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Master's Thesis

**The Impact of Discount Format,
Discount Presentations and the Complexity of
Calculations on Consumers' Perceptions**

August 2015

Graduate School of Seoul National University

International Commerce

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**The Impact of Discount Format, Discount Presentations and the
Complexity of Calculations on Consumers' Perceptions**
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Abstract

The Impact of Discount Format, Discount Presentations and the Complexity of Calculations on Consumers' Perceptions

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A widespread practice in analyzing price-making strategies has been made to identify how different kinds of discount methods influence consumers' perception. However, in reality, several ways of discount tactics are combined together and presented in on and offline stores. Therefore, identifying the interaction between different discount tactics on consumers' perceived savings seem to be necessary.

Through this study, the effect of 3 independent variables on consumer price perception regarding discounts was explored. These are: discount formats (many discounts with relatively small discount rate vs. relatively few discounts but with

large discount rate), price discount presentations (percentage-based vs dollar-based) and the complexity of discount calculations on consumer price perception. And it was found that, percent of deal has more impact compared to amount of deal. And if the price is easy to compute, consumers tend to evaluate the savings close to the exact amount of discount. But under the hardly-calculated condition (frequency, percentage, complex), consumers' perceived savings were always overestimated (higher than 485). So inaccuracy of calculation led to overestimation according to this study, which is different from previous study. In the second analysis, the result demonstrated that under dollar-based condition, depth clue became more dominant than frequent one. And under percentage-based condition, frequency effect can become dominant on consumer's perception and magnitude store was regarded to be less favorable.

These findings hold important implications in the real-life contexts and it would provide a new perspective in making marketing strategies.

Keywords: Perceived savings, Price format, Price presentation, Price complexity

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Chapter I. Introduction

Price discount is one of the most important marketing strategies in the current business environment. In order to increase revenue, more and more companies put emphasis on making effective promotion strategies, and price is one of the most important promotion methods, also it can be said that, price is the most effective way to attract customers and enhance their willingness to purchase. Therefore, the effect of price discount is becoming the issue of which entrepreneurs mainly take care.

Nowadays, different shopping malls provide various discount formats, therefore, when consumers go shopping, they firstly could be allured by the big eye-popping signs proclaiming “Up to 70% off” or “All items are on sale”. Afterwards, within the stores, consumer’s perception will be affected by how the deal is presented (dollar-based or percentage-based), as well as how difficult it is to calculate sales amount (easy or difficult to calculate). So consumers are always exposed to very complex and mixed price discount environment. However, existing papers only focused on examining separate effects of each element on consumers’

perceptions, or how price discount strategies influence consumer's various internal judgments, therefore, through this study, I will try to figure out which format of store (frequently discounted or deeply discounted) will attract more consumers, and under each type of store, what kind of price discount presentations are more favorable to buyers. And does the complexity of price calculations largely affect the consumer's perception? These are the questions to be answered through this study.

Chapter II. Literature Review

Discount Format: Frequency vs Depth

Alba (1994) manipulated two different cues – frequency and magnitude- to determine their relative effects on consumer perceptions. Alba (1994) presented the same 60 merchandise items of two different supermarkets, Clark's and Taylor's, to participants, and required them to evaluate the total amount of price of 60 items for each store. Clark's enjoys frequency advantage that discounts many items with relatively small discount rate, and Taylor's provides fewer discounted items but by deeper amounts. All subjects were told that two supermarkets adopted different price policies, and they were not allowed to offer the same price estimates to both stores. Through this experiment, Alba found that the frequently discounted store, Clark's, was perceived to be offering more sales compared to its competitor. According to Alba (1994)'s explanation, it is likely that frequency items are more easily coded and remembered, because the frequency heuristic is more pervasive and superior on most dimensions than magnitude one. So participants might forego

deeper processing to compare difference between frequency and magnitude, and regard frequency effect to be more plausible due to its ease of coding and remember.

Shai (2014) also found the similar results by simulating everyday choice. This research examined how “Everyday Low Price (EDLP)” strategy influenced consumer’s decisions and perceptions about retail prices, especially when they are uncertain about retailers’ current prices. The results demonstrated that participants preferred to choose the retailer that adopted EDLP strategy or that offered frequent discount with small rate even when the average price was found to be higher relative to infrequent large discount.

However, Alba (1999) drew the different conclusions that the frequency effect could not generalize in the later study. Alba (1999) employed a buying-game task in the brands-across-time context and required participants to evaluate average prices of two brands, which were provided over a period of 36 game months. The frequency brand was on sale for 18 months of the game at the price of \$2.29, and priced at \$2.49 for the rest of 18 months. But the depth brand was discounted at \$1.29 for 3 months, and was priced regularly at \$2.49 for the other 33. It was found that, in contrast to Alba (1994)’s results, average price of depth brand was lower than that of frequency brand. So in the following study, Alba (1999) divided experiment into two groups, dichotomous and non-dichotomous, to identify the conditions under which depth effect is significant. The results showed that a

significant depth effect occurred when prices are distributed dichotomously (i.e., when each brand was on sale at a constant discount price), whereas frequency effect emerged when the price has a non-dichotomous distribution (i.e., sale prices for each brand are variable). Alba (1999) explained that, in the dichotomous condition where the deep discounts are vivid and more diagnostic, subjects might perceive the sales price of depth brand as a dominant cue. However, in the dichotomous condition where price distributions are more complex, sales amount were not perceived readily. Subject cannot identify the distinction between frequency and depth brands, as a result, frequency effect became dominant and was regarded to be more favorable.

As you can see, the occurrence of frequency and depth effect largely depends on various contextual situations, therefore the interaction between other factors and frequency-depth effect is worthy of studying.

Discount Presentations: Dollar-based vs Percentage-based

Krishna (2002) examined the effects of “price framing” (i.e., how the offer is communicated to the consumer – is a price deal communicated in dollar or percentage terms?) through a meta-analysis of 30 studies across 20 published articles in marketing. This research revealed a significant result that both the

percentage-based deal and dollar-based deal have a positive influence on perceived savings, but percent of deal has more impact compared to amount of deal. And it is also found that small bundles with high rate of percentage-based discounts are most impactful for consumers, because consumers perceive the deal less favorably if the size of the bundle increases.

Estelami (2003) also compared how different discount strategies affect consumers' perception on multi-dimensional prices (e.g., "\$699 regular price, 25% off" or "\$799 airline ticket plus \$50 airport charge"). Estelami (2003) presented a list of prices of home appliances, asked participants to point out the cheapest item and recorded their response time, further he analyzed the accuracy of calculation. The results revealed that participants are more inaccurately calculate a regular price combined with a percentage discount, because multiplication is more complicated than reduction, participants regard easy-to-calculate method, which is the regular price presented with a absolute reduction, much cheaper than difficult-to-calculate method (percentage discount).

And Gendall (2006) compared how consumers perceive two different priced items (low vs high) under percentage-based and dollar-based presentation. It is found that, in terms of low-priced items, such as potato chips, there was evidence to prove that percentage of deal is more effective than dollar of deal. However, with regard to high-priced items, such as computer and stereos, dollar presentation is much more favorable than percentage presentation.

What's more, Hu, Parsa & Khan (2006) examined how the perception of consumers could be affected in different service industries (food service vs non-food service) with the presentation of dollar and percentage. This study indicated that, in food services, dollar-off discounts are more significantly desirable, however, in non-food services, percentage-off discounts are perceived more favorable.

Most of existing studies about price presentations indicated that how consumers perceive different price presentations largely depend on different factors, such as industry, discount levels, and the type of products.

Complexity of Calculations: Easy vs Difficult

Thomas and Morwitz (2005) investigated how the cognitive ease and fluency of judging the difference between the two prices can influence the consumers' judgments. Participants were presented with two different types of discounts: easy-to-compute (e.g., regular price \$5.00 – sale price \$4.00) and difficult-to-compute (e.g., regular price \$4.97 – sale price \$3.96), and they were asked to offer the amount of discount. The results showed that, holding the difference constant, participants perceived a larger discount when the difference between regular and sale prices is easy to compute than that of difficult to compute.

According to Whittlesea and Williams' (2001) discrepancy attribution model, consumers might think that two analog magnitudes are closer if their difference is difficult to calculate, therefore the difference that consumers perceived between the regular and sale prices is smaller. On the contrary, if consumers find that the difference is surprisingly easy to calculate, they assume that two magnitudes are farther apart from each other, as a result, the discrepancy is observed to be larger. Similarly, consumers' judgments can also be influenced by the precision or roundedness of prices. That is to say consumers are inclined to regard precise prices (e.g., \$395,425) to be lower in magnitude than round prices (e.g., \$395,000). So it can be inferred that the nature of digits used in the magnitude discount have a tremendous impact on the consumers' judgments. And discount is perceived to be larger for consumers when retailers provide magnitude of the discount with computationally easy digits.

And Kim and Kramer (2006) identified how the need for cognition and cognitive effort influence consumers' perceived savings on multi-dimensional prices. The results demonstrated that consumers' perception on promotions depends on the complexity of price discounts and how accurately consumers can evaluate the price discounts. Calculation inaccuracy often leads to underestimate sales amount. Furthermore, Kim and Kramer (2006) compared the novel ("Pay 60% of the regular price") and regular ("Get 40% off the regular price") discount presentations, and found that the former one (novel presentation) led to higher

perceived savings and possibility of purchase. It is likely that novel way of presenting price is easier to calculate for consumers, so it reduced the possibility of discount underestimation.

Estelami (2003) studied the relationship between the nature of price presentation and consumers' perceived savings. The results demonstrated that the price discount presentation that ends with even number is much easier to compute the sales amount, compared to the price discount that ends with odd number, thus resulting in high accuracy in its calculation.

2.1 Research Gap:

With regard to price discounts, many scholars led heated discussion and conducted research in many aspects. Some scholars put focus on the consumers' side, such as their perceived savings, their willingness to purchase, and so on. And others are more interested in the side of price tactics, comparing different tactics, such as frequency versus depth effect, percentage-off or dollar-off, and complex or easy to compute.

However, if we take a closer look at recent price discount methods in the on-line or off-line stores, it can be easily found that several ways of discount tactics are combined together. For example, a regular price, after-discount price and the

percentage of sale are provided to attract more consumers. So, not the only one price tactic can influence consumers, but several price tactics combined together and exert mingled influence to buyers.

As a result, in this study, I would like to examine the mutual effects of different discount formats, discount presentations and the complexity of calculations on consumers' perceived savings. There are three variables will be taken into consideration.

1. Discount format: Frequency vs Depth

Many discounts with relatively small discount rate (frequently discounted store) vs relatively few discounts but with large discount rate (deeply discounted store)

2. Price discount presentations: Percentage-based vs Dollar-based

3. Complexity of discount calculations: Easy vs Difficult

2.2 Hypotheses:

Hypothesis 1: Inaccuracy of calculation may lead to underestimation.

According to Kim and Kramer's (2006) finding, it demonstrated that Calculation inaccuracy often leads to underestimate sales amount, because consumers always discount the discounts. However, in Kim and Kramer's study, it is designed to test one item ("Get 40% off the regular price") at one time, and the

material I created is a list of 20 discounted items presented to participants.

Therefore, it can be a good way to test whether inaccuracy of calculation lead to underestimation even under the condition of offering multiple discounted items.

And the first hypothesis is that calculation inaccuracy will be still significantly resulting in underestimation since the more discounted items provided to participants, the more underestimation they did in the process of calculating multiple discounts.

Hypothesis 2: Dollar-off effect is more favorable when the base price is high.

After comparing how consumers perceive two different priced items (low vs high) under percentage-based and dollar-based presentation in Gendall's (2006) study, it is found that, in terms of high-prices items, such as computers and stereos, dollar presentation is much more favorable than percentage presentation. Also, Gendall provided one discounted item, so this study is conducted to test whether this result is consistent even in an accumulative study.

Hypothesis 3: Different discount format, discount presentations and complexity play a mutual role in affecting consumer's price perception.

For example, under the dollar-based discount condition, consumers tend to believe that stores, which have few discounts but with relatively higher discount rate, are offering more discounts. And under the percentage-based discount, it is

just the other way around. Or in the frequently discounted stores, percentage-based discount presentation is more favorable to consumers. And the opposite results will be significant in the deeply discounted stores. And also, since the price presentation is largely affected by different factors, the factor of price complexity would influence consumers' preference on different discount presentation.

Since previous study focused on identifying single effect of price discount on consumers' perception, the third hypothesis is to examine the mutual effects of different discount formats, discount presentations and the complexity of calculations on consumers' perceived savings.

Chapter III. Experimental Methods

3.1 Subject

A total of 101 people participated this experiments. 70 people are employees (Korean) from Korean company, 9 global interns (foreigners) in Korean company, 22 non- Seoul National University students (Korean & international students). In order to make analysis easy, the last experiment result is removed, therefore, the final data which were used in the analysis are 100 pieces.

3.2 Design

2 (Discount Format: Frequency vs Depth) * 2 (Discount Presentations: Dollar-based vs Percentage-based) * 2 (Complexity of Calculations: Easy vs Difficult) mixed design with 8 cells in total. In view of discount presentations, I will conduct between-subjects design, and for discount format and the complexity of computations, within-subjects design will be conducted. Since it is hard to

design it as all between-subject experiment, or all within-subjects one, mixed design of between- and within-subjects experiment was implemented. And in terms of dollar and percentage presentation, it will be easily identified that the discount amount of dollar and percentage group is the same, if discount presentation is designed as within-subjects experiment, as a result, between-subjects design was adopted only for discount presentation.

3.3 Materials and Procedure

In terms of the experiment materials, I mainly referred to the Alba's (1999) study. For all subjects, the products and total amount of prices on the list were identical, with 20 items listed in each page. There are two stores, A and B store, A store enjoys frequency advantage that discounts more items than B but with relatively small discount rate, and B store has depth sale by deeper amount than A store. Under difficult-to-compute, percentage-based condition, discount of A store ranges from 5%~25%, and every item will be on sale. However, not all the products will be discounted in B store, instead some of products enjoy higher rate of sale, from 30%~50%. And the amount of savings for two stores are identical, both are \$485. Under difficult-to-calculate and dollar-based condition, the experiment materials will be the same with percentage-based condition, except

presentational difference - discount will be presented with dollar. Under easy-to-calculate, percentage of sale condition, relatively easier calculation of percentage will be adopted, such as 10%, 20%, 30% and 50%. With regard to A store, it implements 10% and 20%, and B store adopts 30% and 50%. Under the condition of dollar of sale, the discount amount will be converted to be dollar-based, and in order to make participants easier to compute, all the unit digits become 5 or 0. The amount of sale will be identical for all conditions (See Appendix).

Chapter IV. Results

A total of 100 subjects' data were analyzed with SPSS program. And Analysis started from broad to specific as follows.

1. Compared two variables of price format, presentation and complexity in all conditions.

Frequency	Depth
Dollar	Percentage
Difficult	Easy

2. Compared two variables of price format, presentation and complexity under certain conditions as follows.

Format (Frequency vs Depth)	Under hardly-calculated condition
	Under easily-calculated condition
	Under dollar-based condition
	Under percentage-based condition

Presentation (Dollar vs Percentage)	Under hardly-calculated condition
	Under easily-calculated condition
	Under frequently-discounted condition
	Under Deeply-discounted condition

Complexity (Difficult vs Easy)	Under dollar-based condition
	Under percentage-based condition
	Under frequently-discounted condition
	Under Deeply-discounted condition

3. Compared the same variables under more specific conditions, in order to calculate the specific effect of each variable of format, presentation and complexity.

Format (Frequency vs Depth)	Under dollar-based, hardly-calculated condition
	Under dollar-based, easily-calculated condition
	Under percentage-based, hardly-calculated condition
	Under percentage-based, easily-calculated condition

Presentation (Dollar vs Percentage)	Under frequently-discounted, hardly-calculated condition
	Under frequently-discounted, easily-calculated condition
	Under deeply-discounted, hardly-calculated condition
	Under deeply-discounted, easily-calculated condition

Complexity (Difficult vs Easy)	Under frequently-discounted, dollar-based condition
	Under frequently-discounted, percentage-based condition
	Under deeply-discounted, dollar-based condition
	Under deeply-discounted, percentage-based condition

ANOVA analyses of three independent variables are presented in the below.

The results are presentation: $F(1, 399) = 13.488, P < 0.01$; format: $F(1, 399) = 3.150, P > 0.05$; complexity: $F(1, 399) = 2.725, P > 0.05$. It revealed that there are no significant effects between price format, price complexity and price evaluation. However, it revealed a significant effect of price presentation.

Therefore, an Independent-Samples T test of two variants of price presentation was computed to further classify the effect of price presentation on the consumer's perception. It is found that, under dollar-based presentation ($M=477.84$), the amount of price evaluation is less than that of under percentage-based presentation ($M=508.49$), $P < 0.01$. It means that, regardless of different price format and

complexity, percentage-based presentation makes people perceive more discount than that of dollar-based presentation.

Frequency (M=500.67)	Depth (M=485.66)	Not Significant
Dollar (M=477.84)	Percentage (M=508.49)	Significant
Hard (M=499.04)	Easy (M=486.51)	Not Significant

In the second analysis, the frequency and depth effect were compared under certain conditions, such as:

Format:

Under hardly-calculated condition, the effect of frequency and depth is not significant: $F(1,199) = 0.394$, $P > 0.05$. However, under easily-calculated condition, the effect of price format on evaluation is significant: $F(1,199) = 4.555$, $P < 0.05$.

And the result of Independent-Samples T Test between two levels is that frequently-discounted store (M=497.26) is perceived to be more discounted compared to deeply-discounted store (M=475.75), $P < 0.05$. Under dollar-based condition, the effect of price format is significant: $F(1,199) = 8.076$, $P < 0.01$. And the result of Independent-Samples T Test between two levels is that frequently-discounted store (M=465.56) is perceived to be less discounted compared to deeply-discounted store (M=490.11), $P < 0.01$. Under the condition of percentage-based group, the main effect is still significant: $F(1,199) = 15.886$,

$P < 0.01$, and frequency effect ($M = 535.77$) is higher than depth effect ($M = 481.23$), $P < 0.01$.

Format:		Frequency	Depth	
Condition:	Hard	$M = 504.07$	$M = 495.57$	Not Significant
	Easy	$M = 497.26$	$M = 475.75$	Significant
	Dollar	$M = 465.56$	$M = 490.11$	Significant
	Percentage	$M = 535.77$	$M = 481.23$	Significant

Presentation:

It is found that the effect between dollar and percentage is not always significant under four different conditions. Firstly, under difficult condition: $F(1,199) = 1.962$, $P > 0.05$. Under easy condition: $F(1,199) = 18.966$, $P < 0.01$. Under frequency condition: $F(1,199) = 29.509$, $P < 0.01$. Under depth condition: $F(1,199) = 0.834$, $P > 0.05$. Therefore, the results are significant only under easily calculated, and frequently discounted settings. Under two given conditions, Independent-Samples T Tests between two levels were further analyzed. It is found that the price evaluation of percentage-based presentation ($M = 507.71$) is always higher than that of dollar-based presentation ($M = 465.30$), $P < 0.01$ in easy condition, and also under depth condition, the percentage ($M = 535.77$) is bigger than dollar

(M=465.56), $P < 0.01$.

Presentation:		Frequency	Depth	
Condition:	Hard	M=490.37	M=509.27	Not Significant
	Easy	M=465.30	M=507.71	Significant
	Frequency	M=465.56	M=535.77	Significant
	Depth	M=490.11	M=481.21	Not Significant

Complexity:

Under dollar-based condition, the effect of complexity on evaluated results is significant: $F(1,199) = 8.436$, $P < 0.01$. However, under percentage-based condition, the effect is not significant: $F(1,199) = 0.012$, $P > 0.05$. Under frequently discounted groups, the result is not significant: $F(1,199) = 0.242$, $P > 0.05$; Under deeply discounted groups: $F(1,199) = 4.207$, $P < 0.05$. And the results of Independent-Samples T Test between two levels are further analyzed. It is found that the price evaluation of hard computation (M=490.37) is higher than easy calculation (M=465.30), $P < 0.01$ in easy condition, and also under the condition of depth, the complex one (M=495.57) is bigger than easy one (M=475.75), $P < 0.01$.

Complexity:		Frequency	Depth	
Condition:	Dollar	M=490.37	M=465.30	Significant
	Percentage	M=509.27	M=507.71	Not Significant
	Frequency	M=504.07	M=497.26	Not Significant
	Depth	M=495.57	M=475.75	Significant

In order to calculate the specific effect of each variable of format, presentation and complexity, data was analyzed under more specific conditions.

Under dollar-based, hardly-calculated condition, the effect of frequency and depth is not significant: $F(1,99) = 3.233, P > 0.05$. However, under dollar-based, easily-calculated condition, the effect of price format on evaluation is significant: $F(1,199) = 6.625, P < 0.05$. And the result of Independent-Samples T Test between two levels is that frequently-discounted store ($M=453.26$) is perceived to be more discounted compared to deeply-discounted store ($M=476.90$), $P < 0.01$. Under percentage-based, hardly-calculated condition, the effect of price format is not significant: $F(1,199) = 3.662, P > 0.05$. Under the condition of percentage-based and easily-calculated group, the main effect is significant: $F(1,199) = 17.420, P < 0.01$. And the result of Independent-Samples T Test between two levels is that frequently-discounted store ($M=540.82$) is perceived to be more discounted compared to deeply-discounted store ($M=474.60$), $P < 0.01$.

There are two significant effects between the independent variables and dependent variables in terms of price presentation. Under frequently-discounted and hardly-calculated condition, the effect of dollar and percentage is significant: $F(1,99) = 6.967, P < 0.05$. However, under deeply-discounted, easily-calculated condition, the result is not significant. And for easy and frequency condition, the result is significant: $F(1,199) = 29.140, P < 0.01$. In view of easily-calculated and deeply discounted situation, the significant result cannot be found. Therefore, Independent-Samples T Test was analyzed under the above two significant conditions. It showed that percentage-based presentation is higher than dollar-based presentation in both cases. The specific results are: hard and frequency condition: $M_{\text{percent1}} = 530.72 > M_{\text{dollar1}} = 477.42 (P < 0.01)$; easy and frequency condition: $M_{\text{percent2}} = 540.82 > M_{\text{dollar2}} = 453.70 (P < 0.01)$.

In terms of complexity, there is only one significant effect between independent and dependent variables, which is under deeply-discounted and dollar-based setting: $F(1,99) = 5.224, P < 0.05$. And the result of Independent-Samples T Test is that complex calculation ($M = 503.32$) is perceived to be more discounted than easy calculation ($M = 476.90$), $P < 0.05$.

Chapter V. Discussions

Several conclusions can be drawn from the above results.

In the first analysis, only the result of price presentation group is significant. And the result of dollar-based condition ($M=477.84$) is lower than that of percentage-based condition ($M=508.49$). It means that consumers perceive the percent of deal more favorably than amount of deal. It is consistent with Krishna (2002)'s finding, which is that percent of deal has more impact compared to amount of deal. Furthermore, subjects are more inaccurately calculate percentage discount because multiplication is more complicated than reduction, and it is not consistent with the first hypothesis, which is that inaccuracy of calculation may lead to underestimation. In Kim and Kramer (2006)'s study, it demonstrated that Calculation inaccuracy often leads to underestimate sales amount, because consumers always discount the discounts. The reason why the result is so different could be due to different experiment methods. In Kim and Kramer's study, they used one discount item ("Get 40% off the regular price") at one time, however, in this study, a list of 20 items were presented to participants, and ask them to roughly

compute the amount of sale they can get. So in such an accumulative computation test, the process of computing the discounts of 20 items and adding them up together may lead to raise perceived savings, because there is no subtraction, but addition. Therefore, in Kim and Kramer (2006)'s study, through doing subtraction or division, consumers often undervalue price promotions because they discount the discounts. In contrast, in my study, participants over-evaluate the sum of discounts because they did addition and multiplication throughout the test.

And regarding why percentage-off discounts were perceived higher than dollar-off discounts, one explanation is that, in such an accumulative test, evaluating the discounts is far more complex than previous study (Kim and Kramer 2006; Gendall 2006; Hu, Parsa and Khan 2006). So in my opinion, when the percentage-conditioned tests were presented to participants, they first compute the absolute value of the percentage-off amount, and estimate the amount of discount through multiplying base price and averaged absolute value of the percentage off. However, according to Gendall's finding, the dollar-off discounts should be more desirable if the base price is very high. And the discount prices adopted in this study are all over \$100, since \$100 is very high price, participants should have perceive dollar-based condition to be favorable. But in reality, it is just the other way around. It is probably that, most of participants are Korean, and it is possible for them to consider price discount as Korean currency, even though it is marked as \$ (USD). In that regard, the amount of price discount is very low, as

result, participants tend to think that percentage-off discounts provide more discounts.

And from the average of evaluated price, we can see that the mean of depth (485.66), dollar (M=477.84) and easy (M=486.51) are close to the original price (485). However, under the rest of conditions, all the prices are evaluated higher than 485. This is because that the above three conditions (depth, dollar, easy) make people feel easier to compute the price. For example, in the depth condition, subjects just need to sum up the half of the number of frequency store, and compared to dollar condition, percentage setting needs people to multiply sale percentage in order to know the exact amount of discount that people can get. So in the condition of dollar, subject can pass one process of calculation and directly sum up the price. And in the easy condition, subject can do calculation more correctly than the hard situation, therefore, the final evaluation is more close to the correct discount. It means that, in such an accumulative study, calculation accuracy may lead subjects to estimate sales amount close to the original price, and inaccurate computation may result in overestimate the amount of discount.

In the second analysis, the finding of this experiment is in accordance with the finding of Alba (1994), which is that under dollar-based condition, frequently-discounted store was perceived to be more favorable than deeply-discounted store. However, in a Alba's later study (1999), it showed that in the different dichotomous situation, different stores were perceived readily. As such,

in my study, the opposite result came out under dollar-based condition, which is depth clue became more dominant than frequent one. And it is consistent with the third hypothesis, which is that different discount format and discount presentations play a mutual role in affecting consumer's price perception (only mutual effect between different discount format and discount presentation is significant).

It is probably because that, participants may use "anchor-and-adjust" strategy (Krishna and Johar 1996) when judging price discount, meaning that subjects would first form an anchor price, and then gradually adjust to regular price to arrive at a judgment. As a result, in this case, subjects regard the price discount as an anchor, and compared to frequently discounted store, price discount in deeply discounted store is much higher, so in consumers' mind, depth clue is more vivid and diagnostic so that participants perceive magnitude clue to be superior to frequency one. Therefore participants tend to think that depth store is more favorable. However, in a percentage-based situation, it is hard for participants to identify the sale-price because the discounts are more complex. Therefore, it leads subjects not to identify the difference between frequency and magnitude, thus the depth heuristic is less vivid and diagnostic and frequency effect can become dominant on consumer's perception. So from participants' perspective, magnitude store was regarded to be less favorable.

In the third analysis, more specific situations were classified in order to provide references to make specific price strategy. It is found that in a dollar-based,

easily-calculated condition, frequency clue (M=453.70) is more favorable than magnitude one (M=476.90). However, in a percentage-based and easily-calculated condition, deeply-discounted store (M=474.60) is more attractable than frequently-discounted one (M=540.82). The interesting thing is that, in a percentage, easy situation, frequency clue is more impactful than that in a dollar, easy situation. It is because in a percentage, easy situation, about 5 participants offered very high evaluation (over 750, and two people offered 800), as a result, these 5 data influenced the average of frequency clue to a great extent. But what we need to take into consideration is that in two different situations, frequency clue is very volatile and easily affected, and it is different from Alba (1999)'s finding, in which the depth clue is volatile. So as you can see, the occurrence of frequency and depth effect largely depends on various contextual situations.

In terms of presentation, the results are significant only under two conditions. In the hard, frequency setting, dollar clue (M=477.42) is less favorable than percentage one (M=530.72). Also in the easy, frequency setting, dollar-based presentation (M=453.70) is less impactful than percentage-based presentation (M=540.82). And moreover, the easy and frequently-discounted setting with percentage-based presentation has the most impact on consumers' perceived savings, which is 540.82.

With regard to complexity, only one case has significant result. In the setting of deeply-discounted and dollar-based, difficult-to-compute (M=503.32) is more

favorable than easy-to-compute ($M=476.90$).

Chapter VI. Implications

This study examined the mutual effects between different price discount strategies on consumers' perceived savings, and the findings hold important implications in the managerial and academic contexts.

From an academic perspective, the results of this experiment are partly different from previous studies, therefore this can provide new perspectives in the academic contexts. For example, in this study, inaccuracy of calculation led to overestimation in an accumulative experiment, however, in the condition of one discount item at one time, inaccuracy of calculation led to underestimation. As a result, this research delivered opposite results compared to previous studies. As you can see, price discount presentations differ under various conditions, meaning that this variable is largely affected by diverse factors. Actually, there are a lot of researches identifying the effect of price discount presentation under various contexts. For instance, in terms of different priced products, for high-priced items, such as automobile, notebook, dollar-off discounts have more effects, but for low-priced items, such as toothpaste, percentage-based discounts are more

favorable (Raghubir, 1992; Zeelenberg & Puttern, 2005; Hu et al., 2006). And with regard to the characteristics of industry, for food service industry, consumers perceive dollar presentation to be higher than percentage one, and in non-food service industry, percentage presentation is more favorable. Therefore, the effect of price presentation should be more classified and carefully adopted under each situation.

What's more, this study also delivered new methods to identify the relation between price and consumer perception. Most of the study regarding price strategy adopted questionnaire methods to ask participants expectable results, so the answers fell well within the limits of expected behavior for a particular society. It leads the results to be distorted. But in my study, much more objective methods were given to test the relation between independent and dependent variables. In this study, participants didn't realize that it is price perception test, so most of them were just calculating the discounted price without previous bias, as a result, this study has more referential meaning in evaluating the effect of price tactics on consumers' perception.

In addition, examining mutual effects among different price tactics through experimental methods is also differentiated from previous studies. Most of existing studies only focused on identifying the effect of one factor on consumers' decision, however, here in this study, three different variables were mingled to test their combined effects, as a result, it is more realistic than existing findings.

From a managerial perspective, this study could provide very important insights about how to make price strategy. Since in a real business setting, the proportion of promotion cost among operation cost is becoming bigger and bigger, and price became one of the most important factors in making marketing strategy. So according to this study, different price strategies should be conducted in specific situations.

First of all, making price strategies need to consider different factors, such as the number of discounted items, the base price (low vs high), whether the price is presented with various ways. And under each condition, different price strategies can be made. For example, through this experiment, it is found that under dollar-based condition, deeply-discounted store was perceived to be more favorable, however, in the opposite condition, participants more favor frequency effects. So, for department store, which have many discount items to be on sale, should have the price discount be presented in a percentage-based way. But for deeply on-sale department store, it would be better to adopt dollar-off discounts.

Secondly, the effect of calculation inaccuracy also depends on whether it is presented with one item at one time, or displayed with 20 items in a list. Marketers are supposed to take care of using complex price mixing, for instances, in a convenience store, where consumers do not purchase many products, price designed in an inaccurately calculative way will be working, since inaccuracy of calculation may lead to overestimation, and consumers overestimate the discounts,

then they might feel that they perceived more savings. However, in a big mart, where many items, even bulk of products are usually consumed, calculation inaccuracy may reduce consumers' willingness to buy, because in my research, it was discovered that calculation incorrectness led to underestimation. So over-complex price combination in a big mart probably does not work anymore. In this situation, marketers should learn to how to mix price strategies properly to help consumers understand products and services better, thus improving their purchase of product.

Chapter VII. Limitations and Future Research

Even though several significant results came out through this experiment, there are still some limitations need to be improved in the future, and a number of extensions that deserve consideration as follows.

First of all, most of the subjects who participated in this experiment are Korean, in that regard, the results are hard to extend to non-Korean contexts. It is known that, eastern people tend to see the whole picture, and westerners are more inclined to see the particular part. It means that westerners do not tie the individual part with the context. However, easterners always judge an item in a whole context, so it is totally different between western and eastern way of thinking. As a result, it is hard to say that the results of this experiment can also extend to western settings, it can not generalize in other situations. Therefore, it would be better if participants from different nations, such as western and eastern, can be taken into account.

Secondly, there is no pre-test before conducting experiment, as a result, the price difference between frequency and magnitude, percentage and dollar, easy and complex group are not verified, and the base price, price discounts in each cell

were determined based on my judgments, so in that regard, the impact of price discounts on consumer's perception may be distorting. Therefore, preliminary test should have been administered to determine that the independent variables truly influence dependent variable, and the difference of price discount in each cell is appropriate. For further study, it will be perfect if pre-test is conducted to have price discounts in each group be different enough to impact consumer's perceived savings.

Finally, be remembered that, when going shopping, price is not the only one factor that should be taken into account, consumers would be likely to have more preferences in brand awareness or may be easily influenced by other marketing measures. As a result, even though I tried to simulate reality, it still has some limitations in replicating actual purchase situations. However, the important thing is that this research explored the need to uncover the mutual effects of price discount on consumers' perception. So further studies can clarify the mechanism of how and why participants perceive that way in a better manner, and novel forecasts can be made with regard to price perceptions in the future.

Bibliography

- [1] Alba, Joseph W., Susan M. Broniarczyk, Terence A. Shimp, and Joel E. Urbany (1994), "The Influence of Prior Beliefs, Frequency Cues, and Magnitude Cues on Consumers' Perceptions of Comparative Price Data", *Journal of Consumer Research*, 21 (September), 219-235.
- [2] Alba, Joseph W., Mela, Carl F., Terence A. Shimp, and Joel E. Urbany (1999), "The Effect of Discount Frequency and Depth on Consumer Price Judgments", *Journal of Consumer Research*, 26 (September), 99-114.
- [3] Shai, Danziger., Liat Hadar., Vicki G. Morwitz (2014), "Retailer Pricing Strategy and Consumer Choice under Price Uncertainty", *Journal of Consumer Research*.
- [4] Manoj, Thomas., Vicki, Morwitz (2005), "Easier Differences Are Larger: The Misattribution of Processing Fluency to Analog Distance", *Journal of Marketing Research*.
- [5] Whittlesea, Bruce W. A., Lisa D. Williams (1998), "Why Do Strangers Feel Familiar, But Friends Don't? The Unexpected Basis of Feelings of Familiarity", *Acta Psychologica*, 98 (April), 141-166.
- [6] Whittlesea, Bruce W. A., Lisa D. Williams (2001), "The Discrepancy-Attribution Hypothesis: The Heuristic Basis of Feelings of Familiarity", *Journal of Experimental Psychology: Learning, Memory and Cognition*, 27 (1), 3-13.

- [7] Estelami, H., 2003, "The Effect of Price Presentation Tactics on Consumer Evaluation Effort of Multi-dimensional Prices", *Journal of Marketing theory and Practice*, 11 (2), 1-16.
- [8] Gendall, P., Hoek, J., Pope, T., Young, K. (2006), "Message framing effects on price discounting", *Journal of Product & Brand Management*, 15: 458-465.
- [9] Hu, H. H. S., Parsa, H. G., Khan, M. (2006), "Effectiveness of price discount levels and formats in service industries", *Journal of Service Research*, 6 (Special Issue): 67-85.
- [10] Kim, H. M., T. Kramer (2006), "The Moderating Effects of Need for Cognition and Cognitive Effort on Responses to Multi-dimensional Prices", *Marketing Letters*, 17 (3), 193-203.
- [11] Kim, H. M., T. Kramer (2006), "'Pay 80%' Versus 'Get 20% off': The Effect of Novel discount Presentation on Consumers' Deal Perceptions", *Marketing Letters*, 17 (4), 311-321.
- [12] Krishna, A., R. Briesch, DR Lehmann., H. Yuan (2002), "A Meta-analysis of the Impact of Price Presentation on Perceived Savings", *Journal of Retailing*, 78 (2), 101-118.
- [13] Krishna, Aradhna and Gita V. Johar (1996), "Consumer Perceptions of Deals: Biasing Effects of Varying Deal Prices," *Journal of Experimental Psychology: Applied*, 2 (September), 187-206.
- [14] Raghubir, P. (1992), "Semantic cues and buyer evaluation of promotional communication", Summer Educators Conference Proceedings. *Chicago: American Marketing Association*, 12-27.

Appendix

Consumer Price Perception Research

University:

Major:

Gender:

We would appreciate your participation on the marketing research below. Please read the following instructions carefully before making your choice.

Assume that there are big promotions in A and B Stores, and you have to prepare the following items. Please **estimate** (don't compute) the total amount of discount you can expect to receive from each store.

1.

Products	Price (Unit: \$)	A Store	B Store
Snail + EGF Repairing Mask * 50 pieces	120	\$30 off	\$48 off
Patterned Cotton Fabric	200	\$20 off	No Sale
Fit and Flare Dresses	180	\$36 off	\$54 off
LG Bluetooth Headset	170	\$25.5 off	No Sale
Longda Organic Black Beans	110	\$22 off	No Sale
Abercrombie Blue Men Jeans	100	\$15 off	\$45 off
Thai Rice (20kg)	150	\$7.5 off	No Sale
Hera Cosmetic Set	180	\$36 off	\$63 off
Brand New Men Levi's Black Slim Jeans	165	\$33 off	No Sale
Fitbit Flex Activity Monitor & Sleep Tracker	140	\$21 off	No Sale
Electric Rice Cooker	200	\$20 off	\$100 off
ASICS Men Red Running Shoes	180	\$9 off	No Sale
Prada Sunglasses	160	\$40 off	\$48 off
New Balance Running Shoes	180	\$36 off	\$63 off
Logitech M215 II Generation Black Mouse	140	\$14 off	No Sale

Newmine Mobile Battery PH561	160	\$32 off	No Sale
Sunny Twister Stepper with Handle Bar	120	\$6 off	No Sale
Michael Kors Black Saffiano Tote Bag	140	\$35 off	\$63 off
Schwinn A10 Upright Exercise Bike	160	\$16 off	No Sale
Panasonic Electric Iron	120	\$30 off	No Sale
Total amount of discount:			

2.

Products	Price (Unit: \$)	A Store	B Store
Snail + EGF Repairing Mask * 50 pieces	120	\$30 off	\$50 off
Patterned Cotton Fabric	200	\$20 off	No Sale
Fit and Flare Dresses	180	\$35 off	\$55 off
LG Bluetooth Headset	170	\$25 off	No Sale
Longda Organic Black Beans	110	\$20 off	No Sale
Abercrombie Blue Men Jeans	100	\$15 off	\$45 off
Thai Rice (20kg)	150	\$10 off	No Sale
Hera Cosmetic Set	180	\$35 off	\$65 off
Brand New Men Levi's Black Slim Jeans	165	\$35 off	No Sale
Fitbit Flex Activity Monitor & Sleep Tracker	140	\$20 off	No Sale
Electric Rice Cooker	200	\$20 off	\$100 off
ASICS Men Red Running Shoes	180	\$10 off	No Sale
Prada Sunglasses	160	\$40 off	\$50 off
New Balance Running Shoes	180	\$40 off	\$60 off
Logitech M215 II Generation Black Mouse	140	\$15 off	No Sale
Newmine Mobile Battery PH561	160	\$30 off	No Sale
Sunny Twister Stepper with Handle Bar	120	\$5 off	No Sale
Michael Kors Black Saffiano Tote Bag	140	\$35 off	\$60 off
Schwinn A10 Upright Exercise Bike	160	\$15 off	No Sale
Panasonic Electric Iron	120	\$30 off	No Sale
Total amount of discount:			

Consumer Price Perception Research

University:

Major:

Gender:

We would appreciate your participation on the marketing research below. Please read the following instructions carefully before making your choice.

Assume that there are big promotions in A and B Stores, and you have to prepare the following items. Please **estimate** (don't compute) the total amount of discount you can expect to receive from each store.

1.

Products	Price (Unit: \$)	A Store	B Store
Snail + EGF Repairing Mask * 50 pieces	120	25% off	40% off
Patterned Cotton Fabric	200	10% off	No Sale
Fit and Flare Dresses	180	20% off	30% off
LG Bluetooth Headset	170	15% off	No Sale
Longda Organic Black Beans	110	20% off	No Sale
Abercrombie Blue Men Jeans	100	15% off	45% off
Thai Rice (20kg)	150	5% off	No Sale
Hera Cosmetic Set	180	20% off	35% off
Brand New Men Levi's Black Slim Jeans	165	20% off	No Sale
Fitbit Flex Activity Monitor & Sleep Tracker	140	15% off	No Sale
Electric Rice Cooker	200	10% off	50% off
ASICS Men Red Running Shoes	180	5% off	No Sale
Prada Sunglasses	160	25% off	30% off
New Balance Running Shoes	180	20% off	35% off
Logitech M215 II Generation Black Mouse	140	10% off	No Sale
Newmine Mobile Battery PH561	160	20% off	No Sale

Sunny Twister Stepper with Handle Bar	120	5% off	No Sale
Michael Kors Black Saffiano Tote Bag	140	25% off	45% off
Schwinn A10 Upright Exercise Bike	160	10% off	No Sale
Panasonic Electric Iron	120	25% off	No Sale
Total amount of discount:			

2.

Products	Price (Unit: \$)	A Store	B Store
Snail + EGF Repairing Mask * 50 pieces	120	20% off	50% off
Patterned Cotton Fabric	200	20% off	No Sale
Fit and Flare Dresses	180	10% off	No Sale
LG Bluetooth Headset	170	10% off	No Sale
Longda Organic Black Beans	110	20% off	No Sale
Abercrombie Blue Men Jeans	100	20% off	30% off
Thai Rice (20kg)	150	10% off	50% off
Hera Cosmetic Set	180	20% off	30% off
Brand New Men Levi's Black Slim Jeans	165	20% off	No Sale
Fitbit Flex Activity Monitor & Sleep Tracker	140	10% off	30% off
Electric Rice Cooker	200	20% off	50% off
ASICS Men Red Running Shoes	180	10% off	No Sale
Prada Sunglasses	160	10% off	No Sale
New Balance Running Shoes	180	20% off	30% off
Logitech M215 II Generation Black Mouse	140	20% off	No Sale
Newmine Mobile Battery PH561	160	10% off	No Sale
Sunny Twister Stepper with Handle Bar	120	20% off	No Sale
Michael Kors Black Saffiano Tote Bag	140	20% off	50% off
Schwinn A10 Upright Exercise Bike	160	10% off	No Sale
Panasonic Electric Iron	120	20% off	No Sale
Total amount of discount:			

국문 초록

상이한 할인 형태, 할인가 표시 형태 및 제시단가의 복잡성이 소비자 인지에 미치는 영향에 대한 연구

현재까지 가격할인이 소비자의 가격 인지에 미치는 영향에 관한 연구들이 많이 진행되어 왔다. 하지만 현실생활에서는 별도의 특정 단일가격 형태가 아닌, 다양한 가격할인 방식들이 서로 결합되어 소비자에게 영향을 준다. 때문에 본 논문에서는 다양한 가격형태 간의 상호작용이 소비자의 가격 인지에 어떤 영향을 미치는지에 대해 알아보려고 한다.

본 연구에서는 주로 세 가지 가격 독립변수 (가격 할인 형태, 할인가 표시 형태 및 제시 단가의 복잡성) 의 상호작용이 소비자의 가격 인지에 미치는 영향을 심리학적 실험방식을 통해 분석함으로써 아래와 같은 결론들을 얻을 수 있었다. 본 연구를 통해 1) 퍼센트 표시 형태가 금액 표시 형태보다 소비자들로 하여금 더 많이 할인받았다는 느낌을 받게 하고, 2) 또한 계산의 부정확성은 할인가격을 실제 할인가보다 높게 짐작하게 한다는 결론이 나왔으며, 이는 기존의 연구결과들과는 상반된

결과이다. 3) 상호작용으로는 퍼센트 표시 형태 조건에서 많은 상품들을 적은 할인율로 할인하는 가격 할인 형태가 더 효과적이었고 금액으로 표시된 조건에서는 반대로 적은 상품들을 대폭 할인하는 방식이 더 많이 할인하였다고 생각한다는 결론이 나왔다. 이는 가격 할인 형태와 할인가 표시 형태 간에 서로 상호작용이 있었음을 설명한다.

주제어: 가격 인지, 가격 할인 형태, 할인가 표시 형태, 제시단가의 복잡성

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