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**REFERENCE PRICE AND CONSUMERS' PURCHASING DECISIONS: A SURVEY
OF THE LITERATURE**

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Abstract

Through an inspection of the existing literature, this thesis is aimed at providing a review, in general terms, of the characteristics typical of consumer's reference standards and its formation and application's processes.

The paper can be divided into three clearly identifiable parts and each one of them will regard a different aspect of individual's reference standards and decisional process. In more detail, the first part has the scope to show what are the cornerstones of the Prospect Theory (Kahneman and Tversky, 1979), presenting also those studies that support its theorizations, with the scope of demonstrating how Prospect Theory is more pertinent than the standard normative principles in the specific area of reference-dependence. Instead, the second part is about the principal features composing consumers' reference standards, with a particular attention to what are the processes employed by individuals both to form these standards and to use them to make those evaluations necessary to come to any consumption decision. It can be affirmed that this second part represents the economic part of the thesis, since it is aimed at showing why consumers tend to use reference standards when asked to make a purchasing choice. By contrast, the third part, with its managerial mold, shows how individuals use these reference points and has the aim to provide sale stratagems that can make sellers able to influence consumer's reference point formation and application: in fact, following some specific strategies, sellers may take advantage from eventual reference points' changes.

Introduction

When economists analyse and describe how consumers behave when asked to choose among different alternatives, they generally refer to the normative principles of the standard economic theory.

Following the neoclassical principles, among all the combinations of consumer's preferences, represented by the so called *utility function*, the consumer will choose the one that maximizes his utility without exceeding his limited amount of resources (e. g., the consumer's income). Hence, the consumer is supposed to be perfectly rational, fully aware of all the available options and acting accordingly to the utility maximization principle.

Unfortunately, even if this classical view has been considered the most appropriate way of describing and predicting consumers' behaviour, it presents some deficiencies. In fact, empirical evidence has shown that the assumption of perfect rationality is not totally plausible: even if subjects have well defined preferences and know very well what their available options are, often they do not take "the best" decision.

The explanation of this apparently unjustifiable behaviour could be the fact that irrational variables contribute to the final choice.

To properly describe the actual behaviour of consumers and economic agents in general, Daniel Kahneman and Amos Tversky, formulated in 1979 a valid alternative to the standard economic theory - the so called Prospect Theory.

One of the building blocks of Prospect Theory is the concept of *reference dependence*: subjects asked to decide between several alternatives do not come to a decision considering the final outcomes but instead the deviation of all the possible options from certain reference points. Thus, consumption decisions seem to be the result of a comparison between all the alternatives available and the individuals' reference standards.

Starting from this assumption, the aim of this thesis will be to provide a review of the existing literature about consumer's reference standards, trying to establish a connection between the economic and the managerial approach.

As reported in Chapter 1, the fundamental contribution of Kahneman and Tversky furnished a new interpretation of the consumer's behaviour, giving support to the assumption that consumers do not choose following their utility function but instead using some reference standards.

This is the reason why Kahneman and Tversky first, and Thaler (1985) later, started to use a new utility function (the so called *value function*), that is built on individual's reference point.

In particular, when the focus is on the consumption purchasing decisions of consumers, the natural reference point is a *reference price*.

The reference price is the subject of Chapter 2: there It will be shown how consumers purchasing choices can be seen as the result of comparison between the charged prices and the consumer's reference price, and that only when the comparison is favourable (e. g., the charged price is lower or, at least, equal to the consumer's reference price) the consumer will be willing to purchase the good. Further, since this reference price may vary among consumers, it has to be observed from two different perspectives: first, from a *qualitative point* of view, the reference price can be stimuli-based (or external), when it is based on external stimuli provided by the seller, or memory-based (or internal), when it is the result of a broad price history knowledge; second, from a *quantitative* perspective, it can be constitute by a unique price (form Helson's Adaptation-Level Theory) or by two or more (from respectively Volkmann's Range Theory and Parducci's Range-Frequency Theory) values.

The existence of more than one type of reference price indicates that it could not be exogenously determined and that it is strongly linked to the consumer's characteristics. This idea is the starting point of Chapter 3, that concerns the managerial implications of having a reference price in the consumers' decision making process. In fact, in choosing their pricing strategies, carefully consider the type of reference price used by their customers. Thus, while sellers who want to address stimuli-based reference price consumers should use price promotions, providing external stimuli, sellers who want to reach the memory-based reference price segment should curate their product presentation, providing a justification for the charged price.

Chapter 1

Reference dependence: the alternative way of considering the individual's decision making process

1. Prospect Theory and reference dependence

In 1979 Kahneman and Tversky, two psychologists, formulated a new theory of decision making, known as Prospect Theory, that is meant to describe how people choose between alternatives in risky situations. This theory was inspired by the results they obtained through a number of experiments where subjects were asked to express their choices in hypothetical problems involving monetary prizes. These results were in contrast with the standard economic theory of choice under uncertainty, that is Expected Utility Theory; thus, to explain this hard evidence, a new model was introduced.

One of the building blocks of Prospect Theory is *reference dependence*: in making decisions, subjects do not consider the final consequences of their choices, as dictated by the standard model of choice. Rather, they evaluate their choices in terms of (positive or negative) changes with respect to a *reference point*. As a consequence, the utility function (which in Prospect Theory is called value function and denoted by v) is not defined over final outcomes (final consumption bundle, final asset position, etc.) but over gains and losses relative to the reference point (*gain-loss utility*).

To furnish some support to this hypothesis can be useful to report two experiments made by Kahneman and Tversky known as experimental problems 11 and 12.

Problem 11: In addition to whatever you own, you have been given 1,000. Now choose between

A: 1,000 with probability 50% B: 500 with certainty
0 with probability 50%

Among 70 students, the 84% chooses B.

Problem 12: In addition to whatever you own, you have been given 2,000. Now choose between

C: -1,000 with probability 50% D: -500
0 with probability 50%

Among 68 students, the 69% chooses C.

Now, as can be easily observed, these two problems, in terms of final wealth, are totally equivalent: problem 12 is obtained from problem 11 by adding 1,000 to the initial individual status quo and by subtracting 1,000 to the possible alternatives. For that reason, individuals choosing option B in Problem 11, would be expected to choose D in Problem 12. Looking at the reality, it can be observed that individuals' behaviour diverge from this expectation, choosing B first, and C then. This discordant behaviour can be justified only using the above mentioned concept of *reference dependence*: agents do not considers the alternatives in absolute rational term but compare them with their standards.

Further, beyond reference dependence, Kahneman and Tversky identify two other crucial elements that affect the decision making process. The first is called *loss aversion* and captures the idea that “losses loom larger than gains”: the aggravation that one individual's experiences in losing a sum of money appears to be greater than the pleasure associated with gaining the same amount.

The second is *diminishing sensitivity*: the idea is that the impact on utility of a marginal change will decreases as we move further away from the reference point. Thus, for example, the difference between a gain of \$10 and \$11 will seem larger than the difference between gains of \$100 and \$101.

To sum up, according to Prospect Theory, the utility function (Figure 1) has the following characteristics:

- Reference dependence: it is defined on gains and losses relative to a reference point.
- Loss Aversion: it is steeper for losses than for gains (i.e., it has a kink at the reference point).
- Diminishing Sensitivity: it is generally concave for gains and convex for losses. Diminishing sensitivity implies that the individual is more willing to take risks in the region of losses than in the region of gains.

Notice that loss aversion and diminishing sensitivity imply that gains and losses can be evaluated quite differently by the decision maker. In other words, the shape of the utility function changes significantly as it crosses the reference point (without this change at the reference point, the difference with respect to the standard utility theory would be minimal). Therefore, the exact nature and position of the reference point becomes crucial.

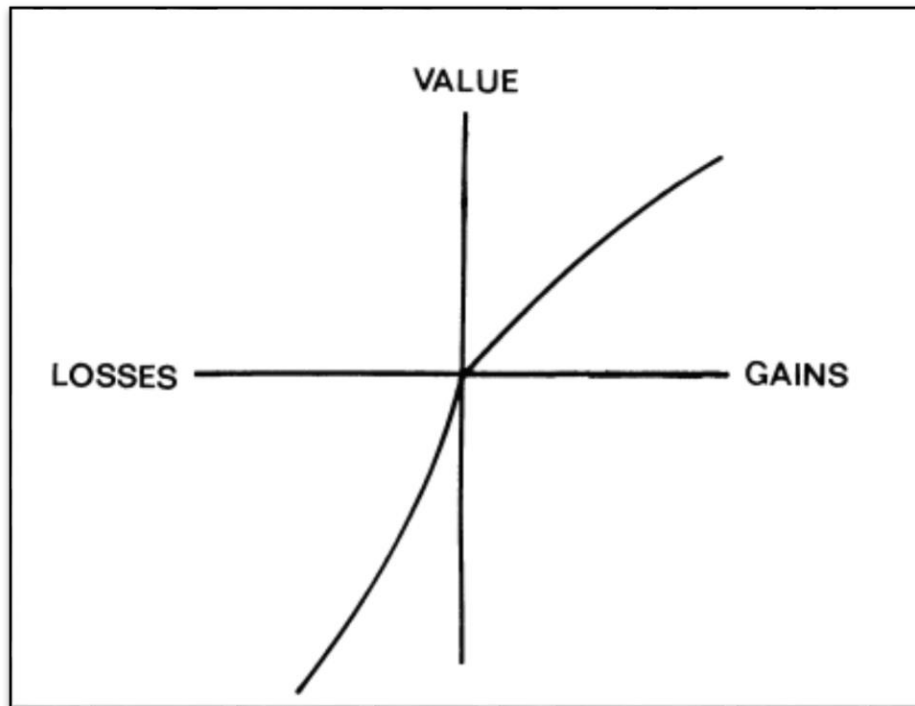


Figure 1. Agents' utility function

2. Individual's reference point: possible alternatives

In their paper, Kahneman and Tversky do not identify a univocal individual's reference point. Even though they state that the reference point "usually corresponds to the current asset position", they also admit that it "can be affected by the formulation of the offered prospects, and by the expectations of the decision maker". In fact, the location of the reference point is part of the decision process and, in particular, of what they call the *editing phase*. This phase is a preliminary analysis of the decision problem, in which the decision maker organizes and reformulates the available options in order to simplify his subsequent evaluation and choice. During this editing phase, the decision maker, among other things, identifies and locates the reference point and codes the alternatives in terms of gains and losses relative to this reference point (this procedure is called *coding*).

At the light of these assumption, it remains open the possibility that the reference point does not necessarily coincide with the status quo and can differ from subject to subject and, for the same subject, can change in different moments and circumstances.

For example, starting from this new hypothesis that individuals' reference point may diverge from their status quo, Koszegi and Rabin try to formalize the above mentioned List's findings,

constructing a model that considers reference points formed considering subjects' expectations.

In their "*A model of Reference – Dependent Preferences*" (2004, 2006) they suppose that a person's utility depends not only on the actual consumption bundle, c , as in the standard economic theory, but also on a reference consumption level, r . The overall utility has two components: the *consumption utility* classically stressed in economics, and the *gain-loss utility*. A person assesses gain-loss utility in each dimension of the consumption bundle separately. Thus, in evaluating how satisfied she is with the outcome, the decision maker "breaks up" deviations in consumption from the reference level into deviations in individual dimensions. The authors consider a strong relationship between these two components of the utility: after some experiments, they find that the agent's sensation of gain and losses is generally likely to be smaller for a good whose consumption utility is smaller. As a result, how a person feels about gaining or losing in a dimension depends solely on the changes in consumption utility associated with such gains or losses. For that reason, Koszegi and Rabin take the strong view that person's expectations are more important than the status quo in determining a person's sensation of gain or loss. They make the extreme assumption that the reference point is fully determined by the expectations a person held in the recent past. Specifically, a person's reference point is her probabilistic beliefs about the relevant consumption outcome held between the time she first focused on the decision determining the outcome and shortly before consumption occurs¹. These expectations are important in determining sensations of gains and losses because, as indicated in the Prospect Theory, a person will make its decision referring to how she perceives the value of all the possible alternatives.

Indeed, in their "*Gambling with the house money and trying to break even: the effects of prior outcomes on risky choice*" (1990), Thaler and Johnson theorized that an agent's reference point could be also his prior experiences: these experience can dramatically influence subsequent choices in systematic ways. Specifically, under some circumstances a prior gain can increase subjects' willingness to accept gambles (*the house money effect*), while prior losses can decrease the willingness to take risk. It happens because in case of prior losses, subsequent losses are not integrated with the prior outcome; in contrast, in case of prior gains, subsequent losses that are smaller than the original gain can be integrated with the prior gain

¹ The reference r is determined endogenously and it is defined as the preferred personal equilibrium (PPE). It is a personal equilibrium because it is a rational expectations equilibrium in the sense that given a consumer's expectations regarding a choice set, she form expectations regarding choice outcomes. Then, it is the preferred one in the sense that when more than one PE exists, the PPE is the one that maximizes ex-ante expected utility.

mitigating the influence of loss aversion and facilitating risk-seeking. The basic idea is that until the winnings are completely depleted, losses are coded as reductions in a gain.

In general, it can be said that the Kahneman and Tversky's Prospect Theory has been considered as an alternative theory to explain empirical and experimental evidence on the actual behaviour of decision makers without giving definite information about the nature of the reference point. Its main message is that the reference point is far from being exogenous and fixed, but depends on the characteristics of the subjects: it means that it can vary among subjects and, additionally, the same individual can have different reference points depending on the circumstances.

3. Reference dependence and reality distortion

Starting from the assumption that reference points cannot be exogenous and fixed but depends on the individuals' characteristics, it can be affirmed that their formation is based on how individuals "react" to the information they receive.

In fact, when, during their editing phase, they code their information, because of reference dependence, agents are subjected to a sort of distortion of the reality that makes them not behaving rationally.

This reality distortion can take different forms, depending on its characteristics; the most important are the following (Table 1):

Disposition effect	The tendency of selling winner assets whereas keeping looser assets
Status quo bias	The tendency to be reluctant to leave the status quo because the disadvantages of not being at it seem to be perceived larger than the advantages
Endowment effect	The tendency of demanding prices higher than those individuals would be willing to pay for the same item

Table 1. Types of reality distortion

See them in detail.

Disposition effect. Considering the financial decisions, when an individual has to decide whether to sell an asset he already owns, his reference point will typically be the purchasing price. This produces the so-called *disposition effect*. It is a sort of anomaly registered in behavioural finance that consists in the fact that investors tend to sell assets whose price has increased (the “winner”) relative to the purchasing price, whereas they tend to keep assets whose price has dropped (the “losers”).

For example, assume that an investor purchase one share at \$50 and the price is now \$40. Suppose that in the next month the price could go either up \$10 or down \$10 with a 50-50 probability. The investor must choose between selling the stock now and realizing a paper loss of \$10 or keeping the stock in his portfolio having the 50-50% of losing \$20 and breaking even. A risk-averse investor will sell the stock, while an investor that is employing the purchase price as the base (or reference price) to compute gains and losses, will not sell the stock: the disposition-effect-affected-consumer prefers the chance of breaking even to the certain pain of experiencing a loss. On the other hand, assume that the investor purchased one share at \$50 and the price is now \$60, again with 50-50% chance of going up or down by \$10. In this case, the disposition-effect-affected-consumer will prefer the immediate realization of the \$10 gain and he will sell the stock.

Now, if the reference point is the purchasing price, when considering selling a winner, the decision maker operates in the region of gains, where the utility function is concave, i.e., the decision maker is more risk averse: risk aversion then leads him to opt for the certain decision (realize the paper gain) instead of the risky decision (hold on the asset). The opposite occurs for a loser asset. In the previous example, since by prospect theory individuals are risk averse over gain, they will prefer a certain \$10 to a 50-50 % bet to win \$0 or \$20; conversely, because they are risk-seeking over losses, they will prefer a 50-50% bet to lose \$0 or \$20 to a certain loss of \$10.

Status quo bias. Individuals determining their reference points can be influenced also by a distortion called *status quo bias*². This effect, due to Kahneman and Tversky’s concept of loss

² Explanations for the status quo bias can be grouped into three different categories. In fact, it can be the consequence of

- rational decision making in the presence of transition costs and/or uncertainty. In fact, transition costs introduce a status quo bias whenever the cost of switching exceeds the efficiency gain associated with a superior alternative;
- cognitive misperceptions. This misperception can be provoked by *framing* and/or *anchoring*. Framing is about how gains and losses are proposed while anchoring implies the tendency to consider too heavily the first part of an information offered (the anchor) and make subsequent judgments use the initial piece of information;
- psychological commitment. Continuance of status quo choices may be motivated by the individual’s desire to justify previous commitments to a course of actions by making subsequent commitments.

aversion, makes individuals very reluctant to leave their status quo because the potential disadvantages of not remaining at it seems to be perceived larger than the advantages. In addition, the advantage of the status quo increases as the number of the alternatives increases and Samuelson and Zeckhauser (1988) find that when choosing among different options, an alternative becomes significantly more popular when it is designated as the status quo (*status quo framing*): subjects tend to choose different alternatives when, in case of two similar problems, in one of them one potential outcome is presented as a status quo.

Endowment effect. Another anomaly that relates to reference dependence (and to the location of the reference point) is the so-called *endowment effect*. The term endowment effect was coined for the first time by Thaler (1980) to describe the phenomenon by which most people would demand a considerably higher price for a product that they own than they would be prepared to pay for it. Stated elsewhere, the value people attach to a good seems to be affected by the property right: specifically, people place a higher value on objects they own relative to objects they do not. A laboratory demonstration of this effect was provided in 1984 by Knetsch and Sinden that conducted an experiment in which participants were endowed with either a lottery ticket or with \$2.00. Some time later, each subject was offered an opportunity to trade the lottery ticket for the money, and vice versa. Very few subjects chose to switch and those who were given lottery tickets seemed to like them better than those were given money³.

Following Thaler's theorization, in his "*Does market experience eliminate market anomalies?*" (2003), List shows through a field experiment, that a subject tends to ask a higher selling price than the price he is actually willing to pay to acquire the same good. This can be explained considering this behaviour as a form of risk aversion (according to prospect theory): an individual may not know how valuable something is to him until he has it, thus he undervalue the good when purchasing it because he is discounting for the possibility that the good may not be as valuable as anticipated. Another interpretation of the loss aversion effect could be the fact that the individual when selling a good that he is owning will experience a loss (that is, not owning the good anymore) and, as a result, will ask more than he is willing to pay to compensate his loss of losing the good. In general, List identifies the individual reference point in his status quo.

Moreover, List find that this specific anomaly is observed only for the inexperienced subjects: substantially, he hypothesizes that the market experience can eliminate the endowment effect. To test this hypothesis, he conducts an experiment collecting data by examining trading

³The endowment effect was described as inconsistent with standard economic theory which asserts that a person's willingness to pay for a good should be equal to their willingness to accept compensation to be deprived of the good.

pattern of sport memorabilia at a sports card shown in Orlando, FL. At the sport memorabilia market, subjects were randomly given one of two more or less equally valuable sports cards and were then asked whether or not they wanted to exchange their good for the other good. Considering the fact that the two goods were initially assigned randomly, it was expected that exactly fifty percent of people were assigned the good they preferred less so that a trading volume of fifty percent was anticipated. In fact, a smaller volume would constitute evidence for the existence of an endowment effect (e. g., people value goods more when they own them). Conversely, a closer trading volume (to fifty per cent) would identify a small magnitude of the endowment effect. This estimation of the endowment effect magnitude was tested among two subsets of subjects: the Card Dealers that were expected to have a relatively high average level of experience, and the Non Dealers, whose average level of experience was expected to be relatively low. The results of the experiments showed that the percentage of trades conducted by Dealers numbered 43.6%, close to the theoretically predicted fifty percent, whereas the percentage of trades among Non Dealers amounted to 20% (far from the predicted 50%).

The important implication of this finding is that since the correlation between reduced endowment effect and market experience is confirmed⁴, it implies that a subject reference point may diverge from his status quo under certain circumstances.

For example, in List's experiment, Non Dealers subjects' reference point is the status quo while the reference point of the Non Dealers subject is formed on their expectation of exchanging the memorabilia.

4. Reference dependence in consumption decisions: the reference price

In his "*Mental Accounting and Consumer Choice*" (1985), Thaler tries to furnish a new theory of decision-making process, integrating the economic theory with some psychological intuitions provided by Kahneman and Tversky in their Prospect Theory and creating a hybrid theory of economics and psychology.

His study is based on the concept of Mental Accounting and is aimed to move further toward a behaviourally based theory of consumer choice.

The theory proposed consists of three key features:

⁴ Also Coursey, Hovis, and Schultze (1987) theorized that the discrepancy between an individual willingness to pay and his willingness to accept (that is, the endowment effect) diminishes with experience in a market setting.

- first, the utility function $U(z)$ of the classical view is replaced with the *value function* $v(\cdot)$ from prospect theory;
- second, the price enters directly the value function, in the form of a *reference price*;
- third, the normative principles of *fungibility*⁵ is relaxed.

As said above, the first step in describing the behaviour of the representative consumer is to replace the utility function from the economic theory with the psychologically richer *value function*, used for the first time in the prospect theory.

Then, while in the prospect theory the value function is defined over single, unidimensional outcomes, Thaler extends the analysis to incorporate compound outcomes where each outcome is measured along the same dimension.

Consumers code these joint outcomes (x,y) in two different ways: in one case consumers integrate all the possible outcomes, and then value them jointly $v(x + y)$; in the other case consumer considers outcomes to be segregated⁶ because they value them separately $v(x) + v(y)$.

In the next step the consumer analyses transactions using a two-stage process:

- first, individuals evaluate potential transactions.
- second, they approve or disapprove of each potential transaction.

As can be observed, the first stage is a judgment process while the second is a decision process.

In evaluating the transaction, consumers consider two different kinds of values:

- the acquisition value – that is the value that consumers are ready to part with for physically acquiring some good, and
- the transaction value - that is the value consumers attach to having a good deal and equals zero if the price that one is paying is equal to the mental reference price for the good whereas it is positive if the price is lower than the reference price.

In doing this analysis, three price concepts are used:

- p - that is the actual price charged for some good z ;
- \underline{p} – that is the value equivalent of z : it is the amount of money which would leave the individual indifferent between receiving \underline{p} or z as a gift. In other words, \underline{p} corresponds to the standard notion of willingness to pay; finally,
- p^* - that is the reference price of z .

⁵ The fungibility principle says that money must be considered in the same way regardless of its source or its end use.

⁶Integration is suggested in case of Multiple Losses and in case of Mixed Gains that results in a net gain (e. g., in that case, the consumer integrate a bigger gain with a smaller loss). Segregation is suggested in case of Multiple Gains.

Using these three price concepts, it is possible to measure both the transaction value and the acquisition value. Analytically:

- the transaction value is the value the consumer gets by buying the good at a price p when the reference price is p^* . This value depends on the comparison between p and p^* , but is unaffected by the consumption benefit of the good;
- the acquisition value is essentially the consumer surplus: it is the (positive or negative) net benefit that accrues from consuming the good purchased at a price p (here the reference price does not enter:).

Then, it will be easy to measure the total utility as the sum of the two value obtained.

Therefore, the reference price affects the decision of the consumers as it enters the transaction part of the utility function; as a consequence, the consumer is more likely to part with the good, the larger the difference between the reference price and the actual price.

Thaler does not give a univocal description of the reference price determinants. However, he proposes an interesting interpretation of the consumer's reference price, based on the concept of fairness. The reference price is a fair price, that is a price that, according to the consumer's perception and experience, closely tracks the seller's production costs. An implication of this is that buyer's perceptions of a seller's costs will strongly influence their judgments about what price is fair, and this in turn influences their value for the reference price. In case the seller will charge a subjectively (for the customer) too high price, consumers are likely not to buy the good since its price is considered unfair; in addition, this could have a negative impact also on the seller's reputation: he will be considered by customers as a profiteer. Then, the direct consequence is that consumers will not buy from him anymore, as a sort of punishment. At the end, after an individual has evaluated all the transactions, he has to consider his local temporal budget constraints. That is, the budget constraint that most influences behaviour is the current income flow rather than the present value of lifetime wealth. For many families, for example, the most relevant time horizon is the month since many regular bills tend to be monthly. Thus, the budgeting process, either implicit or explicit, tends to occur on a month-to-month basis. Second, expenditures tend to be grouped into categories and potential expenditures are then considered within their category. Further, this type of behaviour violates the economic principle of fungibility. In sum, giving the existence of time and category specific budget constraints, the consumer evaluates purchases as situations arise.

It is evident that Thaler's theory investigates three different areas:

- coding gains and losses,
- evaluating purchases, and
- budgetary rules.

What is important is that a new approach to consumer's decision-making process is provided: starting from Kahneman and Tversky's findings, Thaler tries to explain how individuals make their decisions using psychological variables and elements that the economic theory does not consider at all.

Koszegi and Rabin, in their "*A Model of Reference – Dependent Preferences*" (2006), provide a model which generalizes the one by Thaler: like in Thaler, they assume that a buyer's willingness to pay for a good does not reflect merely his intrinsic valuation of the good; rather, it also depends strongly on beliefs about whether he is going to buy and how much she is going to pay for it. In fact, if for example a consumer expects to buy a pair of shoes, he construes coming home without a pair of shoes as a (strongly felt) loss of shoes not acquired and a (less important) gain for money not paid, making her inclined to buy; conversely, if he expects not to buy, he experiences giving up money as a loss, and getting shoes as merely a gain, making him disinclined to buy. Clearly, in forming his expectation, also an expectation about the selling price is formed: the consumer expects to buy a pair of shoes because, among other things, he is expecting also a certain price. If the true price turns out to be different than expected, then it is more likely that the consumer will make an unexpected decision. This reference price depends on the distribution of price the consumer is facing. In effect, once there is a possibility of acquiring the shoes at a cheaper price, the consumer would experience a loss from paying the higher price instead. Due to this comparison effect, the willingness to buy of the consumers decreases for the higher price: the reservation price is by definition the highest price the consumer is ever going to pay for the good, so buying at that price necessarily feels like a loss when compared to other possible purchase prices. And the lower the other possible prices, the greater the consumer's sense of loss from buying.

Summarizing and looking at the support that the mental accounting has received, Thaler's theory is able to provide a very good and adequate explanation about how psychological variables make the assumptions of the economic theory obsolete; moreover, Thaler's findings have been proved by other studies showing that consumers are strongly influenced by their reference price when making a purchasing decision. As a result, there is robust evidence that support the Mental Account theory.

After considering the Thaler's theory as a better approximation of the consumers' behaviour, it could be useful to provide the main results that research has evidenced about consumer's reference price formation process and about reference price's characteristics.

For that reason, in this thesis the attention will be exclusively focused on consumer's reference price, attempting to identify what are its constituents, the way in which consumers

form their reference price and if it is possible to influence it through promotions sales and others strategies.

Chapter 2

A reference price for each consumer

1. The consumer's price comparison process

As discussed in Chapter 1, the economic literature has highlighted that subjects tend to come to a decision not considering the final outcomes of the available choices but instead evaluating all the possible alternatives in terms of their deviations from a certain individual reference point. This psychological decision making process, called *reference-dependence*, has been taken into account also by the managerial and marketing literature, which has applied it to explain the consumption decision by consumers.

Even if, as will be showed later in Chapter 3, the two literature have different approaches in studying the reference dependence implications, their starting point is the same: agents make judgments and consumption choices based on the comparison of observed prices to a reference point that can be summarized by a reference *price*.

Further, this comparison can be explicit as well as implicit. In details:

- in *explicit comparisons* people compare one price with another price or with a range of prices, while
- in *implicit comparisons* people compare the actual price to an unspecified but expected lower price.

Then, both implicit and explicit comparisons can have two different outcomes. In fact, the final result can be either favorable or not favorable. Specifically,

- a *favorable* result implies that the available price is lower than the agent's reference price and, in this case, the agent will be more likely to purchase the product considering the charged price as just
- a *not favorable* result implies that the observed price is greater than the agent's reference standard and, consequently, the agent will be more likely not to make the purchase because of the perceived price iniquity.

At the light of these considerations, it appears clear the cross reference with the Kahneman and Tversky's (1979) theorizations. Here, the idea is that, using the language of Prospect Theory, a price above the reference price, being perceived by the consumer as a loss, will lead to an unfavorable decision, while a price below the consumer's reference price, being perceived as a gain, will result in a favorable decision.

Analytically, reporting the Hardie et al. (1993)'s example, suppose a situation in which a reference price, p^* , for each consumer is set. Here, the price gain provided by any price $p \neq p^*$ is defined as the amount by which the price p is below the reference price ($p < p^*$) whereas the price loss is the amount by which the price p is above the reference price ($p > p^*$).

2. The concept of *fairness*: is an ethically acceptable price enough for convincing consumers to buy?

As said earlier in Chapter 1, one of the first economists who explicitly talked about reference price in consumer choice was Richard Thaler in 1985; according to him, the standard with which consumers compare the income price stimulus can be labeled as the “expected or fair price” (Thaler, 1985). Hence, in Thaler’s opinion, the reference price is related to the concept of *fairness*.

In effect, *fairness* seems to be an ethical rather than an economic concept and, for that reason, it becomes not easy to define it as well. However, Thaler used to think that consumers judge a price fair or just to pay considering their specific idea of eventual manufacturer’s costs: specifically, consumers tend to judge a price as unfair (fair) in case they are convinced that the production and/or selling costs are extremely low (high or, at least, equal) with respect to the charged price. as a result, consumers that will have the perception that the seller is taking an unfair advantage at their expenses will consider his charged price as unfair.

Thaler’s assumptions about the concept of price fairness support the shared hypothesis that price fairness is judged by consumers following the *principle of the dual entitlement*, which argues that fairness perceptions are governed by the belief that firms are entitled to a reference profit (that in the consumer’s perception may refer to some reasonable amount above costs) and consumers are entitled to a reference price. Therefore, consumers are not willing to accept that changes in the status quo price are made arbitrarily or merely for the purpose of increasing the firm’s profit but, at the same time, they entitle the firm to protect its profit when events such as rising production and/or selling costs arise. In the classic example, a retail vendor is entitled to raise the price of snow shovels in response to an increase in the wholesale price but not in response to a surge in demand brought about by a snowstorm.

Hence, a more general definition of price fairness can be constructed, looking at it as the extent to which outcomes are deemed reasonable and just, and thus transaction fairness might refer to the extent to which sacrifice and benefit are commensurate for each party involved.

Having in mind the concept of fairness, Xia, Monroe, and Cox (2004), stated that price comparisons can lead consumers to one of three types of general judgments: equality, advantaged inequality, or disadvantaged inequality (Table 2).

In general:

- a perception of price *equality* does not trigger an unfairness perception, since it implies a correspondence between the consumer's reference price and the price charged by the seller. In this case, the consumer is going to pay exactly how much he expected to pay and won't have the perception that the seller is having an economic advantage at his expense.
- a price *inequality*, it may lead to two different judgments depending on the type of that inequality. To identify these two different judgmental outcomes, it becomes important to look at the price fairness from the buyer's perspective. Here, the two cases are distinguished:
 - in case the price inequality goes *to the detriment* of the consumer, his judgment will be negative, considering either that the price is less fair (e.g. the price does not equal the consumer's reference price but is still acceptable) or that is unfair;
 - in case the price inequality is *in favor* of the consumer (e.g., the price charged is lower than the consumer's reference price), the consumer won't have a negative judgment and will be more likely to purchase the good.

Summarizing,

Equality	No unfairness perception
Advantage inequality	Positive unfairness perception
Disadvantaged inequality	Negative unfairness perception

Table 2. Equality, advantaged inequality, or disadvantaged inequality

Hence, it appears clear that perceived unfairness is less severe when the inequality is to the buyer's advantage than when it is to the seller's advantage⁷.

In any case, looking at the reality and observing that consumers differ each other because of some personal characteristics, it appears obvious that a univocal reference price (e. g., the fair price) cannot be the common unit of measure for all consumers.

Therefore, stated that the consumer's reference price is a fundamental tool to make price comparisons and subsequent price evaluations, it cannot be linked only to the "ethical" concept of fairness. Actually, the consumer's reference price seems to be the result of "analytical" elements such as either consumer's past price knowledge or consumer's reaction to external stimuli provided by sellers.

3. Memory-based reference price versus stimuli-based reference price: a reference price for each consumer

Starting from the last consideration that the consumer's reference price seems to be the result of "analytical" elements such as either consumer's past price knowledge or consumer's reaction to external stimuli provided by sellers rather than of ethical judgments, an important part of the research have agreed to the existence of two different types of reference price: the *memory-based reference price* (also known as *internal reference price*) and the *stimuli-based reference price* (also called *external reference price*). The former is formed looking at temporal influencers such as past prices whereas the latter is the result of the information available in the current purchase environment.

As a result, while *time* considered as the prices faced on past purchase occasions and stored in consumer's memory (Rajendran and Tellis, 1994) is the preponderant element of the memory-based reference price, *context* meant as the other prices of the product category in the store at the point of purchase seems to be the prevalent element of the stimuli-based reference price.

Let analyze them in detail.

⁷ Xia, Monroe, and Cox (2004) sustained that the potential factors that may influence unfairness price perceptions can be summarized into four groups. The first group contains the variable that specify the context of the comparative transactions: a price fairness judgment most likely is based on comparative transactions that involve different parties and when perceived price discrepancies occur, the degree of similarity between the transactions is an important element of price fairness judgments. The second group contains information that provides reasons why a certain price is set may influence perception of price fairness. The third group is represented by the previous experiences that consumers may use to judge the actual transaction. Finally, the fourth group is constituted by consumers' general knowledge or beliefs about sellers' practices (e. g., social norms and market knowledge) used to adjust their judgments of price fairness.

3.1 Memory-based reference price

Memory-based reference prices are used by consumers when they judge a good's actual price relying on their memory of that good's past prices. Hence, past prices become a part of the consumer's information set: the consumer is able to remember prices encountered on past purchase occasions and therefore enters the purchase environment with an idea of how much he should pay for the good. As a consequence, the comparison will have a favorable outcome when the charged price is still in line with the consumer's recalled level of the specific good's price.

As it can be easily deduced, the memory-based reference price is built on the consumers' price *awareness* of past prices. Generally, researchers have equated buyers' price awareness with the ability to *remember* prices recently paid. In effect, the concept of awareness can be operationalized in three different ways:

- buyers' ability to recall the exact price paid
- the buyers' ability to recall the relative price rank of alternative items in their choice set, or
- the ability of buyers to recognize the price paid for the item from a limited set of alternative prices.

Instead, Monroe and Lee (1999) argued that "memory-based buyers" often make purchase decisions on what they *know* rather than what they *remember*. Thus, buyers' price estimates and product evaluations are affected by price information to which buyers have been previously exposed, even though they may not consciously remember the prices relevant to their judgments.

Starting from the common view that what is accessible in memory is often measured by what buyers can consciously remember, the implication is that buyers frequently make judgments that a particular item is too expensive or a real bargain based on some prices that they remember from past shopping experiences, and these remembered prices form a basis on which the buyer's reference price is formed.

However, as indicated by Monroe and Lee, recent studies have demonstrated that such recall of previously encountered information represents only one type of memory, generally known as the *explicit memory*. This kind of memory is characterized by *conscious* recollection of an exposure episode: the consumer is able to remember what happened. But there is a second type of memory, the *implicit memory*, that reflects *non-conscious* retrieval of previously encountered prices.

The direct implication of the coexistence of these two types of memory is that even if a buyer is not able to remember explicitly the price he paid for an item, he might be very capable of judging a new price for products in the item's category as too high, a good deal, or expensive. It appears clear that the buyer is supposed to have some knowledge of prices of similar items in the category even though he may not be able to recall any specific price. Then, it becomes obvious the difference between remembering and knowing:

- *remembering* requires the conscious recollection of having encountered a piece of information
- *knowing* involves a sense of familiarity toward a previously encountered item, experienced without conscious recollection of the exposure event.

Hence, when consumers process information *consciously* (remembering), they:

- pay attention to the price
- encode the price information
- make a judgment regarding the value of the item, and
- make a decision to either purchase the good or not.

Conversely, when price information is processed at a *non-conscious level* (knowing), consumers do not pay particular attention to the prices: they are more likely to demonstrate a lack of price awareness and not be able to recall the price of the item at a subsequent time. However, these same consumers may be able to indicate that the product is too expensive, a bargain, or priced reasonably, suggesting that the price information has been processed and evaluated (Figure 2).

Finally, because of its nature, the memory-based reference price is more likely to be linked to a specific brand because it is modeled as a brand-specific phenomenon: in fact, it considers the price history of a good and, as a consequence, each brand will have a different internal reference price.

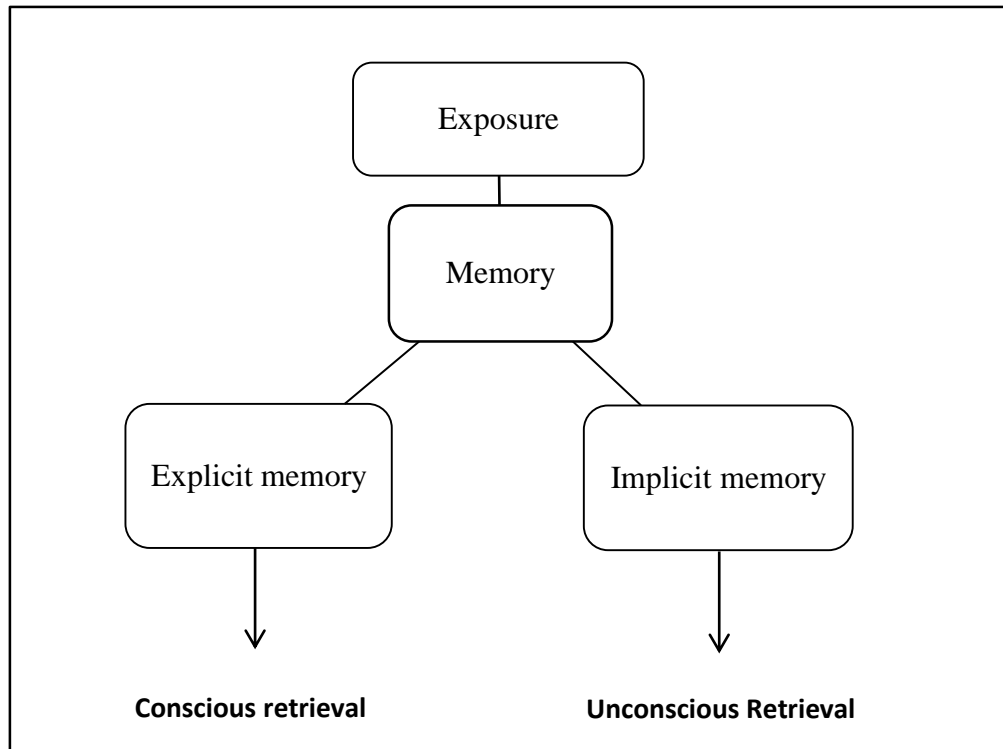


Figure 2. Explicit versus implicit memory

3.2 Stimuli-based reference price

The memory-based reference price is not the only one standard used by consumers. In some circumstances, the reference price is formed during the purchase occasion on the basis of the prices observed – here, the so called stimuli-based reference price.

As a matter of fact, external information in the purchase environment represents the stimulus determining what a consumer thinks he should pay for a good. Thus, while memory-based reference price represents the consumer’s conscious or unconscious memory of past prices of a good and is a function of the price history of that good, the stimuli-based reference price is built on price information available in the current purchase environment. Here,

- retailers may explicitly provide a reference point for price comparison (the so-called advertised reference price), or
- the consumer may form his external reference price based either on the regular price of the good at the point of purchase, or on the current price of the good chosen on the prior occasions, or on the lowest price in the category observed at the point of purchase.

In fine, the stimuli-based reference price tends to be common across brands because, being contextually determined at the point of purchase, it is based on the comparison among different brands that provide similar goods to identify and justify any price difference.

4. Coexistence of the two reference prices in the same consumer: is it possible?

Given the fact that the use of memory-based reference price and stimuli-based reference price assumes two different type of comparisons, it is useful to investigate whether consumers use either internal or external reference price exclusively, whether they use both the types together, or whether the external reference price will influence the internal reference price and vice versa.

Prior research has typically assumed that consumers use either internal or external reference price exclusively, but not both together (Hardic, Johnson, and Fader 1993). However, there are alternative theories in which both internal and external reference prices are included as separate terms in the consumer’s decision making process. For example, Rajendran and Tellis (1994) and Mazumdar and Papatla (2000) showed that consumers’ use of the two types of reference prices depends on consumers’ characteristics such as the number of brand sampled, strength on brand preference, and purchase frequency.

Speaking of that, it is possible to identify at least three different approaches (Table 3).

First approach	The use of either type of reference price is exclusive: memory-based customers segment use only memory-based reference price and stimuli-based segment use only stimuli-based reference price
Second approach	The stimuli-based reference price is supposed to influence the consumer's memory-based reference price whereas the memory-based reference price is supposed to influence the consumer's stimuli-based reference price
Third approach	Stimuli-based reference price and memory-based reference price may coexist in the same customer

Table 3. The three reference price approach

Let see them in detail.

4.1 First Approach

The first approach is in line with the theorization of customer segments provided by Moon, Russel and Duvvuri (2006) that grouped customers into three different segments, depending on the role of reference price in their consumption decisions. The three segments are the following:

- the *memory-based reference customers segment (MBR)*, in which consumers take into account price expectations developed from past purchase behavior when making a current choice;
- the *stimuli-based customers segment (SBR)*, in which consumers make choices by constructing a reference point from the currently observed distribution of prices and no memory of past prices is needed to encode prices; and
- the *non-reference price segment (NRP)*, in which consumers take price information as given. Such no-reference price shoppers respond to observed prices without going through any subjective encoding prices when making purchase decisions. For that reason, their utility function reduces to a standard utility function, which implies that such a consumer does not respond to a reference price.

This segmentation assumes that the use of either type of reference price is exclusive: memory-based customers segment use only the memory-based reference price as standard while the stimuli-based customers segment is expected to use only the stimuli-based reference price as reference point.

Generally speaking, according to Moon, Russel and Duvvuri's model, prices that are considered inappropriate either because they are too high with respect to past prices (MBR) or too high relative to the current price of a specific good (SBR) generate a psychological reaction that is translated in perceived disutility⁸. Then, the difference in MBR and SBR consumers are directly related to the way through which consumers use price information in making a decision. While memory-based consumers segment is supposed to devote considerable cognitive resources to remember past prices and to continually monitor the pricing environment conditioning their behavior on change in this environment, the stimuli-based customers segment is supposed to remember the identity of the last brand purchased,

⁸ Here is clear the link with the Prospect Theory's concept of *gain-loss utility*. As specified in Chapter 1, the value function v from Prospect Theory is not defined considering the possible final outcomes but over gains and losses relative to a certain reference point: specifically, every amount that exceed the reference price is perceived as a loss and every amount lower than the reference price is perceived as a gain. Moreover, following the *loss-aversion* concept, a loss will be perceived more negatively than the positively perception of a gain of the same amount.

not the set of past prices, and to use the current price of this reference brand to determine the fairness of the prices currently in the store.

4.2 Second Approach

In the second approach the stimuli-based reference price is supposed to influence a consumer's memory-based reference price at the time of purchase, and vice versa.

The stimuli-based reference price influences a consumer's memory-based reference price when the consumer that enters a store with a specific idea of how much he is going to pay for a good, changes his mind after looking at the bundle of prices proposed by the store itself. In the language of Prospect Theory, maintaining the distinction between acquisition utility (that is a function of p , the actual price of the good being purchased, and p^* , the consumer's internal reference price for the product) and transaction utility (that reflects the value or "merits of the deal"), the external reference prices works by moving the fair price of the product, thus enhancing the merits of the deal.

In effect, the *context*⁹ in which a product is seen may influence its evaluation. This influence presumably happens because the context affect the internal standard (that is, the previously mentioned consumer's initial belief) from which a product value is perceived.

Thus, according to this hypothesis, in case the stimuli-based reference price is *below* the internal reference price, the consumer will abandon his previous internal standard, considering it too high, and will push his estimation downward; at the same time, in case the stimuli-based reference price is *above* the previous consumer's estimate, it happens that the agent will push his estimation upward¹⁰ to a certain point over that the assimilation is not possible anymore.

For example, suppose that a consumer enters a supermarket with the idea to buy the product j at the price p and notes that all the prices of products similar to product j are less (more) than p . In this case he will probably upgrade its initial belief (e. g., the price p), lowering (enhancing) it of an amount that is still in the so-called consumer's interval of acceptance and conforming it to the other observed prices.

Biswas and Blair (1991) provide an useful framework that can clearly explain this concept (Figure 3).

⁹ Here the context is intended to be the set of all the similar goods' prices, that is, the set of all the external reference prices.

¹⁰ The consumer's initial internal reference price can be changed through *direct* information or through *inferencing*. Intuitively, the direct information is a new external reference price diverging from the initial reference price; instead, an example of inferencing is when a consumer is exposed to high external reference price for an unfamiliar brand and he may associate this high price with better quality.

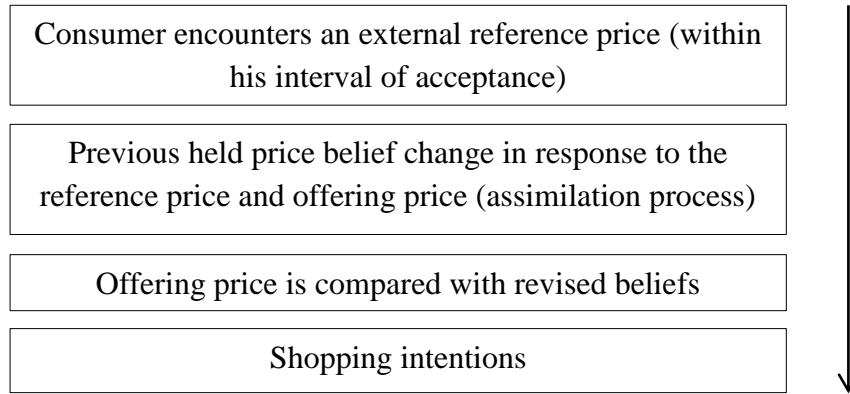


Figure 3. Biswas and Blair (1991) framework

Hence, the consumer updates his initial internal reference price and uses this updated reference price as a new standard against which he compares the charged price in order to decide whether or not to purchase a good.

Considering the mechanism by which consumers integrate the input furnished by external stimuli to their existing internal reference price, it could be interesting to mention a psychological perspective adopted by researchers to explain how and when the “new” information (e. g., the external stimulus) is assimilated in the consumers’ internal reference price.

This psychological perspective is treated by the Assimilation-Contrast Theory and suggests that, for a given quality level, a consumer has a distribution of prices that are considered acceptable (the above mentioned interval of acceptance): the “new” price resulting from the assimilation of the external stimulus will be integrated in consumer’s existing internal reference price only if the observed price is judged as belonging to that distribution. As a consequence, consumers update their internal reference prices by weighting this existing internal reference price and the observed prices, and by factoring in a price trend observed from prior prices.

This potential change in consumer’s internal reference price is known as *assimilation* and it is function of the difference between the perceived external reference price and consumer’s internal reference price.

Moreover, Lichtenstein et al. (1991) discovered that at relatively low levels of external reference price, consumers are initially willing to assimilate much of the difference between the external reference price and their internal reference price. However, if the external reference price rises above a certain level, considered by consumers “too much”, consumers begin to view at this external stimulus with increased skepticism which does not permit

assimilation. In other words, according to what is stated above about the Assimilation-Contrast Theory, consumers have intervals of acceptance around their standards. A consumer introduced to an external reference price assimilates it if the difference between the external reference price and his internal reference price is within the interval; otherwise, a contrast effect occurs and this difference is not assimilated (Biswas and Blair, 1991).

The consequence is clear: as an external reference price increases relative to the initial consumer's reference price, the extent of the difference absorbed into subsequent higher internal reference prices diminishes.

Moreover, an important variable that influences the assimilation of the external stimuli in the internal standard is the consumer's *confidence* in his initial beliefs. In fact, this confidence should relate negatively to belief change, and meaningfulness of the reference price should relate positively.

As noted earlier in the paragraph, it is also possible that it is the memory-based reference price that influences the stimuli-based reference price. In this case, the idea of how much a consumer is going to pay for a good will shape the perception of the bundle of prices that are presented to him during the purchase occasion. For example, a consumer will judge a certain price in the bundle (an external reference price) too high with respect to his internal reference price. In other words, the external gamma of stimuli will not influence the initial internal reference price and the consumer won't upgrade its initial standard to assimilate the external stimuli against which he is presented: the direct consequence will be that the consumer will purchase the good only if its price is in line with his initial internal reference price.

4.3 Third Approach

The third approach assumes the coexistence of both memory- and stimuli-based reference prices into the same customer. There the reference price is a weighted average of both memory-based and the stimuli-based reference prices. Moreover, the weight parameter, which indicates the relative importance of one type of reference price, can vary across consumers and across brands (Dohana and Terui, 2008).

Analytically, the reference price (RP) of brand j at time t for consumer h is defined as

$$RP_{jht} = \lambda_{jh} IRP_{jht} + (1 - \lambda_{jh}) ERP_{jht} .$$

The weight parameter λ_{jh} (also called the memory parameter since it represents a consumer's ability to recall past prices) takes value in the interval $[0, 1]$; thus, if λ_{jh} is greater than 0.5, the consumer is expected to be likely to use internal reference price rather than external reference price; conversely, if it is less than 0.5, the consumers is expected to use external reference price rather than internal reference price.

To better understand the way in which the two types of reference prices are involved in the decision-making process, it could be useful to report a framework that starts from the shared idea that consumers compare the charged price with their personal standards. This comparison process can be called “self construal¹¹”, from social psychology, and serves customers to understand how much prices charged are in line with their relative idea of those prices.

The resulting conformity between the individual standard and the selling price will then be defined by the weight of internal and external reference prices: hence, using both internal and external standards, the consumers will form his price evaluation; finally, a subsequent consumption decision will be taken. In practical terms (Figure 4):

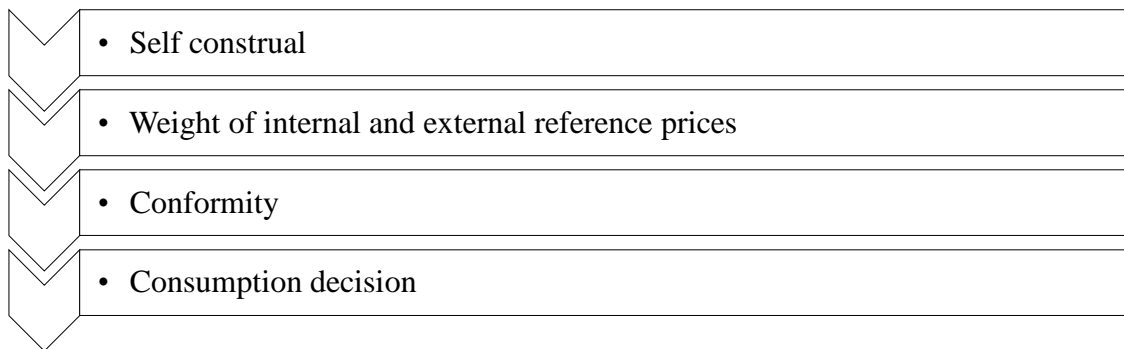


Figure 4. Coexistence of memory-based and stimuli-based reference price: the application process

To prove the adequacy of this third approach many studies were conducted. For example, considering a scanner panel data of curry roux and instant coffee category using MCMC method, Dahara and Terui observed that more than 50 percent of consumers form their reference prices based either on an internal or external reference price.

In addition, that consumers do have multiple reference prices has also been asserted by Mayhew and Winer (1992), who found that both memory-based reference price and stimuli-based reference price have considerable effects on purchase probability.

¹¹ In social psychology, “construals” are how individuals perceive, comprehend, and interpret the world around them, particularly the behavior or action of others towards themselves. It follows that, if applied to decision-making issues, construals become how agents perceive, comprehend, and interpret the prices charged (in relation to their standards).

Finally, Rajendran and Tellis (1994) propose a reference price model that incorporates both memory-based reference price and stimuli-based reference price to answer the dualism of reference price conceptualizations. They argue that reference prices of target brands are formed as a weighted average of memory-based and stimuli-based reference price. Moreover, the weight parameter is bounded by 0 and 1 and is homogeneous among consumers. Later, Mazumdar and Papatla (2000) extended this specification by assuming that the weight parameters might vary across segments in the market.

Because of the significant empirical evidence associated with this last approach, it seems to be reasonable to consider it the most reliable. Following this view, consumers judging charged prices use both internal and external reference standards and how much they rely on these two types of reference prices may vary among them. The relative emphasis that consumers place on their memory for prior prices versus externally available information depends on the relevance of the two sources of information (internal memory and external stimuli) as well as on the accessibility of the information in memory. The relevance and accessibility may in turn be determined by consumer and product characteristics (Mazumdar and Papatla, 2000).

4.3.1 Consumer's Characteristics

An interesting work about consumer's characteristics that can influence the predominance of one type of reference price on the other is proposed by Dahana and Terui (2008). They identified seven crucial characteristics, presented below:

1. *Purchase Frequency*. Consumers who purchase particular brands in the category more frequently are likely to have better memory concerning the past price of those brands. Therefore, we can expect that such consumers tend to use memory-based than stimuli-based reference price (Rajendran and Tellis 1994).
2. *Interpurchase times*. A second characteristic that can influence the relative use of memory-based and stimuli-based reference price is the interpurchase time (Mazumdar and Papatla 2000). Consumers who leave the market for a long time, i.e. who have longer interpurchase times, are likely to have difficulty recalling past prices. Such consumers would therefore use external reference price rather than internal reference price to evaluate brands' prices.
3. *Brand sampled*. Consumers who tend to switch across numerous different brands in the category will encounter various prices (Rajendran and Tellis 1994, Mazumdar and

Papatla 2000). It would be difficult for consumers to recall those prices if the prices of the brands that were purchased varied with a large range.

4. *Deal Proneness*. If a consumer purchases the category mostly when it is on promotion, then stimuli-based reference price will be stronger than internal reference price (Mazumdar and Papatla 2000). Promotion-sensitive consumers are more likely to notice in-store price information and related cues and instead form a reference price at the point of purchase.
5. *Purchase quantity*. Vanhuele and Dreze (2002) posit that the consumer's budget for the category can improve consumer attention toward prices. Therefore, a consumer who buys a larger size is likely to have better ability to recall past prices and therefore to be an internal reference price shopper.
6. *Price volatility*. Price volatility is also a potential factor of a consumer's ability to recall past prices (Vanhuele and Dreze 2002). It would be easier for a consumer to recall if a price were relatively stable. On the contrary, if prices fluctuate intensely with a large range, consumers would find it harder to recall past prices. Consequently, stimuli-based reference price is expected to be more important relative to IRP for a consumer who encountered volatile prices.
7. *Brand preference*. The last factor that might engender a greater use of one type of reference price is brand preference (Mazumdar and Papatla 1995). A consumer who has a higher preference to a specific brand would have higher probability to purchase the brand. In turn, that consumer would have better knowledge of the brand characteristics, including price. Such a consumer is more likely to rely on memory-based reference price than on stimuli-based reference price.

In sum, the reference price literature explains purchase behavior on the basis of reference price type used referring to customer heterogeneity. Hence, while some customers compare the current price of each brand to an internal reference price that is formed on the basis of past prices (generally, for a specific brand), other customers, who are unlikely to remember past prices, form an external reference price on the basis of the currently observed price of a focal brand.

4.3.2 Product Characteristics

Also the product characteristics may influence the weight assigned by consumers to the two types of reference price. For example, more expensive categories should draw more attention to prices; therefore, previous prices in such categories should be easier to recall than those in categories that are less expensive: for that reason, it is expected that this kind of categories are dominated by consumers who use more the memory-based reference price. Conversely, those product categories that are characterized by a heavy promotional activity are expected to be dominated by users that use more the stimuli-based reference price: the reason is that when there is a lively promotion activity, previous prices are difficult to remember and are also less relevant referents for price judgments. Finally, for those product categories that experience a great interpurchase time, consumers are more likely to use external reference standards because of the difficulty to recall past price.

In any case, whatever the type of reference price, a generalization can be made: if the product class considered is relatively homogeneous, there is a greater probability that there will be only one reference price formed for the entire class; instead, if the product class is heterogeneous, there may be multiple consumer's reference price.

5. The comparison's second term: one, two or more.

The fundamentals of Prospect Theory by Kahneman and Tversky (1979) first and of the Consumer Choice Theory by Richard Thaler (1985) then have demonstrated that agents are likely to take decisions by comparing the actual occasion with some personal standards. As a result, every individual's choice seems to be based on a comparison between two terms. In the specific area of consumption decisions, while the first term of comparison is the actual price charged by the seller, the second term is the consumer's reference price. This theorization is grounded on three psychological theories that show how individuals, in general, and consumers, in particular, tend to make a comparison between the charged price with at least one of their either internal or external stimuli when judging the convenience of a deal.

These psychological theories are the following (Table 4):

Adaptation-Level Theory	Consumers compare the target price against the mean of the contextual set of prices
Range Theory	Consumers compare the target price against the two prices that define the range in the contextual set
Range-Frequency Theory	Consumers compare the target price against all of the prices in the contextual set

Table 4. The three reference price psychological theories

Let see them in detail.

5.1 The Helson's Adaptation-Level Theory

The Adaptation-Level Theory by Helson (1964) is a psychological theory of sensory perception that proposes sensory judgments relying on a comparison of current sensation to the adaptation level of recent sensory experiences. In other words, it posits that an individual's reference point for subjective judgments of an outcome is a function of all the previously experienced outcomes.

Applying Adaptation-Level Theory into behavioral pricing theory, the reference price has been hypothesized to be an adaptation level that depends on recent price experiences. The important implication of that theory is that consumers when judging the attractiveness of a market price compare this market price to a single reference price that has been estimated as the most recent price paid, the weighted mean of past prices and further.

As said before, the Helson's theory has been predominant in identifying what is the reference standard against which consumers compare charged prices. Its predominant role can be attributed to three different commonalities of price experiences:

- first, many repeated price experience have little to no price variability;
- second, people are often able to recall prices by context, hence they can choose a specific reference price for a specific price judgments;
- third, in the event a person does evoke a range of prices, the level of the internal reference price and the level of the range of evoked prices are likely to be highly correlated.

However, this theory represents only one of the multiple points of view provided by the psychological literature aimed at recognizing all the variables involved in the consumer's decision making process.

5.2 The Volkmann's Range Theory

Another account of how people make sensory judgments could be the Volkmann's Range Theory (1951). This is a theory of sensory perception proposing that the range of the values of the stimuli to be judged determines the perceived value of any one stimulus in the range. Hence, a linear relationship between the stimulus range and the psychological scale is supposed. For example, Range Theory predicts a 50-gram weight should be judged as heavy when the range of stimuli being judged is from 20 grams to 60 grams, moderately heavy when the range is from 30 grams to 70 grams, and light heavy when the range is from 40 grams to 80 grams. The conclusion is that the endpoints of the range of stimulus values become anchors for judgments scales.

Applying Range Theory to behavioral pricing matters, it implies that consumers use the range of remembered price experiences to set a lower and upper bound of price expectations, and that the attractiveness of a market price is a function of its relative position within this range.

The important implication of choosing the Range Theory as the best approximation of consumer's decision making behavior is the fact that this theory implies the range of prices a consumer evokes when evaluating a market price has an independent influence on a judgment about the attractiveness of the market price. In other words, the internal reference price is not the norm that serves as a neutral point for comparison anymore.

The empirical evidence supporting this hypothesis is provided by Janiszewsky and Lichtenstein (1999) that made four different studies manipulating the range of evoked prices while maintaining the consumer's reference price constant.

They started from the idea that Helson's theory is not an adequate model to describe consumers' decision process since Adaptation-Level Theory as a theoretical foundation for the internal reference price is more a metaphor than a description of the comparison process. They argued that Adaptation-Level Theory's inadequacy arises from the fact that it was proposed to account for visual system adaptation to light and darkness, sensory system adaptation to weight and pain, auditory system adaptation to volume, and so forth, and price perceptions are not a psychological response to the sensory stimulation of nerves and receptors.

The scope of these experiments was to show that when the upper bound of the range of evoked prices is increased, perceptions of the market price become more favorable, while when the lower bound of the range is decreased, perceptions of a market price become less favorable. Moreover, the studies were aimed at demonstrating that if the range of prices available at the judgment time can influence perceptions of price attractiveness, then variability in this range that is not accompanied by variability in the consumer's reference price should result in changes in price perception.

5.2.1 Adaptation-Level Theory versus Range Theory: differences

To illustrate in practical terms the difference between Adaptation-Level Theory and Range Theory, the following example can be helpful.

Suppose that consumers are exposed to three different ranges of available prices:

- \$.75-\$1.75,
- \$1.00-\$1.75,
- \$.75-\$1.50

and encountered a market price of \$1.25.

The possible outcomes of this simple situation may be two:

- in case the reference price is the sole standard of comparison in price perception, then there should be no influence of the range manipulation since it is expected reference price would be approximately \$1.25 (e. g., the mean of every range prices) in each of the three different range conditions and then in line with the market price of \$1.25 (there the potential support to the Adaptation-Level Theory);
- in case the endpoints of the range of evoked prices are used as anchors of the price perception scale, then the \$1.25 market price should be perceived in different ways, depending on the proximity to either the lower or the upper bounds of the evoked range of prices (there the eventual evidence supporting the Range Theory).

In sum, referring to the Adaptation-Level Theory, price-attractiveness judgments should be based on a comparison of market prices to the consumer's reference price, while in case of Range Theory, price-attractiveness judgments should be based on a comparison of market prices to the endpoints (e. g., both the lower and the upper bounds) of a range of evoked prices. In other words, Adaptation-Level Theory would predict no difference in the three situations since provided that consumers will experience the entire range of prices at once,

their adaptation level will be the mean of the prices (e. g., \$1.25) and the price of \$1.25 will be perceived equivalently across the three conditions mentioned above.

In contrast, Range Theory would predict different consumer perceptions as the range of evoked prices may change.

Looking at the experiments, consumers are exposed first to prices that range from \$.75 to \$1.75, and it is observed that they tend to assign the lower bound of the range of prices to \$.75 and the upper bound of the range of prices to \$1.75: at this point they will judge a price of \$1.25 as neutral. When then the distribution of price ranging from \$1.00 to \$1.75 is presented, consumers assign the lower bound of the range of prices to \$1.00 and the upper one to \$1.75 and will perceive the \$1.25 price as positive since it is closer to the lower bound (e. g., \$1.00) than to the upper bound (e. g., \$1.75). The contrary happens when the proposed range of prices goes from \$.75 to \$1.50: since the price of \$1.25 is closer to the upper bound (e. g., \$1.50) posed by consumers, it will be perceived negatively.

Thus, as predicted by Range Theory hypothesis, the price-range manipulation has a significant influence on price-attractiveness perceptions: people use endpoints of the range of evoked prices when evaluating market prices and the direct implication is that the lower and upper endpoints of a range of evoked prices are used as anchors for price judgments.

In addition, the experiments show another important difference among the two theories. Since the Adaptation-Level Theory predicts that changes in price perception rely on changes in a single standard, then if a context manipulation is shifting the internal reference price, perception of all market prices should shift in the same direction. For example, if a manipulation shifts the consumer's reference price upward, then all market prices should be perceived as lower.

In contrast, Range Theory predicts that price perceptions rely on two standards, hence a context manipulation can shift perceptions of price in different directions. For example, if a context manipulation that constricts the evoked range of prices shifts both endpoint standards, then low prices will be perceived as lower and high prices will be perceived as higher. The direct consequence is that a change in context can influence the probability the product will be purchased.

In light of these results, Range Theory seems to win the direct comparison with the Adaptation-Level Theory. Nevertheless, there are some cases in which the range of evoked prices is likely to have little influence on perceptions of attractiveness of a market price. It happens in two opposite cases:

- when there is limited price variability because there is a dominant going price and this specific price is likely to be accompanied by a very narrow evoked range of prices, or

- when there is lack of perceived substitutes in the marketplace for a specific item because in this case there is a reduced variance in an evoked price range. For example, the reference price is more likely to be important as reference point for a specialty good where the consumer is unwilling to accept a substitute such that the decision becomes one of buy/no buy for only a particular brand.

Because of these last considerations, it can be affirmed that there is not an univocal way to determine the second term of the above mentioned comparison: while sometime the consumer's reference price seems to be the only standard against which consumers compare market prices, some other times the endpoints of a range of evoked prices seem to play the major role in determining the attractiveness of charged prices.

5.3 The Parducci's Range-Frequency Theory

In addition to Adaptation-Level Theory and Range Theory, a third model must be mentioned. It is the Parducci's Range-Frequency Theory (1965). Like the Range Theory, also this last model is an exemplar model in which the cognitive representation is assumed to include all prices in the contextual set.

The Range-Frequency Theory is a model of psychological evaluation of stimuli in a certain context and it posits that when a stimulus is rated alongside other stimuli, its rating will depend in part on where it ranks among the stimulus set. For example, a patient comparing doctors may provide a different rating to the same doctor when presented in a group of doctors perceived to be superiors by the patient than when presented in a group of doctors perceived to be inferior by the patient (Schwartz 2008).

In addition, the contextual environment in which a judgment is made influences the judgment itself following two different and opposite principles. While following the Anderson's (1965) *assimilation* concept, the same item will be judged more attractive when presented alongside attractive items than when presented with unattractive items, following the Wedell, Parducci, and Geiselman (1986) *contrast* concept, the same item is judged more attractive when presented with less attractive items than when presented with more attractive items.

Then, since different stimulus arrangements will determine different contextual parameters, the direction of the contextual effect depends on how stimuli are presented. As a consequence, the judgment of a stimulus will reflect its place in the distribution of contextual stimuli (Parducci, 1963). To specify, in the Parducci's Range-Frequency Theory the subject's judgment is based on the concept of "contrast" instead of on the Anderson's assimilation.

Applying the Range-Frequency Theory to pricing issues, it follows that consumers compare the target price against all of the prices in the contextual set. Here, the Range-Frequency Theory implies that every price judgment is based on the combination of two principles:

- the *range principle* that assumes subjects divide the stimulus range into subjectively equal intervals that constitute the categories in their rating scale (e. g., in the psychological field, this category judgments could be “good” and “bad”, or “small”, “medium” , and “large”, and so on). Concentrating to a price evaluation, a subject will then divide all the possible prices that a particular item can have into different segments – that are the above mentioned psychological categories – indicating, for instance, the expensiveness/cheapness of the item.
- the *frequency principle* that assumes subjects assign a certain frequency to each rating category. Applying this principle to price judgments, people will assign a frequency of happening to each one of the segments constituted in the preceding phase of the range principle. For example, a subject will form two different categories for an item, let’s say, “Expensive” and “Cheap”, and will assign a frequency of 50% to the first segment and a frequency of 50% to the second segment. It is clear that the frequencies assigned depend on the characteristics of the subject and on the information that he has at his disposal.

To better understand the distinction between range and frequency principles it could be useful to mention the study of Wedell, Parducci, and Roman (1989). Considering the case in which university students are instructed to assign grades as fairly as possible to different hypothetical distributions of exam scores, they observed that students showed a tendency to assign grades to equal sub-ranges of exam scores (e. g., A’s the top fifth of the range) and a tendency to assign an equal number of scores to each grade (e. g., A’s the top 20% of scores). To sum up, the subjective judgment J of stimulus i in context k is the result of the compromise between the range R and the frequency F principles, in which is comprised the weighting parameter w that is a value between zero and one:

$$J_{ik}: (w)*R_{ik}+(1-w)*F_{ik}$$

Through this equation it is possible to relate the judgment of a stimulus to the context in which the judgment is made.

As explained in Chapter 1, if consumers only use the price available to them in the external environment, as with external reference prices, the price judgment will be stimulus-based while if consumers must retrieve price from memory, as with internal reference prices, the

price judgment will be memory-based. Because extreme values are comparatively distinct, these values should be more salient than other stimuli in the context. As the endpoints are expected to be more easily retrieved from memory, they are more likely to be used in a memory-based judgment; in contrast, less salient intermediate values are less likely to be retrieved and used in a memory-based judgment. As a consequence, consumers are expected to weight intermediate prices more heavily when using external reference price than when using internal reference prices.

Thus, frequency effect will be larger for stimulus-based price judgments than for memory-based price judgments while range effects will be larger for memory-based price judgments than for stimulus-based price judgments.

5.4 Theories' adequacy

It appears clear how each one of these three theories fit to specific situations implying the nonexistence of a totally adequate model furnishing a single and unique second term of comparison. It would be more correct to say that all the three contribute to the definition of a specific second term of comparison for each specific situation.

In general terms, it can be observed that all the three models will provide the same fit either in reference price sets containing only one or two values or in larger reference price sets when the mean and the midpoint of the contextual range are the same.

However, there are conditions in which Adaptation-Level Theory and Range Theory provide very good accounts for the experimental data, such as the case of price perceptions dominated by frequency effects for the Adaptation-Level Theory or the case of price perceptions dominated by range effects for the Range Theory.

6. Reference price formation process: five exemplar models

Starting from the concept of reference-dependence, it has been shown that consumers when judging the attractiveness of a market price tend to compare this charged price with a reference standard that can be either a memory-based (e. g., internal reference price) or a stimuli-based (e. g., external reference price) one. In addition, this standard can be an unique one (e. g., Adaptation-Level Theory) or it can be composed by two (e. g., Range Theory) or more (e. g., Range-Frequency Theory) values.

Very little has been said about the formation process of these reference prices. In general, it can be affirmed that how consumers form their reference prices depends on the accessibility of a price in memory (e.g. Biehal and Chakravarti 1983). Consumers who have a better memory of previous prices paid will use that information to construct a reference price. Then memory-based reference price will dominate the formation reference price of such a consumer in making price judgment. On the other hand, consumers who have limited ability to access past prices stored in memory will rely greatly on stimuli-based reference price in making such a judgment.

Hence, what is stated is the fact that in forming their standards, consumers may be influenced by both *context* (for the stimuli-based reference price) and *time* (with regard to the memory-based reference price), even though with different weights depending on the consumers' characteristics and the other variables seen before.

As noted earlier in the Chapter, a clear distinction between the contextual and the temporal components of reference prices seems to not fully represent the reality, since one of the two can be at the limit predominant on the whole individual's reference price.

However it may help to define and present five different models of how consumer use information they possess to form their reference price that maintain this distinction. In fact, the models considered differ each other for the degree to which consumers are postulated to use past information from memory versus current information available at the moment of the purchase.

Moreover, given that both memory-based and stimulus-based reference prices are admitted, it is possible to create a continuum that captures the degree to which consumers may be required to draw on their memory or external information in forming a reference price. For example, at one extreme, a reference price model that requires no memory for past information and therefore consumers form the reference price at the point of purchase can be considered; at the other extreme, a reference price model that requires consumers to retrieve historical prices as well as other information of each brand from memory with a reasonable degree of accuracy can be conceived.

Grouping them as stimulus-based reference price, which is formed at the moment of the purchase, and as memory-based reference price, which is formed utilizing price and/or other information stored in consumer's memory, five models will be presented.

6.1 Stimuli-based reference price formation's models

Starting with the stimuli-based reference price, it has to be underlined that in this case consumers enter a store with no knowledge of the historical prices of different brands. If prices are considered an important attribute, consumers may use the current price of any brand or the current price of a known brand as a reference point for price judgments.

The models that explain how consumers use external stimuli to construct their standards are two:

- the first one is the *Random Brand's Current Price*. It represents the extreme case in which the consumer not only has no knowledge of brand prices but also is not able to determine which brand's current price should be used to compare prices of other brands. Under this condition, the consumer may randomly select a brand available on the current purchase occasion and use its price as a reference point for price judgments;
- the second stimulus-based reference price model is the *Reference Brand's Current Price*. This model of reference price is based on the notion that the consumer cannot remember the price paid but does have a reference brand in memory. When evaluating prices of other brands, the consumer, therefore, uses the current price of this reference brand for comparing prices of all other brands.

6.2 Memory-based reference price formation's models

With regard to the memory-based reference price formation's models, three additional model must be mentioned:

- the *Prices of Previously Chosen Brands* model that states that consumers do not distinguish among prices of different brands and use the price of the brand chosen on the prior occasion as the common reference price to judge prices of different choice alternatives. Here consumers are supposed to have a stronger memory for attribute information of chosen brand than for the rejected brand. Hence, the price of the brand previously chosen rather than prices of all brands encountered during past purchase occasions should be readily accessible in the consumer's memory and used as a common reference point for comparing the current prices;
- the second model named *Brand-specific Past Prices* assumes that each brand's history constitutes its own reference price specific to the brand. In that case, consumers are

able to distinguish among the prices of different brands encountered during past purchase occasions. This reference price is unique for each brand in that each brand's price is compared against its own price history;

- finally, the last model is the *Brand-specific Past Prices and Other Information* model. Also this model is brand specific but it additionally utilizes other historical information about a brand in forming the reference price. In fact, consumers not only remember specific prices of each brand, but they also use other information such as price trends or frequency of deals for each brand.

6.3 Models' performances and empirical results

Stated that all the five models presented above are plausible, it could be useful to provide a schematic representation of them first and empirical evidences then, to summarizing their adequacy.

The five models are organized as follows (Table 5 and 6):

Stimuli-based reference price's models	
Random Brand's Current Price	The consumers does not have brand price knowledge and he is not able to determine which brand's current price should be used as term of comparison
Reference Brand's Current Price	The consumer does not remember the price paid but has a reference brand in memory

Table 5. Stimuli-based reference price's models

Memory-based reference price's models	
Prices of Previously Chosen Brands	The consumer does not distinguish among prices of different brands and uses the price of the brand chosen on the prior occasion as term of comparison
Brand-specific Past Prices	The consumer is able to distinguish among the prices of different brands encountered during past purchase occasions
Brand-specific Past Prices and Other Information	The consumer remembers specific prices of each brand and uses also other information

Table 6. Memory-based reference price's models

To prove every single model performance, Briesch, Krishnamurthi, Mazumdar and Raj (1997) conducted a series of experiments on four brands of liquid detergent, tissue, coffee, and peanut butter.

With regard to the memory-based models of reference price, they found that the Prices of Previously Chosen Brands model performed the worst in all four product categories, whereas the Brand-Specific Past Prices model outperformed all other memory-based models of reference price. Since this result means that consumers tend to use past prices of a brand as their reference price and have a different reference price for each brand, they found further support to the shared assumption that the memory-based reference price consumers' segment generally shows a stronger loyalty to a specific brand. This permits it to have a wide knowledge of the preferred brand price history.

Furthermore, the Brand-specific Past Price model performed better than the two stimulus-based models and, for that reason, it appears to be the best model indicating the reference price formation process.

7. Reference price formation process: principles and stages

Considering all the five models presented above it can be observed that, despite the different ways of receiving and processing the information, the reference price formation's process is always constituted by three different stages based on three different principles, and that also

the eventual intentionality of the reference price construction has important implications in interpreting the consumer's behavior.

It is possible to summarize the three principles, stages and the type of intentionality in the following way (Table 7):

Reference price formation process	
The three principles	<ul style="list-style-type: none"> • The single-comparison principle • The multiple-brand exponential smoothing principle • The rational expectation principle
The three stages	<ul style="list-style-type: none"> • The information acquisition • The information coding • The information assimilation
Intentionality	<ul style="list-style-type: none"> • Intentional reference price construction • Unintentional reference price construction

Table 7. Reference price formation process's elements

Now, let analyze them in detail.

7.1 The three principles

With regard to the three general principles that guide the consumer's formation process of reference prices, they can be distinguished as follows:

- the first is the *single-comparison principle*, which assumes that consumers use the price of a previously purchased brand as the single standard for judging all prices on the current purchasing occasion;
- the second is the *multiple-brand exponential smoothing principle*, which assumes that consumers form reference prices for all brands: for example, the reference price for Brand A serves as the standard for comparing exclusively the current price of Brand A;

- the third principle is the *rational expectation* one, which assumes that consumers form reference prices for all brands based on the pricing history, trend, and deal frequency, as well as consumer characteristics (Briesch et al., 1997).

7.2 The three stages

Whatever is the type of information received by the consumer and the resulting kind of reference price used – e. g., consumers use different ways to process the received information depending on their personal characteristics -, it is possible to identify a common general reference price formation process for all types of consumers.

In fact, three common consequential stages can be recognized:

- the first one is the stage in which consumers acquire information over time and/or contextually to have an input to the formation of the reference price: in forming their reference prices, consumers may be influenced either separately or simultaneously by their prior purchase experiences, by the current purchase context, and by their own individual characteristics.

For example, prior purchase experience during which consumers are exposed to price and promotional information create a price memory that can be potentially moderated either by several contextual factors like the purchasing occasion, the store environment, and the type of product being purchased or by individual differences in price sensitivity, brand loyalty, demographics, and so on;

- in the second stage consumers will process the information received, eventually integrating memory-based and stimuli-based information; as indicated above, there are different theories concerning the integration process: while one side of the research sustains that there is not an assimilation of external information into the consumer's internal reference price, another branch of the research supports the hypothesis that, under certain circumstances, consumers are willing to update the external information modifying their initial internal reference price;
- finally, in the third stage, consumers will assimilate all the information coming from their memory and/or the external environment in which they are asked to take a consumption decision and will form their final reference standard.

7.3 Intentional versus unintentional construction

Another important issue in understanding how consumers form their reference points concerns the fact that it is not perfectly clear whether consumers intentionally construct their standards or form them automatically, without conscious awareness of the stimuli (either external or internal) that influence them.

It is obvious that whether the standards used for comparative judgments are constructed without awareness has important implications for several reasons:

- first, if comparative standards are formed deliberately, consumers may only construct these standards when they are required to make a judgment; but, if standards are formed automatically, their construction may occur when consumers are exposed to stimuli, independently of any judgment that consumers expect to make;
- second, if consumers construct standards deliberately, they may form and apply different standards in different situations, depending on the stimuli that they consider to be relevant in these situations. Instead, in case consumers' standards are constructed without awareness, their influence may persist over time and situations, regardless of the conditions that gave rise to them;
- third, if consumers form standards deliberately, these standards are likely to be influenced only by stimuli that consumers consider relevant; in contrast, if the reference points are constructed without awareness, objectively irrelevant stimuli may affect the standards used.

Most of the research has a propensity for the first hypothesis, that is the intentional construction of the standard, supporting the belief that consumers are conscious of the past prices and/or contextual stimuli that influence their reference prices.

Anyway, another branch of the literature theorizes that unconscious influences on the construction of consumers' standards could occur as well (Adaval and Monroe, 2002).

In effect, previous research indicates that preceding acquired knowledge may influence the interpretation of new information and judgments without an awareness of why this particular subset of knowledge is applied. It seems likely that in this situation experiences of which consumers are unaware could influence the construction of this standard and could have an influence on their judgments. As noted by Adaval and Monroe (2002), it can be observed that consumers who evaluate a particular product may often be aware that they judge it relative to a standard of which they may be unaware of the factors that have led to its construction. Hence, standards that people use when evaluating products can be formed unintentionally and may be influenced by exposure to stimuli of which consumers are not consciously aware.

8. An example of a reference price formation process

Suppose that some consumers (group 1) visit a store that offers relatively low-priced products, and they encounter a \$100 target product (T) in the context of two others (C1 and C2) priced at \$50 and \$75, respectively.

Suppose now that other consumers (group 2) visit a different store that offers relatively high-priced products, and encounter the same target product in the context of two others (C3 and C4) priced at \$125 and \$150, respectively.

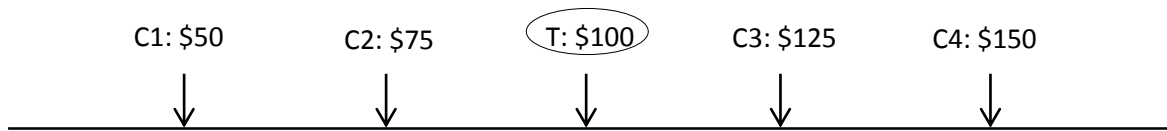
Starting from the hypothesis that the three products to which each group of customers is exposed represent the totality of their experience with this type of product and only these products will influence the standards that are constructed, it is possible to create a continuum of objective prices showing the position of each product.

The prices of the three products may be subjectively integrated to form a weighted value representing a typical price of the products in question, or what Helson's would call the *adaptation level*. In addition, each set of prices (e. g., \$50-\$100 or \$100-\$150) may provide consumers with a unconscious perspective concerning the range of prices that products of this type are likely to have.

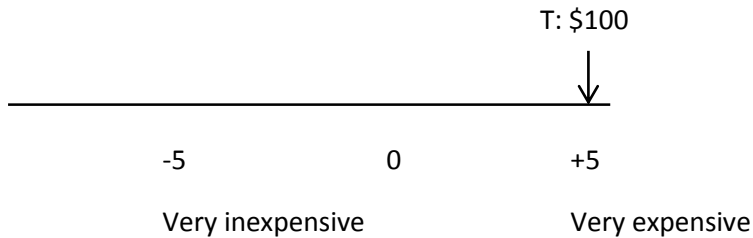
To understand how unconscious exposition to stimuli may influence consumers' standards, suppose that both groups of consumers are asked to judge the price of the products along a scale from -5 (very inexpensive) to +5 (very expensive). As can be easily imagined, the first group will judge T's price close to +5 (very expensive), but the second group will judge it close to -5 (very inexpensive).

Clearly, the judgment will be totally (or, at least, largely) influenced by the *context* (that is, the set of prices of the three products) in which the product T is presented: as said above, when this set is formed by the interval \$50-\$100 (group 1), consumers will judge the price as very expensive while when the set comprehends values that go from \$100 to \$150 (group 2), the judgment of T's price will be as very inexpensive.

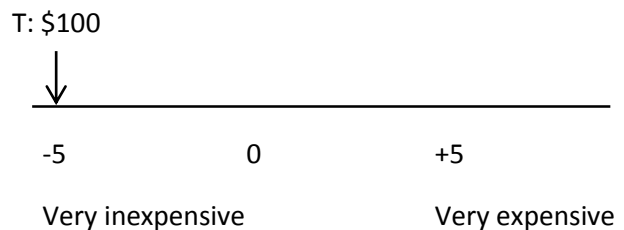
Below the framework is presented.



Group 1



Group 2



In addition, it could be helpful to distinguish between the process occurring at the time in which information is received and those that occur later when people are expected to make a judgment.

Theoretically, when consumers receive objective information about a product, they may translate it into subjective values. This translation requires that they relate the information to a standard that could be based on the objective stimulus values they have encountered either in the immediate situation or in the past, and on the range of these values.

In the previous example, if consumers make their judgments when they first see the information, they may position the scale to include the highest and the lowest objective prices that they consider relevant, based on the perspective that they have formed. Consequently, consumers in the first group should position it to include prices that range from T to C1, whereas those in the second group should position it to include prices that range from T to C4. In each case, because of the approved belief that the adaptation level is given by the mean of the prices set, consumers' adaptation level will presumably be positioned near the center of the scale.

Alternatively, if both the two groups of consumers merely examine the product prices at the time they first receive the information about them but do not make judgments of their expensiveness, therefore, over time, the remembered values of the individual stimuli gradually become assimilated to the adaptation level (Upshaw, 1969). Thus, these values become less distinguishable both from one another and from the adaptation level itself.

Nevertheless, the perspective formed on the basis of the original context stimuli may persist and, as a result, it may continue to influence judgments of both the original stimuli and new ones.

Hence, consumers will judge a target product to be less expensive if they have previously encountered it in the context of higher-price products than if they have encountered it in the context of low-priced products.

In addition, if consumers do not evaluate the target product until some time after it was first encountered, its original context will have less influence on their evaluation of it.

Furthermore, suppose consumers are asked to recall the price of the target product immediately after information about it is presented. In this case, they should report it fairly accurately, and this should be true regardless of the context in which the product was encountered. But, since memory for the target price after a period of time has elapsed presumably becomes partially assimilated to the adaptation level, as reported above, consumers will remember the actual price of a product as being lower if they have previously seen it in the context of low-priced products than if they have encountered it in the context of high-priced products.

Chapter 3

Promotions versus product's presentation: what sellers should know

1. Economic literature versus managerial literature: two different approaches

As stated in Chapter 2, both the economic and the managerial/marketing literature have investigated and analyzed the implications of the use of a reference price in the consumer's decision-making process.

Clearly, these two literatures have different scopes in determining what are the variables used by consumers in forming and using their standards. For that reason, two different approaches can be distinguished:

- the economic literature is aimed at understanding *why* consumers use reference standards in coming to a decision, whereas
- the managerial and marketing literature tries to understand *how* consumers form their reference standards.

From these different methods of investigation it can be stated that while the economic side of the literature wants to comprehend the way in which consumers make their choices because has the objective to identify and explain what are the underlying economic processes leading to these choices, the managerial/marketing part of the literature wants to analyze the standards' formation method because of its purpose of taking advantage from potential influence of this formation method.

In effect, with regard to this last consideration about the managerial approach, knowing how people construct their reference points means to know what are the variables that make consumers coming to their decisions. This means that if sellers will be good at influencing these variables – for example through promotions or product's presentation -, they will be able to influence also consumers' reference points. Being able to do that will, in turn, mean that sellers choosing the right selling strategy will indirectly influence consumers' consumption decisions, leading them in their desired direction.

2. Memory-based versus stimuli-based reference price consumers: the characteristics sellers should consider

In order to identify what could be the most appropriate selling strategy, it could be useful to get again the two different types of reference price identified by the literature: the memory-based – or internal – reference price, and the stimuli-based – or external – reference price.

Even though this distinction is not so defined in the reality, maintaining it for a while can be useful since it will permit to highlight the main differences that characterize the two reference price consumers' segments. In fact, because users of memory-based reference price and stimuli-based reference price adopt different mechanisms to evaluate prices, strategies used to influence their reference standard formation's process should change as the type of reference price used changes.

2.1 Memory-based reference price consumers

As stated in Chapter 2, in general, because frequent, repetitive buying of the same brand could increase consumer's recall of the brand's price, the temporal component could be stronger when loyalty is high, sampling of brand is low, and purchase frequency is high. Hence, since the memory-based reference price segment is supposed to be less likely to switch among brands and more likely to purchase on feature, it can be said that memory-based reference price shoppers exhibit strong brand preference than the stimuli-based reference price segment. In other words, This consumer's loyalty can be explained assuming that a customer who knows a brand's price history is a customer who always, or at least often, bought it. Further, the reasons of this brand preference may vary among consumers but, in any case, they are related to the brand's specific features differentiating it from others. So, who has a good memory of the price charged by a certain brand over time is the one who strongly prefers it compared to all the others and buys it very frequently.

Moreover, memory-based reference price consumers appear to remember past price information for their preferred brands, and armed with this explicit price memory, they tend to evaluate and respond only to feature advertisements for the preferred brands. Hence, memory-based reference price shoppers may engage in little or no point-of-purchase price comparison.

2.2 Stimuli-based reference price consumers

Unlike the temporal component, the context component tends to be stronger among consumers who sample several brands since they are more likely to observe the prices of competitive brands on the shelf.

The stimuli-based reference price consumers' relatively high level of brand switching and their being less responsive to both feature and display promotions suggests two things:

- they are supposed to conduct relatively little price search, either before or during the shopping visit;
- since its choice will be based on some stimuli (e. g., temporal lower and/or more convenient prices) that may vary among the different purchase occasions, they are not supposed to buy the same brand every time a purchase is made.

2.3 Intentional versus unintentional information

From the literature, it can be observed that each one of the two consumers' segments (e. g., the memory-based and the stimuli-based consumers) seem to be supported by different consumers' ways to learn price information.

In general, consumers may learn price information either in an *intentional* or in an *incidental* way (Monroe, Powell and Choudhury, 1986). In detail:

- intentional price learning results from an active search and memorization of exact prices, typically for specific brands, and includes explicit comparison of current prices with previous prices stored in memory;
- Incidental (or unintentional) price learning occurs when consumers compare prices across brands in the course of buying, without any explicit intention or effort to memorize them.

As a consequence, while intentional learning seems to favor temporal reference prices, incidental price learning seems to be compatible with contextual reference prices.

3. Rajendran and Tellis: how to choose the right price

Stated, from Chapter 2, the coexistence of the two different reference prices in the same customer and said that not including both in designing pricing strategies can conduct to suboptimal prices, Rajendran and Tellis (1994) provided some important pricing advices. In their work they identify four different implications depending on the way in which prices are wrongly charged.

Let see them in detail.

1. *Wrongly including only price and ignoring the contextual and temporal reference prices leads to a suboptimal everyday price.* The everyday low price is the result of ignoring the dynamics of price – the consumer recalls recent past prices and is less responsive to current low prices if they also occurred in the immediate past. By ignoring this behavior the manager does not increase the price after a discount to raise the consumer's reference price.
2. *Wrongly including only a temporal reference price and excluding the contextual reference price leads to a suboptimal everyday "high" price.* The everyday high price is because the inclusion of the temporal reference price indicates that any discount would lead consumers to expect continued discounts and thus is unprofitable in the long run. In other words, some sellers fear that a frequent discounting activity may "damage" their image since consumers can perceive their "normal" prices as too high with respect to their discounted prices not being willing to pay those higher prices anymore. Though everyday "high" prices are a rarity for most consumer products, they occur for some products and many services. In these cases, managers fear that discounting leads to a decline in perceived quality and an inability to sustain demand at high prices.
3. *Only the inclusion of both temporal and contextual reference prices leads to an optimal pricing scheme of alternating high and low prices.* The contextual reference price prompts a response to competitive low prices by requiring a low price for one's brand at least some of the time. The temporal reference price prompts a high price for at least some of the time to rise the consumers' temporal reference price, so that any subsequent low price then can be perceived as a discount. The combination of temporal and contextual reference prices leads to an optimal scheme of alternating high and low prices which is typical for most consumer products.
4. *Wrongly ignoring the contextual reference price leads to substantially lower sales and profits.* If the true response model should contain both contextual and temporal

reference price terms, then using one that contains only price or temporal price terms leads to suboptimal profits. The reason is that the manager sets the same everyday price that is either too high or too low; these suboptimal higher or lower prices lead to substantially lower sales and profits.

4. Selling strategies' objectives and characteristics

As stated above in the chapter, it is largely accepted that memory-based reference price shoppers use a brand-directed heuristic¹² that first establishes a preferred reference brand, perhaps on the basis of a quality assessment, and then provide subsequent price evaluations comparing current prices to past prices for the preferred brand. On the other extreme, stimuli-based reference price shoppers appear to us an effort-minimizing heuristic that allocates modest importance to brand or price promotion.

At the light of these considerations, since segments that are dominated by users of memory-based reference price tend to compare a brand's current price with its previously prices, it won't be a mistake to think that stimulating demand for the memory-based segment should involve setting a price that compares favorable with the brand's price history.

By contrast, because of the fact that stimuli-based reference price consumers are less concerned about the historical prices of the brands but, instead, they tend to compare the price of a brand with that of the other brands they typically buy, targeting these consumers should involve identifying the set of brands that the segments typically consider and setting a price that is lower than other brands in this set.

In other words:

- a seller who wants to influence a memory-based reference price consumer has to work on the price history of the preferred brand rather than to external stimuli provided at the moment of the purchase, whereas
- a seller, who wants to influence a stimuli-based reference price consumer, has to pay more attention on the way in which a product is presented relative to others rather than on its price history.

However, it has been demonstrated that both types of reference price may coexist in the same consumer, possibly with different weights that depend on the personal characteristics of the consumer itself. For that reason, it is clear the need not to consider the previous considerations

¹² A *heuristic* is any approach to problem solving, learning, or discovery that employs a practical method not guaranteed to be optimal or perfect, but sufficient for the immediate goals (Wikipedia).

separately when stating price strategies: otherwise, a seller won't be able to address both sides of the consumer's reference price.

In fact, since it is stated that the majority of consumers use both external and internal reference prices, sellers should adopt pricing strategies that may influence both the internal and the external part of the same customer's reference price.

Generally, retailers have two ways at their disposal to choose the right selling strategy and charge the right price enabling them to influence consumers in forming their reference price.

They are identifiable in:

- *promotions* that affect *existing* prices directly, generally lowering them with the scope of giving consumers the perception of a saving when purchasing a good, because of the reduced price, and
- *product's presentation* that means curating all those features that concern the image of the good: in that case, the aim is to give a specific product's image that should induce consumers to be willing to pay the price charged.

The dichotomy between promotions and product presentation can be interpreted in terms of the differentiation between acquisition value and transaction value (Thaler 1985). Following the Thaler's distinction:

- *acquisition value* is the value attributed by consumers to the benefits resulting from the purchase of the good and it is not linked to the price,
- *transaction value* is the difference between the consumer's reference price p^* and the price charged p and implies a price judgment.

In this perspective, promotions are value-based strategies that are aimed at enhancing the transaction value (lowering the charged price or trying to increase the consumer's reference price) whereas product's presentation are product-based strategies that are aimed to increase the buyer's perception of the product's quality or benefits (e. g., the acquisition value).

Hence, it appears clear that promotions should be adopted mainly for those consumers that are ready to switch from one brand to another, because of the convenience due to the reduced price. Conversely, the product's presentation should mainly address those consumers that show a strong loyalty to a specific brand and are not generally willing to switch among brands. Thus, promotions will work most on customers with a more developed stimuli-based reference price whereas product's presentation will be of more interest for memory-based reference price consumers.

5. Pricing strategies' rationale: the price discrimination

In general, pricing strategies are based on the generic concept of *price discrimination* stating that price discrimination occurs when the same item is sold at different prices to different consumers.

Since there are several ways to discriminate among consumers, trying to differentiate among all the different types of price discrimination, Pigou (1920) provided a classification that identifies:

- *first-degree, or perfect price discrimination*. It involves the seller charging a different price for each unit of the good in such a way that the price charged for each unit is equal to the maximum willingness to pay for that unit;
- *second-degree price discrimination*, or nonlinear pricing. It occurs when prices differ depending on the number of units of the good bought, but not across costumers (quantity discounts or premia);
- *third-degree price discrimination*, meaning that different purchasers are charged different prices, but each purchaser pays a constant amount for each unit of the good bought.

Moreover, two extra form of price discrimination that a seller can consider in selling its products must be mentioned:

- the first one is the *spatial price discrimination* that occurs when several stores contemporaneously offer an identical item at different prices.

The first question that comes in mind in this case is how those stores that charge higher prices remain in the market. The answer is simple if the theorization of H. Varian (1980) and Salop and Stiglitz (1977) are considered. They divided consumers into two categories: the informed and the uninformed consumers. While the informed consumers know the entire distribution of offered prices and go to the stores with the lowest price, the uninformed consumers know nothing about the distribution of prices and shop for the item by choosing store at random. So, this differentiation becomes useful to explain how the higher-priced retailers are kept in business: for Varian first and Salop and Stiglitz later, the higher-priced retailers still remain in business because of their share of uninformed customers;

- the second extra price discrimination is the *temporal discrimination*. The first that mentioned this kind of price discrimination was Joel Sobel (1984) that defined temporal discrimination as the situation in which a good is sold at a higher price which later declines: he supposed that a fixed number of sellers sell a homogeneous

good and typically vary their prices over time, charging a higher price in most periods, but occasionally cutting the price to sell to a large group of customers with a low reference price; then, after the discounted sale, prices remain high for an interval to be cut again later. Here, the seller's aim is to first extract the surplus from the high-demand consumers and only later to sell to the low-demand consumers.

Some researchers have objected that temporal price discrimination could provoke losses in sellers' profit because of lower prices resulting in lower gains as well as a deterioration in consumers' willingness to pay the restored higher price. However, Conlisk, Gerstner and Sobel (1984)¹³ demonstrated that temporal price discrimination is profitable and that periodic discounted sale aimed at consumers with low reference prices still generate gains for sellers.

However, despite all the different types of price discrimination, a lowest common denominator can be identified and it is the consumers' heterogeneity. As can be easily understood, if each customer has different needs and willingness to pay, sellers can use different strategies to reach all consumers' needs maintaining their profits high also selling at lower prices.

6. Price promotions: the most appropriate tool to address stimuli-based reference price consumers

Promotions are generally used by retailers to stimulate the purchase of a product providing a convenient price aimed to convince consumers to acquire that product. As said above, sellers fluctuate their prices to induce brand switchers to buy one brand instead of another because of price issues while at the same time minimizing the loss of profits coming from the lower prices charged (Narasimhan 1988). Hence, the addresses of this particular price strategy are those consumers in which the stimuli-based reference price prevails. To give support to this assumption, some researchers have provided demonstrations that price promotions do not constitute an optimal strategy for attracting memory-based reference price consumers. The reasons identified are two:

¹³ In the Conlisk, Gerstner and Sobel's study (1984) agents are supposed to be fully informed and fully rational. The supply side is constituted by a seller that sells a product choosing each period a price while the demand side is composed by two segments of consumers having two different reference price (one lower than the other). What the three researchers found is that the seller has not convenience to state a price that is lower than the lowest reference price because in that case he would yield no more consumers but lower revenue; moreover, the seller will sooner or later drop the price to the lowest consumers' reference price to reach "low" consumers. As a consequence, the best strategy in order to address both the two segments of consumers is to sell to "high" consumers at their higher reference price and then to lower the price charged to reach also the "low" consumers.

- first, price promotions, being external stimuli, are more appealing for those consumers that are more involved with external stimuli when purchasing a good;
- second, in case the price promotion is used to reach a memory-based consumer's choice, this strategy may become counterproductive. Here, the cases are two: if the price reduction is applied to a brand not preferred by the memory-based consumer, what happens is that the memory-based reference price consumer, because of his brand-loyalty, won't buy the alternative brand causing a reduction in the profit of the discounted brand coming from the lower price paid by the external reference price segment; whereas, if the price reduction is assigned to the memory-based consumer's preferred brand, the discount will provoke first a reduction in the consumer's internal reference price and, once the price reduction is eliminated, the consumer's unwillingness to pay the undiscounted price anymore, and second a reduction in the profit coming from the memory-based segment purchases: in fact, this segment would be willing to pay for the good even the non-discounted price.

In any case, having different kinds of price discrimination implies that promotions could take different forms – depending on which type of discrimination sellers wants to reach. Anyway, the most common used are the price discount, the price comparison and a practice called product bundling.

Moreover, each one of these three forms of promotions have different objectives since they are aimed at influencing different variables of the reference price' formation process. In fact:

- *price discounts* want to give consumers the idea that they will realize a saving from the product purchase;
- *price comparisons* are meant to furnish *new* internal and external reference prices to the consumer modifying individuals' *initial* standard point;
- *product bundling* is a relative new practice that could provide a discount but is mainly aimed at associating the sale of a liked product with the one of an unwanted product.

6.1 Price Discounts

A price discount can be defined as the willingness of retailers to sell a good with a price reduced of a certain quantity or percentage as a way to give consumers the perception of a saving on the price paid. Then, this saving should not be nothing more than the difference between the consumer's external reference price (e. g., the unreduced price) and the reduced price charged.

But, as it often happens, theory differs from practice. In fact, sellers that want to use this type of pricing strategy have to pay attention to the extent of the promotion threshold and the frequency of their promotions since choosing the wrong promotion size and frequency can lead to very unprofitable consequences.

6.1.1 Consumers' perception of price reductions

Several studies have demonstrated that consumers, when encoding¹⁴ and evaluating information provided to them, will be affected in their behavior not by the information itself but instead by their perception of the information. This has two implications:

- first, the way in which price changes (that are the price reductions) are *framed*¹⁵ may affect how they are perceived.
- second, consumers tend not to unconditionally believe to price discounts since their perceptions of discounts are typically less than the proposed price cutting: consumers tend to *discount* the price discount.

With regard to the first implication, for example, a \$50 savings probably sound smaller when framed as a 1 percent discount, and a \$100 savings probably sounds larger when framed as a 50 percent discount. For that reason, sellers should state proportional discounts when they are large: if they are not, sellers should not state them.

It is clear that the same logic applies to absolute discounts: they should be stated when large or, at least, not stated when small.

Moreover, from a retailer's point of view, the benefits of prudently choosing when to state absolute and relative discounts are not limited to discounted items: in fact, one item's discount can increase sales of nondiscounted items through product complementary and/or increased store traffic (Mulhern and Leone, 1991).

In addition, although price frames may not directly alter price perception for smaller, habitually purchased items whose prices are generally ignored (Kujala and Johnson, 1993), they may indirectly alter price perception by stimulating attention to price information. For example, advertising the price of lettuce as "40% off" might grab attention and induce price processing more than simply stating its current price of \$60. This would be consistent with

¹⁴ In pricing literature, *encoding* refers to the subjective interpretation and assignment of meaning to objective prices and price discounts (Monroe, 1984).

¹⁵ As highlighted by Kahneman and Tversky (1985), framing effects realize when the way in which a problem under uncertainty is presented (i. e. framed) affects the individual's decision.

recent research reporting that extremely low or high prices can grab consumer attention and stimulate price searching (Kujala and Johnson, 1993).

Instead, considering the second implication, the discounting of discounts increases with higher proposed savings and will affect people in deciding whether to purchase a good (Gupta and Cooper, 1992).

This behavior can be explained with the fact that customers tend to protect themselves from deception happening when retailers inflate the discounted prices to distort consumer perception of the savings offered. Several studies have linked the extent of the discounting of discounts to some features such as the discount level, the store image and reputation, and like. For example, with regard to the discount level, it has been demonstrated that consumer's skepticism and extent of discounting increases as the so-called advertised discount (that is, the discount proposed by retailers) increases.

Moreover, with regard to the store's image and reputation, it is suggested that the discounting of discounts will be less for high image-stores than for low-image stores because high-image stores are supposed to have high credibility that translates into high credibility of their discounts; furthermore, stores that promote their product very frequently will be perceived by consumers as stores that can always offer deals because apply regular prices that are too high and this will certainly damage stores' reputation making their discounts less credible.

6.1.2 Price discount threshold

Gupta and Cooper (1992) have demonstrated that a price discount will have effect on consumer's purchasing intention only when a *promotion threshold* is respected. A promotion threshold is defined as the minimum value of price discount required to change consumer's intention to buy.

Starting from the Assimilation-Contrast Theory's precept that consumers have an interval of acceptance around their reference price and that small price differences within this interval are less likely to be noticed than prices above or below this interval, Gurumurthy and Little (1989) and Eastlack and Rao (1986) showed that a minimum level of advertising is needed before advertising has any significant impact on sales.

Also Grewal, Marmorstain and Sharma (1991) got important result concerning this matter. What they found is that:

- when the discount size is perceived to be *low*, consumers are unlikely to expend the cognitive effort needed to process additional information because the price promotion is deemed to be of little value, and that, similarly,
- when the discount size is judged to be *acceptably high but plausible*, there is again little uncertainty about the perceived value of the offer, and consumers are unlikely to be motivated to process additional information in detail;
- finally, when the discount size is *in the moderate range*, because of the fact that here the perceived value of the offer is uncertain, consumers are expected to process additional information in the price promotion most elaborately.

So, on the basis of these concepts, it can be affirmed that promotion thresholds exist such that consumers do not change their intention to buy the product unless the price reduction is greater than some threshold value. In other words, a promotion threshold exists such that below this threshold advertised discounts have no impact on consumer's purchasing intention. Moreover, retailers have to consider the fact that also a "maximum" level of a threshold should be set. In fact, as it has been largely demonstrated, price discounts shift consumers' internal reference price because of assimilation processes. It, in turn, means that if consumers are proposed to pay a discounted price lower than their internal reference price, their reference price will shift downward and the discounts will be likely to result in a lower reference price. Here it becomes clear the negative relationship between the extent of the discount and the consumer's internal reference price. Because of this negative relationship, what will be fundamental is to choose the optimal strategy to avoid this negative consequence.

6.1.3 Price discount frequency

Among the negative consequences of choosing the wrong price discount strategy, the most important is the case in which a brand is frequently on promotion. In that case, the frequent discount activity may provoke

- a "negative" assimilation of the discounted price on the customer's internal reference price, and
- become likely to erode probability of purchase, lowering consumers' reference prices and increasing their price sensitivity.

In addition, if a brand is frequently on promotion, consumers may become confused about what the "normal" price is and may view a return to the usual price as a price increase. For

that reason, in raising the price of a brand, sellers must pay particular attention to avoid unfavorable customers' perceptions.

A working way to raise prices after a promotion may be to enhance those prices in *small increments* so that consumers can be forced to adapt higher reference prices. The underlying rationale for small incremental price increases is that consumers appear to have a region of price insensitivity around the reference price, and a price change may not be noticed by the consumer (Kalyanaram and Little, 1994).

This problem does not occur in case of a brand with either infrequent promotions or an irregular pattern of promotions. Here, this “anomalous” promotional activity, making it difficult to forecast when the next might occur, could cause stockpiling¹⁶ in the “gain” condition thus showing greater impact of gains over losses.

This last assumption shows that there is an optimal frequency of promotions that neither lowers the reference price significantly nor confuses customers about the normal price. In fact, irregular promotions often maximize profit from reference price effects (Greenleaf 1995).

In any case, to have positive results, retailers should plan their frequency, duration, and level of price promotions very well in order to successfully manage the reference prices that consumers form.

6.2 Price comparisons

Another way to influence consumers trying to change their purchasing intentions is to provide them a price comparison to demonstrate the convenience of one product relative to other products or relative to its previous price. In these cases, researchers say that retailers provide consumers with both an “internal” reference price and a lower external reference price¹⁷. In other words, seller wants to convince customers to have a certain idea about a product's price that is greater than the price they charge, trying to impose the higher external reference price (that is, the “internal” reference price) as a basis for consumers to use in evaluating the lower

¹⁶ Stockpiling is a practice in which addicted consumers finding their favorite brand on sale decide to acquire a more than the quantity they need of a certain product for future use. In this case, the reduced price can serve as an incentive to acquire more than the necessary to take advantage from the discount. On one hand, this enhance the actual revenues of the seller, since he is selling more; on the other hand, in the long run, this may be turn in missed gain because of the reduced price.

¹⁷ Note that here the internal reference price is not intended as the result of a product price history but it has to be considered as a term of comparison furnished by the seller himself and not created by the consumer.

offering price. Long story short, retailers using comparative formats have the scope of communicating to consumers *where* to locate their internal reference prices.

In general, price comparisons can have many forms: “Was \$X, now \$Y”, “List price \$X, our price \$Y”, and provide both an external (Y) and an “internal” (X) reference price.

However, whatever form it takes, the comparative information presents three basic external reference price formats:

- comparing a selling price with competitors’ prices
- comparing a selling price with the seller’s former price
- comparing an advertised price with the manufacturer’s suggested retail price.

6.2.1 Price comparison’s rationale

In general, through comparisons, retailers want to take advantage of the fact that consumers tend to assimilate the difference between external stimuli and their internal reference price when this difference is within their interval of acceptance (Assimilation-Contrast Theory).

Since consumers tend to believe pricing claims that exceed their initial price expectation and, through assimilation, they tend to absorb this difference - that is the discrepancy between their internal reference price and the provided external stimulus (or external reference price) -, using an external reference price managers can enhance consumer’s perception of savings, for instance, by presenting a higher price for comparison (that is, the “internal” reference price).

In fact, the conceptual argument of the comparative activity suggests that advertised reference price (e. g., the external stimulus) can enhance buyer’s *initial* internal reference price and that this enhanced *new* internal reference price, when compared with the lower selling price, results in higher transaction value perception.

In general, buyers’ judgments of the provided external reference prices depend not only on the prices per se, but are also a function of some exogenous constructs that Grewal, Monroe and Krishnan (1998) identified in six elements:

- the first is the *perceived quality*. It is defined as a buyer’s estimate of a product’s cumulative excellence and is not greatly influenced by provided external reference prices in case comparative prices are provided for well-known brands;
- the second is the *buyer’s “initial” reference price*. It is the reference price constituting for the consumer the basis for judging or comparing actual prices. In this case, it has been demonstrated that there is a positive relationship between the external stimulus (that is, the advertised selling price) and the *initial* consumer’s reference price and

between the “internal” reference price (that is, the *new* internal reference price) and the *initial* consumer’s reference price;

- the third is the *perceived acquisition value*. It is influenced positively by the benefits buyers believe they are getting by acquiring and using the product and negatively by the money given up to acquire the product. Certainly, there should be a negative relationship between the advertised reference price and buyer’s perceptions of acquisition value;
- the fourth is the *perceived transaction value*. It is given by the difference between the reference price p^* and the charged price p . There is a negative relationship between the selling price and buyers perception of transaction value since an increase in p , lowering the perceived transaction value, will be perceived by the consumer as a loss;
- the fifth is the *consumer’s willingness to buy*. Since willingness to buy is defined as the likelihood that the buyer intends to purchase the product, it should be positively related with the buyer’s perception of both acquisition and transaction values;
- the sixth is the *consumer’s search intentions*. They are defined as the buyer’s willingness to search for additional price information. This tendency to search for additional information can be explained by the fact that because of variations in price in the marketplace, buyers generally are uncertain on what the lowest available price is and to reduce this uncertainty they tend to seek information from sellers (Stigler, 1961). In this perspective, it could be affirmed that when buyers are exposed to an “internal” regular price coupled with a lower sale price (that is, the comparative promotions’ ratio), their willingness to conduct additional search declines because of an increase in their perceptions of value. Therefore, there should be a negative relationship between buyers’ perceptions of acquisition value and their search intentions.

To synthetically show these relationships, a framework is provided (Figure 5).

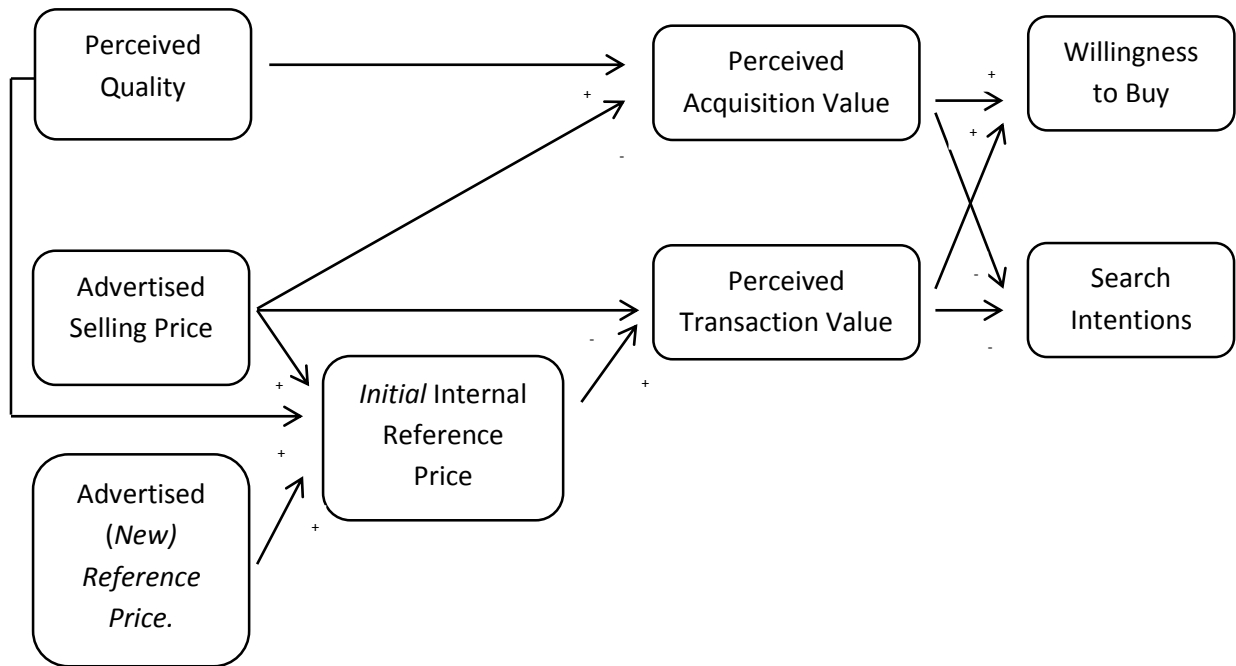


Figure 5. Grewal, Monroe and Krishnan framework

6.2.2 Low consistency versus high distinctiveness: the winning combination

Since making price comparisons means to give consumers new information about prices, retailers should have in mind that consumers are more likely to elaborate information that is

- *inconsistent* with previous information, or
- *distinct* from other present information.

Thus, inconsistent and distinctive information will have more effect on perceptions than an information connoting high consistency or low distinctiveness. As a proof, Lichtenstein, Burton, and Karson (1991) stated that comparative information that implies either low consistency or high distinctiveness enhance the perceived believability of the promotion, have a greater effect on consumer's internal reference prices, increase the favorability of purchase evaluations, and reduce the intent to search for a lower price as compared with promotions' information implying either low distinctiveness or high consistency.

Moreover, while low-consistency information generally provides a within-store comparison, high-distinctiveness information provides a between-store comparison. Speaking of that, economics of information theory (Stigler, 1961) suggests that consumers who are at home are more likely to be interested in between-stores price comparison information than consumers in a store: having travelled to a retail store, a consumer wants to complete the purchase without incurring the time and search costs of visiting another store.

In contrast, consumers who are at home are more likely to be receptive to, and find value in, a between-stores comparison.

Furthermore, consumers in a store might be expected to respond unfavorably to a between-stores comparison because they may not have the opportunity to verify this type of price claim readily by looking at other information or making calls to other stores. Hence, consumers who are in a store are expected to prefer price information in the form of a within-store comparison.

In light of this, the following conceptualization can be made: a within-store comparison will result in greater perception of value than a between-stores comparison when consumers are in the store, whereas a between-stores comparison will be more effective than a within-store comparison when consumers are at home.

6.2.3 Provided external reference price: the importance of choosing the optimal level

An additional consideration should be made about the level of the provided external reference price. In fact, previous research has shown that choosing an *optimal* level of external reference price permits sellers to

- maximize consumer's perception of savings and thus potentially increase sales and enhance the overall profit, and
- maximize the profitability directly by considering the costs of changing price perceptions and the relationship between price expectations and sales.

In effect, choosing an optimal level of external stimuli is important since managers risk their credibility with consumers when they provide extreme external reference prices that appear to be either too "low" or too "high" to customers.

Thus, the reliability of this comparative information seems to be fundamental for a successful external reference price strategy.

This reliability is based on some elements presented below:

- believability or credibility of the reference price
- perceptions of the store's regular selling price
- perceived saving (how the sale price compares with the regular price)
- shop-around saving (how the sale price compares with the lowest price in the market), and
- willingness to buy (Biswas and Blair, 1991).

6.3 Product Bundling

The last way through which retailers can influence consumers' purchasing intentions is the so-called *product-bundle*. In that case, the consumer's evaluation is not on a single product but on a combination of products, that is the so-called product bundle.

Guiltnan (1987) broadly defines bundling as the practice of marketing two or more products and/or services in a single package for a special (e. g., lower) price. Here, the seller's rationale is the hope that the consumer surplus (e. g., the reference price minus the actual price) associated with an attractive product will compensate for the consumer's deficit associated with a less attractive product.

Generally, the consumer's evaluation of the bundle depends on two different elements:

- the consumer's preferences, and
- the *framing* of price information in the bundle offer. As it is largely known, retailers forming a bundle offer can attribute a discount on one or on two or more single products in the bundle. Some researchers have hypothesized that an equivalent price reduction to the overall bundle, to one of the individual products in the bundle, or distributed among the two or more individual products in the bundle can alter the perceived attractiveness of the offer. This may happen because of the framing effect proposed by Kahneman and Tversky (1979), which suggests that a consumer will give a different evaluation of the bundle depending on where the eventual price discount is located (e. g., on the liked product, on the unwanted product and so on), even if it remains of the same amount.

Note that in case of bundling strategies the differentiation between internal and external reference price is negligible since the choice is not among similar products that have similar prices and/or characteristics: instead, the consumer's decision is about to choose whether to buy or not an item that a consumer wouldn't buy if the bundle has not been constituted.

As mentioned before, the rationale behind bundling is to extract consumers surplus in a market of heterogeneous buyers.

To analytically illustrate this concept, suppose that a company has two products, A and B, with zero marginal costs. Also suppose that the market consists of consumer X that highly values product A and has a reference price of \$12 but values product B less and has a reference price of \$4, and consumer Y that moderately values product A and B and has a reference price of \$8 for each of the products. If the company sells each product separately at \$8, consumer X buys product A and consumer Y buys products A and B. Thus, the company's revenue is equal to \$24 from these two consumers.

However, if the company chooses to sell the two products in a single package at the sum of the reference prices (e. g., \$16) and it sells these products only as a bundle, it should be able to increase its revenues to \$32 because both consumers should buy the bundle.

Since multiproduct bundling involving the selling of two or more products at a price that is lower (or, at least, equal) than the combined prices of the individual items, an important step in the composition of the bundle is to identify the product of which to lower the price. For example, suppose that the company wants to provide an additional incentive for consumers to purchase the bundle and decides to offer the bundle of a product A and product B for \$12, \$4 less than the previous bundle price. Here, specifically assigning the \$4 discount to product A (reference price \$12 and list price \$8) or to product B (reference price \$4 and list price \$8) will alter the perceived value of the bundle offer for consumers having a profile similar to consumer X. In fact, these consumers, will either assign more weight to the value of one product in the bundle and will value a change in the offer price of one product differently than a change in the offer price of the other product(s).

Now, since one of the products in a bundle will naturally be more important, a discount to this product should have a larger impact on the bundle evaluation; moreover, the most valued product in the bundle will receive more weight when product evaluations are summed. For example, consumers prefer to receive a discount on a liked magazine, as opposed to a disliked magazine, in a bundle of a liked and a disliked magazine, because the liked magazine has more weight in the overall evaluation of the bundle (Yadav 1994).

Unfortunately, this model has some flaws that do not make it the perfect model for the bundling activity. The most intuitive is the fact that it is often difficult to anticipate which product in the bundle will receive more weight.

On the other, the opposite hypothesis may also be justified: consumers prefer to receive a discount on the product they dislike as an incentive to buy it. Here the clear link to the reference-dependence model, from Prospect Theory (Kahneman and Tversky, 1979): the loss portion of the value function v is steeper than the gains portion of the value function v and assigning the discount to the less valued product in the bundle should result in a greater increase in the utility than assigning the discount to the more valued product in the bundle. Janiszewsky and Cunha (2004) conducted a series of experiments in order to clarify what of the two hypotheses was the most reliable. They found evidence that consumers subjectively value individual products in a bundle and then sum these values to arrive at an overall evaluation of the bundle itself.

Again, their results were discordant: from some experiments it was clear that people perceive more value in a discount to a pre-existing market price that is above their reference price than

in a discount to a pre-existing market price that is at or below their reference price; in some other experiments it was shown that people perceive more value in a discount to a less valued product with a market price near their reference price than to a more valued product with a market price near their reference price.

In any case, the link to the Prospect Theory (Kahneman and Tversky, 1979) seems to be stronger, since it is undeniable that reference price is a function of the product being offered for sale and each product in the bundle has a “price referent” that is compared to an offer price in order to value the offer.

At the light of these hypotheses, it can be summarized that:

- when *one of the two* products in the bundle has an offer price *above* the consumer’s reference price, and *the other* product has an offer price *below* the consumer’s reference price, the discount should be assigned to the less attractively priced item;
- when *both* of the products in the bundle have an offer price *above* the consumer’s reference prices, the price discount should be segregated and partially assigned to each product;
- when *both* of the products in the bundle have an offer price *below* the consumer’s reference price, the price discount should be listed as a separate item.

6.4 Coupons

The previous three types of promotions are not the only ones existing in the market. For example, another type of promotion largely used by sellers is the so-called coupons.

Coupons are marketing tools that permits customers to benefit of

- a discount (fixed or in percentage) on the quantity acquired, or
- an additional quantity of the item for free, after the purchase.

This kind of promotion was generally provided through traditional channels as newspapers, magazines and postal service. However, today also digital formats have started to be considered. The innovation of this digital coupons is that in this case consumers are not asked to materially cut the coupon out of a certain newspaper or magazine and to present it at the point of the purchase but receive directly from the online stores a “bar code” that they will use on internet.

The most evident dissimilarity between the types of promotions presented above and this last form (e. g. the coupon form) is the fact that

- price discounts, price comparisons and product bundles are mainly used to influence customer's reference price in order to make customer's purchasing intention changing in the direction desired by retailers, whereas
- coupons have the objective to propose and promote a product, using the discount on the price or the additional quantity provided for free as an incentive for buying the product.

Even though coupons seems to work only for those customers that do not show a strong preference for a specific brand since in that case consumers will be likely to switch among brands, it has been largely demonstrated that also memory-based shoppers purchase fewer brands and respond very well to coupon features.

Hence, retailers could influence internal reference price shoppers with coupons for their preferred brands. In addition, by rotating coupons for preferred brands over time, retailers may be able to build store loyalty among memory-based reference price shoppers, given their predisposition to stable purchase behavior.

7. Product's presentation: how to address memory-based reference price consumers

The way in which a product is presented can be of crucial importance when choosing among different alternatives. In fact, the product's presentation will provide consumers with a perception of the level of some product's characteristics that will eventually justify or not the charged price.

What substantially differentiate the product's presentation from price promotions is the fact that

- product's presentation may affect the formation process of a reference price, while
- price promotions may modify or substitute an existing reference price proposing a new one (e. g., in price comparisons) or give consumers the perception of savings because of lower prices (e. g., price discounts) or convince consumers of a need they do not think to have until the moment of the purchase arrives (e. g., product bundling).

Because of this distinction, it is not wrong to affirm that the customers more involved with product's presentation are the memory-based reference price consumers. In fact, product's presentation is aimed at furnishing a specific image of the level of quality and other variables of a specific brand, justifying the price charged.

In general, product presentation regards the influence that visual factors can have on the perceived attractiveness and quality of the product.

Specifically, if a product is presented with visual features that give consumers the perception of a high quality, they will be willing to pay for it a higher price, justifying this higher price with the higher quality.

Thus, it can be affirmed that visual factors may be used as an integral part of projecting a product's appearance, sometimes to convey images of high quality while at other times designed to signal an affordable price. The basic idea is that consumers form an expectation of an offer's price based on visual cues inherent in the package and this price expectation affects their intentions prior to actual price information becoming available.

7.1 Central routes versus peripheral routes: how the product's packaging, design and image influence consumer's price evaluations

Previous research and empirical studies on consumers processing of visual cues suggests that price expectations can be formed through both central and peripheral routes when consumers associate visible features – as packaging, design, and like - with judgments.

In particular:

- *peripheral routes* are based on easily processed cues often associated with the *attractiveness* of visual content, and
- *central routes* consist of consumers expending considerable effort to attend to arguments, to elaborate on argument merit, and to generally respond based on their judgment, which usually involves *quality*.

Of course, because of consumers' diversity, product's presentation may not influence all consumers' price expectation in the same manner. As a result, packages may be processed differently by individuals, depending on whether processing follows a central (e.g., quality) or a peripheral (e. g., attractiveness) route.

Henderson and Cote (1998) identifies three specific design factors: natural, harmony and elaborate design factors:

- the natural factors combines lower-level characteristics such as representative and organic;
- the harmony factor combines symmetry and balance;
- the elaborate factor is a combination of design element complexity, activity and depth.

This classification is supported by the literature that uses it as a useful tool to study the design effects from the perspective of generic factors such as natural, harmony, and elaborate. However, these three specific design features interact with the previous two routes in the price expectation's formation process, following the relationship showed below (Figure 6).

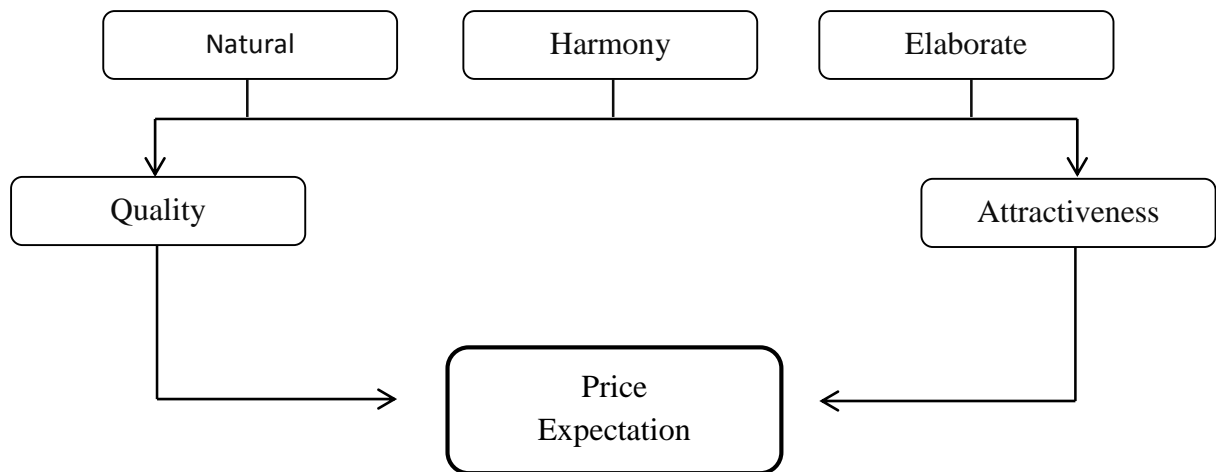


Figure 6. Henderson and Cote framework

To fully understand these relationships, let's start analyzing the two routes relative to the design factors.

Quality is defined as the cognitive evaluation of a product's intrinsic core benefit: perceived quality usually corresponds with the functional benefit consumers seek.

Generally, it is true that consumers will expect higher prices for brand whose package design creates impressions of high quality. For that reason, it is important to understand what relationship exists between quality judgments and specific design factors.

In general, natural designs lead consumers to expect higher prices as they associate natural with higher quality, and higher quality with higher price. Harmony is associated with images of elegance, well-coordinated color combinations, and overall balance, all of which facilitate judgments of higher quality. Hence, consumers expect higher prices for more harmonious packages to be higher in quality, and expect higher prices for higher quality. With regard to the elaborate factors, the relation between elaborate designs, judgments of higher quality, and higher price expectations should also be positive.

Specific evidence indicates that such a positive link exists since when presented with more rather than less elaborate packages, consumers perceive those to certain higher-quality offers: it should be expected that elaborate designs lead to consumers to form higher price expectations as they associate elaborate with higher quality, and higher quality with higher price.

With regard to the *attractiveness* of the package, it is demonstrated that the visual appearance of a package assumes a key role in consumer's decision-making process. When product alternatives are perceived as similar in quality and price, consumers prefer the more aesthetically appealing alternative. This would imply that consumers associate a certain value to the attractiveness of a package then expecting higher prices for more attractive package design.

More deeply, considering the three design factors mentioned above, positive links appear to exist between natural, harmony, and elaborate designs and attractiveness: a natural, harmonic and elaborate design is considered more attractive by consumers that, in turn, associate this enhanced attractiveness with higher quality and, as a consequence, higher prices.

7.2 Consumer's centrality of visual product aesthetics: the CVPA importance

In judging the rightness of a price from the product's presentation, the degree of importance given to design factors and visual cues depends on the centrality of visual product aesthetics (CVPA) that consumers assign to these variables (Orth, Campana and Malkewitz, 2010).

Consumers that are more aesthetically involved process package design differently than those who are less involved, since they attribute a different level of significance that visual aesthetics in their relationship with the product.

Specifically, it is expected that CVPA enhances the influence of design factors on judgment of attractiveness. Moreover, consumers with low CVPA may have some interest in product appearance but they may not utilize design factors to obtain quality judgments. In contrast, consumers with high CVPA would not only use visual appearance in comparing products but would also base quality judgments on design factors. In fact, it is expected that CVPA will enhance the influence of design factors on quality judgments.

Further, with respect to the relationship between CVPA and attractiveness, it is expected that CVPA will also enhance the influence of attractiveness on product's price judgments.

The direct consequence for sellers is that they will be able to better achieve desired impression (quality) by more efficiently employing generic design factors, for example by designing packages that are more elaborate than visual competitors in the segment of interest.

Conclusions

Prospect Theory by Kahneman and Tversky (1979) had certainly played a fundamental role in revolutionizing all the premises posed by the standard theory about consumer's behaviour.

As widely indicated in this thesis, there is no doubt that Kahneman and Tversky's contribution has been fundamental in prompting the study of consumer's reference price and decisional process.

What appears evident from the managerial/marketing literature is the fact that the distinction between stimuli-based and memory-based reference price consumers should not be taken in absolute terms, as well as the existence of a unique term of comparison. In fact, what the literature has highlighted is that consumers tend to use both the qualitative forms of reference price (e. g., the memory-based and the stimuli-based reference prices), sometimes using just one value as term of comparison to the charged price while some other times using two or more (e. g., an entire distribution of) values.

It is obvious that the absence of a unique and exogenously determined reference price complicates the ways through which sellers can influence the reference standard's formation and application process, since, because of different consumers' characteristics, a univocal pricing strategy may be counter-productive. Hence, sellers must choose among at least two ways to address all the types of consumers: they should prefer price promotions in case of consumers showing a prevalence of the stimuli-based reference price whereas should curate the product's presentation in case of a memory-based side's prevalence.

The importance that Prospect Theory and all the following theorizations associated with it have had among the years has to be found in the abandon of the theoretical point of view typical of the standard theory to adopt a more adequate empirical approach that better explain and describe how individuals *effectively* behave in coming to a consumption decision.

As many researchers have sustained, since individuals often fail to act accordingly to the standard precepts being guided also by "irrational" variables, a hybrid model of economics and psychology as Prospect Theory could be the best alternative to justify subjects' choices.

It is true that, looking at the topics of this thesis, both the managerial and the economic literature did not find an univocal model perfectly fitting with consumers' behaviour: this happens because consumers differs each other for specific personal characteristics that do not permit their behaviour standardization.

However, both the two sides of the literature have agreed on the Prospect Theory's fundamental assumptions - for example, both managers and economists found that consumers

do not strictly follow their utility maximization, and judge each potential transaction not in absolute but in relative terms.

Finally, even if researchers did not find it possible to determine a unique reference price, all the studies conducted have been of essential importance to demonstrate how perfectly rational lines of reasoning are not adequate to explain and justify behaviours that cannot be perfectly rational by definition.

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