
Online versus In-Store: Price Differentiation for Multi-Channel Retailers

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Abstract

Pure-play online retailers have created pressure on traditional bricks-and-mortar retailers forcing many of them to move to a multi-channel business model to provide customers online storefronts in addition to local physical stores. Conventional wisdom suggests that online prices be lower than in-store prices. This study investigates whether multi-channel retailers follow such clear-cut pricing strategies based on the sampling of both their online and in-store prices. The results from three national retailers of office supplies in the USA indicate that their online prices are not necessarily lower than in-store prices. In addition, they suggest that the retailers apply different pricing strategies across different product categories. The finding reveals that multi-channel retailers use differential strategies for online and in-store pricing. It calls for further investigation of the interaction between consumer behavior and pricing strategies in hybrid e-commerce environment.

Keywords: Price differentiation, Multi-channel retailers, Pure-play online retailers, Bricks-and-mortar retailers.

1. INTRODUCTION

The advances in information and communication technologies (ICTs) have significant impacts on the operation modes of retailing industry. Traditional bricks-and-mortar retailers face the challenges from pure-play online retailer (e.g. Amazon.com, eBay.com, and Netflix.com). The competition forces many traditional companies to establish online storefronts for their customers in addition to local physical stores. Such a move creates multi-channel retailers from which people can buy products both online and in-store.

The main incentive for pushing the online channel is to reduce cost through the optimization of inventory, elimination of unnecessary intermediaries, and enhancement of customer relationship management (Fleischmann, Hall, & Pyke, 2004). Moreover, this new channel can provide consumers with richer and more accessible information (Brynjolfsson & Smith, 2000).

Most existing studies focus on the comparison between traditional bricks-and-mortar retailers and pure-play online retailers (Stylianou, Kumar, & Robbins, 2005). However, many large chain retailers, such as Best Buy, Barnes & Noble, or Walmart, operate on a hybrid mode by offering

customers both online and in-store channels (Bernstein, Song, & Zheng, 2008). The prices that these multi-channel retailers offer online and in-store may or may not be the same. Though some researchers suggest that online prices tend to be lower than in-store prices for multi-channel retailers (Ratchford, Pan, & Shankar, 2003; Pan, Ratchford, & Shankar, 2002), few empirical studies investigate the issue by actually comparing the prices.

The examination of the phenomenon is important because retailers with mixed channels can have different pricing strategies leading to different consumer experiences and competitive advantages. ICTs provide customers with different options to interact with companies in their shopping experiences. For example, multi-channel customers are inclined to use more than one channel to interact with organizations, possibly using companies' websites to check for information and prices, but buying in physical stores (Rangaswamy & Van Bruggen, 2005).

Retailers continue innovating in the usage of ICTs to support distribution channel, although important issues still need to be studied, such as online consumers' psychology to better understand websites success and failures (Wareham, Zheng, & Straub, 2005). Companies still need more experience with internet since it remains a new environment (Bernstein, Song, & Zheng, 2008). There is still a lack of agreement on the factors determining acceptance of websites (Flavian, Gurrea, & Orus, 2009). Few studies have examined price differences for the same product across different channels within the same retailer. The understanding of these possible price variations can provide a clearer view of the e-commerce evolution.

This study examines whether the prices in multi-channel retailers differ in their two channels, the physical and the online. In specific, we verify whether the price differences follow the same pattern among the stores, and across groups of products. The contribution of this study is on the analysis of possible price strategies among retailers in the same business area, identifying price differences among groups of products and between the two channels within retail companies.

The rest of the paper follows with a literature review on price strategies for companies, price differences for conventional and online channels within multi-channel retailers, and variations on prices for groups of products based on their

characteristics. Furthermore, we describe the methodology utilized for the analysis, and list the corresponding results. Later, we present the discussions on the results, with the associated conclusion and implications.

2. LITERATURE REVIEW

Few related studies have been performed for the retail sector, even though ICTs are considered strong influencers to most industries (Doherty & Ellis-Chadwick, 2006). Retailers' evolution to a multi-channel mode still holds many unsolved issues to study. For example, it is not clear for a multi-channel retailer whether the online prices are lower than in-store prices. Huang & Swaminathan (2009) mention an Ernst and Young survey where two-thirds of multi-channel companies price their products the same for their conventional and online channels; with the note that customers usually expect lower online prices.

Along the maturation of ICTs and the retailers' migration to a multi-channel mode, a company may give two different prices for a single product: an in-store price and an online price. Lee, Kauffman, & Bergen (2009) argue that online reputation and relative price levels influence prices for different product categories. Previous empirical studies either compare the price for the pure-play online retailers to the brick-&-mortar retailers, but few examine the difference between online prices and in-store prices within each multi-channel retailer.

Consumer preferences are based on the retail format and on the price wanted (Keen, Wetzels, de Ruyter, & Feinberg, 2004). Price differences can occur at company level, channel level, and at product category level (Smith, Bailey, & Brynjolfsson, 2001).

Pricing strategies at company level

The Internet gives the idea of a more dynamic environment where it is easier to change prices, although this view does not consider the internal cost for companies to communicate, educate and even convince staff. It neither, considers the associated cost with the retrain of the sales force to a different organizational structure, to a different selling model, or how to take full advantage of the new price strategy (Bergen, Ritson, Dutta, Levy, & Zbaracky, 2003). On the other hand, Stylianou, Kumar, & Robbins (2005) asserted that contrary to what could be expected, price changes are not more frequent

or different in magnitude for the online channel than for the conventional channel. Even though, cost and price dispersion have shown higher for the online channel.

The effects of ICTs on the business arena seem to rely on the generally accepted belief that they imply a more dynamic, effortless, and highly efficient medium, which push prices to lower levels, eliminate unnecessary intermediaries, and where consumers benefit from information at their fingertips. Nonetheless, different researchers affirm that activities like price adjustments can imply large quantities of time and effort from companies. This, without considering managerial costs involving information gathering, decision-making, and communicating the changes (Zbaracki, Ritson, Levy, Dutta, & Bergen, 2004).

Price changes have a direct impact on operations, and vice versa. They can also have dramatic effects on supply chain. Researchers called for additional analysis on the relationships between dynamic pricing and inventory, production planning, and capacity management decisions (Fleischmann, Hall, & Pyke, 2004).

E-commerce eases dynamic pricing practices, where they are linked to groups and individual preferences (Haws & Bearden, 2006). Price difference between products from Internet companies becomes smaller as the number of companies competing increases (Baye, Morgan, & Scholten, 2004b). Besides, online price dynamism suggests the idea of effortless price changes, which does not take into account the implications such as consumer perceptions on fairness (Haws & Bearden, 2006) and feelings of discrimination by the dynamic pricing, having as consequence lost of trust (Kannan & Kopalle, 2001). In the same way, price changes are perceived unfair when they are done in a shorter period of time, especially with low priced products. Differences between consumers result in the greatest perceptions of unfairness and the lowest level of satisfaction. The highest perception of fairness and satisfaction across all price level conditions is reached when the consumers are involved to set prices.

All this defines price strategies that retailers establish to compete in a faster, and usually high responsive electronic environment. The Internet platform allows having mixed pricing strategy, where online retailers with higher quality in their services can benefit from a competitive market. This higher quality can help to differentiate them, and be able to set higher

prices, using also the obtained trust and reputation (Venkatesan, Mehta, & Bapna, 2006).

Part of these price strategies might involve random price changes to hinder customers' learning from low price practices (Varian, 1980). Baye, Morgan, & Scholten (2004a) provide the 'hit and run' sale as a way to avoid getting into competition where the minimum price is forced. Here, in order to maximize profits, online retailers need to be as much unpredictable as possible, changing timing and discount magnitudes. It is hard, if not impossible for a customer to learn from low-prices when store have continuous differences among prices (Lach, 2002).

Thus, differences among retailers can be significant, influencing our study. We considered three different companies, all of them being national retailers of office supplies with a solid presence through physical and online locations.

Pricing strategies for business modes

Many researchers agree on the idea that prices for the pure-play online retailers should be lower than those of conventional retailers. Ancari & Shankar (2002) argued that conventional retailers have the highest prices, followed by the multi-channel retailers, and ending with pure-play online retailers with the lowest price. However, they also suggested that when shipping costs are included, the order change, from multi-channel retailers having the highest price, to pure-play online retailers, and ending with conventional retailers showing the lowest price. Nevertheless, it is a common practice nowadays that most multi-channel retailers offer ship-to-store services for free. Many customers place orders online and pick them up in store. This gives multi-channel retailers further advantage in terms of both customer convenience and cost saving.

Additionally, Ratchford, Pan, and Shankar (2003) posit that ICTs can improve consumer position in the buying process, and that online prices are usually lower than prices in traditional channels. At the same time, different types of customers have different online buying preferences. For example, goal oriented buyers look for efficient and strong economic value options, whereas experiential buyers prefer enjoyable purchasing experience (Mathwick, Malhorta, & Rigdon, 2002).

As mentioned earlier, researchers postulate that online retailers present lower prices than traditional ones (Brynjolfsson & Smith, 2000; Pan, Ratchford, & Shankar, 2002). Bailey (1998) argues that Internet retailers show different prices suggesting diverse strategies, including those for homogenous products. Where, those companies are possibly contending for the same groups of customers, although using different marketing practices and different kind of services.

Most of the retailers have a presence in the Internet showing a new paradigm, nevertheless, challenges such as channel conflicts still need to be cleared (Webb, 2002). Schoenbachler & Gordon (2002) argue that marketers working with multi-channel face problems such as the cannibalization of sales with higher margins. In addition, they deal with high costs to implement campaigns, and issues related to customers retention. At the same time, studies also show that channel conflicts can be reduced by combining the advertisement and general information transmission process, together with adapting prices for both channels (Zhang, Zhuang, & Huang, 2010). This equilibrium price is possible for conventional and online channels, where usually it is close to the price of conventional channel considering that the online price is lower (Yao & Liu, 2005).

All three retailers which were considered for our study have both channels, the conventional using physical stores, and the online through their websites. Particularly, all three retailers share same markets with similar groups of products, having a strong physical presence in the south area of the state of Texas.

Pricing strategies for product nature

Bock, Lee, & Li (2007) studied price differences among online retailers, suggesting that differences in Internet maturity have an impact on retailers. Particularly, they compared retailers from the United States and China, where US retailers have lower price dispersion. Findings show that price levels change depending on the product types regardless of the Internet maturity; and that online retailers usually have lower prices and lower price differences compared to multi-channel retailers.

Furthermore, the price dispersion among online retailers is linked to service characteristics which can allow higher prices. Multi-channel retailers with established brands in physical stores can better manage price premiums compared to

pure-play online retailers, although this is not observed in high competitive markets such as books, CDs, and flight tickets (Walter, Gupta, & Su, 2006). In addition, hybrid retailers can be more successful than pure-plays due to advantages in brand strength, cross-promotional opportunities, and the multi-channel offering (Min & Wolfinbarger, 2005).

Studies posit that there is a potential to replace the traditional channel with e-commerce for complex or technological products, which have no standard characteristics (Jantan, Ndubisi, & Yean, 2003). In contrast, for some types of retailers, their customers assign higher value to physically displayed products at their stores as consequence of the possibility to prove them personally. However, after the customer bought the product once, they tended to have the same product valuation through the conventional channel as online. For this reason, the retailer is inclined to set prices to attract customers to the physical store initially, and then take advantage of the increased profits from online sales (Mehra, Kumar, & Raju, 2010).

The reasons for us to include different groups of products were based on these previous facts in the literature. Particularly, around differences on customers' preference, and differences on prices for varied products assigned accordingly to their characteristics. From the simplest ones with not much differentiation (e.g. paper, envelopes) to the more complex such as electronic products, which can still cross-sell related services from retailers.

In summary, companies can define different price strategies which may vary across different channels and even across different product groups. To enhance the comprehension on these events, we did a case study with three national retailers of office supplies, all of which have a conventional channel plus an online channel. Six groups of products were selected considering their characteristics that could influence price differences.

3. METHODOLOGY

As previously mentioned, the goal of this study is to analyze price differences in multi-channel retailers, across groups of products. For which it is preferred that the chosen companies be all national multi-channel retailers with a strong local presence.

The office supply market is highly competitive as the sales of products are highly price sensitive.

Thus, this study samples both online and in-store prices from major office supply retailers in USA, including OfficeMax, Office Depot and Staples. In order to avoid bias in the data and retain confidentiality of the results, they are labeled as Store A, Store B and Store C after a scrambling of the order.

We collected and compared prices for different groups of products within the three office supplies retailers. These groups included Machine Supplies (MS), Office Technology (OT), Filing and Storage (FS), Paper (PA), Personal Organizers (PO), and Desktop Accessories (DA). The variety of products show not only price differences, but distinguishable characteristics, such as for printers that are not only much more complex than a ream of paper, but which can imply additional sales through attached services and warranties extensions.

The three retailers showed products in all six categories, and had a well-developed web site. Their physical stores are located in highly transited avenues, and have a continuous customer flow, besides their direct sales to medium and large size organizations.

One of the authors went to the physical stores to record the prices of different products. For each group of products, at least 30 prices were collected. This ensures sufficient sample size for the statistical analyses including *t*-test and ANOVA *F*-test to compare mean prices. During the same period of time, the research team search for the online prices of the same products from each retailer. All the prices recorded and used in this study were regular ones, and special, clearance and on-sale prices were not included. This avoids the potential bias due to special events such as sales and promotions.

There is a wide diversity in the prices of different products, such as the price for a pencil compared to a digital camera. To make the comparison, we used price ratios created dividing the online price of a product by its in-store price. In this way, the comparison is based on the changes in percentages, providing a better perspective of variations.

4. RESULTS

Table 1 compares the online prices and in-store prices in terms of their price ratios. If the prices are the same, the ratio is 100%. A lower-than-100% ratio indicates that the average online price is lower than the average in-store price,

and a higher-than-100% ratio indicates that the average online price is higher than the average in-store prices. The overall average price ratio for all the products in the sample is 98.92% and it is not significantly different from 100%.

Product	Store			By Prod
	A(n=89)	B(n=131)	C(n=78)	
MS (n=72)	100.00 (.00)	99.17 (3.33)	101.25 (6.87)	99.96 (3.96)
OT (n=36)	97.22 (9.62)	100.00 (.00)	104.49 (15.55)	100.57 (10.69)
FS (n=59)	100.77 (2.43)	90.76*** (18.52)	99.94 (10.18)	94.17*** (16.09)
PA (n=32)	100.00 (.00)	92.96 (27.85)	106.40*** (6.19)	99.36 (17.84)
PO (n=49)	100.55 (2.06)	96.09 (12.51)	107.60* (14.39)	99.95 (11.84)
DA (n=50)	100.00 (.00)	103.13 (12.53)	98.63 (13.88)	100.54 (10.70)
By Store	99.80 (3.73)	96.16*** (15.18)	102.55* (11.84)	98.92 (12.18)

Table 1: Online Price to In-store Price Ratio (%)

Note: Standard deviations are given in parentheses below the mean. *-Significant at 0.1 level, **-Significant at 0.05 level, ***-Significant at 0.01 level.

Among the three stores, however, Store B offered relatively lower online prices than in-store prices by almost 4% on average, but Store C makes their online prices higher on average than their in-store prices by less than 3%. Store A, on the other hand, did not have significantly different on-line and in-store prices as the average price ratio is very close to 100%.

Category-wise, only the Filing & Storage category had significantly lower online prices than in-store prices by an average of 5.83% (i.e. 100% - 94.17%). The online and in-store prices for the other five categories were not much different.

Nevertheless, Store C had the categories of Paper and Personal Organizers with significant differences between online and in-store prices with 106.40% and 107.60% respectively. Moreover, Store B showed one price ratio with significant difference between online price than in-store price for the Filing and Storage category with a 90.76% of the online prices lower than in-store prices, on average.

Table 2 gives the ANOVA results for testing mean differences in the price ratios across three stores for all the products and each product category respectively. There was a significant difference in the price ratio between online and

in-store prices at a .01 level across stores for all product categories.

Product	F	Significant Paired Difference
MS	1.51	C-B: 2.08%*
OT	1.45	C-A: 7.27%*
FS	2.53*	A-B: 10.01%*; C-B: 9.18%*
PA	1.62	C-B: 13.44%*
PO	4.05**	C-B: 11.51%***
DA	.75	
Overall	7.37***	C-B: 6.39%***; A-B:3.64%**

Table 2: Store-wise ANOVA Tests

Note: $H_0: \mu_A = \mu_B = \mu_C$; *-Significant at 0.1 level; **-Significant at 0.05 level; ***- Significant at 0.01 level.

The post-hoc examination located two pairs that are significantly different: Store B - Store A and Store B - Store C. That indicated that Store B is different from both Store A and Store C in terms of price ratios, but Store A and Store C are not that different. Thus, the stores can be divided into two groups: Store B by its own in one group and Store A and Store C in another group. The difference in price ratio between Store B and Store C was 6.39%. As shown in table 1, Store B offered lower online prices than in-store prices by 3.84% (i.e. 100%-96.16%) on average, but Store C made the online prices higher than in-store prices by an average of 2.55% (i.e. 102.55%-100%). Thus, the total gap of 6.39% between the two stores can be decomposed into 3.84% plus 2.55%. In the same way, the difference in price ratio between Store B and Store A was 3.64%. As shown in table 1, Store B offered lower online prices than in-store prices by 3.84% (i.e. 100%-96.16%) on average, but Store A had the online prices slightly below in-store prices by an average of 0.20% (i.e. 100%-99.80%). Thus, the total gap of 3.64% between two the stores can be decomposed into 3.84% minus 0.20%.

For the Machine Supplies products three groups of stores can be set up, starting with the lower-price-ratio group which includes the Store B with a price ratio of 99.17%. Additionally, there was the higher-price-ratio group comprised by Store C, having a price ratio of 101.25%, and establishing a significant difference to the lower-ratio group by 2.08%. In the middle, Store A is shown with a 100% price ratio, not having a significant difference with neither of the other two stores.

A similar situation occurred for Office Technology products where the lower-price-ratio group

comprised by Store A with a price ratio of 97.22%, and the higher-price-ratio group, which includes only Store C (104.49%) showed a significant difference totaling 7.27%. In the middle, Store B displayed a price ratio of 100%, having no significant difference to Store A neither to Store C.

Filing & Storage products displayed in the post-hoc examination two groups of stores, starting with the lower-price-ratio comprised by Store B only with a price ratio of 90.76%, and the higher-price-ratio group including Store A (100.77%) and Store C (99.95%). The significant differences between stores in each group were about 9.5%. For Paper products, the lower-price-ratio group included only Store B with a price ratio of 92.96%; compared to the higher-price-ratio group comprised by Store C only, with a price ratio of 106.40%, displayed a significant difference of 13.44%. In the middle, Store A had a price ratio of 100%, pointing no significant difference to the other two groups.

For Personal Organizers products a similar situation to the Paper category was shown, with the lower-price-ratio group comprised by Store B, having a price ratio of 96.09%, and the higher-price-ratio group including Store C with a price ratio of 107.60%. A significant difference between these two groups was estimated, totaling 11.51%. In the middle, Store A had a price ratio of 100.55%, without any significant difference to the other two groups. Finally, Desktop Accessories products showed no significant differences among the three stores: Store B (103.13%), Store A (100%), and Store C (98.63%).

Table 3 gives the ANOVA results for testing mean differences in the price ratios across six product categories for all the stores and each store respectively. Cross product categories for all the stores had a significant difference in the price ratio between online and in-store prices at a .05 level. The category-wise comparison in Table 1 shows that the online prices are on average 94.17% of the in-store prices for Filing and Storage products, whereas the differences are not that significant for other categories.

The post-hoc examination located diverse pairs of categories with significant differences, which we grouped to distinguish categories. For all the stores within the overall, two groups can be created: the lower-price-ratio group comprising the Filing & Storage included, listing the lowest online price to in-store price ratio (94.17%). Subsequently, the high-price-ratio group with

the rest of the categories: MS (99.96%), OT (100.57%), Paper (99.36%), PO (99.95%), DA (100.54%). The average significant difference in price ratios between the two groups was about 6%.

Store	F	Significant Paired Difference
A	1.46	MS-OT: 2.78% ^{**} ; FS-OT: 3.55% ^{**} ; PA-OT: 2.78% [*] ; PO-OT: 3.33% ^{**} ; DA-OT: 2.78% ^{**}
B	2.23 [*]	MS-FS: 8.41% ^{**} ; OT-FS: 9.24% [*] ; DA-FS: 12.38% ^{***} ; DA-PA: 10.17% [*]
C	1.21	PA-DA: 7.77% [*] ; PO-DA: 8.97% ^{**}
Over-all	2.34 [*]	MS-FS: 5.80% ^{***} ; OT-FS: 6.41% ^{***} ; PA-FS: 5.19% ^{**} ; PO-FS: 5.78% ^{**} ; DA-FS: 6.37% ^{***}

Table 3: Category-wise ANOVA

Note: $H_0: \mu_{MS} = \mu_{OT} = \mu_{FS} = \mu_{PA} = \mu_{PO} = \mu_{DA}$;
 MS - Machine Supplies; OT - Office Technology;
 FS - Filing & Storage; PA - Paper; PO - Personal Organizers; DA - Desktop Accessories; * - Significant at 0.1 level, ** - Significant at 0.05 level, *** - Significant at 0.01 level.

Store B was the only store to show an overall significant difference (p-value = 0.055) for the price ratio at store level. The post-hoc analysis identified two groups: the lower ratio group comprised the Filing and Storage products and Paper products (90.76% and 92.96% respectively) and the higher ratio group comprised Machines Supplies, Office Technology, and Desktop Accessories products (99.17%, 100%, and 103.13% respectively). The average differences in price ratios between two groups were about 10%. In the middle laid the Personal Organizer category that was not significantly different from either group (i.e. 96.09%).

Even though Store A did not display an overall significant difference at store level (p-value = 0.212), the post-hoc examination displayed the Office Technology products with significant difference to the rest of the categories due to its lower-price-ratio of 97.22% that suggests a lower online price than in-store price. Consequently, the lower price group included only the OT category, and the higher price group comprised all the rest of the categories: MS (100%), FS (100.77%), Paper (100%), PO (100.55%), and DA (100%). The average differences in price ratios between these two groups were about 3%. On the other hand, Store C had no overall significant difference at store level (p-value = 0.312), showing in the

post-hoc analysis that the Desktop Accessories products were significantly different to Paper and Personal Organizers categories, creating the lower price group with the Desktop Accessories products only (98.63%), and higher price group with Paper and Personal Organizers categories (106.40% and 107.60% respectively). The average significant differences in price ratios between group 1 and group 2 were about 8%. In the middle could be found the other three categories: MS (101.25%), OT (104.49%), and FS (99.94%) without any significant difference to either group.

5. CONCLUSION AND IMPLICATIONS

Retailers are experiencing changes on their business models adding an online channel as an option to better reach their customers. Many companies in the area of office supply are using a multi-channel model having their conventional bricks-and-mortar stores plus their websites supporting an online store.

The conventional wisdom indicates that retailers offer lower prices through their online offerings; although most studies have focused comparing pure-play retailers to traditional bricks-and-mortar, not having a clear idea if in-store prices are really above the online prices within the same retailer.

Consumers are learning to deal with this new model, sometimes checking prices and product information online and buying the product in the physical stores. Even requesting additional details on products via ICTs, and sending their opinions and preferences back to the retailer electronically. Companies using this new medium still need additional experience to fully take advantage of it, moving their prices across groups of products, channels, and facing a more elaborated competition from other retailers.

Differences in prices along these dimensions (stores, channels, product categories) are assumed not purely random, but the result of pricing strategies. Three stores were selected, Store A, Store B, and Store C, all national retailers of office supplies, with a solid presence in this highly competitive market. The three of them have both channels bricks-and-mortars stores, and an online presence. All of them have products in all selected product categories (MS - Machine Supplies; OT - Office Technology; FS - Filing & Storage; PO - Personal Organizers; DA - Desktop Accessories, and Paper).

In order to analyze these differences we compared price ratios obtained by dividing the online price by the in-store price. This was needed since the product categories included products with different price magnitudes, misleading the results, and a price ratio provides a percentage amount easier to compare.

Results suggest an overall difference between online and in-store prices not significant, which goes against the generally accepted beliefs and some previous studies. Table 1 shows the overall price ratio for all the products in the sample, 98.92%, presenting a minor difference on average for the online prices to the in-store prices across stores and categories.

Different stores have different pricing strategies in terms of how to differentiate online prices and in-store prices. Results showed that, Store C pushes the online prices higher than in-store prices. A possible explanation could be that they offer discounts in stores rather than online looking to keep the online prices consistent with the catalog prices. Another reason may include staff performance evaluation based on local sales volume, supporting in-store sales.

Nevertheless, as can be seen in Table 1, the three stores showed different product strategies where Store A displayed the same or very close online prices than in-store prices through the different categories. Store B, on the other hand, displayed lower online prices than in-store prices in four out of six categories, and at the store level also. In contrast, Store C had four categories with price ratios above 100% indicating higher online prices than in-store prices, and at the store level too. Overall, and at four categories out of six, Store B showed a significant different price ratio than Store A and Store C, being the store with more differences in price ratios overall and across categories.

Across different product categories, stores employ different pricing strategies. In particular, Filing & Storage seems to have a lower price ratio than others. Even though, only the Filing & Storage and Personal Organizers categories in Table 2 indicated significant different means of price ratios among stores, overall the store-wise ANOVA test showed a significant different means of price ratios, pointing different price strategies for the three stores.

Each store would use different pricing strategies for different product categories. Some may give online discount, if any, for one product category

at a time, while other may not. Table 3 shows test results for Store C and Store A as the two stores with a consistent price strategy across categories. For Store C, the price ratios were about the same except for Desktop Accessories, and for Store A the Office Technology category was the only one different to each and every one of the rest of categories. The overall result shows that the mean of price ratios across categories are different, indicating a diversified pricing strategy across products.

This study as all studies, have limitations, including a cross-sectional analysis where we were not able to track the price changes over a period of time. A longitudinal analysis can provide a better insight on the price strategies and associated consumer behavior. At the same time, it can give a more detail idea of past strategies used by companies looking to attract more customers, especially, more sales with ideally better overall profits.

The importance of this study relies on the fact that these price differences across channels and product categories affect consumer experiences and their behaviors. Retailers can attract different consumer groups depending on their preferences (traditional, object-driven, experience-driven). A better understanding of this commercial interaction can help to support decisions toward optimizing sales in the retail sector.

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