Brick-and-Mortar Barriers: The Impact of Uncertainty Avoidance on Purchase Probability under Personalized Pricing

Group 10

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Abstract

This paper examines how the cultural dimension of Uncertainty Avoidance impacts perceived price unfairness and purchase behavior in the supermarket industry, aiming to further the understanding of cultural factors' influence on the sustainability of personalized pricing in this industry.

The increasing number of data in supermarkets' possession has enabled the application of highly advanced price management algorithms for personalized prices and discounts. Personalized pricing in the supermarket industry is still a relatively new phenomenon, however, and only few have adopted this practice, all with mixed results.

While there are obvious economic incentives for supermarkets to adopt personalized pricing, one main barrier prevails: such a discriminatory practice induces an unfairness perception, which decreases the purchase probability.

Consumers' unfairness perception and how such perception translates into purchase behavior is of paramount importance to the sustainability of personalized pricing practices, and thus, identifying consumer characteristics that enable prediction of perceived unfairness and reactions to perceived unfairness can aid decision-making in this field.

This paper uses a survey comprising of a mixture of question-based and scenario-based components to estimate Uncertainty Avoidance, perceived price unfairness, and the impact of perceived price unfairness on purchase probability.

We find that Uncertainty Avoidance is positively correlated to the perceived price unfairness under personalized pricing schemes. Moreover, we find that the negative correlation between perceived price unfairness and purchase probability is stronger for consumers with High Uncertainty Avoidance.

Keywords: Brick-and-mortar stores, uncertainty avoidance, personalized pricing, perceived price unfairness, purchase probability

Introduction

In the age of Big Data, consumers are increasingly expecting a personalized shopping experience in return for giving up personal data (Fenech & Perkins, 2015). To accommodate these expectations, retailers have developed highly advanced data analytics algorithms which also have implications for retailers' price management. In particular, such algorithms are becoming more prevalent in usage for personalizing prices and discounts (Weisstein et al., 2013), motivated by considerable profit opportunities for the firm (Sahay, 2007).

Personalized pricing (or personalized discounting) has often been defined as the ability to vary prices for the same product across different consumers according to their willingness to pay, and communicate prices in a directed, personalized way (Garbarino; Lee; Miyazaki, 2003). Several studies have provided empirical evidence that such practices increase consumers' perceived price unfairness (e.g. Richards et al., 2015; Garbarino & Maxwell, 2010), referring to this as the main obstacle for adopting personalized pricing.

Hitherto, most research on personalized pricing has focused on online vendors (e.g. Garbarino; Lee; Miyazaki, 2003; Garbarino & Maxwell, 2010; Lee & Lawson-Body, 2011) as the data accessibility has traditionally been greater for such firms and due to the relatively greater prominence of personalized pricing in this sector (Fenech & Perkins, 2015). Moreover, as brick-and-mortar stores (i.e. physical stores) offer greater procedural transparency (Mittal & Agrawal, 2016), the aforementioned obstacle, that is the consumers' perceived price unfairness, is greater in this sector. Therefore, it is relevant to examine determinants of the magnitude of the obstacle for brick-and-mortar retailers.

In 1999, when M. C Campbell first studied the effect of inferred motive, she called for a more comprehensive understanding of the factors behind perceived price unfairness. However, cross-cultural differences have received little empirical attention, leaving us with a scant understanding of the effect of cultural differences, and research is often limited in its geographical scope. The present research addresses this gap by examining the impact of the universal cultural dimension Uncertainty Avoidance on perceived price unfairness, and moreover, how this cultural dimension affects the relationship between perceived price unfairness and purchase probability.

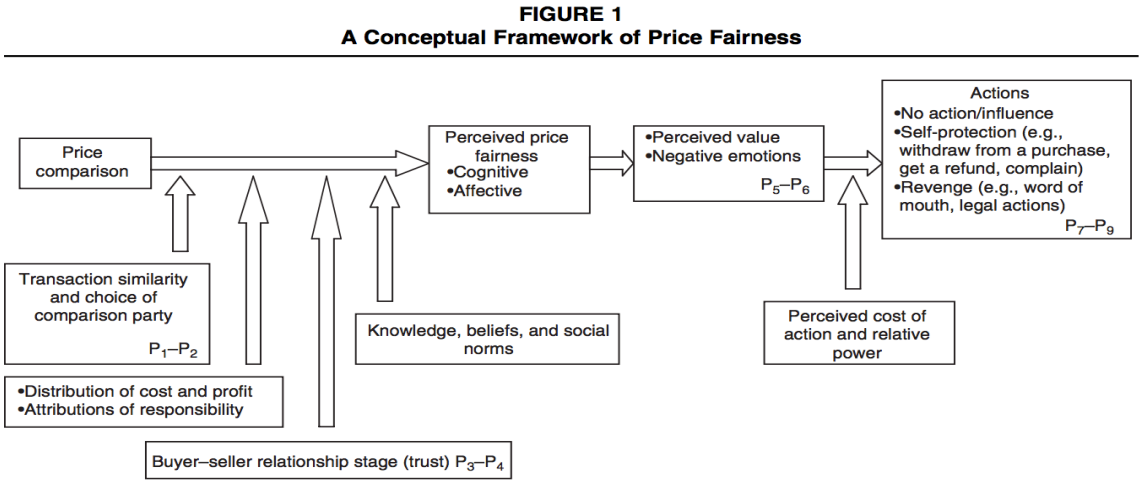
Conceptual Background

In essence, fairness considerations are based on *dual entitlement* (Kahneman et al., 1986): that is, the consumer perceives a reference price she believes she is entitled to, while she also perceives a reference profit to which she believes the firm is entitled. If the consumer faces a price higher than the reference price, and attributes this difference to the firm's seeking to make a profit above its reference profit, a disadvantageous inequity perception arises. On the contrary, a price lower than the reference price will create an advantageous inequity perception (Richards et al., 2015).

It follows that consumers' fairness judgments are based on whether firms are seen to have benevolent intentions (Campbell, 1999). Literature suggests that such fairness judgments are based on consumers' perceptions of the seller's costs (Bolton et al., 2003), buyers relationship with the seller and product (ibid.), cultural differences among buyers (ibid.), suspected motives behind price setting (Campbell, 2007), procedures used for price setting (Xia et al., 2004), perceived deviation from social norms (i.e. industry standards) in price setting (Garbarino & Maxwell, 2010), and interpersonal differences in price faced (Anderson & Simester, 2008). Xia et

al. summarized the formation of price fairness perceptions in a conceptual framework, as shown below:

FIGURE 1
A Conceptual Framework of Price Fairness (Xia et al., 2004)



When humans perceive unfairness, they are willing to give up, or lose out on, substantial value to avoid being treated unfairly (e.g. Brosnan & de Waal, 2003; Walster et al., 1978). The magnitude of this depends on individual characteristics such as attitudes towards risk, psychological well-being, and level of altruism they assign to the motive behind the unfair treatment (Rotemberg, 2011). Empirical research has supported the application of these principals to price unfairness, and found a strong negative correlation between perceived price unfairness and purchase probability (e.g. Wu et al., 2012; Richards et al., 2015): that is, even if an economic transaction is beneficial to the consumer, he is willing to refrain from completing it to avoid paying a discriminatory price.

Literature suggests that the perceived price unfairness varies across cultures (e.g. Chapuis, 2012; Woodside et al., 2011; Patterson et al., 2006). In shaping individual perceptions of fairness, cultural orientation is crucial in affecting customer actions (see Figure 1). Hofstede (2001) defines culture as "the collective programming of the mind distinguishing the members of one group or category of people from another". Consumers from different cultures have various price sensitivities, implying price discriminations across the globe for essentially the same product (Fan and Leung, 2005). Similarly to perceived price unfairness, the level of trust in the provider and the level of satisfaction depend on culture (Woodside et al, 2011). Trust is a psychological state that reflects the confidence the consumer has in an exchange partner's reliability, benevolence and integrity (Chapuis, 2012). Chapuis argues that dynamic pricing would appear to undermine the kindness and the integrity of the firm because of the perception of its opportunistic behavior – charging a higher price when demand is strong. This idea can be applied to personalized pricing, where opportunism can be perceived in a mechanism that charges higher prices when the willingness to pay is higher.
One prominently used framework for examining cultural differences is Geert Hofstede's six cultural dimensions (Hofstede, 1980), which has been widely applied to in fields such as

Organizational Behavior and Political Science as its construct is designed for practical application. The focal cultural dimension of this paper is *Uncertainty Avoidance,* as this dimension is closely related to trust and fairness, two key factors in influencing price unfairness perceptions and subsequent effects on purchase actions (ibid.)

Uncertainty Avoidance (UA) describes the extent to which people feel threatened by ambiguous or unknown situations (Hofstede, 2001). Higher Uncertainty Avoidance is associated with a desire for reduction of ambiguity and a need for predictability, written rules and structured relationships while lower Uncertainty Avoidance is associated with a propensity to engage in risk-taking behavior (Triandis, 1994). In purchase actions, consumers are uncertain over what their reference price should be (Richards, 2015). Generally, being treated fairly reduces people's feeling of uncertainty (Desai et al., 2011).

Experiment Design

The experiment consists of three main components: First, a component designed to measure the subject's Uncertainty Avoidance; Second, a component measuring the subject's general unfairness perception in a consumer context; Third, a component measuring the reactions to personalized pricing in terms of changes in perceived price unfairness and purchase actions.

In previous research, the measurements of Uncertainty Avoidance are typically used on a country level to create country-level measurements. However, there is a feasibility of measuring Uncertainty Avoidance on an individual level, as the country score is built on aggregating individual responses. Researchers have proposed Uncertainty Avoidance scales that are designed for the individual level (Patterson et al., 2006):

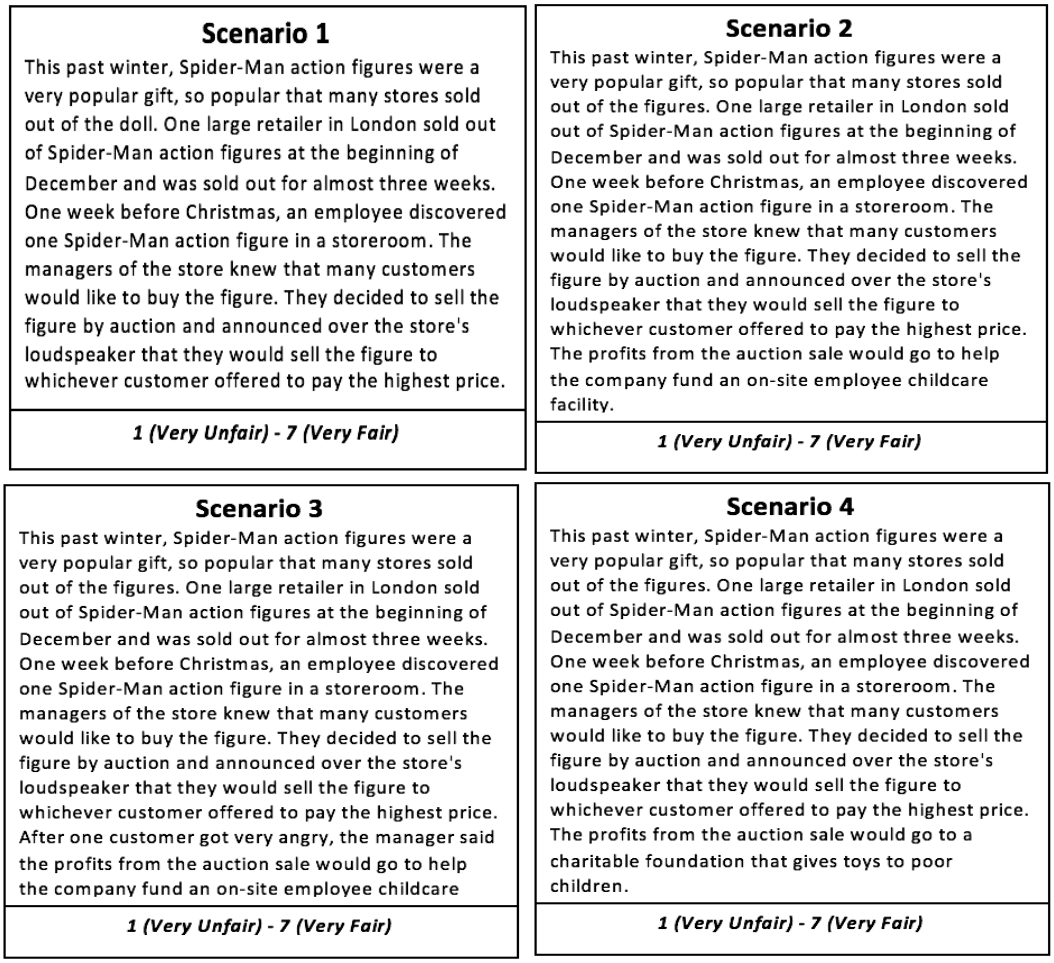
Figure 2: Uncertainty Avoidance Component

Uncertainty Avoidance
1. It is important to have instructions spelled out in detail
2. It is important to closely follow instructions and procedures
3. Rules and regulations are important because they inform me of what is expected
4. Standardised work procedures are helpful
5. Instructions for operations are important
1 (Strongly Disagree) - 7 (Strongly Agree

These scale items have been widely applied in academic research and have good internal reliability. In our questionnaire, the scale items are measured on a 7-point Likert-scale and the individual-level Uncertainty Avoidance Index is derived from calculating the average of these items.

In order to explore other influential factors, we examined the impact of a firm's motive and relative profit on perceived price unfairness. Subjects are shown four scenarios based on a same price change altering motive (negative, positive) and relative profit (more than usual, no more than usual). Then they are asked to indicate their fairness perception on a 7-point scale (1=very unfair, 7=very fair).

Figures 3-6: Perceived Unfairness Scenarios



Past research suggests that auctions can be perceived as the firms taking advantage of increased consumer demand, result in perceived higher profits (Holt, 1995; Kahneman; Knetsch; Thaler, 1986), so we expect subjects referring the first scenario as the retailer auctioning off the Spider-Man action figure with negative motive (taking advantage of consumers) and making higher profits. In the second scenario we changed the negative motive to positive by saying that the retailer will use the profit for public good, keeping the perceived profit constant. In the third scenario we create negative motive and no more than usual profit with the additional information that the retailer will donate the profit to charity but only decide to do that after receiving a complaint from a consumer. The last scenario changes the motive to positive by indicating the donation at the beginning.

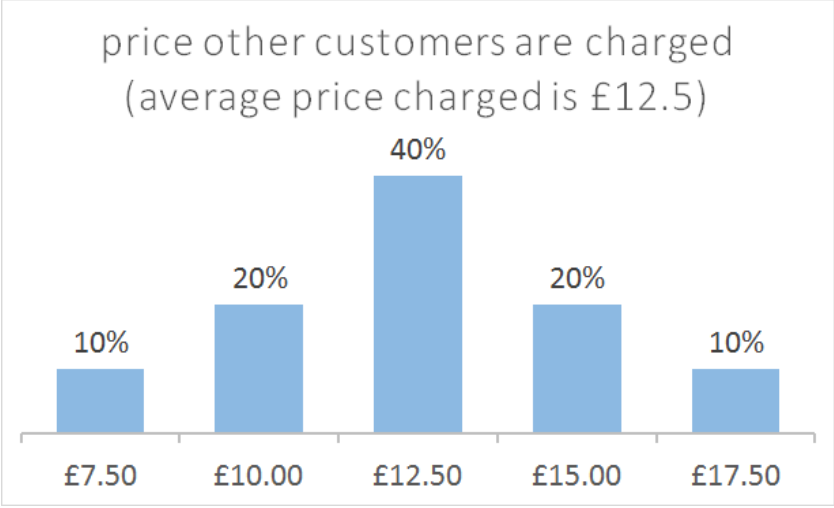
The last section of the experiment is designed to elicit subjects' purchasing behavior and price perception on personalized pricing. We selected a bundle of standard products (5 Bananas, 12

cans of Coke, Minced Beef, 450g Cornflakes, 1L Orange Juice, 1L Laundry Detergent) in the supermarket that are rather well-known by consumers. Moreover, using a bundle of goods will reduce the impact of individual differences in willingness to pay. While we note that the willingness to pay for this particular goods bundle will, to some extent, depend on the subject's individual preferences, the factor of interest is not willingness to pay in itself, but the resulting change in willingness to pay after personalized pricing is applied.

Figure 7: Bundle of products

Subjects are engaged with a series of purchasing decisions, consisting of a confidential round and a non-confidential round, to indicate their purchasing behavior as well as perceptions confront 5 different price levels (£7.5, £10, £12.5, £15, £17.5, centered on the real market price). We varied the offered price for this bundle in a random order to eliminate the potential effect of anticipated ascending price level. In the confidential round subjects, are asked to make buy/not buy decision followed by a 7-point scale perceived fairness selection (1=very unfair, 7=very fair) at each price level with no additional information, whereas in the non-confidential round a price distribution of what other people are charged is given to simulate the experience and transparency in brick-and-mortar stores. We expect to see changes in purchasing behavior as well as price perception prior and post price distribution.

Figure 8: Distribution of the price other customers are charged



Subjects are asked to guess the price of the bundle before being given the distribution. By including this factor in the analysis, we control the interpersonal inequality in initial price perceptions. Our ultimate goal is to find out the changes in both perceived unfairness and purchase behaviour derived from knowing prices that other people are charged, and the linkage to individual Uncertainty Avoidance level.

Analysis & Results

Below are our analysis and results from the experiments we conducted.

Finding 1: *UAI is uncorrelated with age, gender, and surprisingly, nationality in our case.*
We think this is understandable for two reasons. Firstly, in our survey design, the nationality question is optional and received only 66 responses. The sample size might be too small to replicate the findings by Hofstede. Secondly, perhaps more importantly, as most of our respondents are LSE Students, the cultural difference within sample is probably significantly smaller than the general population.
We run the following regression:
UAI ~ age + gender + nationality
None of the slope coefficients is significant.
(see appendix for regression output)

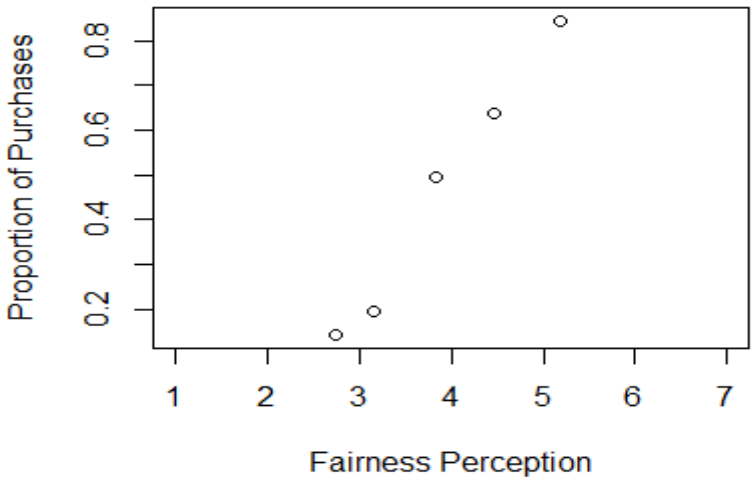
Finding 2: *Perception of price unfairness and buying decision are highly correlated.*
Naturally, when the price is perceived as unfair, consumer is less likely to buy. Our data is in line with this intuition, a good indicator that respondents took our survey seriously.
At each price level, we performed regression of buying decision on fairness perception and conducted t-test for the significance of the slope coefficients. We find that in almost all cases, we have strong evidence for correlation between purchasing decision and fairness perception.
Table of P-values for the t-test with the null hypothesis that there is no correlation between purchasing decision and fairness perception

Figure 9: Probability values (P-values) of the used price levels

price level	Before	After
£7.50	0.004302	0.174
£10.00	0.0000168	0.0117
£12.50	1.07E-10	1.06E-08
£15.00	0.0000977	4.48E-09
£17.50	0.000126	0.000284

By aggregating all price levels, we also find a very clear relationship between average fairness perception and proportion of respondents choosing to purchase.

Figure 10: Fairness Perception versus Proportion of Purchase

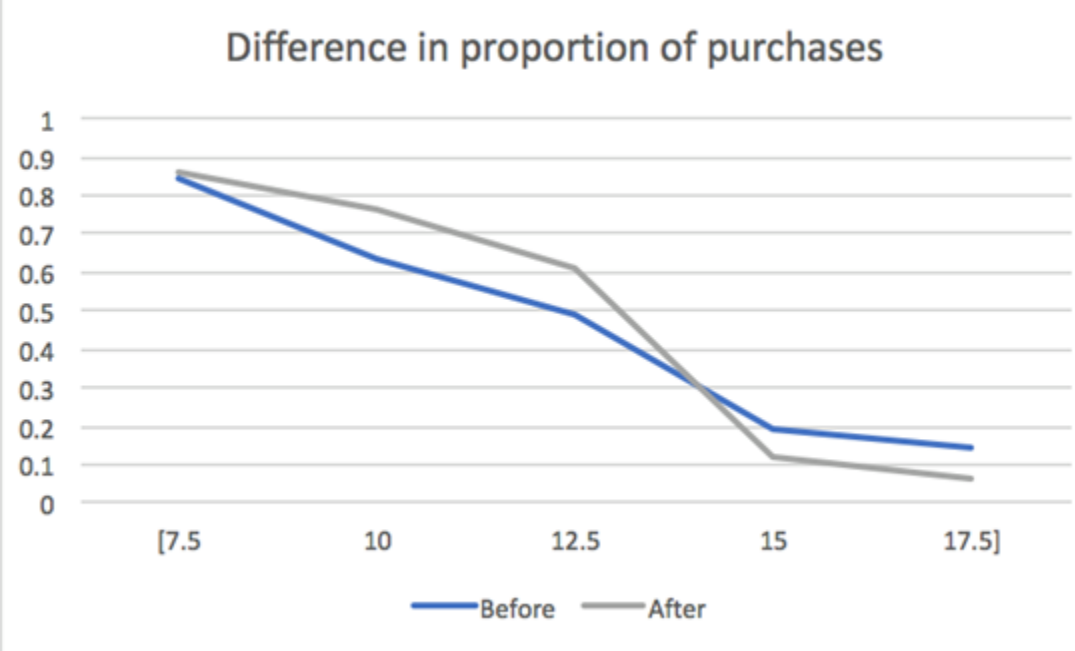


Finding 3: *After the average price 12.5 is disclosed, the change in buying decision differs at each price level.*

At P=7.5, P=10,P=12.5, more people opted to buy. At P=15, P=17.5, more people opted not to buy.

Before the price is revealed, at P=7.5, 84% of people choose to buy, after the average price of 12.5 is disclosed, 86% of people choose to buy; at P=10, 64% of people choose to buy, after the disclosure, 77% of people choose to buy; at P=12.5, 49% of people choose to buy, and after the disclosure, 61% of people choose to buy. Intuitively, we see increases in the proportion of people buying because people now think they are getting a good deal.
At P=15, 19% of people choose to buy, and 12% choose to buy after the disclosure; at P=17% choose to buy and only 6% choose the buy after the disclosure, presumably because they now see they are getting a bad deal.

Figure 11: Difference in proportion of purchases



Core findings

By and large, the data collected supported the predictions our working theory made. In particular, there are three major core findings.

Core Finding 1: *Change in fairness perception before and after the price disclosure is positively correlated with UAI, which fits our hypothesis that consumers high in Uncertainty Avoidance will perceive greater price unfairness under personalized pricing.*

Note that given our research design, we are not interested in the correlation between UAI and perceived price unfairness before the disclosure per se. Since people naturally come in with very different estimates of the bundle's worth, testing for correlation between UAI and perceived price unfairness before disclosure would inevitably be biased by preconceived estimates of the bundle's worth, a hidden variable that we have no direct way of controlling for. By considering the difference in before and after fairness perception, however, we eliminate the impact of the hidden variable and provide a more accurate measure of people's readiness to form price unfairness perception.

We estimate the following regression:

Difference in Fairness Perception at 17.50 ~ UAI + gender + age

Age and gender are included as controls. Removing them does not change our result.

The estimate for the slope coefficient is -0.34, with p-value at 0.05, marginally significant at 5% significance level and highly significant at 10% significance level. (see appendix for full regression output).

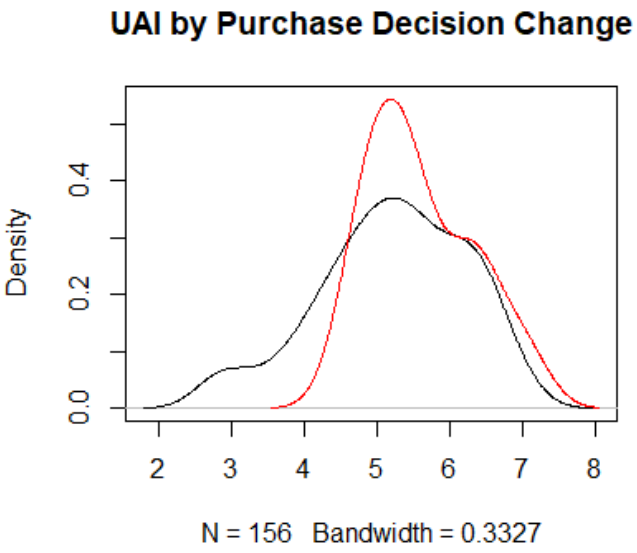
We note that such correlation does not exist at other price levels, which is slightly surprising. We did not expect to find any correlation at P=7.5, P=10, or P=12.5, since unfairness perceptions are significantly lower when experienced as advantageous inequity (Richards et al., 2015). At P=15, however, we were expecting to find a positive correlation with UAI, albeit in smaller magnitude than the coefficient at 17.5. Statistical analysis shows that while the coefficient(-0.13) is indeed negative and smaller in magnitude than the coefficient at P=17.5, as we predicted, the associated p-value is 0.35, falling short of any meaningful threshold for statistical significance. We suspect that at P=15, the deviation from the average price is too small to induce strong feelings of price unfairness and consequently fail to produce a statistically significant result in our limited sample size.

Core Finding 2: *Change in before and after purchase decision is positively correlated with UAI*. This fits our hypothesis that the subsequent negative effects on purchase probability are greater for consumers with high Uncertainty Avoidance.
We run the following regression:

Difference in _Buying_17.50 ~ UAI
The estimated slope coefficient is -0.11, with p-value at 0.0072, again a highly significant result.

Core Finding 3: the Buy-Buy group (mean UAI 5.21) is significantly less uncertainty avoidant from Buy-No Buy group(mean UAI 5.60).
We are interested in knowing whether UAI influences consumer's purchase decision in the face of perceived price unfairness. An intuitive way to investigate this is to compare those who s
We aggregate the data for all price levels and performed t-test for the difference in means. The resultant p-value for the associated difference in mean test 0.03193, suggesting a highly significant result. In other words, in the presence of price unfairness (the disclosures), those who reacted more strongly by changing buying decision to no buying decision are on average more uncertainty avoidant.
Below is a density graph that illustrates the difference in mean. Clearly, the Buy-Buy group is more densely distributed in the middle, whereas the Buy-No Buy group is skewed towards the right (higher uncertainty avoidance).

Figure 12: UAI by Purchase Decision Change



(red line indicates Buy-Buy group, black line indicates Buy-No Buy group)

Conclusion & Implications for Business

In this study we examine the role of Uncertainty Avoidance in determining the magnitude of perceived price unfairness and the dimension's role in the relationship between perceived price unfairness and purchase probability for brick-and-mortar stores.

Consistent with existing research, we find a strong negative correlation between perceived price unfairness and purchase probability. Moreover, we find that consumers with a high Uncertainty Avoidance will, indeed, perceive a higher level of price unfairness when exposed to personalized pricing. This can be explained by the lower willingness to trust that humans with a high Uncertainty Avoidance exhibit, which will consequently impact the trust in the Buyer-Seller relationship (see Figure 1) and lead to them assigning a relatively lower level of altruism to the firm's motive for deviating from the dual entitlement. Moreover, we find that the subsequent negative effect on purchase probability is stronger for people with a high Uncertainty Avoidance, i.e. they are willing to give up more value to avoid unfair treatment compared to consumers with a low Uncertainty Avoidance. This result supports Desai et al.'s finding that unfairness perceptions increase uncertainty, and thus, we should, indeed, expect that consumers with a high Uncertainty Avoidance are willing to go further to avoid unfair treatment (and in extension, to avoid uncertainty).

Due to the high procedural transparency that brick-and-mortar stores face, perceived price unfairness is a key factor in the decision of whether to adopt a personalized pricing scheme. Our findings can be applied by decision-makers to further their understanding of differences in cultural factors in respective markets' marketing environment, by relating our results on individual behavior to Geert Hofstede's country-level Uncertainty Avoidance Index covering more than 70 countries. While prescriptions about decision-making in this regard will be left to additional research, the implications for brick-and-mortar stores is that the obstacle that is unfairness perceptions is greater in countries with high Uncertainty Avoidance such as Japan, France and Spain, while personalized pricing is more feasible in countries with a low Uncertainty Avoidance such as Denmark, Singapore and the United Kingdom. Naturally it follows that there is a greater need (and ROI) for mitigating perceived price unfairness in countries with a high Uncertainty Avoidance, particularly when efforts are focused on increasing trust in the Buyer-Seller relationship. Relevant research for decision-makers on trust in the Buyer-Seller relationship has been conducted (e.g. Doney & Cannon,

1999; Akrout et al., 2016; Abdul et al., 2012), however, it remains to determine the implications of the remaining five of Hofstede's cultural dimensions for the viability of personalized pricing schemes in the brick-and-mortar industry.

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Appendix

```
library(psych)
library(sm)
library(car)
df <- read.csv("E:/LSE/groups2017/responses.csv", header=TRUE,stringsAsFactors=FALSE)

#1:unfair__7:fair

########################################DATA
Cleaning/Processing################################################

colnames(df)<-
c("timestamp","consent","ua1","ua2","ua3","ua4","ua5","FP_PN","FP_PP","FP_NN","FP_NP","I_B
_750",

"I_FP_750","I_B_1000","I_FP_1000","I_B_1250","I_FP_1250","I_B_1500","I_FP_1500","I_B_1750"
,"I_FP_1750",

"P_B_750","P_FP_750","P_B_1000","P_FP_1000","P_B_1250","P_FP_1250","P_B_1500","P_FP_15
00","P_B_1750",
            "P_FP_1750","age","gender","nationality","GP")
# FP_PN : Fairness Perception_ Profit Negativemotive
# FP_PP : Fairness Perception_ Profit Postivemotive
```

```
# FP_NN : Fairness Perception_ Noprofit Negativemotive
# FP_NP : Fairness Perception_ Noprofit Postiveemotive
# I_B_750 : Initial_Buyingdecision_7.50
# I_FP_750 : Initial_Fairness Perception_7.50
# P_B_750 : Post_Buyingdecision_7.50
# P_FP_750 : Post_Fairness Perception_7.50
# GP:Guessed Price

#calculate UAI by taking the avergae of the five ua-related questions
df$UAI <- (df$ua1+df$ua2+df$ua3+df$ua4+df$ua5)/5
#describe(df$UAI)

#D_FP_750 : Difference in_Fairness Perception_(price level) = post - initial
df$D_FP_750 <- df$P_FP_750 - df$I_FP_750
df$D_FP_1000 <- df$P_FP_1000 - df$I_FP_1000
df$D_FP_1250 <- df$P_FP_1250 - df$I_FP_1250
df$D_FP_1500 <- df$P_FP_1500 - df$I_FP_1500
df$D_FP_1750 <- df$P_FP_1750 - df$I_FP_1750

#replace missing values in age with the mean
mage<-mean(df$age,na.rm = TRUE)
for(i in 1:nrow(df)){
  if(is.na(df$age[i])){
    df$age[i]<-mage
  }
}

#replace "Yes" with 1 and "No" with 0 in all I_B_(price level),P_B(price level)
df$I_B_750[df$I_B_750=="Yes"] <- 1
df$I_B_750[df$I_B_750=="No"] <- 0
df$I_B_750=as.numeric(df$I_B_750)

df$P_B_750[df$P_B_750=="Yes"] <- 1
df$P_B_750[df$P_B_750=="No"] <- 0
df$P_B_750=as.numeric(df$P_B_750)

df$I_B_1000[df$I_B_1000=="Yes"] <- 1
df$I_B_1000[df$I_B_1000=="No"] <- 0
df$I_B_1000=as.numeric(df$I_B_1000)

df$P_B_1000[df$P_B_1000=="Yes"] <- 1
df$P_B_1000[df$P_B_1000=="No"] <- 0
df$P_B_1000=as.numeric(df$P_B_1000)

df$I_B_1250[df$I_B_1250=="Yes"] <- 1
```

```
df$I_B_1250[df$I_B_1250=="No"] <- 0
df$I_B_1250=as.numeric(df$I_B_1250)

df$P_B_1250[df$P_B_1250=="Yes"] <- 1
df$P_B_1250[df$P_B_1250=="No"] <- 0
df$P_B_1250=as.numeric(df$P_B_1250)

df$I_B_1500[df$I_B_1500=="Yes"] <- 1
df$I_B_1500[df$I_B_1500=="No"] <- 0
df$I_B_1500=as.numeric(df$I_B_1500)

df$P_B_1500[df$P_B_1500=="Yes"] <- 1
df$P_B_1500[df$P_B_1500=="No"] <- 0
df$P_B_1500=as.numeric(df$P_B_1500)

df$I_B_1750[df$I_B_1750=="Yes"] <- 1
df$I_B_1750[df$I_B_1750=="No"] <- 0
df$I_B_1750=as.numeric(df$I_B_1750)

df$P_B_1750[df$P_B_1750=="Yes"] <- 1
df$P_B_1750[df$P_B_1750=="No"] <- 0
df$P_B_1750=as.numeric(df$P_B_1750)

#buying decison change at each price level, post-initial
df$D_B_750 <- df$P_B_750 - df$I_B_750
df$D_B_1000 <- df$P_B_1000 - df$I_B_1000
df$D_B_1250 <- df$P_B_1250 - df$I_B_1250
df$D_B_1500 <- df$P_B_1500 - df$I_B_1500
df$D_B_1750 <- df$P_B_1750 - df$I_B_1750

#replace "Male" with 0, "Female" with 1, "Other" , "Prefer Not to say"= NA in gender
df$gender[df$gender!="Male" & df$gender !="Female"] <- NA
df$gender[df$gender=="Male"] <- 0
df$gender[df$gender=="Female"] <- 1



########################################DATA Analysis
Preliminary##############################################

#see if UAI is correlated with gender or age
fit_UAI_genderage<- lm(UAI ~ gender + age +nationality,na.action=na.omit,data=df)
summary(fit_UAI_genderage)
```

```
#perception of price unfairness and buying decision are highly correlated,record p-values
summary(lm(I_B_750 ~ I_FP_750 , data=df))
summary(lm(I_B_1000 ~ I_FP_1000 , data=df))
summary(lm(I_B_1250 ~ I_FP_1250 , data=df))
summary(lm(I_B_1500 ~ I_FP_1500 , data=df))
summary(lm(I_B_1750 ~ I_FP_1750 , data=df))

summary(lm(P_B_750 ~ P_FP_750 , data=df))
summary(lm(P_B_1000 ~ P_FP_1000 , data=df))
summary(lm(P_B_1250 ~ P_FP_1250 , data=df))
summary(lm(P_B_1500 ~ P_FP_1500 , data=df))
summary(lm(P_B_1750 ~ P_FP_1750 , data=df))

#more likely to buy when people think the price is fair
I_B_average <-
c(mean(as.numeric(df$I_B_750)),mean(as.numeric(df$I_B_1000)),mean(as.numeric(df$I_B_1250)
),
            mean(as.numeric(df$I_B_1500)),mean(as.numeric(df$I_B_1750)))
I_FP_average <-
c(mean(df$I_FP_750),mean(df$I_FP_1000),mean(df$I_FP_1250),mean(df$I_FP_1500),mean(df$I_
FP_1750))
plot(I_FP_average,I_B_average,xlab="Fairness Perception",ylab="Proportion of
Purchases",xlim=c(1,7))


#plot buying decision before and after price disclosure,use excel
ave_I_B <-
c(mean(df$I_B_750),mean(df$I_B_1000),mean(df$I_B_1250),mean(df$I_B_1500),mean(df$I_B_1
750))
ave_P_B <-
c(mean(df$P_B_750),mean(df$P_B_1000),mean(df$P_B_1250),mean(df$P_B_1500),mean(df$P_B
_1750))

##########################################DATA Analysis
Core##########################################

#regression of change in fairness perception on UAI at P=17.5
fit_D1500<- lm( D_FP_1500 ~ UAI + age + gender, data=df)
summary(fit_D1500)
fit_D1750<- lm( D_FP_1750 ~ UAI + age + gender, data=df)
summary(fit_D1750)


#regression of change in buying decision on UAI at P=17.5
fit_test<- lm(D_B_1750 ~ UAI , data=df)
```

```
summary(fit_test)


#he Buy-Buy group(mean UAI 5.21) is significantly less uncertainty avoidance
#from Buy-No Buy group(mean UAI 5.60)
#buy-buy aggregate
x<-
c(df$UAI[df$I_B_750==1&df$P_B_750==1],df$UAI[df$I_B_1000==1&df$P_B_1000==1],df$UAI[df$
I_B_1250==1&df$P_B_1250==1],
    df$UAI[df$I_B_1500==1&df$P_B_1500==1],df$UAI[df$I_B_1750==1&df$P_B_1750==1])
#buy-no buy aggregate
y<-
c(df$UAI[df$I_B_750==1&df$P_B_750==0],df$UAI[df$I_B_1000==1&df$P_B_1000==0],df$UAI[df$
I_B_1250==1&df$P_B_1250==0],
    df$UAI[df$I_B_1500==1&df$P_B_1500==0],df$UAI[df$I_B_1750==1&df$P_B_1750==0])
#t-test difference in mean
t.test(x,y)
```