(6)
Log-likelihood						
Model	-2099.376	-1929.213	-2147.564	-1965.158	-578.133	-482.580
Intercept-only	-2123.248	-2070.625	-2157.597	-2106.912	-685.015	-669.504
Chi-square						
Deviance	4198.753	3858.426	4295.129	3930.315	1156.266	965.159
LR	47.743	282.824	20.064	283.510	213.763	373.849
p-value	0.000	0.000	0.001	0.000	0.000	0.000
R2						
McFadden	0.011	0.068	0.005	0.067	0.156	0.279
McFadden (adjusted)	0.006	0.060	0.000	0.059	0.147	0.261
McKelvey & Zavoina	0.038	0.226	0.016	0.227	0.219	0.433
Cox-Snell/ML	0.041	0.224	0.017	0.225	0.171	0.285
Cragg-Uhler/Nagelkerke	0.042	0.230	0.018	0.230	0.244	0.408
Count	0.210	0.285	0.198	0.279	0.787	0.813
Count (adjusted)	-0.013	0.081	0.018	0.116	0.261	0.354
IC						
AIC	4220.753	3892.426	4317.129	3964.315	1168.266	989.159
AIC divided by N	3.702	3.497	3.787	3.562	1.025	0.889
BIC	4276.179	3977.678	4372.556	4049.567	1198.499	1049.337
Variance of						
e	3.290	3.290	3.290	3.290	3.290	3.290
y-star	3.420	4.251	3.344	4.258	4.212	5.803

5. Discussions

This research was the first and foremost designed to explain the joint effect of goal framing and anchoring in real online shopping environment. The empirical results of this study extend the understanding of previous research and provide the evidences for the joint effect of goal framing and anchoring in influencing customer purchasing decision which I believe can contribute some benefits to the literature and practical application.

The first interesting finding we observed discussing in the descriptive statistic section is that the influence of money incentive in researching behavior in the market. In all experiment groups, the data obtained when considering the level of *interest* on specific product is expressed in a predictable direction and there is no clear differentiation of trends between/among groups. Nonetheless, when asked about the *intention* and *willingness to pay,* the differentiation became obvious. The explanation for this may be because the participants learned that they have to contribute some of their own money in case they are given the money to buy selected products because the given money is not enough to buy all 3 products. The impact on participants' money in their decision gave them the incentive to have more thorough assessments. This result is also in the line with the study of Servan-Schreiber et al. (2004) on trading market.

The analysis results in both inferential statistic and the proportional odds models demonstrate the impact of price anchoring on customer behavior which has been shown in the studies of Bokhari & Geltner (2011), Weisstein et al., (2013), Schröder, Lüer & Sadrieh (2015). Furthermore, the noteworthy contribution of this result is that it has shown the different influences of anchoring consumers with high price and low price. It indicates significant negative impacts in a way that matters not only attitude but also customer decisions in case they recognize a product selling at lower price. In reverse, information about product being sold at higher price only raises the interest on considering product but does not reveal a significant impact on purchase decision. This finding not only helps strengthen the theory of Kahneman & Tversky (1979,1992) about *loss aversion* but also points out a problem to be avoided in appearing sponsor products on shopping website. This problem is to avoid appearing sponsors products with prices lower than the prices of products being reviewed by customers. Instead, the price may be higher or equivalent to the viewing product.

Concerning to the not-so-significant of goal framing on customer decision-making, but it has a significant impact on customer attitude, we still do not have enough evidence to conclude that

goal framing is not impact on decision-making. The reported result may due to a unique feature of goal framing which is the susceptibility of goal frames to linguistic and contextual variations. The effect of framing customers with information about the benefits of the product or the harm of not using the product depends heavily on the language and context. This is also a limitation of this study. Research only unveil the differences based on a single context without knowing how effective of using different context and explanation words. Further studies about of effectiveness of possible goal framing contexts could bring promising contributions on marketing as well as customer psychology literature.

Turning to the main hypothesis about joint effect of anchoring and goal framing, the statistic results have shown the decisive impacts of how joining effect of goal framing and anchoring influences customer purchasing behavior. The joint effect of high-price anchoring and goal positive goal framing clearly illustrate the importance of this relationship. Although every single element does not have a significant impact on purchase decisions, the combination of both factors significantly effects on the positive changing of consumer behavior. It declares the interaction and resonance of psychology factors in the real environment which has been demonstrated in similar studies in behavioral psychology (e.g Becker, 1978; Kamdar & Van Dyne, 2007; Patrick et al., 1993: 781; Zuckerman et al., 1995; Liao et al., 2010: 1090-1109…). The effect of goal framing and anchoring is considered as a guarantee of the effectiveness of using these two psychological measures to promote for products. The possible explanation for this could be customers becoming agitated from many information which seems neutral but implicitly implies high value of the product being considered. These seemingly neutral information has led customers to believe in the value and quality of products, thereby driving them to make purchasing decisions. In addition, customers tend to trust the information they synthesize rather than the information received from advertising of the products.

6. Conclusion

Along with the online shopping revolution and the application of information technology during the Internet of thing era, most users' behaviors are monitored and analyzed. Applying the data science and machine learning to analysis and behavioral orientation has been used to improve sales effectiveness. The information that appears on websites is no longer random or manually designed but has been actively arranged through algorithms to evaluate complex consumer

behavior. Providing scientific evidence for the linkage of pricing information of promotional products and description of product information to consumer decision helps complement existing algorithms. It involves eliminating the apperance of products with significant lower price than the being considered product. In addition, the appearance of information about the benefit of the product categories instead of specific product and a product being sold at a higher price will create sympathy and boost customer buying behavior.

On the customer perspective, this study unveil an important cognitive bias to their decision. This motivates them to seek more information and use their knowledge to reduce the impact of these factors. Besides the contribution for previous literature this study still leaves unsolved questions which are the how efficiencies of different linguistic and contexts of goal framing and the ideal model to measure the willingness to pay of consumers for follow-up studies.

In short, the cognitive psychology factors such as anchoring and goal framing are not influencing as single element but also combine to enhance the impacts on subjects.

Appendix A: The English version of the Survey

Survey for Behavior Experiment

Thank you for taking time to do my research. My name is Tri Dung Huynh. I'm a master student at Kassel University, Germany. I'm working on a behavior research for my thesis under the supervision of Dr. Christoph Bühren. Collected data will be used only for my research. You will have a chance to receive €50 to make an actual purchase so please read and answer the questions carefully. If you have any questions or concerns, please don't hesitate to reach me at tridung.huynh@gmail.com.

Please open this link in new tab and tell me what number do you see on the left corner : *https://www.random.org/integers/?num=1&min=1&max=6&col=1&base=10&format=plain&rnd=new

- 1
- 2
- 3
- 4
- 5
- 6

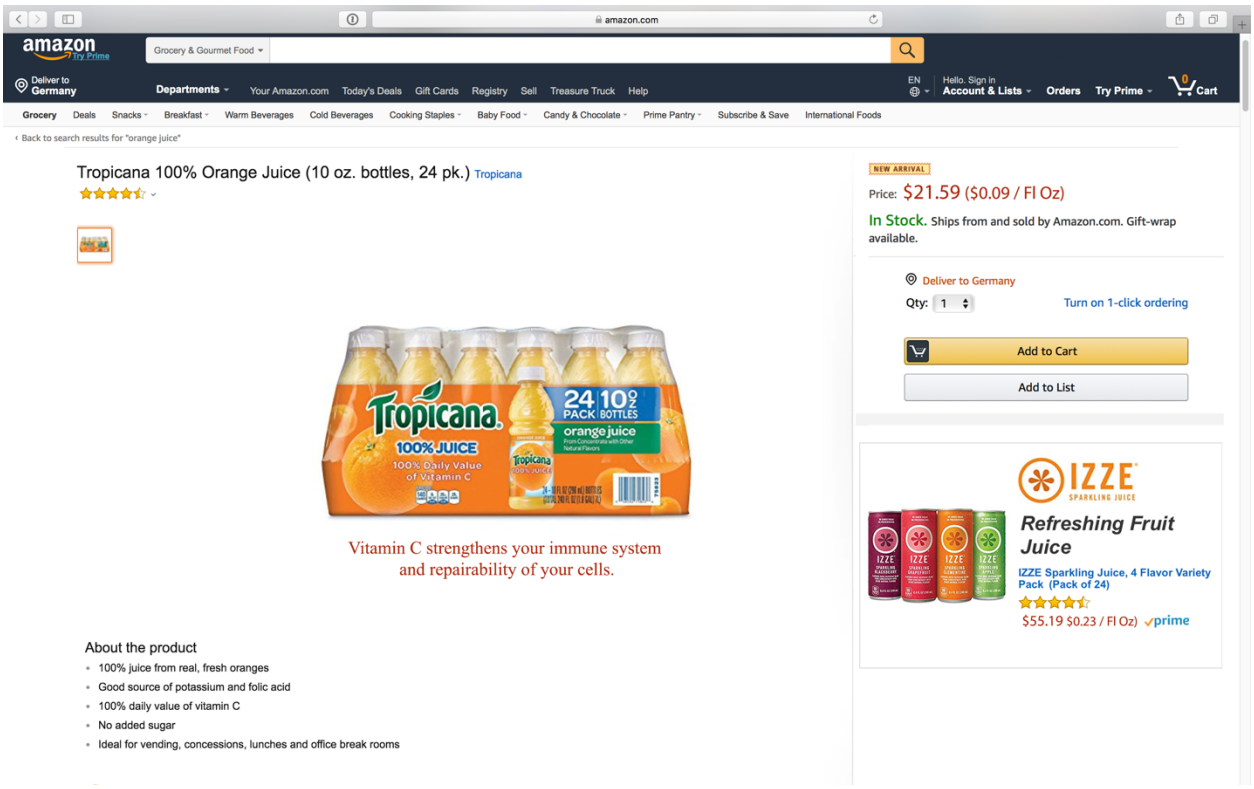
Note: Google will automatically jump to experiment for each group.

Time to go shopping

Assuming that you are thinking about buying orange juice, electronic translator and in-ear headphone. But you are still thinking about whether you buy it or not and what should you buy. Now I will give you the information of 3 products. Please read products' information carefully before answer below questions. I will give $50 for 2 random participants to actually buy your chosen products.

Product 1: Orange Juice

Please open this link for to see the product before answer the questions:
https://image.ibb.co/jGwm68/Group_1_1_1.png



1. How do you like the product in the picture above?

* *Mark only one oval.*

	1	2	3	4	5	6	7	
Don't Like it at all	◯	◯	◯	◯	◯	◯	◯	I really like it

2. Have you ever bought or intended to buy Orange juice before

? * *Check all that apply.*

- [ ] Yes, I bought it online.
- [ ] Yes, I bought it in the store.
- [ ] No, but I intend to buy it.
- [ ] No, not at all.

3. How do you intend to buy the product in picture above from the scale from 1 to 7?

	1	2	3	4	5	6	7	
No, I don't want to buy it.	◯	◯	◯	◯	◯	◯	◯	Sure, I will buy it.

4. Do you add this product to your cart to buy today?

* *Mark only one oval.*

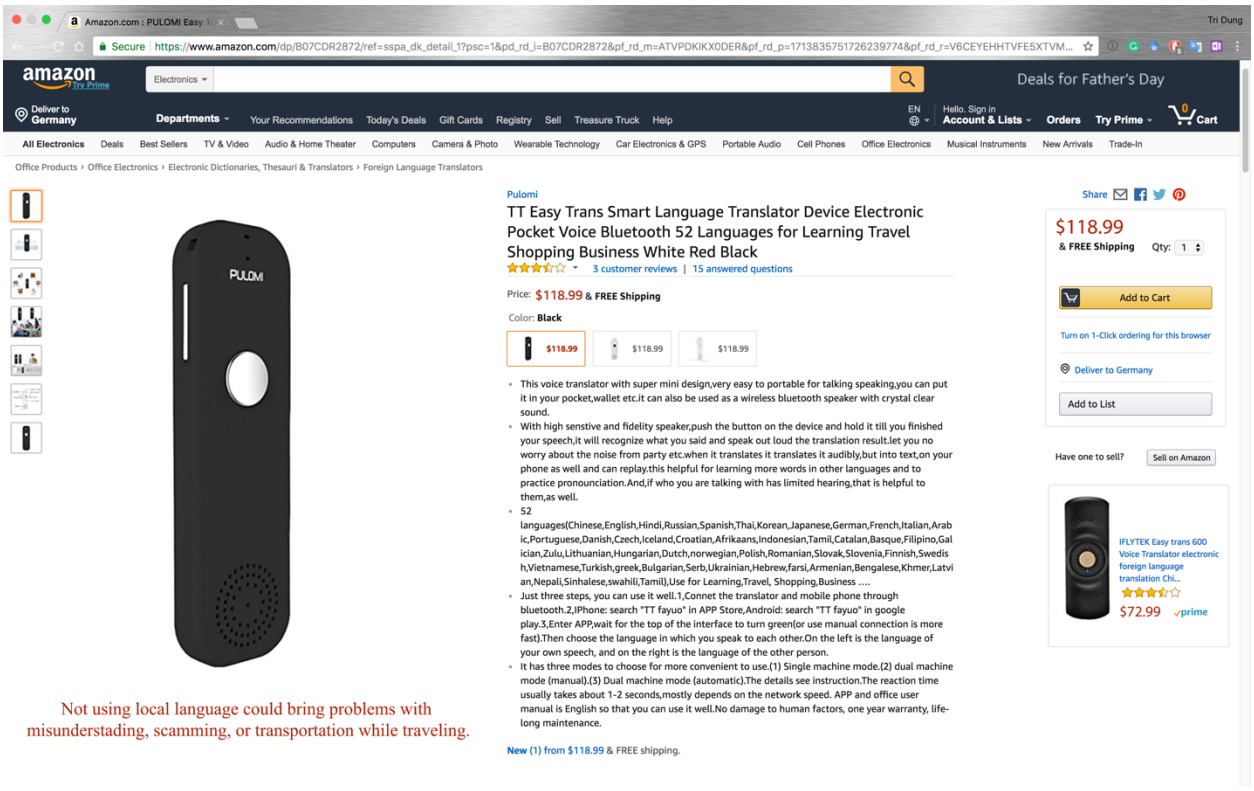
◯ Yes
◯ No

5. What is the reasonable price (US Dollar) for this product?

Product 2: Electronic translator

Please open this link for to see the product before answer the questions:

https://image.ibb.co/eKYNeT/Group_1_4_2.png



1. How do you like the product in the picture above ?

* *Mark only one oval.*

	1	2	3	4	5	6	7	
Don't Like it at all	◯	◯	◯	◯	◯	◯	◯	I really like it

2. Have you ever bought or intended to buy Translator before ? * *Check all that apply.*

- ☐ Yes, I bought it online.
- ☐ Yes, I bought it in the store.
- ☐ No, but I intend to buy it.
- ☐ No, not at all.

3. How do you intend to buy the translator in picture above from the scale from 1 to 7?

	1	2	3	4	5	6	7	
No, I don't want to buy it.	◯	◯	◯	◯	◯	◯	◯	Sure, I will buy it.

4. Do you add this product to your cart to buy today?

* *Mark only one oval.*

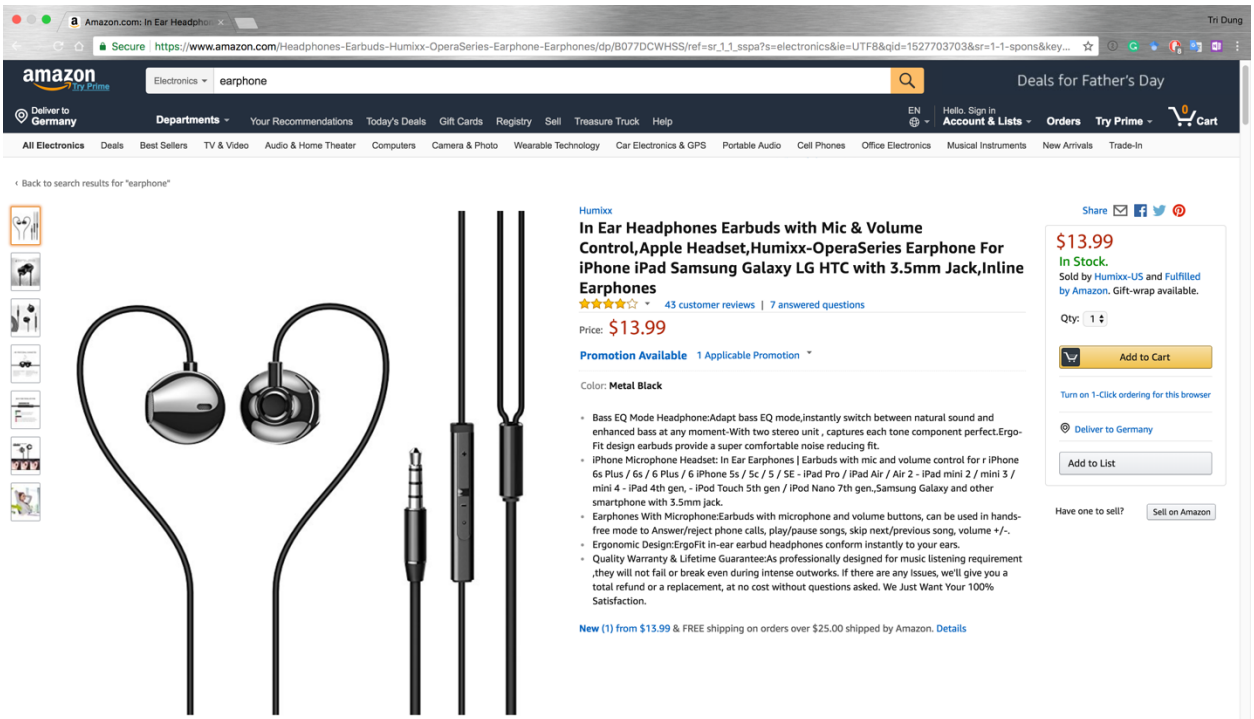
- ◯ Yes
- ◯ No

5. What is the reasonable price (US Dollar) for this product?

Product 3: In Ear Headphone

Please open this link for to see the product before answer the questions:

https://image.ibb.co/edyzR8/Group_1_5_3.png



Using good headphones will enable you to have the best sounding experience and comfort.

1. How do you like the product in the picture above?

* *Mark only one oval.*

	1	2	3	4	5	6	7	
Don't Like it at all	◯	◯	◯	◯	◯	◯	◯	I really like it

2. Have you ever bought or intended to buy in-ear headphone before ? * *Check all that apply.*

- ☐ Yes, I bought it online.
- ☐ Yes, I bought it in the store.
- ☐ No, but I intend to buy it.
- ☐ No, not at all.

3. How do you intend to buy the in-ear headphone in picture above from the scale from 1 to 7?

Mark only one oval.

	1	2	3	4	5	6	7	
No, I don't want to buy it.	◯	◯	◯	◯	◯	◯	◯	Sure, I will buy it.

4. Do you add this in-ear headphone to your cart to buy today?

- ◯ Yes
- ◯ No

5. What is the reasonable price (US Dollar) for this in-ear headphone?

General Questions

1. Please provide us your email to contact you in case you win money:

2. Your gender?

Mark only one oval.

- ◯ Male
- ◯ Female
- ◯ Other: _____

3. What is your nationality?

4. How old are you?

5. Do you often buy anything online?

6. What are you usually buying online?

* *Check all that apply.*

- ☐ Books and Audible
- ☐ Movies, Music and Games
- ☐ Electronics, Computer
- ☐ Home, Garden, Pets & Tools
- ☐ Food & Grocery
- ☐ Beauty and Health
- ☐ Toys, Kids & Baby
- ☐ Clothing, Shoes and Jewelry
- ☐ Handmade

7. How is this statement true with you?

"This is a product that I could talk about for a long time"

7a. For Orange juice

* *Mark only one oval.*

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

7b. For Electric Translator

* *Mark only one oval.*

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

7c. For Headphone

* *Mark only one oval.*

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

8. Identify yourself from 1 to 7 about how risk loving you are:

	1	2	3	4	5	6	7	
Extremely hate taking risk	◯	◯	◯	◯	◯	◯	◯	Love gambling

Debriefing questions

1. Do you recognize that there are 2 products appear in each picture while you answer above questions?

* *Mark only one oval.*

◯ Yes

◯ No

2. Do you compare their prices while you decide whether you buy it or not?

* *Mark only one oval.*

- ◯ Yes
- ◯ No

3. Do you think you understand the description for rules of the game?

* *Mark only one oval.*

- ◯ Yes
- ◯ No

4. If yes, what do you think you should do to get reward?

- ◯ Choose the lowest price for each product
- ◯ Compare the price & the function/ benefit of the product
- ◯ Don't buy all appeared products
- ◯ I'm not sure
- ◯ Other: _____

I really appreciate your help

Thank you very much for your contribution to my research. Please don't discuss the questions in this survey with your friends until they finished the survey themselves. Leaking this content may influence your friends' behaviors and generate bias in this experiment. We will inform you if you win our $50.

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