

# The Effect of Price Promotion on Just Noticeable Difference in Multichannel Retailing

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# **The Effect of Price Promotion on Just Noticeable Difference in Multichannel Retailing**

## **Abstract**

Multichannel retailers often use a price discrimination strategy to attract different consumer segments and dealing with pure online retailers' price competition. However, research to date is unclear on how channel-based pricing strategy should be used and when to use that consumer can accept and willing to pay. This study aims to investigate how consumers notice the price differences across online and offline channels for one product from the same retailer. We further examine the effects of price promotion on the noticeable price difference given it is a frequently used strategy by companies. Drawing upon the prospect theory and behavioural pricing literature, a series of experiments with a large population of 1,440 were conducted to test our hypotheses. Our study identifies different price thresholds for different channels and discovers a new threshold of noticeable prices at 20% of the original price when comparing two channels at a regular price than a promotion price setting. The main results show that (1) consumers are more likely to notice price difference in offline than the online channel; and (2) when price promotion is on, consumer notice the price go down while the actual price is increased, indicating the price promotion formats alters consumers' capability to notice price differences. Our study contributes to the under-researched area of the cross-channel effect of pricing in multichannel literature and provides managerial implications.

*Keywords: Just Noticeable Difference; Pricing Promotion Formats, the Cross-Channel Effect of Pricing*

*Track: Retailing & Omni-Channel Management*

## **1. Introduction**

Multichannel retailers often face the challenges of whether and how to set different prices for different channels when facing price pressure and competition from Internet-only firms (Homburg, Lauer, & Vomberg, 2019; Vogel & Paul, 2015). Various studies provided empirical evidence to show the feasibility of the channel-based price differentiation and consumers' willingness to pay based on the acceptable justification and reasoning (Chu, Chintagunta, & Vilcassim, 2007; Wolk & Ebling, 2010). Companies often use the channel-based pricing differential instruments or justifications such as premium price, discount, promotion, clearance, and service charges (Homburg et al., 2019; Vogel & Paul, 2015; Wolk & Ebling, 2010), to encourage consumers to engage with the targeted channels and deals. The assumption is that consumers should notice the price difference set up by the firms. However, there is little empirical evidence on whether and how consumers notice the price difference across online and offline channels with one brand and one product from the same retail. The study is therefore to examine if and how consumers notice the price difference across two channels and under what conditions.

The paper contributes to the current literature in two main ways. Firstly, we identify the different levels of noticeable price for different channels. By incorporating just noticeable difference theory and behavioural pricing literature, our study first time shows the threshold of price difference varies depending on channel differences and if the channel-based pricing differential instruments (i.e., price promotion) was used. Secondly, our study further examined the effect of price promotion format on the noticeable price difference and purchase intention. To the best of our knowledge, this paper is the first to study the impact of price promotion format on noticeable price differences.

## **2. Theoretical Foundation and Hypotheses Development**

Understanding price behaviour is very important to setting optimal price in multiple channels. The price behaviour can explain a field of how buyers perceive, remember, and use price information (Cheng & Monroe, 2013). There are four fundamental concepts of the price behaviour which are reference price, a differential price threshold, an absolute price threshold and acceptable price range (e.g. Monroe, 1973). Previous literature has covered the importance of price behaviour toward consumer response to the price which is considered as a core in the topic of noticing price differentiation. The numeric price presentation and consumer perception are the two themes of antecedences to cause noticeable price differentiation.

Making the price differentiation is more/less noticeable need understanding the antecedent of noticing price difference, which is important to set a price strategy in multichannel retailers. Often consumers evaluate the prices based on current price comparing with previous purchased price or based on the promotional prices as a signal of saving money. By integrating the prospect theory into the just noticeable difference theory, it will give a better understanding of how different promotional price formats influence noticing price differentiation. Massive literature agrees that the different promotional presentation formats have different perception of price framing effect. However, how different promotional presentation formats influence noticing price differentiation is still limited.

### *2.1. Just noticeable difference and price differences*

The concept of the just noticeable difference argues that if the differences in the two weights were small, no difference would be noticed. This phenomenon between thresholds is called the just noticeable difference. Buyers have internal norms to judge price and when price below thresholds, buyers do not perceive price change (Cheng & Monroe, 2013) because buyers pay more attention to upper and lower levels of the price range but neglect price changes inside that range. Empirical studies illustrate that there are differential price thresholds within the price acceptance range, which has a significant impact on the purchasing decision (Monroe, 1971).

Consumers more sensitive to online prices because it is easy to access price information and compare with other prices due to transparent online information. Multichannel retailers suffer hard online competition in prices when compare with pure-online retailers because the pure-online retailers have lower operational cost. Therefore, multichannel retailers seek to integrate their online and offline channels to utilize channel integration to maintain current customers and attract a new one. Recent researches have covered some areas in channel integration toward purchase intentions but did not consider noticing price differentiation. Hence, there are factors might influence consumers to notice differentiation or at least recognizable that price has been changing in multiple channels such as differential price thresholds, reference price range, price sensitivity and promotional price.

The first antecedent factors of noticing price differentiation are the differential price thresholds. Previous studies measure three price thresholds and identified the 5% of price increase is the threshold that consumer notice price difference. It has investigated the single-channel of offline context (e.g. Cheng & Monroe, 2013). However, with increasing of using

multiple channel system created a worthy need to identify the differential price thresholds for one product, one retailer, two channels. Retailers can apply the strategy of channel-based price differentiation by setting different prices for the same product across online and offline channels, so consumers select the channel that they prefer (Wolk & Ebling, 2010). Consumers are more sensitive in online channel than offline (Degeratu, Rangaswamy, & Wu, 2000), and consumers expect online price more than offline (Lo, Hsieh, & Chiu, 2014). The recent research investigates consumer response into price differentiation in channel-based price differentiation (Fassnacht & Unterhuber, 2016). Therefore, because consumers are more sensitive to online price and expect lower price online, differential price thresholds might be different in one product, one retailer and two channels. Thus, the current research argues that differential price thresholds differ between online and offline channels due to the way of perceiving the prices in each channel. This research put forward the following hypothesis:

*H1: Comparing the offline with online prices in multi-channel retailer, consumer is more likely to notice the price differentiation in offline when price change.*

Second, the price sensitivity and reference price range have massive literature in the area of price perceptions and noticing differentiation. The reference price is part of the past purchasing price which is stored in the consumer's mind and its uses to evaluate the future purchase (e.g., Monroe & Lee, 1999). The researcher argued about how the importance of reference price point (range) to notice price difference, and how the reference price range of upper and lower acceptance affect consumer perceptions toward prices (see Monroe, 1973). Although the importance of the reference price range, there is no research investigated the comparing distance of reference price range between online and offline. It could argue that because determining the reference price changes with time, which depends on the last purchase price. The reference price from expectations model perspective supports this statement (e.g., Kalyanaram & Little, 1994).

In addition, price sensitivity is very important to evaluate the prices on different channels. Price sensitivity refers to individual differences in how consumers react toward various price levels. In online shopping, consumers consider the price as an important factor. (Degeratu et al., 2000) found that online consumers are more price sensitive than offline consumers. Researchers confirmed that the price sensitivity differs from channel to other (Wolk & Ebling, 2010). However, we do not know yet how the price sensitivity in multichannel. Based on the above discussion this paper assumed the following hypotheses:

*H2: Consumers have (a) wider reference price range, and (b) higher level of price sensitivity at offline channel than the online channel for the same retailer.*

The third factor that might influence noticing price differentiation is the promotional price. Setting price depends on the retailers' strategy whether to use regular price or promotional price. one of the most popular promotional price setting is the external reference price. Price promotion is temporary price reductions (Bogomolova, Dunn, Trinh, Taylor, & Volpe, 2015). When offering frequent discounts, the reference price in the buyers' mind will update because buyers pay more attention to the discounts (Vanhuele & Drèze, 2002). Researchers in numerical cognition domains demonstrated that numerical magnitude comparisons typically follow Weber's Law. They argue that there is a negative relationship between the just noticeable difference and magnitude numbers. When the differences between two numbers decrease, the magnitude of these numbers increases (Grewal & Marmorstein, 1994). This paper argues that promotional price influence consumers to notice difference when the price change. The gain and loss of price framing effect consumers to less likely notice difference when using the promotional price vs. regular price. Based on this discussion this research assumed the following hypothesis:

*Hypothesis H3: In the comparison of promotional versus regular prices at the same increasing of price threshold, the consumer is noticing price differentiation in the offline price is greater than the online price.*

## *2.2. Prospect theory in pricing*

Researchers are very interested in promotional price framing and consider as an important topic to research (e.g., Guha et al., 2018). For example, when consumers perceive the price deal as gain situation, they might make a heuristic decision. Thaler (1985) argue that people perform mental accounting during the transaction whether is gain or loss towards the different stimulus. Many studies who investigated consumer perception have used the Prospect Theory by Kahneman and Tversky (1979) as a theoretical background. The studies of Kahneman and Tversky (1979, 1984) have illustrated that the framing of decision making could influence cognitive judgment. The prospect theory stated that there are two situations for price framing effect which are loss and gain situations.

Researchers argued that the price framing effect will different when using different price format equally the same amount of discount. In 2015, Vogel and Paul applied instrument of channel-based price differentiation, these instruments are monetary promotion

to investigate customer perception and retention. Some researchers studied the forms of non-monetary promotional such as 'buy one get one free'. This type of non-monetary promotion is the popular way instated of "50% off" (see Chen et al., 2012). The non-monetary promotion might increase sales and reduce negative perception related to product quality (Minahan & Ogden-Barnes, 2015). We argue that when using different monetary promotions which are equally the same value of the discount, consumers might notice price differentiation differently. The three monetary prices are (external reference price, now value, and saving value). It has considered these conditions because in real practice we can see these promotional formats in most of the retailers. Based on this argument we develop the following hypothesis:

*H4: Using price strategy of external reference price "Was £/ Now £" is less likely noticing price differentiation compare with price strategy of (a) "Now £" and (b) "Save £". Whereas using price strategy of (c) "Save £" is less likely noticing price differentiation compare with price strategy of "Now £".*

### **3. Methods**

#### *3.1. Study overview*

The objective of this research is to study whether and how consumers notice the price difference and under what conditions. We conducted two sets of experiments to study the just noticeable price difference levels in study 1 and the effect of promotion formats in study 2. The fashion product category was chosen because (1) the fashion industries often use the unify price strategy in practice, which introduces less social bias into our experiment; (2) the plain white shirt we use has less gender biases. A total 1,440 participants were recruited with a small money approximately (£1) incentives through Prolific (online platform) in the UK.

#### *3.2. Study 1*

The aim of first study is to identify the differential price thresholds in one product, one retailer, and two channels. Using conditions of price formats (regular price versus promotional price). The baseline price is (£24) per shirt. In addition, as well as Uhl and Brown (1971), have used three levels of prices (5%, 10%, and 15%). However, this study, avoid duplicating the price of other products in experiments between the baseline price and a threshold of 15%. Hence, we used three levels of price differences (5%, 10%, and 20%).

### 3.2.1. Study design, sample, and procedure

We conducted an online experiment using a 2 (online vs offline channels) x 3 (three price levels of price differentiation) x 2 (price promotion vs regular price) between-subjects design. Participants were randomly assigned to these 12 experimental groups. A total of 720 respondents provided useable data as the final dataset with the 74.2% female and 25.8% male, and more than half of the sample the age between (18-35). Participants were asked to answer the question after reading the imagination scenarios.

The two pages of setting price was manipulated to measure noticing price differentiation by asking the responders directly whether they notice price differentiation. We measured price sensitivity with six items adapted from previous research (Wakefield and Inman 2003), reference price ranges using the scale of the high and low expected price (Lowe & Alpert, 2007), and binary answers of if the respondents to notice the price changes.

### 3.2.2. Data analysis and result

Manipulation check was conducted by using ANOVA test. The results show there is a statistically significant difference between the three price levels,  $P < .001$ ; by divided the data to different channels, the ANOVA illustrated the data between groups of online,  $P = .049$ , and offline,  $P < .001$ .

The analysis shows the differential price thresholds is a statistically significant difference at 20% of price differentiation,  $P = .028$  which participants notice 87.5% in the offline channel more than online 76.7%. When noticeable price difference between promotional price condition versus regular price condition, the analysis shows that there is a statistically significant at 20% of price differentiation between online and offline in the promotion condition only than other two price levels, see the below table. The research accepted the (*H1*) & (*H3*). The results showed consumers have higher price sensitivity towards online ( $M = 3.99$ ,  $SD = .607$ ) than offline channel ( $M = 3.85$ ,  $SD = 0.682$ ), with a statistically significant level,  $P = .009$ . In addition, the results found that the distance of price range by using the T-test in online price range ( $M = 2.73$ ,  $SD = 1.29$ ) and offline price range ( $M = 2.91$ ,  $SD = 1.32$ ). Hence, there is no statistically significant difference,  $P = .938$ . Therefore, it has accepted the (*H2b*) and did not accept the hypothesis (*H2a*).



**Table Summary (P-value) of Noticing Price Differentiation**

| Conditions                           | Price Thresholds |       |        | All        |
|--------------------------------------|------------------|-------|--------|------------|
|                                      | 5%               | 10%   | 20%    | 5% 10% 20% |
| Price Thresholds                     | 5%               | 10%   | 20%    | 5% 10% 20% |
| Online vs. Offline                   | 0.381            | 0.659 | 0.028* | 0.160      |
| Promotion Price (Online vs. Offline) | 0.224            | 0.084 | 0.274  | 0.713      |
| Regular Price (Online vs. Offline)   | 1.000            | 0.315 | 0.031* | 0.100      |

(\*) P-value < .05

### 3.3. Study 2

It has used online-offline channel integration as Herhausen and others (2015). This study similar to the study-1; however, some important adjustments were made for the experiment in this study. It has designed the price differentiation based on 20% of increase price as baseline price. It represented an online store and manipulated two levels of channel integration.

#### 3.3.1. Study design, sample, and procedure

The experiment designed as 2 (channel integration) X 3 (monetary promotions) X 2 (non-monetary promotions). The total of 12 experimental groups. A total of 720 respondents provided useable data as the final dataset which are 29.2% Male and 70.8% Female whereas most of the participants' age between (18 – 35). In the experiment, it has shown a product and give a scenario. Following by questions related to consumer perceptions. The scenario asked the participants for both groups (high and low channels integration) to imagine searching online for random clothes at one of the most popular multi-channel retailers in the UK. This study has developed a measurement of the noticing price differentiation to be 7- point scale instead Yes/ No. The developed question became as follows: “To what extent did you notice price differentiation between the current price "X" of the above product and the price you saw on the previous page”. The range is (Decrease - 0 - Increase).

#### 3.3.2. Data analysis and result

The manipulation check used 1-item to measure the three levels of monetary promotions and by using the ANOVA test, the result illustrated there is a statistically significant difference,  $P < .001$ . It is highly remarkable that the mean of noticing price differentiation is -0.15 which means that consumers in general notice the price has decreased. It is due to the promotional

price presentation formats. The results found that there is a statistically significant difference in the noticing price differentiation across all promotional price presentation formats,  $P < .001$ ,  $F(2,717) = 14.678$ .

#### **4. Discussion and Conclusion**

By applied the just noticeable difference into prospect theory, this study find that participants notice price difference in the regular price more than the promotional price due to the gain and loss concept, more precisely, participants in the condition of offline regular price at 20% more notice than the online channel for the same level and condition. This paper contributes to knowledge that identified a new differential price threshold between online and offline channels are 20% of price differentiation compare with prior research who study single channel which identified the 5% as a differential threshold.

Moreover, there are statistically significant differences in price sensitivity between online and offline channel for the same retailer which match previous research; this contrasts the reference price range. It also contributes to knowledge that the different price presentation formats have different perceptions of noticing price differentiation due to the concept of prospect theory of gain and loss situations when integrated with just noticeable difference theory.

Furthermore, this study represents the initial data of noticing price differentiation of different conditions. However, there are factors that influence on noticing differentiation such as high and low channel integration and seasonal versus non-seasonal condition did not include in his paper. The future study will cover the influence of online-offline channel integration, and the seasonal versus non-seasonal as three levels of interaction into noticing price differentiation.

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