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Examination of Consumers' Perceived Quality and Willingness to Buy in the Context of Price Variability and Frequency of Price Change: A Study of Retail Products

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Abstract: Marketing managers are able to influence consumers' perceptions of quality and their willingness to buy, using the frequency of price changes and price variability. This study aims to examine the differences in the frequency of price changes and price variability, in terms of the perceived quality and the willingness to buy. For this purpose, using values calculated according to the average and standard deviation of the market price of a specified product, we obtained two different price variations, ±1σ and ±2σ, and price stimuli determined at two different frequencies of price changes (three and seven times were considered), which resulted in four different participant groups. At the end of the study, a statistically significant difference was only found between consumers in the low price variability and infrequent price change condition and consumers in the high price variability and infrequent price change condition, in terms of the perceived quality.

Keywords: frequency of price changes, price variability, perceived quality, willingness to buy
JEL Classification: M3, M31

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Introduction

Price is an important stimulus in consumers' purchase decisions and hence, it has a direct effect on companies' profits. Businesses try to influence their customers by making changes in the prices of the products or services they offer. Specifically, in retailing, pricing strategies have become an important part of making business decisions; thus promotions, discounts, and markdowns are frequently employed by retailers to boost consumer demand (Jung, Park, and Choi, 2018, p. 291). Price changes were expressed as price promotions or price discounts in previous studies (Gupta and Cooper, 1992; Jedidi, Mela, and Gupta, 1999; Putler, 1992; Rao, 1984). The pricing tactics they used need to be examined from a systematic point of view. Marketing managers may make price changes for different reasons, such as responding to changes in inventory or changes in costs on the supply side or offering lower prices on products as promotions to attract customers, especially in light of the current promotion overload (Murthi, Haruvy, and Zhang, 2007, p. 1; Nirmala and Dewi, 2011, p. 80; Bellini and Aiolfi, 2019, p. 14). At this point, price variability and the frequency of price changes need to be discussed in terms of the influence they have on consumers' decisions. Here, price variability indicates the width of the price changes' range, and the frequency of price changes refers to the frequency of price increases and decreases in a certain period. In response to the price variability and the frequency of price changes, consumers can stockpile, adjust their purchase quantity, or postpone their purchase (Ho, Tang, and Bell, 1998). The frequency of promotions has an impact on the internal reference price. The high price variability of a product may cause internal reference price uncertainty (Caputo, Lusk, and Nayga, 2020). Thus, price variability and the frequency of price changes may be an important influence on consumers' purchase decisions (Kalyanaram and Winer, 2022).

Among many factors influencing consumers' buying decision making, price is one of the most crucial factors with its dual role, which may be categorized as the sacrifice effect and the information effect (Völckner, 2008). While the sacrifice effect of price means a sense of monetary loss for consumers, which they have to forgo in exchange for the product or service, according to the information effect of price, price is seen as an indicator of quality (Cui, Wajda, and Hu, 2012; Mayasari, Haryanto, Wiadi, Wijanarko, and Abdillah, 2022). As an opposite view of the classical economic theoretical assumption, Scitovsky (1944-45) stated that consumers may not have the necessary information about the quality of the product's offerings, and claimed that quality can be judged by the available information, such as price. Although low-priced products may appear attractive for consumers to buy, they may also be considered less attractive because of their suspected inferior quality. Quality perception is expected to vary directly with the price (Stafford and Enis, 1969). Thus, it can be said that consumers' quality perception of products depends

on the structure of the price distribution.

Previous research has focused on the pricing strategy (or price information) in different concepts, such as price promotion depth, price promotion frequency, promotional pattern, or deal frequency (e.g., Krishna, 1994; Mela and Urbany, 1997; Grewal, Krishnan, Baker, and Borin, 1998; Lee and Lim, 2009). These studies mostly associate price information with the perceived quality and buying intention (Rao and Sieben, 1992). A recent similar experimental study, in which Prakash and Spann (2022) systematically manipulated two dimensions of dynamic price variation (amplitude and frequency), suggested the exploration of the impact of quality on retailers pricing practices. Perceived quality and the willingness to buy products are related to both the price level and price differential (Deering and Jacoby, 1972). A product priced below or above the absolute price thresholds (or limits) would be less likely to produce a willingness to buy response (Kosenko and Rahtz, 1988). For instance, when the price of a product falls below the lower price limit, its perceived quality is thought to be relatively low. Accordingly, the willingness to buy is relatively low when the price is unacceptably low for acceptable prices.

To our knowledge, the empirical evidence for the effects of both price variability and the frequency of price changes on the perceived quality and willingness to buy is quite meager. Therefore, this study aims to examine the differences in the prices of the products purchased by consumers, and the variability in these prices in terms of the perceived quality and willingness to buy. In a price knowledge survey, Vanhuele and Drèze (2002) selected representative product categories from a national store panel of approximately 300 product categories. Among these product categories, toilet paper has been found to be in the high price variability, low product variety, and narrow price ranges category. Considering the study of Vanhuele and Drèze (2002), toilet paper was found appropriate for serving as the product stimuli of this study. Next, after a review of the background literature, research hypotheses are proposed. In the third section of the article, the research methodology used to test the research hypotheses is described. Then, the research hypotheses are tested, and the research results are explained. In the final section of the article our findings are stated, along with their implications for researchers who are concerned with price changes and marketing managers who plan pricing applications, which concludes the paper.

Literature Review

Various marketing studies examining the effects of price on consumer behavior have been conducted (for example, Alford and Biswas, 2002; Rao and Monroe, 1989; Dodds and Monroe, 1985; Johnson, Herrmann, and Bauer, 1999). Within the existing academic re-

search on price, interest in price promotions has increased because retailers also notice the encouraging effects of price promotions on the purchasing behavior of consumers (Walters and MacKenzie, 1988; Mulhern and Padgett, 1995; Shaddy and Lee, 2020). Price promotion is defined as "temporary price discounts offered to a customer" by Blattberg, Briesch, and Fox (1995, p. 122). In this way, promotion is related to a reduction in the price of a product from its current price. Jedidi et al. (1999) stated that price promotion has two dimensions, which are frequency and depth. Alba, Mela, Shimp, and Urbany (1999) named frequency and depth as pricing patterns. While promotion frequency is defined as the average number of times an individual product is promoted over a specified period, promotion depth refers to the percentage reduction in the price from the existing price (Allender and Richards, 2012, p. 324).

The price promotion strategies that marketers use intensively raise important issues regarding the consumers' purchasing decision process (Lattin and Bucklin, 1989; Gijsbrechts, 1993; Sinha and Smith, 2000). It is known that people evaluate observed price changes by comparing those prices to an internal reference price (Lehtimäki, Monroe, and Somervuori, 2019). In other words, a consumer has a frame of reference for acceptable prices, in which the price information is encoded and interpreted (Sorce and Widrick, 1991). Small price changes that are close to the reference prices of consumers will cause price insensitivity and this price change will not be noticed by consumers (Kalyanaram and Little, 1994). Therefore, if the price changes made over the internal reference price levels of the consumers are above a certain threshold, it may affect their purchasing behavior (Han, Gupta, and Lehmann, 2001, p. 436). In addition, it is known that consumers think more about purchasing decisions and do more research on product categories with high price variability, or frequent promotions (Mehta, Rajiv, and Srinivasan, 2003).

Kumar and Pereira (1995:156) stated that the effect of price promotion frequency on a given promotion is unclear (e.g., may be positive or negative). Frequent discounts on products will increase the price threshold for discounts so that the same level of discount will be insufficient to affect the buying behavior of consumers (Han, Gupta, and Lehmann, 2001, p. 436). Although frequent discounts are thought to be beneficial in the short term, as they may lower the reference price in the consumer's mind, they will harm brand promotion activities in the long term (Jedidi, Mela, and Gupta, 1999). For example, in their experimental studies, Kalwani and Yim (1992), who examined the effect of price promotion frequency and price discount depth on the expected price, found that there were differences in the context of consumers' price expectations between price promotions three and seven times in a given period.

The distribution of market prices faced by consumers can affect their buying decisions (Meyer and Assuncao, 1990). It is found that the direction of a price change (i.e.

increase or decrease) within the level and width of the acceptable price range of the individual is acceptable (Mazumdar and Jun, 1993). The price level can be seen as similar to the central tendency in the distribution of acceptable prices; variability in market prices would influence consumers' price uncertainty and also the acceptable price range (Lichtenstein, Bloch, and Black, 1988; Mazumdar and Jun, 1993). Mazumdar and Jun (1992) argue that the expansion of the acceptable price range, arising from price volatility, is mainly due to an upward change in the upper limit of acceptable prices rather than a downward shift in the lower limit of acceptable prices. Not only can individuals vary in how large a range of prices they find acceptable, but also in whether this range is centered almost at the same point (Rao and Sieben 1992, p. 257). On the other hand, Helsen and Schmittlein (1992) found that regular large price variability is related to increased price responsiveness and being more attentive to customers. They also concluded that deal frequency is related to store traffic, thus it is suggested that manipulation of the dealing frequency and/or deal price variability may have an effect on consumer purchase behavior.

Although the price is known as the indicator of the monetary amount that consumers pay for goods/services, it is also supported by research that the price is an indicator of the level of quality (Dodds and Monroe, 1988; Monroe and Krishnan, 1985; Peterson and Wilson, 1985; Zeithaml, 1988; Park, Lalwani, and Silvera, 2020). Perceived quality, which can be evaluated differently from objective quality, is the personal judgment of the consumer about the overall excellence or superiority of the product, which contains abstract thoughts (Zeithaml, 1988, p. 3). High-priced products are considered to be high quality, thus they lead to a greater willingness to buy them (Rao and Monroe, 1989; Scitovsky, 1944-45; Dodds, Monroe, and Grewal, 1991). The use of price as a quality cue can shift, depending on different factors such as the product's domain (Boyle, Kim, and Lathrop, 2018). For example, according to Völckner and Hofmann (2007), the perceived price-quality relationship is less for durable items than for non-durable items.

Since price promotions decrease prices, and lower prices are related to lower quality, there is reason to assume that price promotions also lead to lower quality inferences (Raghubir and Corfman, 1995; Darke and Chung, 2005; Chae, 2020). While the depth of the price promotion will rapidly increase sales, the long-term reputation for quality can be damaged. In contrast, low-depth promotion would cause relatively less damage to the perceived quality (Hsu, Huan, Guntoro, and Thongma, 2014). The quality of the infrequently promoted brands would also tend to be judged more favorably (Lalwani, Wang, and Silvera, 2021).

Because the goal of this research is to look at the differences in the pricing of products purchased by consumers, as well as the variety in these prices, in terms of their perceived quality and the consumers' willingness to pay, four conditions were defined for

the treatment groups: low price variability-infrequent price variation, low price variability-frequent price variation, high price variability-infrequent price variation, high price variability-frequent price variation. Thus, the following hypothesis is developed:

H1: There is a statistically significant difference between the groups examined in the study, in terms of perceived quality.

The frequency and depth of price changes applied by businesses may affect the purchasing behavior of consumers. Meyer and Assuncao (1990) conducted a study to reveal the behavioral process of consumers when faced with rising prices; they found there was a growing tendency to delay purchases, but accelerate purchases when prices fell. For example, Della Bitta, and Monroe (1981) concluded that the discount threshold should be 15%, and Harlam, Krishna, Lehmann, and Mela (1995) said the discount rate should be at least 20% for directing consumers to purchase. Jedidi, Mela, and Gupta (1999) also found that a high level of discounts has more impact on consumers' brand selection and the number of purchases compared to frequent discounts. Thus, the second hypothesis is as follows:

H2: There is a statistically significant difference between the groups examined in the study, in terms of willingness to buy.

Methods

To combine the different conditions in which the price variability and the frequency of price change measures were taken, a 2x2 between-subjects experimental design was used for the study. A survey was applied to four groups, containing 90, 91, 98, and 97 people, who were all given a questionnaire. All 376 questionnaires were completed and contained usable data. The data collection procedure was carried out in two stages. In the first stage, each participant was exposed to a stimulus containing a visual of the product (branded toilet paper) and they were then asked to respond to questions about the internal reference price of the product. Because of its high price variability, low product assortment, and narrow price range (Vanhuele and Drèze, 2002), toilet paper was chosen as it was considered to be suitable for the variables in this study. Also, it is known that toilet paper is in the easy-to-stockpile category (Narasimhan, Neslin, and Sen, 1996), thus it will be easy to observe the participants' responses to changes in its price in this study.

According to the adaptation level theory by Helson (1964), an individual will judge external price information using an internal standard, such as the mean of observed

market prices. The internal reference price is considered as the covariance variable of the research, since the product serves as a point of comparison for past prices (Han, Gupta, and Lehmann, 2001), which are stored in the consumer's mind. By including the internal reference price as an analysis of the covariance variable, a factor that may have had an impact on the findings related to the research variables could be eliminated by creating a difference between the consumers participating in the research.

In the second stage of the research, each participant was randomly assigned to one of the four questionnaires, each with different price stimuli, where the price of a consumption product (toilet paper) was determined by two different frequencies of price change and two different price variability ranges over a 10 week period. The two levels of frequency for the change in price were three and seven. The two levels of price variability were in the range of $\pm 1\sigma$ and $\pm 2\sigma$ of the average market price of toilet paper. Winer (1989) called price variation "reference price uncertainty" and for a period, the reference price uncertainty variable was calculated simply as the standard deviation of the reference prices. Similar to the procedure in the study by Winer (1989), a series of calculations were made for the price stimulus in each questionnaire to be applied. Firstly, the average price of the product was calculated using the current market prices of nine different supermarkets, and 29 virtual markets selling the item. Next, considering the average and standard deviation values (σ) obtained from the price data, two levels of frequencies of price changes (three and seven times) were randomly derived from the average price value obtained in the range of $\pm 1\sigma$ and $\pm 2\sigma$, each one different from the others. The differently derived prices for each participant were obtained through a mathematical software package. Therefore, in this research, the frequency of price changes and the price variability were provided for the prices used as stimuli. The participants were asked to assume they wanted to buy branded toilet paper, and they were allowed to examine the prices for that item over the previous 10 weeks. The prices were in large font so they would be noticeable and memorable. The prices provided to the participants did not trend in a certain direction (increase or decrease) in order for them to not be influenced by too many factors, because, the direction of price change is known to be the strongest determinant for the difference in consumers' evaluations of the different number of price changes (Mazumdar and Jun, 1993). On the other hand, customers tend to perceive higher prices as signs of a higher quality; this higher quality is equated with higher price increases (Yang, Sun, Lalwani, and Janakiraman, 2019). Following the manipulation of the prices according to the frequency and price variability, the participants' perceived quality, and their willingness to buy the product were measured. By providing clear instructions, the participants were asked to complete the survey accordingly.

University students are a suitable sample for studying consumer behavior since

they are known as effective surrogates for general consumers with significant buying power (Fan, Liu, and Zhang, 2013; Cho and Workman, 2011). Thus, the sample for this research consisted of university students and was selected through convenience sampling. The data used in the research were obtained through face-to-face interview techniques and questionnaires; this was all done during class hours in March and April of 2020. The research was composed of four questions used by Chandrashekaran and Jagpal (1995) to measure the internal reference price, 5-item scales to measure the perceived quality, and five items to measure the willingness to buy, which were previously used by Dodds, Monroe, and Grewal (1991). To suit the function of the scales used in the current research context, some modifications and minor adaptations were made. Scale items for perceived quality and for willingness to buy were measured on a 7-point Likert-type scale, varying from 1 = "strongly disagree" to 7 = "strongly agree." This was similar to previous studies where the scale items were used. The internal reference price was assessed by asking the subjects to fill in the blanks in a set of open-ended questions, such as "I think a FAIR PRICE for the toilet paper shown would be _____."

Results

Validity and Reliability of the Scales

The scales used in the research should be justified, and the decomposition validity and convergent validity should be provided to verify the test interpretation or to establish the construct validity. Thus, confirmatory factor analysis (CFA) was used to examine the factor structure of the items and also to evaluate the validity of the scales used in ANCOVA. The SPSS AMOS program was used to perform a confirmatory factor analysis on the data obtained in the study. In this confirmatory factor analysis, CMIN/DF, GFI, TLI, CFI, RMR, and RMSEA were used to test the goodness of fit. As a result of the confirmatory factor analysis, CMIN / DF = 1.801 ≤ 3 (p = 0.000 < 0.001), CFI = 0.985 ≥ 0.9, IFI = 0.985 ≥ 0.9, and RMSEA = 0.046 ≤ 0.05 values were obtained. The wellness indices calculated as a result of CFA showed that the research scales had a good fit (Schermelleh-Engel, Moosbrugger, and Müller, 2003).

Table 1. Confirmatory Factor Analysis Results

Variable	Item	Factor Loadings	AVE	CR
Internal Reference Price (IRP)	Fair price	0.823	0.758	0.926
	Lowest price seen	0.863		
	Highest price willing to pay	0.887		
	Normal price	0.908		

Perceived Quality (PQ)	The likelihood that the product would be reliable is (very high to very low)	0.835	0.655	0.903
	The workmanship of product would be (very high to very low)	0.798		
	This product should be of (very good quality to very poor quality)	0.905		
	The likelihood that this product is dependable is (very high to very low)	0.877		
	This product would seem to be durable (strongly agree to strongly disagree)	0.595		
Willingness to Buy (WTB)	The likelihood of purchasing this product is (very high to very low)	0.892	0.586	0.870
	If I were going to buy this product, I would consider buying this model at the price shown (strongly agree to strongly disagree)	0.920		
	At the price shown, I would consider buying the product (strongly agree to strongly disagree)	0.853		
	The probability that I would consider buying the product is (very high to very low)	0.512		
	My willingness to buy the product is (very high to very low)	0.548		

Fornell and Larcker (1981) stated that, as a conservative estimator of convergence validity, the average variance extracted (AVE) should be higher than 0.5. From Table 1, it can be said that the convergence validity of the constructs used in the study was sufficient. Discriminant validity shows the level of separation of different variables from each other. In order to provide discriminant validity, the relationship between variables and other variables should be of low value. In this respect, the square root values of the average variance extracted (AVE) value of a scale should be greater than the correlation coefficient values of the relevant scale with other scales examined in the study (Fornell and Larcker, 1981, p. 46).

Table 2. Relationships Between Variables and The Square Root Values of The Average Variance Extracted

	IRP	PQ	WTB
IRP	**0.870**		
PQ	0.181*	**0.809**	
WTB	0.169*	0.300*	**0.765**

Note: *$*p < 0.01$*

When we look at the relationships between variables and the square root values of the average variance extracted in Table 2, it can be seen that the average root values of

the average variance extracted for each scale of the study were greater than the correlation coefficient values of the relevant scale with other scales. Therefore, it can be concluded that the scales used in the research also provided discriminant validity.

Cronbach's alpha coefficients were calculated to determine the reliability of the scales used in this study. Nunnally (1978), states that the reliability coefficient (Cronbach's alpha) should be at least 0.7 for exploratory studies and 0.80 for non-exploratory studies. The Cronbach's alpha coefficients had good reliability levels of 0.924, 0.901, and 0.882 for IRP, PQ, and WTB.

Hypotheses Tests

To test the differences between the four groups, a 2 (price variability) X 2 (frequency of price change) ANCOVA was applied. With the idea that the price information for the product examined in the research may affect the results of the research, the internal reference prices of the product were considered as covariance variables, and differences between the study's groups, in terms of perceived quality and willingness to buy, were examined.

Some prerequisites must be met for the selection of the covariance variable in ANCOVA (Stevens, 2009). In choosing the appropriate covariance, it is expected that it is a continuous variable (measured at least in the interval scale), its reliability is sufficient (Cronbach's alpha value is at least 0.7), and it has statistically significant relationships with the dependent variables (Owen and Froman, 1998, p. 558). The reference price scale consisted of a 4-item scale measure and could be said to be continuously variable. The reliability of the reference price scale was quite high (0.924), as stated before. In Table 2, which shows the relationships between the research variables, it can be seen that the reference price had statistically significant relationships with all the research variables. Therefore, the internal reference price was found to be suitable as the covariance variable of the study.

For ANCOVA to be applied, some assumptions should be provided. These assumptions, named by Huitema (2011), are independent observations, normality, and homogeneity. Assigning each participant randomly to the study groups was considered to be more likely to be independent than the assignment of participants according to a non-random procedure. According to the normality assumption, the dependent variable should be normally distributed within each subgroup. This assumption would be valid only for cases where the sample numbers in the subgroups were more than 30, and since the sample numbers of the subgroups in this study were in the range of 90 to 98, this assumption was met. Since it was known that homogeneity would be achieved if there were an equal and sufficient number of samples ($n > 30$) for each group (Pallant, 2005), it was thought that the homogeneity assumption would also be met in this study ($n1 = 90$, $n2 = 91$, $n3 = 98$, $n4 = 97$).

Table 3. Means and Standard Deviations of The Dependent Variables in Study Treatments

Group #	frequency of price change	price variability	n	Perceived quality		Willingness to buy	
				Mean	Std. D.	Mean	Std. D.
1	3 times	narrow (1 sigma)	90	5.26	1.10	3.41	1.62
2	3 times	wide (2 sigma)	91	4.67	1.25	3.48	1.43
3	7 times	narrow (1 sigma)	98	4.80	1.32	3.61	1.35
4	7 times	wide (2 sigma)	97	4.95	1.00	3.43	1.42

Before the ANCOVA results, the mean scores and standard deviations of the dependent variables across the frequency of the price changes and price variability are presented in Table 3. Levene's test for the equality of error variances' results for perceived quality ($F[3,372] = 1.936$; $p = 0.123$) and for willingness to buy ($F[3,372] = 1.149$; $p = 0.329$) declared that all the groups were homogenous

Table 4. ANCOVA Results of Perceived Quality and Willingness to Buy

Variables	Sources	df	Mean square	F	Sig.*
Perceived quality	Intercept	1	856.470	632.269	0.000
	Covariate (Reference price)	1	13.696	10.111	0.002
	Group (frequency X variability)	3	4.552	3.361	0.019
Willingness to buy	Intercept	1	345.799	167.495	0.000
	Covariate (Reference price)	1	23.887	11.570	0.001
	Group (frequency X variability)	3	1.201	0.582	0.627

According to ANCOVA results, as shown in Table 4, it was found that there were significant differences among the study's groups for perceived quality ($F[1.3] = 3.361$, $p < 0.05$, $n^2 = 4.552$). Thus, the first hypothesis was supported. Post hoc tests using Bonferroni's adjustment were performed to reveal which groups were significantly different from the others. The post hoc results indicated that for consumers in the low price variability and infrequent price variation condition, the perceived quality was significantly more important than it was for the consumers in the high price variability and infrequent price variation condition ($p < 0.05$). Further, there was no significant difference between the groups in terms of willingness to buy ($F[1.3] = 0.582$, $p > 0.05$, $n^2 = 1.201$). Accordingly, the second hypothesis of the research was not supported.

Discussion

The aim of this study was to examine the differences in the frequency of price changes and price variability, in terms of the perceived quality and willingness to buy. To achieve this aim, four treatment groups were established and tested. Among the treatment groups, in the low price variability and infrequent price variation condition, the perceived quality of the consumers was greater than that of the consumers in the high price variability and infrequent price variation condition.

As the evidence for the existence of upper and lower price limits is supported by the assimilation-contrast theory (Sherif and Hovland, 1961), the results of this study have provided evidence that the quality perceptions of consumers differ for price changes in different price ranges. Alford and Biswas (2002) suggested that consumers appear to be skeptical of reference prices offered externally. Also, the perceived price gap, to the degree that a retail price deviates from the internal reference price of a customer, has been seen as a major factor affecting the price judgments of consumers (Shirai and Bettman, 2005). A consumer may be suspicious of the quality of a product if its price is within a wide range. Specifically, it is known that consumers are more concerned about perceived quality in cases of price declines (Prakash, Yadav, and Kadyan, 2021).

According to the literature, price promotions have positive impacts on the volume of sales (Choi and Mattila, 2014). Contrary to the price promotion literature, there was not much difference between the groups in this study, in terms of their willingness to buy. The reason for this result can be explained by the fact that we used prices as stimuli in a direction change (not only price increases but also price decreases), so as to be similar to real price practices. The results also showed that the direction of the price changes was more effective than the frequency of the price changes and price variability in the willingness to buy of the individuals participating in different treatments.

Mazumdar and Jun (1993) argue that consumer price uncertainty is related to the direction of price changes, thus a decision to purchase a product may be affected negatively in an uncertain price frame, because buyers classify new price stimuli encountered in the marketplace as consistent or contradictory (Morris and Morris, 1990). A similar argument is stated by Meyer and Assuncao (1990), as price variation, as an uncertainty factor of future prices, would have an effect on the buying patterns of consumers. In this respect, under this uncertainty, no difference was found between the groups in the study, in terms of their purchase intentions.

Conclussion

Pricing is a much more complicated process than is generally known, as the structure of

the price offered to consumers affects their buying behavior differently. Within a retail context, retailers' prices and the perceived product quality are prominent attributes of customer satisfaction (Darsono and Junaedi, 2006; Kühn and Mostert, 2015). In pricing research, the effect of price promotions on consumers' quality perceptions and purchasing has been widely studied. Within these studies, very little investigation has been done on the impact of price variations and the frequency of price changes on product quality perception or willingness to buy. Also, most studies have not examined the effect of both price variations and the frequency of price changes simultaneously. On the other hand, most of these studies deal with price changes in the direction of discounts. The present study addresses the need for research in this area by examining the effects of price variations and the frequency of price changes on a product's perceived quality or consumers' willingness to buy it.

The task of the pricing manager is to determine the upper and lower limits of what a consumer or market segment is willing to pay for a product. In this sense, this research would be helpful for pricing managers when determining threshold values by calculation of the mean and variance of the product's price. In price-related applications, retailers are recommended to be careful in how to design the price change pattern, because, in addition to price variability and the frequency of price changes, the direction of the price seems to be influential in consumers' purchasing behavior. Based on the results of this study, the implementation of less frequent price changes within a narrow price range strategy may be proposed for retailers. This strategy is also vital for managers regarding how the firm's image is created through its prices.

Limitation

This study was carried out on toilet paper and the reasons for choosing this product are explained in the study. Under the assumption that the realization of the research on a single product with a low product range and narrow price range is a fundamental constraint, it is recommended not to make a generalizable judgment about the research results. By researching different sample groups, different products, and different frequencies of price changes and variations, the effect of design differences in future studies will be examined. It is recommended that these studies are especially on real-world pricing applications that vary in either direction.

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