

Effect of Overlapping Price Ranges on Price Perception: Revisiting the Range Theory of Price Perception

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Effect of overlapping price ranges on price perception:

Revisiting the range theory of price perception

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INTRODUCTION

Consumers typically focus on few determinant attributes when making a purchase decision (Alpert 1971). The most important attribute to the consumer typically acts as the determinant attribute. Once a determinant attribute is identified (e.g., screen size in the case of television purchase), consumers are likely to compare prices across different values of that attribute (e.g., 32 inch, 40 inch, etc...). Each attribute value is likely to have a price distribution in the market (e.g. a range of prices may be observed for 32 inch TVs and another range for 40 inch TVs). Prior research on range theory of pricing suggests that the judgment of a price offering (a 32 inch TV at Rs.25,000) then depends on its relative location within that range (range of 32 inch TV prices – Rs.18,500 to Rs38,800). In other words, consumers compare a particular price against other “prices in the price distribution, such as the endpoint prices (lowest and highest prices)” (Cunha and Shulman, 2011, p. 823). However, we argue that a more realistic situation is that a consumer has to evaluate a product’s price in the presence of two or more distributions. Specifically, we argue that a price evaluation not only depends on that particular price distribution, but also on whether the end points of other price distributions overlap with those of the current range. For instance, a particular 32 inch TV’s price evaluation will depend not only the end points of the 32 inch price range, but also on whether the 32 inch TV range overlaps with that of the 40 inch TV range.

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Consider the scenario where the consumer has to purchase a television and has identified screen size as the determinant attribute. The prices of TVs across three screen sizes are presented in Table 1. This is a more realistic situation as consumers are well equipped to observe price ranges across various quality levels as most websites (such as Infibeam.com, Flipkart.com, RediffShopping.com, etc..) have the facility to display all available products from a particular category or quality level. Moreover the prices may be easily sorted (ascending or descending) enabling consumers to observe price ranges more readily. Consumers are also likely to notice these ranges in showrooms that display various options with models. Further, websites offer filtering features (e.g., sort by brand, by price, etc) which simplify the choice task (Alba et al. 1997; Suri et al. 2012). Sorting by price may make consumers more sensitive to the price paid (Haubl and Trifts 2000) and hence may result in consumers taking the context provided by prices of neighbouring ranges into account.

Evidently, the lowest price (end point) of the 32 inch TV overlaps with the highest price of the 24 inch range whereas the highest price of the 32 inch TV (end point) overlaps with the lowest price of the 40 inch range. Range theory of pricing posits that any price in the range will be evaluated based on the end points of the range (Janiszewski and Lichtenstein 1999; Niedrich et al. 2009). However, given that the range of 32 inch overlaps with that of the 40 inch, we argue that the price evaluations in the overlap region will be different from the predictions of range theory. We argue that price evaluations in the overlap region will be based on counterfactual reasoning and potential regret involved with a decision due to two products being available at the similar price.

Table 1. Market Prices of Television

TV Screen Size	Price Range (in INR)
24 inch	13,000 – 22,000
32 inch	18,500 – 38,800
40 inch	31,000 – 51,500

(Source: Infibeam, 2012)

The rest of the thesis summary is organized into four sections. First, we present a brief review of literature on range theory of pricing. We identify the shortfalls of the theory and argue that accounting for multiple price ranges would lead to a more realistic account of range theory. Second, we develop the overlapping price ranges hypotheses – for price evaluations in the overlap regions of a particular price range and provide evidence for the same using an experiment. Third, we use eye tracking as a tool to support and validate the results of study 1. Fourth, we argue that goal-directed behaviour acts as a boundary condition to overlapping ranges hypotheses. Fifth, we examine the effect of overlap when multiple attributes and trade-offs are taken into account. Specifically, we account for the differences in attributes across quality ranges and account for attribute trade-offs by consumers. Finally, we present the theoretical and managerial implications of our study.

LITERATURE REVIEW

Evaluations Based on Reference Price

The process by which consumers form and use price referents is a widely discussed topic in the marketing literature (Cunha and Schulman 2011). In particular, the evaluation of a price offering with respect to a reference price has received considerable attention (Rajendran and Tellis 1994). Reference price is defined as the “standard price against which consumers evaluate the actual prices of the products they are considering” (Rajendran and Tellis 1994, p. 22). Other terms used synonymously (in spite of subtle differences) with reference price include perceived price (Emery 1970; Monroe 1973), reservation price (Scherer 1980) and evoked price (Rao and Gautschi 1982). Adaptation level theory proposed by Helson (1964) provides the theoretical rationale for reference price. The stimulus level to which a person has become adapted to, is termed as the adaptation level. In the pricing context, based on the tenets of this theory, Monroe (1973) argued that consumers adapt to a price level (standard)

in their minds based on prior price experiences and current purchase context. The incoming price information is evaluated relative to this adaptation level price for the product (Monroe 1990). Though it was widely researched, reference price had a number of shortcomings. The adaptation level theory was originally proposed for physiological stimuli. Janiszewski and Lichtenstein (1999) argue that applying this theory to behavioral responses may not be appropriate. Moreover the adaptation level theory suggests an indifference region (in terms of sensitivity to new stimulus) where the individual does not perceive any differences in the stimulus (Janiszewski and Lichtenstein 1999). Furthermore, Kalyanaram and Little (1994) estimate 'latitude of acceptance' around the reference price and argued that consumers were indifferent to prices in this region. Range theory of price perception was proposed as the viable explanation to account for these shortfalls.

Range Theory of Pricing

Range theory for stimulus judgments was first developed by Volkman (1951). He argued that the end points or dual-standards might be better able to explain the variations in price attractiveness than single-standard (reference price) models. "It is primarily the end stimuli that control the oscillations of the absolute scale. The center of the stimulus-range has no special functional significance whatever. It is merely a convenient numerical value: the mean of the two end-stimuli" (Volkman 1951, p. 283). Further he postulated that the stimulus range and the psychological scale shared a linear relationship. Based on this argument, Janiszewski and Lichtenstein (1999) proposed the formal range of pricing which suggests that consumer's evaluation of a price offering depends on the most and least prices provided by the context. In other words, the end points of the range of prices in the current context influence the evaluation process of consumers. The range theory of price perception posits that price judgments can be influenced by altering the range of prices, even when the internal reference price is kept constant. Specifically, an increase in the range of prices (with the

internal reference price remaining constant) leads to a wider psychological scale being used by consumers to evaluate prices (Janiszewski and Lichtenstein 1999). Hence as the range increases, the amount of price change required to alter consumer's preference also increases (due to wider psychological scale). Moreover at higher ranges, consumers are less sensitive to prices that are above their internal reference prices. Further, Janiszewski and Lichtenstein (1999) argued that the range theory might be more applicable to durable purchases that are infrequent and uncertain.

Besides price, other attributes may also have a range. Yeung and Soman (2005) extended the research on range theory of price perception to include variability in another attribute, namely quality, and examined the simultaneous range effects of price and quality. Specifically the authors proposed that range effects depended on the evaluability (degree of difficulty associated with evaluation) of the attributes. Yeung and Soman (2005) argued that extending the range of a set would shift preference toward the option, which has a greater quantity of the high evaluability attribute. Moreover, the authors also found that “when the two attributes have the same levels of evaluability, [...] the range effect would not influence preferences systematically” (Yeung and Soman 2005, p. 365).

In summary, the literature on pricing structure has revealed that reference price could no longer be considered the sole construct influencing price judgments (Cunha and Schulman 2011). The reference price or the first moment (mean) of the pricing distribution forms just one piece of the puzzle. The second and third moments (variance or range, and skewness respectively) of the distribution also have a significant influence on price evaluations (Niedrich et al. 2001). However, the research on price ranges has focused on examining the effect of a single distribution (price range for a particular category / quality level) (Janiszewski and Lichtenstein 1999). In addition to price, Yeung and Soman (2005) have also manipulated the quality range and studied the impact of multi – attribute effects. However,

the authors argue that price and quality might have independent ranges. For instance, in their article, Yeung and Soman (2005) cite an example that screen sizes and prices (two attributes) of television sets might have independent ranges (screen size ranging from 19 inch to 32 inch and prices ranging from \$167 to \$289) and might systematically impact preferences based on the evaluability (degree of difficulty associated with evaluation) of the two attributes. However, it is evident from Table 1 that each screen size has a range of prices and the price ranges overlap across the screen sizes. One potential argument supporting the applicability of single range theory in the above illustration is that individuals might consider the entire set of prices (of all screen sizes) as coming from a single distribution. However the quality of the product (based on the determinant attribute) differs systematically across the screen sizes and hence range theory (range of prices at a given quality level) may not be applicable. The two - attribute model (quality range and price range) is also not applicable in this scenario as each quality level (screen size) has a price range. Hence the mechanism of price evaluation will not be adequately explained by range theory or multi - attribute theory.

Theoretical Framework

In this section, we discuss the theoretical framework, namely regret theory, which provides the rationale for understanding consumer perception of overlapping price ranges. The hypotheses termed as ‘overlapping ranges hypotheses’ are developed from the basic tenets of regret theory proposed by Loomes and Sugden (1982). In a decision making context, individuals take into account the potential feelings of regret (or rejoicing) on experiencing an outcome. This anticipated feeling of regret modifies the utility of a product with respect to other products. This is termed as regret theory (Loomes & Sugden, 1982). According to the theory, individuals will adopt a minimax regret approach in their choice. The objective of the minimax rule is to minimize the maximum regret possible from a choice situation. Regret for a product is computed as the difference between the outcome for that product and the best

possible alternative (for the same payment/loss termed as state of nature). The influence of overlapping ranges can be deduced from the regret theory framework. If a consumer considers a product offering and in case a higher category product is available at the same price, then he/she might expect high regret if the lower category product is purchased. Similarly, if a lower category product is available at a similar price, then he/she might associate lower quality to the current product and the expected regret will again be high.

STUDY 1: OVERLAPPING PRICE RANGES HYPOTHESIS

Conceptualization of Price Perception

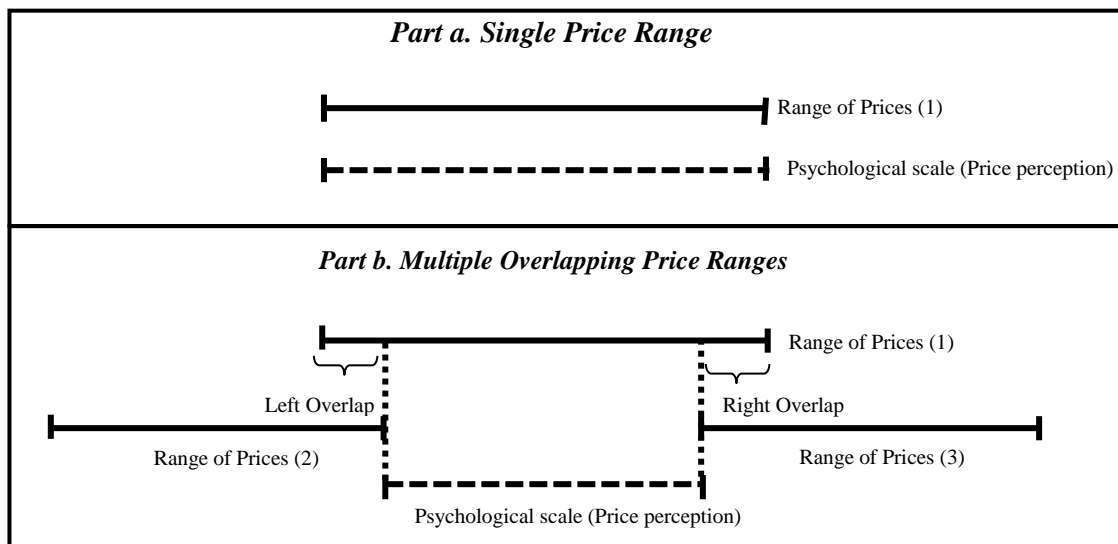
Price perception has been evaluated using price attractiveness ratings and evoked ranges in prior studies on range theory by Janiszewski and Lichtenstein (1999) and Niedrich et. al (2001). Price attractiveness rating refers to the degree to which a consumer finds the price of a product offering attractive. Evoked ranges refer to a particular consumer's price limits for that product category (Rao & Sieben, 1992). The upper anchor refers to the highest price that a consumer is willing to pay whereas the lower anchor refers to the lowest price that a consumer is willing to pay for a product at a particular quality level.

Janiszewski and Lichtenstein (1999) measure the attractiveness rating of the mean price of range and also measure the evoked price range (least and highest price the consumer is willing to pay for the product). Niedrich et. al (2001) operationalized price perception in a similar manner but with one difference. The authors measure price attractiveness ratings at various levels and not just the mean. We conceptualize price perception in a similar manner, i.e., in terms of two components - price attractiveness ratings and evoked range (or acceptable price range).

Overlapping Ranges

The principles of regret theory can be applied to multiple overlapping price ranges. Consider the illustration in figure 1. In part (a), a single price range is presented along with price perception scale. In part (b), the overlapping price ranges are also included. When the lower anchor of a range overlaps with the upper anchor of a lower quality range, it is termed as left overlap. Similarly when the upper anchor of a range overlaps with the lower anchor of a higher quality range, it is termed as right overlap.

Figure 1. Overlapping Ranges Hypothesis



Left Overlap

In the left overlap region of part b (figure 1), the set of prices in the current range (range 1) overlap with those of a lower quality (range 2). Hence an individual evaluating a price in this region (left overlap) from the current range (range 1), he/she might associate lower quality with the product offering and the anticipated regret will be high. Hence the psychological scale will be truncated in this region as illustrated in part b (figure 1).

Hypothesis 1a: The attractiveness rating of a product's price (at a given quality level) will be lesser if a lower quality product is available at the same price (left overlap), than otherwise (no overlap).

Hypothesis 1b: The evoked range of a product (at a given quality level) will be shortened to the left in the presence of another range (at a lower quality level) whose upper anchor overlaps with the lower anchor of the current product's range.

Right Overlap

The right overlap (illustrated in part b) is the region where the prices from a better quality range (range 3) overlap with the current range (range 1). Hence an individual evaluating a product in this region (right overlap) from the current range (range 1) will consider the potential regret to be high, as he/she will be better off selecting a product from the better quality range (range 3) ceteris paribus. Hence the psychological scale for the current set (range 1) will be truncated.

Hypothesis 2a: The attractiveness rating of a product's price (at a given quality level) will be lesser if a higher quality product is available at the same price (right overlap), than otherwise (no overlap).

Hypothesis 2b: The evoked range of a product (at a given quality level) will be shortened to the right in the presence of another range (at a higher quality level) whose lower anchor overlaps with the upper anchor of the current product's range.

Design of the Experiment

Study 1 is designed to illustrate the effect of overlapping price ranges (hypotheses 1 and 2) using a single factor (four levels: left control, left overlap, right control and right overlap) between-subjects design. Comparing the price perception (price attractiveness ratings and evoked price range) across the four groups will illustrate the differential impact of overlapping anchors.

Stimuli Selection

A durable product, namely television is chosen as the target group (students from Indian business schools) is not likely to have purchased a television (confirmed by pretest) and prior familiarity with price information will be lower. Moreover as it belongs to the infrequent purchase category, the set of prices evoked will be context dependent (prices presented to subjects) and will not generally be retrieved from memory (Cunha & Schulman, 2011). This will ensure that the study has high internal validity. Results of a pretest (n=15) indicated that the screen size was the most important attribute in case of television purchase followed by screen resolution. Results from another pretest (n=12) indicated that when no other information (about other attributes) are presented, people adopt the 'higher the better heuristic' and associate higher screen size with higher quality.

Prior studies on range theory of pricing have presented different numbers of prices to subjects. For instance, Lynch, Chakravarti and Mitra (1991) presented 8 prices to subjects, Janiszewski and Lichtenstein (1999), 10 prices and Niedrich et. al (2001), 25 prices. As there is no consensus on the number of prices to be presented, in this study we present 8 prices in one range, similar to Lynch et. al (1991).

Prices can either be presented in an ascending, descending or randomized manner. Danziger and Segev (2006) examined the impact of different price patterns on price judgments and found that when prices were sampled at one point in time (no temporal difference), there was no difference in price judgments among the three conditions. Hence for simplicity, ascending order is adopted throughout this study. Finally, a pretest (n=12) revealed that horizontal presentation of prices (similar to that displayed in websites) resulted in better recall and subjects taking all prices into account. The final list of stimuli used in the experiment are presented in Table 2.

Table 2. Stimuli Employed in Study 1

Screen Size	Prices (in INR)							
32" (All Conditions)	18,500	19,500	23,000	25,300	28,700	30,800	34,400	38,800
24" (Left Control)	13,000	13,600	14,100	14,800	15,300	16,100	17,000	17,500
24" (Left Overlap)	13,000	13,600	14,300	15,500	17,300	18,800	21,300	22,000
40" (Right Control)	40,000	41,100	42,000	43,000	44,500	47,300	50,900	51,500
40" (Right Overlap)	31,000	33,400	39,200	43,000	44,500	47,300	50,900	51,500

For identifying the price levels at which to measure the attractiveness ratings, we use the “own – category methodology” adapted from Sherif (1963) and Monroe (1971). Subjects ($n = 8$) were presented with the list of prices for the 32” TV and were then given an envelope with a series of price slips (in increments of 100’s and counterbalanced) which cover the entire price range presented to them. Subjects were asked to organize the slips into three categories – most acceptable, acceptable and least acceptable. The median of the scale centers of the ‘acceptable’ category is found to be INR 27,400. The median of the 2nd and 3rd quintile values (floored to the nearest 1,000) of the other two categories - INR 19,000 and INR 22,000 from the ‘most acceptable’, and INR 31,000 and INR 35,000 from the ‘least acceptable’, formed the remaining four price levels. These five prices were chosen as the target price levels that will be judged by subjects in the main experiment.

Sample and Procedure

The subjects were first year MBA students from premier management institutes in Ahmedabad, India. The experiment lasted approximately 7 - 8 minutes. A total of 165 responses were collected. Out of these responses, 139 were valid (average age = 22.4 years; 67.6% male) and used for further analysis.

Participants were randomly assigned to one of the four experimental conditions and each subject received a booklet. After the general guidelines, the subjects were presented with a scenario. The subjects were told that they were considering purchasing a new television and found that there were only 7 screen sizes available. The screen sizes (14”, 18”, 24”, 32”, 40”,

46” and 50”) were then listed. This was followed by two lists of prices (depending on the condition the stimuli varied - please refer Table 6.4 presented above). A questionnaire with the dependent measures was then presented.

Following the presentation of the stimuli, subjects were asked to rate the attractiveness of a new 32 inch TV that is being launched at 5 different price levels – two prices close to the lower anchor (INR 19,000 and INR 22,000), one price around the mean price (INR 27,400) and two prices close to the upper anchor (INR 31,000 and INR 35,000). The responses were captured on a 7-point Likert scale (1 - not attractive to 7 - very attractive).

Subjects were then presented with horizontal lines for each of the two screen sizes (depending on the experimental condition) with the endpoints of the line marked with the lower and upper anchors from the price list. Subjects were asked to mark the least and highest prices they were willing to pay on this scale. The evoked range for each screen size is computed based on the distance of the subject’s marking from the respective anchors. The distance was then scaled back to actual prices.

Results

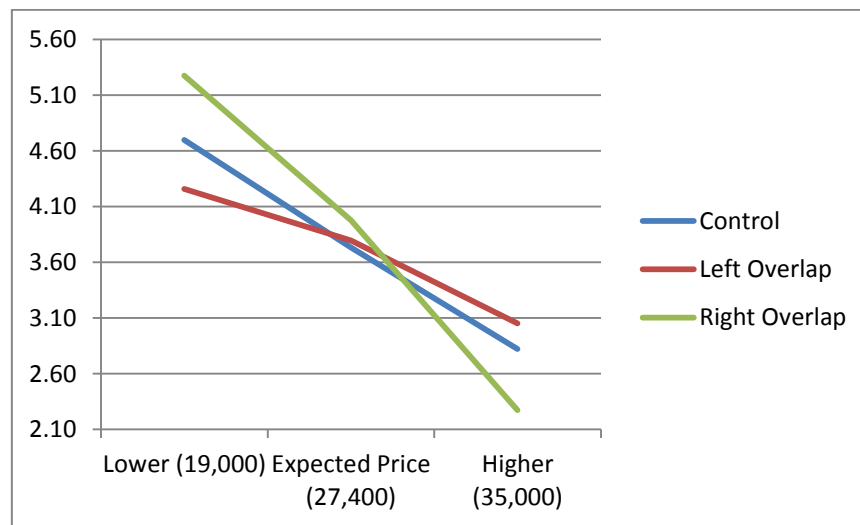
Price Attractiveness

The price attractiveness ratings of the two control groups (left and right) were compared. There was no statistically significant difference between the two control groups ($p < .05$) and were combined into a single group for further analysis. The mean values of the attractiveness ratings for the three groups is presented in Figure 2.

The results of the Mixed ANOVA (3 between subjects – control, left overlap and right overlap and 3 within subjects – price attractiveness ratings at Rs.19,000, Rs.27,400 and Rs.35,000) procedure (with Bonferroni confidence interval adjustment) revealed that there is a significant interaction between the context (control, left overlap and right overlap) and the price levels ($F(4,272) = 2.655, p < .05, \text{partial } \eta^2 = .038$). Analysis of the simple main effects

(comparing the left and right overlap conditions) revealed that there was a statistically significant difference in price attractiveness ratings between the left overlap and right overlap groups at the lower level INR 19,000 ($F(1, 81) = 5.920, p = .017, \text{partial } \eta^2 = .068$) and marginally at the upper level INR 35,000 ($F(1, 81) = 3.566, p = .063, \text{partial } \eta^2 = .042$). However there were no significant differences in the ratings at the mean level as expected ($F(1, 81) = .459, p = .500, \text{partial } \eta^2 = .006$).

Figure 2. Attractiveness Ratings – Control and Overlap Conditions



Evoked Price Range

Analysis of the responses to the evoked price range was conducted in two stages – comparing the left control with the left overlap group and then the right control with the right overlap group. One way ANOVA was conducted to compare the least price the subjects were willing to pay for the 32” television between the left control and left overlap groups (Table 3). The difference is found to be marginally significant ($F(1,65) = 2.772, p = .10$). Another one way ANOVA was conducted to test the difference in the highest price the subjects were willing to pay. In this case, the difference is found to be statistically insignificant ($F(1,65) = .834, p = .37$). The results clearly indicate that the least price that the subjects were willing to pay

increased in the case of the left overlap group. In other words, the left end of the evoked price range has been truncated or shortened.

Table 3. Evoked Price Ranges for 32 Inch TV

Treatment	N (Sample Size)	Least WTP	Highest WTP	Evoked Range
Left Control	28	20,503	33,534	13,031
Left Overlap	39	21,881	32,471	10,591
Right Control	28	20,484	32,033	11,548
Right Overlap	44	20,139	29,216	9,078

* **WTP – Willingness to Pay**

Similarly, one way ANOVA was conducted to compare the least price the subjects were willing to pay for the 32” television between the right control and right overlap groups. The difference is found to be insignificant ($F(1,72) = .409$, $p = .53$). Another one way ANOVA was conducted to test the difference in the highest price the subjects were willing to pay between the two groups. As hypothesized, the difference is found to be statistically significant ($F(1,72) = 7.346$, $p = .008$). In other words, the highest price that the subjects were willing to pay decreased in the case of the right overlap group. This indicates that the right end of the evoked price range has been truncated or shortened.

Manipulation Checks

We conducted two manipulation checks for the overlapping price ranges. First, we randomly selected 5 participants from each group (total of 20 subjects) and interviewed them post experiment. Second, we conducted a separate study with the objective of verifying the effectiveness of the manipulations.

Post Experiment Interviews

A randomly selected group of 5 subjects from each experiment condition (left control, right control, left overlap and right overlap) were interviewed post experiment. Subjects were asked to list the reasoning behind the purchase likelihood rating and evoked price range given in the experiment. In the control group, none of the respondents mentioned the context (40inch or 24inch TVs) as a significant factor behind their chosen rating. However in the left

control and right control groups, majority of the subjects (8 of 10 subjects) mentioned the prices of 24 inch (in the case of left control) or 40 inch (in the case of right control) to play a role in their perceptions. However none of the subjects explicitly mentioned the term ‘overlap’.

Manipulation Study

Manipulation check was conducted with a separate group of respondents from the same target population. Similar method was adopted by Yeung and Soman (2005) to test the manipulation of multi – attribute ranges. We presented the same stimuli to the respondents (N=132). The dependent variables were the items pertaining to the manipulation check. However instead of the dependent variables (price attractiveness ratings and evoked price range), the manipulation check was presented. Two ‘price lines’ of equal length were presented to the respondents. Depending on the group, the price lines were labeled 24” and 32” (for left control and left overlap conditions) or 32” and 40” (for right control and right overlap ranges). The left anchors for the two lines was INR 10,000 and the right anchor was INR 60,000. Respondents were asked to mark the lowest and highest prices of the TVs available in the market in the given screen size.

The ranges of prices marked by majority of the subjects in the control conditions (96%) did not show any overlap. However in the overlap conditions, majority of the subjects (86%) had clearly marked the anchors in a way that showed that the prices presented to them had overlapping ranges between the two screen sizes. The results clearly indicate that manipulation of overlapping price ranges has been successful with the stimuli used in the experiment.

Discussion

The results indicate that the price attractiveness ratings of the target product (32” TVs) were significantly lesser if a lower quality range (24” TVs) were available at the same price level.

This provides support for hypothesis H1a. Similarly the evoked range was also truncated or shortened in the left if there was a left overlap, thus providing support for H1b. The comparison of left control and left overlap groups reveal that the subjects were unwilling to pay a particular price for a 32” television, in case an inferior quality product (24” television) is available at the same price. Evidently, consumers are likely to associate lower quality with such 32” television sets.

In the case of right overlap, price attractiveness ratings for the target product (32” TVs) were significantly lesser if a higher quality range (40” TVs) were available at the same price level. Furthermore, the evoked price range was truncated in the overlap region compared to the control group. Thus the results provide support for hypotheses H2a and H2b. Evidently, consumers find the price of a 32” television to be less attractive, if a superior quality product (40” television) is available at the same price.

The results indicate that consumers are likely to avoid purchasing a 32” television at these price levels (in the overlap region) as the potential (anticipated) regret is likely to be high. Overall, the results clearly indicate that the presence of a context price range with the anchors overlapping with that of the target range, has a significant influence on the price perceptions of consumers. In other words, judgments of price attractiveness and endpoints of evoked range are sensitive not only to the range of prices observed but also to the anchors of the neighboring ranges. As we find significant support for right overlap, we focus on right overlap in the further studies.

STUDY 2: EYE TRACKING

In this study, we use eye tracking as a tool to validate the overlapping ranges hypothesis. The rationale for selecting eye –tracking for this study is that the method could provide data concerning the perceptual and cognitive processes underlying a variety of evaluation or judgment tasks (Van Gog, Paas and Merrienboer, 2005). Eye tracking data along with

behavioral experiments are desirable as together they facilitate a methodological triangulation (Denzin, 1970). Analyzing multiple data sources (behavioral experiments, eye tracking data, verbal reports, etc...) increase the validity of the findings. By triangulation, the relative strengths of the different methods are maximized whereas their disadvantages are minimized (Scheiter & Van Gog, 2009). For instance, eye tracking provides richer “insight into the ‘why’ of viewing behavior” (Scheiter & Van Gog, 2009, p. 1209).

Eye – Mind Hypothesis

Human brain processes a wide array of information at any given point in time. All these information that enter the neural network for processing are received via the senses. Hence the total processing capacity of the senses is accepted to be a human’s processing capacity (Hassin, Uleman & Bargh, 2005, p. 82). Zimmermann (1989) and Norretranders (1998) report that a human’s senses can process about approximately 11 million bits per second. Information was measured in units of bit (basic unit of information) so that different forms of information could be compared. A majority of this processing, approximately 10 million bits per second, is carried out by the visual system. It is evident that more than 90 % of information processed in our brain enters through the sophisticated visual system. However it is imperative to note that majority of this information is filtered out and the processing capacity of our consciousness is just around 10 to 40 bits per second (Kupfmuller, 1962; Norretranders, 1998). It is evident that information obtained from the visual system is associated with conscious processing. This is termed as the *eye – mind hypothesis* (Just & Carpenter, 1980; Hoffman, 1998).

Eye Tracking Methodology

Eye tracking tools are designed to identify the visual stimuli that are currently in the participant’s focus. Light reflected from surfaces passes through the *pupil* and enters the *retina*. The image is inverted and is processed using the *rods* and *cones* in the surface of the

retina. Right below the pupil is the *fovea*. In order to read a word in a text or focus sharply on an object, humans move their eyes so that the *fovea* can pick up the object acutely (Holmqvist et. al, 2011). Eye tracking depends on tracking the *fovea* in the eye as the visual information passing through the *fovea* requires about half of the visual cortex to process (Bojko, 2013).

There are primarily two types of eye movements – fixations and saccades. Fixation, as the term indicates, refers to the eye fixating on a particular point (object or word or picture, etc.). Fixations are characterized by the eyes spending some time on one particular focal point. Typical fixations range from 100 to 600 milliseconds. The length of fixation is an indication of the information (that is on focus) being processed consciously (Holmlqvist et. al, 2011). Saccades on the other hand represent the visualization patterns that emerge from moving the eye's focus from one fixation to another. Saccades take relatively shorter time as the eye can move its focus very rapidly from one point to another. Typically, the duration of a saccade ranges from 20 to 40 milliseconds (Holmqvist et. al, 2011). Most studies focus on fixations to identify the information that is being processed (Bojko et. al, 2011). However it can be argued that though a person is focusing on a piece of information, he / she may not actually process it. Bojko (2013) claims that though “a lack of fixation does not always mean a lack of attention and fixation does not always indicate attention, [...] fixation and attention coincide a lot” (p. 14). Hence fixation can be used as a good proxy for attention.

Hypothesis

When consumers are presented with two price ranges and are asked to evaluate a price offering belonging to one product category (or quality level), current range theory does not offer any predictions about the impact of the other range (could be of lower or higher quality category). We argue that the fixations on the anchors of the other price range will be relatively higher when the anchors overlap with the target price range. In line with the overlapping ranges hypotheses, we propose that subjects are likely to spend longer durations

fixating on the anchors that overlap when compared to the anchors that are independent when evaluating prices closer to the anchors. The measures of interest are fixation duration on the anchors and number of revisits to the anchors. Based on these arguments, the hypothesis is stated as follows:

Hypothesis 3: When evaluating a price offering in the right overlap region of a price range, individuals are likely to spend relatively more time fixating on the anchors of the higher quality range than if there was no overlap.

Design of the Experiment

The study used a simple one way between - subjects design (right control and right overlap groups). As explained earlier, we consider only the right overlap i.e., 32 inch and 40 inch televisions. The price ranges of the 32 inch and 40 inch for the control and overlap conditions were the same as those of study 1. The main difference was that the stimuli were presented on a computer screen with the eye – tracker attached to it.

Sample and Procedure

The sample consisted of second year MBA (postgraduate) and doctoral students from a premium business school in Ahmedabad, India. Participation in the experiment was completely voluntary and all participants received a token of appreciation (a chocolate bar worth INR 40 each). A total of 52 valid responses were collected (average age = 21.7 years; 75% male).

Participants were randomly assigned to one of the two experimental conditions. Subjects who volunteered for the study were brought into the lab one by one and were given detailed instructions about the procedure and task to be performed. The subjects were also given a sample task to be performed on pen and paper, so that they are familiar with the task to be completed in the computer.

We used GP3 Eye Tracker from Gazepoint (60Hz update rate, accuracy – 0.5 to 1 degree of visual angle). The eye tracker was mounted to a desktop unit. This specific eye – tracking device and software combination has been used in prior academic research in various disciplines (eg. Parnamets et. al, 2015). After getting accustomed to the task (sample task), subjects were seated in front of the desktop mounted with the eye tracker. Initially, a 5 – point calibration was done to ensure precise tracking of the subject’s fovea (Bojko, 2013).

Figure 3. Sample Screen – Right Overlap

<u>Price Attractiveness</u>								
The prices of 32 inch and 40 inch TVs available in the market are presented below.								
Other information (brand, logo, pictures, features, etc...) have been concealed so as not to influence your price judgments. The price differences for a particular screen size are not due to quality differences.								
Screen Size	Prices (in Rs.)							
32 Inch	18,500	19,500	23,000	25,300	28,700	30,800	34,400	38,800
40 Inch	31,000	33,400	39,200	43,000	44,500	47,300	50,900	51,500
Please rate the attractiveness of price (INR 35,000) for the 32” television by the new manufacturer (1- Not attractive to 7 – Very attractive).								

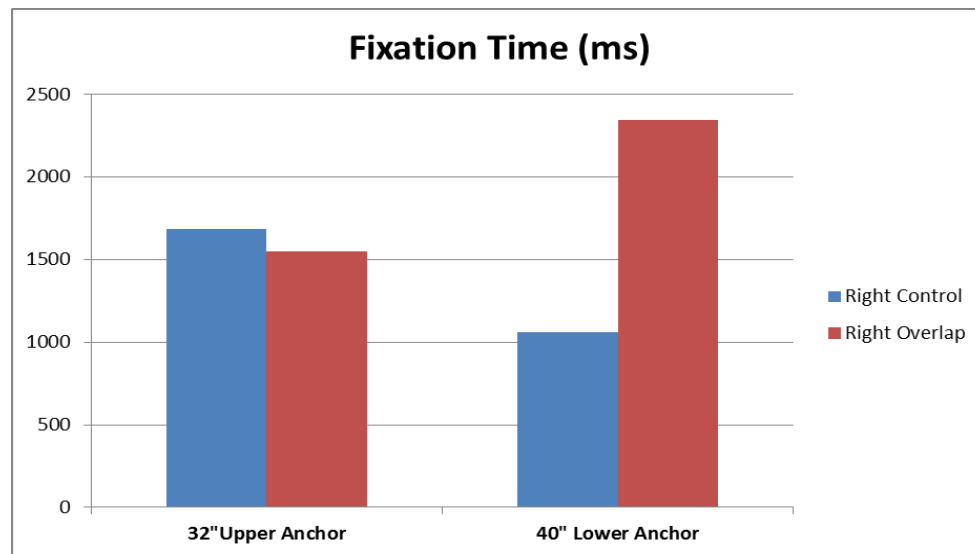
The subjects viewed the task details on screen after completion of the calibration. Their eye movements were recorded by the eye – tracker. Sample screens viewed by the respondents are presented in Figure 3. Each subject viewed the screen and responded to the question on the attractiveness level of the price specified (INR 35,000) for the 32 inch television. The device records the fixations and saccades on screen. This was followed by a non numeric distractor task which lasted approximately 2 – 3 minutes. After completing the price evaluation task and the distractor task, the subjects responded to the questions on manipulation check. First, subjects had to recall the price level at which they made judgments. Second, the subjects were asked to mark the lowest and highest prices presented

to them on two separate price lines – 32 inch and 40 inch, similar to the manipulation check study presented study 1.

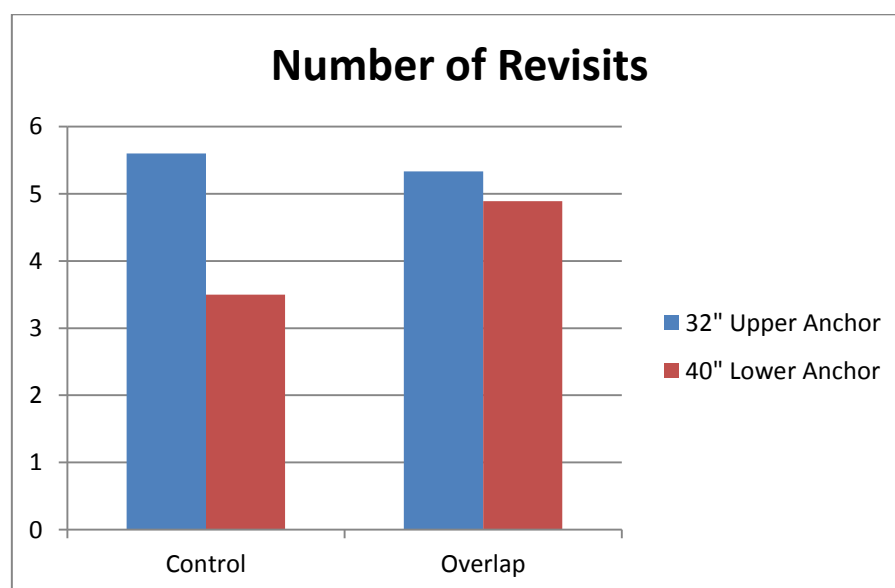
Results

The two manipulation checks were tested initially. All subjects were able to recall correctly the price point evaluated. Further, all subjects in the overlap condition marked the price levels with an explicit overlap in the ranges. As expected, the respondents in the control group marked the price ranges in a manner such that the price anchors were exclusive for each screen size.

As a first step, the price attractiveness ratings was compared between the two groups. The pattern of results are similar to that of study 1. Areas of interest (henceforth AOI) were created for the overlap regions in both the 32 inch and 40 inch price ranges. The mean measures of fixations on the AOIs (32 inch television – higher end and 40 inch television prices – lower end) for the two groups are presented in Figure 4. A simple t – test comparing the average fixation times between the two groups for the 32” upper anchor was found to be insignificant ($p > .05$). However comparing the two groups for the fixation times on 40” lower anchor revealed that the difference was statistically significant ($p < .05$).

Figure 4. Results – Fixation Times

A simple t – test comparing the number of revisits between the two groups for the 32” upper anchor was found to be insignificant ($p > .05$). However comparing the two groups for the number of revisits on 40” lower anchor revealed that the difference is marginally statistically significant ($p < .10$). The data is presented graphically in Figure 5.

Figure 5. Results – Number of Revisits

Discussion

In study 2, we tested the overlapping ranges hypothesis using a simple one way between – subjects design and an eye – tracking tool. We captured the behavioral response of price attractiveness rating for a price level at the overlap region for the two groups and found the pattern to be consistent with the overlapping ranges hypothesis and the results of study 1.

Two measures of eye movements were captured – fixation times and number of revisits – for the areas of interest. The main areas of interest for analysis were the 32” higher anchor where the price level that is to be judged lies in the range and the 40” inch lower anchor where the product is available at the price level to be judged (in the overlap group). The results indicate that both the fixation times and the number of revisits were significantly higher at the 40” lower price AOI for the overlap group compared to the control group. However there were no differences in the fixations or number of visits at the 32” upper price AOI between the two groups. Subjects spent more time contemplating the lower anchor of 40” range in the right overlap condition indicating the importance given to the overlapping anchor of the neighboring range. Thus the results provide support for hypothesis H3.

STUDY 3: GOAL-DIRECTEDNESS AS BOUNDARY CONDITION

In this section, we develop a boundary condition for the overlapping ranges hypotheses. Specifically, we argue that goal – directed behavior inhibits individuals from paying attention to price ranges other than the target category or quality level. We briefly review the literature on goal – directed behavior and develop the hypotheses for the boundary condition.

Goals are defined as desired end states (Bagozzi & Dholakia, 1999; Custers & Aarts, 2005). Two different perspectives exist on how goals affect behavior – cognitive & affective (Van Osselaer et. al, 2005). The cognitive stream argues that goals are represented similar to schemas, attitudes and traits (Shah & Kruglanski, 2003). The affective stream, on the other

hand, claims that the end state must be linked to affect. In other words there should be a positive feeling towards the end state (Custers & Aarts, 2005). However there is a commonality between the two perspectives - “goals are mentally represented and their activation leads to goal-directed behavior” (Chartrand et. al, 2008, p. 190). Bargh (1990) also suggests that goal activation in the minds of consumers directs subsequent behaviors, irrespective of the level of abstraction of the goal. For instance, in a study by Hamilton et. al (1980), when subjects were given a goal of forming an impression about a target, they paid more attention to the target’s behaviors compared to the other group with no goal. Results of the study support the notion that a goal directed at a target likely results in more attention being paid to the target.

Consider a situation where a consumer has a goal, such as to purchase a television with a particular screen size due to a space constraint at his / her living room. In such a situation, the behavior of that consumer is likely to be different compared to another with no such goal. Based on these arguments, we propose that an individual with a goal to purchase from a particular range (quality level) is likely to be indifferent to other ranges (overlap or not) and pay attention only to the target category price range. The evoked price range for a subject with a goal to purchase from that range (quality level) is likely to be unaffected irrespective of whether the neighboring ranges are independent or overlapping.

Hypothesis 4: Goal-directedness (goal to purchase from a particular quality range) will likely result in consumers focusing only on the target price range (no overlapping range effects will be observed).

Design of the Experiment

The study used a simple 2 (control and overlap) x 2 (goal and no-goal) between-subjects design. Similar to study 2, we considered only the right overlap, i.e., 32 inch and 40 inch

televisions. In this study, the objective was to illustrate that the overlapping ranges hypotheses does not hold when consumers engaged in goal – directed behaviors. In other words, we propose goal – directedness to be a boundary condition for the effect of overlapping price ranges.

Sample and Procedure

The sample consisted of first year MBA (postgraduate) students from a reputed management school in Ahmedabad, India. A total of 148 responses were collected. Out of these responses, 132 were valid and complete (average age = 21.6 years; 68.2% male) and used for further analysis. After manipulation checks, a total of 124 responses (average age = 22.4 years; 60.4% male) were used for the main analysis.

Participants were randomly assigned to one of the four experimental conditions and each subject received a booklet. Initially, subjects were given general guidelines and instructions (similar to study 1). After the guidelines, subjects were presented with a vignette. The subjects in the ‘goal’ conditions were specifically informed that there was a space constraint in the living room and they must purchase only a 32 inch TV. Subjects in the ‘no – goal’ conditions did not receive any such information. Further, subjects in the ‘overlap’ group were given the market prices of both 32 inch and 40 inch TVs with the prices overlapping (right end of 32 inch range and left end of 40 inch range). Subjects in the ‘control’ group were given the price information with the two ranges not overlapping with one another. After going through the price information, subjects were asked to mark the evoked price range (least and highest willing to pay prices) for the 32 inch television. After a distractor task (spanning 2 to 3 minutes), subjects were asked to give their demographic information (age and gender). They were also asked to specify whether they had purchased a television within the last one year. This was followed by two more questions to test the goal manipulation (explained in the manipulation check section below).

Results

Manipulation Checks

As specified in the experiment procedure, two manipulation checks were added to the questionnaire. However the two goal manipulation check questions were present only in the two 'goal' conditions. In the 'no goal' conditions, two filler questions were added. The first goal manipulation check question asked whether respondents had any space constraint in their living room – “Without turning back the pages, based on the information given to you earlier, did you have any space constraint in the living room in terms of fitting a television?”. The response options were 'yes / no'. The second question asked the respondents of the particular screen size that would be a proper fit, if they had a space constraint – “If so, what was the size of the television that would fit properly in the living room?”. The options given were 32 inch and 40 inch televisions. Majority of the responses to the goal manipulation checks indicate that the subjects were aware of the space constraint in their living room and were also able to recall the optimum screen size properly. Three respondents in the goal condition indicated that they had no space constraints. Further five other respondents specified either 40 inch or both 32 inch, and 40 inch for the second question on optimum screen size for the living room. These eight respondents were then dropped from the data set. The final dataset for analysis had a total of 124 responses (sample size of each condition is given in the analysis section below).

Evoked Price Range

The mean measures of the evoked price range (highest willing to pay prices) for the 32 inch television across the four groups are presented in Figure 5. The least prices were not analyzed as they do not offer any meaningful interpretations for this particular study (as the overlap is in the right region). Results of the two way ANOVA indicate that there was a statistically

significant interaction between goal and presence of overlap factors ($F(1, 120) = 3.881, p = .051, \text{partial } \eta^2 = .031$).

As the interaction is significant, simple main effects were analyzed. First, the simple main effects of the goal factor were analyzed. There was a statistically significant difference in highest WTP price between control and overlap groups in the no goal condition ($F(1, 120) = 7.762, p = .006, \text{partial } \eta^2 = .061$). However in the goal condition, there was no statistically significant difference in the highest WTP price between the control and overlap groups ($F(1, 120) = .009, p = .925, \text{partial } \eta^2 = .000$).

Discussion

In study 3, we examined the impact of goal-directedness on price perception in the presence of overlapping price ranges. We posit that when a subject is presented with a goal to purchase a product at a particular quality level, her behavior will change (Chartrand et al. 2008) and she is likely to be indifferent to neighboring price ranges. Study 3 used a 2 (right control and right overlap) x 2 (goal and no-goal) between subjects design. In the goal condition, the participants were told that they had a space constraint in their living room and could only fit in a 32" TV. The evoked price range was measured.

There was a significant interaction between the two factors – goal and overlap. Evidently, goal – directed behavior has an impact on evoked price range under different price context conditions (overlap vs. control). The simple main effects revealed that, under the no goal condition, there was a statistically significant difference in the highest price a subject is willing to pay for the 32 inch television. The results of the ‘no-goal’ condition were similar to that of study 1. However in the goal condition, there was no difference in the highest price the subjects were willing to pay between the control and overlap. The evidence suggests that

goal-directedness acts as a boundary condition and inhibits subjects from considering multiple price ranges.

STUDY 4: MULTIPLE ATTRIBUTES

Though range theory focuses on a range of prices at a particular quality level (for eg. screen size in the case of televisions), in reality, there are multiple attributes involved (such as screen resolution, additional features, etc...). Across a range of prices at a particular quality level of an attribute, there may be quality differences in other attributes. Consumers are likely to trade - off one attribute for another especially when the price differences do not exist or are negligible.

Attribute trade – off behavior has been widely researched in the marketing domain (Evangelidis and Levav, 2013). For instance, in the case of choice between two alternatives (with different configurations across two attributes), the choice behavior was altered by adding a third alternative that is dominated by one of the original alternatives (Huber et. al, 1982), or by adding a third alternative that is relatively inferior on one of the attributes (Huber and Puto, 1983). In such cases, the consumers are likely to evaluate the alternatives using attribute weights (importance of the attributes) and values (whether the alternative performs better on the attribute). Further, Simonson (1989) argued that the choice behavior under these circumstances may be explained by consumers selecting the alternative that supports their reasoning. In another study, Simonson and Tversky (1992) also considered the trade – off between two attributes in a choice situation. The authors argued that contrast effects can be extended to trade – offs between attributes. In the case of single attribute, the attribute or alternative is judged with respect to the context. However, in the case of two attributes, the alternatives are judged based on the trade – off values among the alternatives. While Simonson and Tversky's (1992) work argues that choice depends on the comparison of trade – offs between an option and the other alternatives in the set, Mellers and Cooke (1994)

extended the argument and proposed that trade – offs also depend on the attribute ranges. In other words, the attribute ranges were found to have a significant impact on the kind of trade – offs made by consumers. Hence it is evident that attribute trade – off plays a significant role in choice decisions among alternatives and is relevant for our study.

Prior research on range theory does not take the quality differences across a price range into account. For instance, Janiszewski and Lichtenstein (1999) present a range of prices to subjects (with no other additional information). However, subjects are likely to associate price differences with quality differences (Rao and Monroe, 1989). Hence within a particular range of prices, subjects are likely to associate higher quality on certain attributes with higher prices. Similarly, in the case of multiple ranges, though there is a quality difference (in terms of one attribute), at the overlap region, subjects may associate quality differences on secondary attributes across different ranges of prices of products.

Consider the scenario of a 32 inch television and a 40 inch television. The 32 inch television priced at the high end of the range is likely to have more features or have better quality in other attributes than a 40 inch television priced at the low end of the range. For instance, the high price 32 inch television may have a better screen resolution or have Internet access whereas the low price 40 inch may not have these features. Hence a consumer, for a given price, has to make a trade-off between these attributes. The trade – off made depends on the relative preferences for the various attributes. However, we argue that the overlapping price ranges has an impact over and beyond this attribute trade – off effect.

Hypothesis 5: The purchase likelihood of a product (with specific attribute combination) will not only depend on attribute preferences but also on the presence of overlapping price ranges (availability of another product with different attribute combinations).

Design of the Experiment

We used a simple one way between subjects design with two conditions (right control and right overlap), similar to study 3. While we retain television as the product, we use three prices for 32 inch range and three prices for 40 inch range, as we are interested in trade-offs when two products from different ranges are available at the similar prices. In both the conditions (right control and right overlap), we use the same prices for 32 inch range (Rs.30,800, Rs.34,400 and Rs.38,800). However, we manipulate the prices of 40 inch range in the right control (Rs.40,000, Rs.41,100 and Rs.42,000) and right overlap (Rs.31,000, Rs.33,400 and Rs.39,200) conditions.

Screen resolution was found to be the second most important attribute for televisions (study 1 pretest). While screen size and price pairings were taken from the market (websites), the screen resolution information on high end television (specifically 32 inch) was also observed from online retail websites. The high end televisions were associated with ‘Full HD’ (HD refers to High Definition) while the low end televisions were found to be have only ‘HD Ready’ resolutions. Full HD refers to a resolution of 1980 x 1080 pixels whereas HD ready refers to a resolution of 1366 x 768 pixels. Based on the observation from the online marketplace, the two attributes were paired as given in Table 4.

Table 4. Attribute Pairings

Screen Size	Resolution
32" (high / right end of the price range)	Full HD – 1980 x 1080 pixels
40" (low / left end of the price range)	HD Ready – 1366 x 768 pixels

Sample and Procedure

Participants were postgraduate students (N=125, average age = 25.4 years; 63.2% male). Subjects were randomly assigned to two groups. Three sets of questions with distractor tasks between the sets were given to the subjects. In the first stage, subjects were asked to rate their

preferences for six attributes of the television. A total of six attributes are presented – two attributes of interest (screen size and screen resolution) and four fillers. The order of presentation of the attributes was randomized. In the second stage, subjects were asked to imagine that they had shortlisted or considering three models of 32 inch TV and three models 40 inch TV for final purchase. Along with screen size, the screen resolutions were also presented to the subjects. Specifically, the three models of 32 inch TV were marked as ‘Full HD’ whereas the three models of 40 inch TV were marked as ‘HD Ready’. After going through the information, subjects responded on a 9 – point Likert Scale on purchase likelihood. Specifically, subjects responded to the question – “How likely are you to purchase one of the three 32 inch Full HD televisions you have shortlisted above?” on a 9 – point Likert Scale (1 – not likely to 9 – very likely). In the third stage, subjects were also given the price information of the six models. While both control and overlap groups viewed the same prices for the three 32 inch TVs, the prices of the 40” TVs were different between the two groups. After going through the information, respondents again answered the same question – purchase likelihood of a 32 inch television. Subjects then responded to few demographic questions (age and gender) and purchase history of television – “Did you purchase a television in the last one year?”. Finally subjects responded to two questions that tested the effectiveness of the manipulations and were also asked to guess the purpose of the study.

Results

Manipulation Check

The first question checked whether respondents were aware of the price overlap (or no overlap) in the two conditions. Subjects were asked to respond to the question - “Without turning back the pages, based on the price information given to you earlier, please select the TV(s) that you can buy for Rs.35,000”. In the overlap group, both 32 inch Full HD and 40 inch HD Ready were available for a price of INR 35,000. However in the control group, only

the 32 inch Full HD television was available for INR 35,000. Four respondents in the overlap group either marked only one of the two options or marked an irrelevant third option (46 inch Full HD) and hence were dropped from further analysis. Similarly three respondents in the control group chose the wrong set of options and were dropped from further analysis. Overall, the manipulation of overlapping price ranges worked effectively.

As an additional check respondents were asked – “From the following two options, choose the option with a better resolution”. The options were – Full HD and HD Ready. The order of options was counter balanced across subjects. Majority of the subjects chose the correct option – Full HD, while only 2 subjects chose the HD Ready option (dropped from further analysis). The final analysis sample had a total of 113 responses ($N_{\text{overlap}} = 64$; $N_{\text{control}} = 49$).

Pricing Structure and Attribute Trade-off

One way between – subjects ANCOVA (Analysis of Co – Variance) was conducted. The specific equation that was tested is given below:

$$\text{EQN: } \delta\text{PL} = \alpha + \beta_1 (\text{Overlap}) + \beta_2 (\text{Pref}_{\text{Attribute1}}) + \beta_3 (\text{Pref}_{\text{Attribute2}}) + \varepsilon$$

Where $\delta\text{PL} \rightarrow \text{Purchase Likelihood}_{(\text{Att+Price})} - \text{Purchase Likelihood}_{(\text{Att})}$

Overlap \rightarrow Experiment Condition

$\text{Pref}_{\text{Attribute1}} \rightarrow$ Preference for Attribute 1 (Screen Size)

$\text{Pref}_{\text{Attribute2}} \rightarrow$ Preference for Attribute 2 (Screen Resolution)

The dependent variable was the change in purchase likelihood when presented with the price information. $\text{Purchase Likelihood}_{(\text{Att+Price})}$ refers to the response to the purchase likelihood item when subjects were presented with both the price and attributes in the third stage. $\text{Purchase Likelihood}_{(\text{Att})}$ refers to the purchase likelihood response when subjects were presented with just the attributes information in the second stage. The change in purchase

likelihood is measured as the difference between the two purchase likelihood ratings for the 32 inch TVs. ‘Overlap’ is the dummy variable that refers to the experimental condition (0 – control and 1 – overlap). Finally $Pref_{Attribute1}$ and $Pref_{Attribute2}$ refer to the preferences or level of importance given to the two attributes – screen size and screen resolution respectively, that were measured in the first stage of the experiment.

One way ANCOVA on the dependent variable (purchase likelihood change) was conducted. The covariates included in the ANCOVA analysis were ‘preference rating for screen size’ and ‘preference rating for screen resolution’. The adjusted mean purchase likelihood rating change for the two groups at specified levels of preferences for screen size and screen resolution are presented in Table 5. After adjustment for preferences for screen size and screen resolution, there was a statistically significant difference in purchase likelihood changes between the control and the overlap conditions ($F(1,109) = 5.184, p = .025, \text{partial } \eta^2 = .045$). The results clearly indicate that the presence of overlapping price ranges had an influence on the purchase likelihood of a product from a particular price range, over and beyond the attribute preferences of the subjects. Two levels of attributes were taken into account to consider the positional differences (lower end of a price range vs higher end of a price range) of the products in the overlap region. Thus the results provide support for hypothesis H5.

Table 5. Adjusted Mean Changes in Purchase Likelihood

Adjusted Estimates				
Dependent Variable:	$PL_{PrAttr} - PL_{Attr}$ (32 inch TV)			
Factor	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Control	.367 ^a	.357	-.341	1.075
Overlap	-.718 ^a	.312	-1.337	-.100

a. Covariates appearing in the model are evaluated at the following values: Screen Size Preference = 5.89, Screen Resolution Preference = 5.46.

Discussion

In study 4, we tested the hypothesis that the overlapping price ranges have an influence on purchase likelihood while taking into account the attribute differences in the various quality levels in the overlap region. Specifically, we tested the difference in purchase likelihood ratings while controlling for two attributes (one attribute defining the quality level – screen size, and another attribute difference that is due to the position of the product in the product category range – screen resolution). The results of the experiment support hypothesis H6. Evidently, the quality differences that arise due to the position of the product in its price range have an impact on purchase likelihood ratings. However, this purchase likelihood rating is affected further in the presence of overlapping price ranges. This study relaxes one of the major restraints of the range theory of pricing – that is minor quality differences or differences in levels of secondary attributes across a range. We added a secondary attribute to the study and evaluated the overlapping price ranges more comprehensively.

GENERAL DISCUSSION

Theoretical Implications

This research work contributes to the literature on pricing structure influences in several ways. First, the paper takes range theory of pricing further, by considering multiple price ranges with overlapping anchors. Range theory of pricing (Janiszewski & Lichtenstein, 1999; Niedrich et. al, 2001) examines the impact of a single price distribution on consumer price perceptions. We take multiple price ranges of different product lines, which is closer to the market reality. Initially, the mean of the price distribution (reference price) was given importance, followed by the second moment, namely range. This research extends this literature to consider multiple distributions besides the first and second moments of the current price distribution.

Second, we provide evidence that in the presence of overlapping ranges, the predictions of range theory of pricing may not hold. Specifically, range theory predicts a wider evoked range for wide range of prices for a product line. However we argue that when the wider price range overlaps with the inferior or superior product lines' price ranges, the evoked price range is shortened, contrary to range theory's predictions.

Third, to the best of the authors' knowledge, this is the first study to take attribute differences across ranges into account in a study on price ranges. Though the price range is defined as the range of prices at a particular quality level, the price differences in a given range is likely due to differences in attributes or features for that product line. We consider this difference and eliminate the alternate explanation that attribute differences between the price ranges may account for the results. Specifically, we provide evidence suggesting that pricing structure has an influence on consumer behavior even in the presence of differing attribute values across ranges. While range theory does not account for attribute differences, this study considers the secondary attribute and provides stronger evidence for the overlapping price ranges hypotheses.

Finally, this research work makes few methodological contributions as well. To the best of the authors' knowledge, this is the first study to use eye tracking to study consumer perceptions of price information. This research utilizes a novel approach to use eye tracking as a tool to demonstrate the importance given to anchors of price ranges in the context. Further, we have also developed a robust method to capture evoked price range. The proposed method of measuring evoked price range using price lines (a horizontal line with end points marked with price anchors) where subjects mark the least and highest prices that they are willing to pay for the product.

Managerial Implications

The findings of this research have several significant managerial implications. The overlapping ranges hypotheses suggest that the judgments of price attractiveness and endpoints of evoked range are sensitive not only to the range of prices observed but also to the anchors of the neighboring ranges. In other words, the price range required to bring about a desired perception change depends not only on the range of prices presented but also on the end points of the neighboring ranges. As explained earlier, this concept of multiple price ranges of different product lines is closer to market reality. Specifically, range theory of pricing argues that the price change required for a product to induce an attitude change depends on the range of prices observed in the market for that product. However, we argue that this prediction may not hold in many scenarios (especially durables) with a number of product lines being offered by a number of brands. Hence firms should not only consider the range of prices for a particular product line or quality level, but should also consider the price ranges of their other product lines in their pricing strategy. The findings of this research suggest that a wider range of prices but with overlapping anchors is likely to result in a narrower evoked price range, contrary to range theory's (Janiszewski and Lichtenstein, 1999; Niedrich et. al, 2001) predictions. In such cases, consumers are likely to be sensitive (in spite of wider range) to small deviations above the expected (reference) price. Hence price sensitivity around the reference price is likely to be high and firms should take this into account when devising marketing strategies. For instance, when there is no overlap, firms can price their products to extend the range, so that the price sensitivity around the reference price is reduced. However, in the presence of an overlap with the neighboring range, extending the current range of prices will not have any influence on the price sensitivity around the reference price. As per our overlapping price ranges hypotheses, the evoked range will be shortened further due to the extension of the overlap. This might result in consumers

being more sensitive to price changes around the mean, as the psychological rating scale is likely to be very short.

Accounting for overlapping price ranges can benefit marketers of small scale firms or weaker brands. Weaker brands may select price ranges for their products to shorten the perceptual scale of higher quality products from strong brand competitors. For instance, to compete with strong brands like Samsung and Sony, weaker brands like Micromax may price their products to create overlaps leading to cognitive dissonance in the minds of the consumers. When a consumer is focused on buying television from a strong brand, introducing a weaker brand, but with better features (like larger screen size, better resolution) at the same price level may lead to counterfactual thoughts. Consumers are likely to anticipate regret in purchasing a product with less attractive features while a better product is available at the same price. This may lead to a proportion of consumers shifting their preference to the weaker brand. Thus pricing structure can be used as an effective tool to increase the likelihood of consumers purchasing products from small scale firms.

The findings may also have implications for pricing strategy for new product launches. For instance, a firm can launch a product to create an overlap in category which originally did not have any overlap to promote the superior product line. Similarly, a superior brand can create overlaps among its different product lines to upsell higher versions. For example, consider a scenario where a consumer interested in buying a television has shortlisted Samsung as the brand. In case Samsung's product lines (32 inch, 40, inch, etc..) are priced in such a way that there are overlaps in prices, the consumer is likely to upgrade to a better version (say from a 32 inch to a 40 inch). But such a jump would change the focus product line to 40 inch. In this case, the left overlap effects may be observed leading to the consumer upgrading further within the 40 inch product range. Hence the firm will be able to upsell its products effectively just by using the pricing structure.

Furthermore, we argued that consumers are likely to avoid products in the overlap region due to high anticipated regret. Specifically, the eye tracking study illustrated the cognitive dissonance and the amount of counterfactual thought by consumers when evaluating prices in the overlap region. Stronger brands operating at the higher end of product lines may reduce this cognitive dissonance in a number of ways. This would ensure that stronger brands do not lose out to the weaker brands that offer superior features at the same price. Marketers of products who are likely to be affected by this effect, may offer additional services or add-ons to reduce the potential regret from that product option. By ensuring that the anticipated regret is low, by providing guarantees and warranties, with the promise of excellent after sales service, firms can enhance the total utility of the product. This way, stronger brands can continue to charge a premium for their products without losing market share to weaker products in the overlap region.

Further, to avoid the impact of overlapping price range effects, marketers can use messages that lead to more goal – directed behaviors. For instance, a premium player offering a 32 inch television at the higher end of the price range might face strict competition from a weaker player offering a 40 inch television at the same price. By using ad messages that lead to goal – directed behaviors, such as those focusing on the premium features of the higher quality 32 inch television, firms will be able to thwart competition from other players. Similarly a weaker brand offering a product at the lower end of the superior product’s price range can use goal – directed messages focusing on the superior attribute (for instance on the screen size) and influencing consumers to avoid the context provided by the high quality product at the inferior line (32 inch) at the same price.

Finally, a firm, such as Hyundai that has control over the prices of different variants and models, can follow a pricing structure with or without overlapping price ranges, depending on its objectives. If the focus of the firm is to upsell the products of the higher quality range,

then structuring the prices with overlaps would likely result in consumers shifting to better models. On the other hand, firms such as Renault have price ranges of models that are discreet from one another. This can be beneficial to the firm as it has very few models and the objective is to create a feel of exclusiveness to its consumers. Presence of an overlapping price range may not fit well with such an objective. Thus the presence of overlapping price ranges may or may not be beneficial to a firm depending on its objectives and marketing strategy.

Limitations and Further Research

This research has a few limitations. First, all the studies use the same context – television prices – to test the overlapping price ranges. We argue that the overlapping price ranges effect is likely to be observed in the case of durables or infrequently purchased products. Further research can use different categories of products (both durable and frequently purchased products) and compare the impact of overlapping price ranges.

Second, the range of prices for a particular television screen size has a number of brands. However in the case of the automobiles, such as Hyundai, the entire range of prices of the variants is from the same brand. Using this context would eliminate perceived brand differences across different regions of a price range. Future research can use hypothetical brands and evaluate the overlapping price range effects across brands. For instance, the prices of 32 inch Samsung television may overlap with those of 40 inch televisions from Samsung. If the argument that brands play a greater role in determining the purchase behavior holds true, then adding the brand information across ranges will provide a richer evidence for the overlapping price ranges.

Third, all the studies used student subjects as sample. While this helps to increase the internal validity of the studies (due to homogeneity of the sample), further research can use adults

who make purchase decisions for their households, in the case of durables. As students are less likely to have directly involved in the purchase of a television, they are unlikely to have a ready reference price. We also test for past purchase behavior and drop students who were directly involved in the purchase of a television within the last one year period. This ensures homogeneity of the sample and results in a high powered experiment to observe the effects, in case they exist. However, the generalizability of the findings may be questioned.

Finally, we used the tenets of regret theory to provide the theoretical rationale for the hypotheses. However, perceived regret was not measured as part of the studies. While our objective was to develop the hypotheses based on a sound theory, it would be theoretically more insightful to explore the mechanism (perceived regret) involved in the decision making process in the case of overlapping price ranges. We did however measure a proxy for counterfactual thoughts arising due to overlapping price ranges using the fixation times and number of revisits to the overlap region, in the eye tracking study. While the measures illustrate the cognitive dissonance associated with evaluating products in the overlap region, the regret is not directly measured. Future research may capture anticipated regret before taking the decision to purchase a product as well as the perceived regret once the product has been chosen.

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