ANCHORING EFFECT: A MYTH OR REALITY?

ÇAPALAMA ETKİSİ: EFSANE Mİ YOKSA GERÇEK Mİ?

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ÖZ

Tüketiciler satın alma kararlarını verirken sıklıkla irrasyonel davranabilmektedirler. Tüketicilerin irrasyonel davranışlarında en çok kullandıkları bilişsel yanlılıkların (cognitive bias) başında çapalama etkisi (anchoring effect) gelmektedir. Liteartürde çapalama etkisini destekleyen çok sayıda çalışma bulunmakla birlikte, son yıllarda çapalama etkisi karşısında sonuçlar bulunan çalışmalar da ortaya çıkmaya başlamıştır. Bu çalışmada çapalama etkisinin dokuz farklı üründe etkisinin uzun dönemli ve çok sayıda veri seti ile öğrenci olmayan örneklem üzerinden test edilmesi amaçlanmaktadır.

Bu kapsamda 2016-2019 yılları arasında 2041 kişiden kolayda ve kartopu zincir örnekleme yöntemleri ile veri toplanmıştır. Çalışma sonuçlarına göre katılımcıların belirledikleri rakam ile ödemeye hazır oldukları bedel arasında önemli bir ilişki çıkmıştır. Satın alınmaya razı olunan fiyatı belirtmeden önce söylenen rakamdaki (anchor) bir birimlik artış katılımcıların ödemeye razı oldukları bedelde %34'lük bir artış sağlayabilmektedir. Ayrıca 80-100 arası sayı belirtenler 0-20 arasında sayı belirtenlerden %178 daha fazla kendilerine gösterilen ürünlere para ödemeye razı olmuşlardır. İleride yapılacak çalışmalarda çalışmanın gerçek bir satın alma ortamında yapılarak test edilmesi sağlanabilir.

Anahtar Sözcükler: Çapalama Etkisi, Dan Ariely, Daniel Kahneman, Bilişsel Yanlılık, Tüketici Davranışı

ABSTRACT

Consumers are often irrational when making their purchase decisions. Anchoring effect is one of the most common cognitive biases resorted to by consumers in irrational behaviours. Although there are many studies supporting anchoring effect in literature, there are studies against it too. This study amis to test the influence of anchoring effect on nine different products through a longtidunal stuy withnon-student sampling and large numbers of data sets.

Data were collected from 2041 through a snowball and convenience sampling method between the years of 2016-2019. The results show that there is a significant relationship between number (anchor) determined by the participants and the price they are happy to pay. A one-unit increase in the anchor number results an increase of 34% consumers are willing to pay for a product. The consumers who tated the numbers between 80-100 as anchors were willing to pay %178% more for a product than customers who stated numbers between 0-20 as anchors.

Keywords: Anchoring Effect, Dan Ariely, Daniel Kahneman, Cogntive Bias, Consumer Behavior

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1. Introduction and the Rationale for the Study

The generally acepted notion of people being rational in general does not reflcet the reality (Maniadis et al., 2014, Koç & Boz, 2014; Boz, 2015; Koç, 2018). The assumption which claims people are rational started with Parmenides and later on elaborated by Descartes has been cticised by various scholars. Jonah Lehrer (2009: 15) stated that "there is only one flaw of the assumption that human beings are rational is that it is wrong". In the studies conducted over the last 40 years, it has been stated that the emotional processes are more dominant than the cognitive processes when people make decisions (Averil, 1973; Kahneman and Tversky, 1979; Damasio,1994; Montegue, 2007, Boz and Köse, 2018).

In recent years, the emergence of irrational trends in people's decision-making has led to the emergence of scientific disciplines such as behavioral economics and behavioral finance. Similar change is also observed in the marketing. It has been observed that consumers' tendency to buy more and more emotionally and pleasure-oriented tendencies has led to the emergence of sub-disciplines such as consumer behavior and neuromarketing. The consumer's irrationality size in purchasing behavior can be explained by Paco Undehill (1999: 31) as saying "If we only went shopping when we needed something and we only bought the products we needed, the economy would collapse". One of the important factors in the people's irrational decisionmakings are that they make biased and heuristic decisions (Tversky and Kahneman, 1974; Kahneman and Tversky, 2000, Kahneman, 2003; Koç and Boz, 2014; Boz, 2015; Koç, 2018: 321).

One of the reasons why consumers make purchasing decisions on a heuristic or biased basis is that they are unable to collect enough information about the products they purchase. This situation may cause consumers to refrain from making in-depth analysis of the products they consider to o purchase (Drolet et al., 2009). One of the most important reasons why consumers are not able to gather enough information about the products they will purchase is that there has been a large number of options in a certain product group (such as strawberry jam, chocolate) in recent years and with adding new products to the options in the product groups every day makes it very difficult for consumers to follow these products. Consumers are also bombarded with marketing communications. As Kahneman stated in his (2003) study, people have limited capacity to think and analyze in a certain period of time. Hence, consumers may be more likely to base their purchasing decisions on heuristic strategies.

There has been a significant increase in experimental studies on consumers' decisionmaking processes in recent years (Anderson et al., 2007). Experimental studies investigating the attitudes and tendencies of consumers in purchasing decisions are mainly focused on heuristic and cognitive biases (Lacetera et al., 2012; Dunbar et al. 2013; Zhang et al., 2014; Sevilla and Khan, 2014; Boz, 2015). Anchoring effect is one of the most frequently studied biases to investigate the effects of heuristic methods and cognitive biases on consumer purchasing decisions.

Many research studies have investigated the influence of the anchoring effect on purchasing decision-making (Green vd, 1998; O'Conor vd., 1990; Furnham and Boo 2011,ss. 39). Research shows that the anchoring effect is one of the most influential, powerful and best constructed cognitive biases (Beggs and Graddy, 2009). However, counter-studies on anchoring effet have begun to emerge in recent years (Mumma and Wilson, 1995; Mussweiler and Stack, 1999a; Mussweiler vd., 2000). It is seen that the samples of the studies which do not approve or approve the anchoring effect are usually composed of students. In addition, these studies are conducted

with a limited number of sampling or experimental group. It is observed that the studies carried out by the survey are also conducted in a limited time frame. Therefore, the main purpose of this study is to test the impact of anchoring effect on the evaluation of the price of the product to be purchased with a long-term, different products, and a wide sampling set.

2. Background and the Literature

The price is one of the most important marketing components (Boz, Arslan and Koc, 2017). In addition, price is one of the most critical factors determining how much a product will be demanded by consumers (Koç, 2019). The price is also the only income-generating component of the marketing mix elements (Mochtar and Arditi, 2000). It can also be said that price is one of the key determinants of competition among businesses. Pricing is critical to the profitability of the business (Perron et al., 2010). Price is one of the most strategic issues of businesses (Zack, 2007). Therefore, it can be said that the price is also key to the sustainability of enterprises. In view of these explanations, it can be said that the work on the price is also critical.

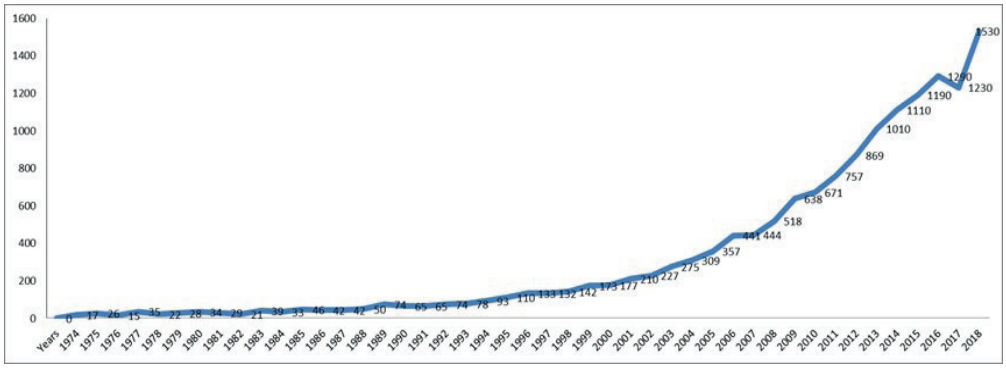
In recent years, it has been stated that emotional characteristics have more impact on the price that consumers consent to pay for the products they want to buy than the physiological characteristics (Koç, 2018). Additionally, research studies in behavioural economics, behavioral finace, consumer behaviour and marketing point that that judgemental heuristics based methods are increasingly becoming important and people tend to resort to cognitive biases when making purchasing decisions (Kahneman and Tversky, 1974; Belsky and Gilovich, 1999).

According to Ariely et al. (2003), purchasing decisions of people/consumers are characterized by very arbitrary and random processes (heuristic methods or biases). Heuristic methods and biases are usually fast, automatic, effortless and often accompanied by feelings (Kahneman, 2003). According to Mussweiler and Daminish (2008), people's decision-making processes are often influenced by various norms, biases, or standards. One of these cognitive biases that affect people's/consumers ' decisions is the anchoring effect.

According to Orr and Guterie (2005), the anchoring effect is the easiest proof, yet it is the most difficult cognitive bias to explain. Anchoring effect was first expressed as "preference reversal" by Slovenian and Lichtenstein (1968). The anchoring effect is one of the standards affecting the decision-making process of people in general and it is formed by assimilating a numerical estimation according to the previously considered standard.

The anchoring effect is based on the assumption that affects the assessment of people with questions such as is the whether the temperature of the air more than 45 degrees Celsius, is the length of a pole more than 400 centimeters, or is that a backpack more than 300 TL. According to this, the numbers expressed in the questions are expressed as "anchor" for those who answer the questions. For example, in the first question, the number of 45 in the expression of 45 degrees centigrade is an anchor. According to the Anchoring effect theory, it is stated that people respond to these questions close to the digits/numbers or values expressed as an anchor. It is stated that the answers are given to the question of "Is a backpack more than $ 300?" are generally clustered around 300 TL while the answers are given to the question of "Is a backpack more than 100 TL?" are generally clustered around 100 TL. According to this, it is seen that consumers tend to reference the initial figures when making the evaluation (such as price or value). There are many studies on the anchoring effect in literature.

It can be said that Tversky and Kahneman (1974) is the most well known of the numerous anchoring effect studies in the literature. Two questions are asked to Tversky and Kahneman's participants (1974) One question is, "Is the number of African countries in the United Nations higher than 65%?" and the other question is, "Is the number of African countries in the United Nations higher than 10%?". Participants are asked to make an estimate of these questions. According to the answers of the participants, after the 65% anchor, the average of the answers were 45% and after the 10% anchor, the average of the answers were 25%. According to this, as the value of the anchor in the questions changes, the answers are clustered around the anchor values.



Graph 1. "Anchoring Effect Literature" By Years

Source: Google Scholar

The anchoring effect is one of the most researched cognitive biases. Graph 1 shows data on the number of anchoring effect studies by years. According to this, the number of studies related to anchoring effect in Google Scholar from 1974 to 1994 has been going horizontally. While there are 17 studies in the Google Scholar in 1974, 78 studies are conducted in 1994 in the matter of "Anchoring Effect". There has been a significant increase in study numbers since 1994. It is observed that 1530 studies were carried out on the anchoring effect in 2018. In 2018, 441 studies related to Framing Bias, 431 studies related to Overconfidence Bias were conducted, and the number of studies related to the Anchoring Effect in 2018 are almost four times higher than those (Google Scholar, 2019).

Table 1 lists thirty leading studies supporting the anchoring effect. When the information about the studies is examined, it is observed that the number of samples generally varies between 24 and 1153. However, the number of samples in general consist of approximately 225 people. It is observed that the sample is generally composed of students. The students constitute approximately 70% of the research samples. The use of only students as a sample in a significant part of the studies, and the access to research findings from a small number of samples, and the collection of data at a time with a single data collection method may create question marks about the generalizability of the studies. (Landis and Kuhn, 1957; Gordon et al., 1986; Koc and Boz, 2014b). According to the results of Hanel and Vione's (2016) study conducted in 59 countries, it is stated that the results of the research obtained from the students (especially the attitudes related the studies) can be problematic in the matter of generalization to the society. In addition,

it is noted that there are significant doubts about the generalization of experimental studies on students to society (Peterson, 2001).

Table 1. Studies Supporting Anchoring Effect

Citation	Sample Size	Subjects	Journal
Green et al., (1998)	370	Adults/ Museum Visitors	Resource and Energy Economics
O'Conor et. al., (1990)	1017	Individuals	Environmental and Resource Economics
Fudenberg et al., (2012)	354	College Students	American Economic Journal: Microeconomics
Bateman, (1980)	24	College Students	Organizational Behavior and Human Performance
Blount et al., (1996)	107	MBA Students	Organizational Behavior and Human Decision Processes
Bottom and Pease (1999)	29	MBA Students	Group Decision and Negotiation
Brodt (1994)	59	Business Managers	Organizational Behavior and Human Decision Processes
Mussweiller et al., (2000)	60+32	Car Experts College Students	European Journal of Social Psychology
Kristensen and Gärling (2000)	160	College Students	Journal of Consumer Policy
Strack and Mussweiler, (1997)	101	College Students	Journal of personality and social psychology
Jacowitz and Kahnemann, (1995)	156	College Students	Personality and Social Psychology Bulletin
Brewer and Chapman, (2002)	831 + 322	Individuals College Students	Journal of Behavioral Decision Making
Pohl et al., (2003)	99	College Students	Memory
Simonson and Drolet, (2004).	468+256+178	College Students Employees	Journal of personality and social psychology
Esch et al., (2012)	34+80+20	Individuals College Students	Psychology & Marketing
Whyte and Sebenius, (1997)	105	College Students	Organizational Behavior and Human Decision Processes
Joireman et al., (2010)	93+42+ 159	College Students	Journal of Environmental Psychology
Mussweiler (2001)	40+42+51	College Students	European Journal of Social Psychology
Meub and Proeger, (2015)	58+44	Individuals	Journal of Behavioral and Experimental Economics
Holst et al., (2015)	520	Farmers	Journal of Economic Psychology

Table 1. Studies Supporting Anchoring Effect (Continues)

Citation	Sample Size	Subjects	Journal

Wu and Cheng, (2011)	318	College Students	Electronic Commerce Research and Applications
Caputo, (2014)	117	Managers	International Journal of Management and Decision Making
Simmons et al., (2010)	179+198+249+127 +57+105+331	College Students Individuals	Journal of personality and social psychology
Englich and Soder, (2009)	163+120	College Students	Judgment and Decision Making
Ritov, (1996)	148	College Students	Organizational Behavior and Human Decision Processes
Thomas and Handley, (2008)	61	College Students	Acta Psychologica
Ariely et al., (2003)	55+132+90+53 +44+55	College Students	The Quarterly Journal of Economics
Bergman et al., (2010)	116	College Students	Economics Letters
Adame, (2016)	356	College Students	LearningandMotivation

The anchoring effect is one of the most powerful and well-established experiments in the laboratory environment (Beggs and Grady, 2009). However, it is observed that the studies against anchoring effect have increased in recent years. Table 2 shows the list of sixteen debiasing studies with results that do not support the anchoring effect. When the information about the studies is examined, it is seen that the number of samples varies between 21 and 1151 in general. It is observed that debiasing studies are generally conducted among students. In addition, it is seen that a significant number of studies are performed with a limited sample number.

Table 2. Studies Against Anchoring

Citation	**Sample Size**	**Subjects**	**Journal**
Mumma and Wilson, (1995)	156	College Students	Journal of Clinical Psychology
Chapman and Johnson, (1994)	40+44 +22	College Students	Journal of Behavioral Decision Making.
Morewedge et al., (2015)	278+269	Individuals	Policy Insights from the Behavioral and Brain Sciences
Smith and Windschitl, (2015)	52+106	College Students	Memory & Cognition
Cheng et al., (2014)	1151	College Students	Computers in Human Behavior
Sudgen et al., (2013)	NA	Individuals	Journal of Economic Psychology
Cheek and Norem, (2017)	602	Workers	Personality and Individual Differences

Table 2. Studies Against Anchoring (Continues)

Citation	Sample Size	Subjects	Journal
Brewer and Chapman, (2002)	881	Individuals	Journal of Behavioral Decision Making
Hartono and Saputro, (2012)	40	College Students	Jurnal Teknik Industrİ
Mussweiler et al., (2000)	60+31	Car Experts College Students	Personality and Social Psychology Bulletin
Englich, (2006)	NA	Conceptual Discussion	Law & Policy
Teovanović et al., (2015)	242	College Students	Intelligence
Mussweiler and Stack, (1999)	39	College Students	Journal of Experimental Social Psychology
Northcraft and Neale, (1987)	21	Real Estate Agent	Organizational Behavior And Human Decision Processes
Wilson et al., (1996)	116+549 +110+58	Colleges Students	Working Paper
Joyce and Biddle, (1981)	50+132	NA	Journal of Accounting Research

In view of the relevant literature, the main purpose of this study is to test the effect of anchoring effect on multiple products (nine products). In addition, testing the effect of anchoring effect with a large number of non-students samples is another purpose of the study.

3. Methodology

3.1. Data Collection and Sampling Methods

Research data were obtained by a survey in quantitative research. Convenience sampling and snowball sampling were used from a non-random sampling method as a sampling method. Research data are collected between March 2016 –January 2019. Research data are obtained through face to face and online survey platforms. The surveys are collected from 2041 people, including 1137 of whom are online and 904 of them are face to face. The face-to-face survey data are collected from the Bursa, Bilecik, Istanbul, Uşak, Izmir, Balıkesir, Ankara provinces.

3.2. Instruments and the Paradigm

Three different survey forms are created within the scope of the research. The survey forms created as follows.

The first survey: The participants are asked nine questions. The data are collected from 367 people with the survey.

1. In the first question, participants are asked to write the last two digits of their mobile phones.

2.After the second question, they are asked how much can they pay for the internet package shown to them.

3. In the third question, participants are asked to write a number between 0 and 100.

4. In the fourth question, they are asked how much they can pay for the SMS package shown to them.

5. In the fifth question, they are asked to write the first two-digit number that came to mind.

6. In the sixth question, they are asked how much they can pay for a speech package shown to them.

7. The gender, marital status, and age of the participants are asked in the seventh, eighth and ninth questions respectively.

The second survey: The participants are asked nine questions. The data are collected from 543 people with the survey. The first, third, fifth, seventh, eighth and ninth questions are common to the first survey. In contrast;

1. In the second question, participants are asked how much they can pay for the coffee by showing the coffee picture.

2. In the fourth question, participants are asked how much they can pay for the chair by showing the chair picture.

3. In the sixth question, participants are asked how much they can pay for a pencil by showing the pencil picture.

The Third Survey: The participants are asked nine questions. The data are collected from 1137 people with the survey. The first, third, fifth, seventh, eighth and ninth questions are common to the first and second survey. In contrast;

1. In the second question, participants are asked how much they can pay for the coffee by showing the coffee picture.

2. In the fourth question, participants asked how much they could pay for the table lamp by showing the table lamp picture.

3. In the sixth question, participants asked how much they can pay for the picture frame by showing the picture frame.

3.3. Findings

Table 3. Correlation Analysis Results Between Variables

		Price Consumers are Willing to Pay
Anchor Value	Pearson Correlation	,074*
	p	,000
	n	6114
* p<0,001		

Table 3 shows whether there is a correlation between the dependent variable (the agreed

price) and the independent value (Anchor Value) before the regression analysis. According to correlation analysis results, there is a statistically significant relationship between the value of the number indicated by the participants and the price consumers' willingness to pay. There is a statistically significant 99% confidence interval between the value of the number that the participants stated before and the price consumers' willingness to pay (Pearson's r=0,074, p<0,001, r^2=0,005). Regression analysis is performed, due to the relationship between the variables as a result of the correlation analysis.

Table 4. Regression Analysis Results

Variable	Full sample			Response to Anchor (0-20 – 80-100)		
	β	SE	t	β	SE	t
Anchor Value	0,34*	0,27	5,83	0,25*	3,55	7,02
R^2	0,07			0,12		

***p> .05. **p < .05. *p < .01.

Table 4 shows the regression analysis results of the two models established within the scope of the study. The regression analysis results of the 6141 data obtained from the participants are in the first model. A positive linear relationship is observed between the anchor value and the price consumers' willingness to pay (R=0,07, R^2 =0,005 t=5,83, p=0,001). The effect size between the two variables is low. As the value of the number expressed by the participants before saw the product image increases the price consumers' willingness to pay statistically significantly (F=33,865, p=0,.001). The analysis shows that consumers a one-unit increase in the anchor number results an increase of 34% consumers are willing to pay for a product (Yi= 28,169 + 0,340* Xi). The findings of this study are in line with Kahneman and Tversky's (1974) study. In the study of Kahneman and Tversky (1974), the subjects were first asked to spin the wheel with values between 0-100. The wheel is set to stop at only 10 and 65. The participants were asked to respond two questions after spinning the wheel. First is, "Is the percentage of African nations among the UN members greater than the number shown by the wheel, or is it small?" Second is, "What is your best estimate for the number of African nations in the UN?" By considering the answers, the average responses of those who correspond to 10% are 25%, while the average responses of others correspond to 65% is 45%.

In the second model, the regression analysis results with 3394 data from 0 to 20 and 80 to 100 of participants who are asked to say a two-digit number are included. According to the analysis results, a positive linear relationship is observed between the anchor value and the the price consumers' willingness to pay (R=0,120, R^2 =0,014) The effect size between the two variables is low. There is a statistically significant correlation between the anchor value and the price consumers' willingness to pay (t = 7,020, p =0,001). As the value of the number expressed by the participants before saw the product image increases, the price consumers' willingness to pay statistically significantly (F= 49,284, p=0,001). According to the results of the analysis, the increase in the number of participants expressed by the participants just before the product is shown increases the price consumers' willingness to pay by 0.25 TL. Strack and Musswiler (1997) report that the anchoring effect can only occur when extreme anchors are used. However, in this study, the anchoring effect is observed among anchors without significant numerical differences among them. In the Green at al.' study (1998) it is observed that the anchor is between 15% and 30% Clarkson', et al. (2012) study also has similar results. They examine the anchoring effect of financial investors in financial purchase decisions within the scope of the research. In the 52-

week period, it was determined that the high price increases in the prices of financial products were influenced by the price assessment of the financial products by evaluating the prices of investors between 4.7% and 14.7% more.

Table 5 shows the results of the independent sample t-test. According to this, there is a statistically significant difference between the numbers that the participants anchor value and the price consumers' willingness to pay (t809,941 = 5,616, p <0,000,). The average price of those who are willing to pay between 0 and 20 is 31,67 TL and the average price of 80-100 is 56,63 TL. The consumers who stated the numbers between 80-100 as anchors were willing to pay %178 more for a product than customers who stated numbers between 0-20 as anchors.

Table 5. Independent Sample t-test Result

		n	x	s.d.	t	p
Consumers' Willingness to Pay	**Response to Anchor Between 0-20**	2722	31,67	74,086	5,616	0,001
	Response to Anchor Between 80-100	656	56,63	107,846		

The research findings are similar to Ariely's (2008) research findings. In his experimental study, Ariely (2008) asked subjects to make quotes at auction prices for various products. Before the auction, the subjects were asked to write down the last two digits of the social security numbers. According to the research results, participants with social security numbers between 80 and 99 offered for an average of $ 56 for the same product, while those with social security numbers from 1 to 20 offered an average price of $ 16 for the same product. The difference between the two groups is about 3 times.

4. Conclusion and Practical Implications

It is explained above that the product price is one of the most important marketing components affecting customer purchases and how important the pricing decisions are in the success of the enterprises. This study shows that the anchoring effect has a significant impact on purchasing decisions and that customers may not make rational decisions when purchasing products.

In addition, important studies in this literature (Bateman, 1980 (24 students), Bottom and Pease 1999 (29 students) and Mussweiler and Stack, 1999 (39 students) are conducted on a limited number of samples and generally on the students. In contrast, this study is carried out with both longitudinal, large sample and potential non-student consumers. Therefore, the results of this study are important in this respect.

It is observed that anchoring effect studies have been conducted for about 40 years. However, it is observed that counter-approaches have emerged in recent years. The anchoring effect is one of the most robust cognitive bias as mentioned before. Examining the study results, it is seen that a strong anchoring effect is formed regardless of whether the product is a product or a service.

Considering the research results, it can be said that there are important implications for sector

representatives, policymakers and researchers. For instance, during a sale showing the preivous price of the product may create an anchor (i.e. pay 80$ instead of 100$) and consumers' purchaisng deciisons may be influenced. In addition, high priced products in brochures can be shown to consumers first, and then lower priced products can be purchased more easily. However, it is very important to consider ethical rules in these discount and promotional messages. It may be useful for academics to investigate the effects of anchoring effect in various scientific disciplines (management organization, human resources, psychology, consumer behavior).

5. Directions for Future Studies and Limitaitons of the Study

Although this study is conducted with long-term and numerous samples, more valid and reliable data could be obtained using neural marketing tools such as electroencephalography and eye tracker to measure the mental and physical responses of participants. However, mixed or triangulation methods could also be used to obtain more generalizable, more valid and more reliable data (Koç and Boz, 2014). These are the main constraints of the study.

In the study, anchors related to price are used. However, further research can be carried out with different anchors such as air temperature, length of an object and the impact of the anchoring effect on different prediction and evaluation situations. In addition, future studies can be conducted and tested in a real purchasing environment. Finally, the participants' level of income and the need for the product are asked to look at the impact of anchoring effect in future studies.

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