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What is the value of bottled water? Empirical evidence from the Italian retail market

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ABSTRACT

Bottled water has become a global business, and Italy is one of the largest producers and consumer countries in the world. However, the Italian bottled water market seems to have reached the maturity stage of its life cycle, and because competitive pressure has strongly increased in this market, producers need to revise their marketing strategies. A variety of products with different features and prices are now available on the market of bottled water, however it is unknown how the retail price of bottled water is affected by its attributes. We thus measured whether, and to what extent, the price of bottled water depends upon its extrinsic (brand, packaging, origin), and intrinsic characteristics (mineral composition). We estimated a hedonic price model using data collected via direct observation of the shelves in various Italian modern retail stores. Our results show that bottled water is highly differentiated and its retail price is mainly affected by extrinsic characteristics. On the basis of these results, several insights are provided for both practitioners and policy makers.

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1. Introduction

Over the last few decades, the global consumption of bottled water has been increasing consistently even in countries where tap water is largely available and considered to be of an excellent quality [47]. This increase has been mostly linked to the changes in lifestyles and eating habits associated with economic growth [15,47]. Several studies have investigated consumer behavior in order to identify the main reasons why people decide to buy more expensive bottled water rather than tap water. These studies have shown that bottled water consumption is mostly driven by consumers' dissatisfaction with the organoleptic quality of tap water (especially taste), followed by health-related concerns [1,13,14,45,46]. Although safety concerns and health improvement are sometimes considered as equivalent, the two factors act differently. In contexts where distrust in tap water suppliers exists (e.g. information regarding current or prior problems with tap water), risk perception and safety concerns are more prominent in driving bottled water consumption [1,13,14,21,46]. In other cases, consumers may prefer bottled water simply because it is considered as healthier, but not necessarily safer, than tap water [3,13,47]. The need for convenience is another important reason for choosing bottled water especially for out-of-home consumption [13,19,45,46]. Today, a bottle of water can be bought almost everywhere and, when finished, it is easily disposed of in the trash, thus it is not necessary to carry around a bulky container all day.

Italy is one of the highest producers and consumers of bottled water in the world [20]. In Italy, the consumption of bottled water began in the 1970s and, since then, annual

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per capita consumption has increased considerably from 47 L in 1980 to a maximum of 192 L in 2008 [2]. However, in the last few years (2005–2013), Italian consumption of bottled water has stagnated considering that annual per capita consumption has been ranging between 187 and 192 L. This is probably due to the persistent economic crisis that has reduced the purchasing power of Italian households, but also other factors are relevant. Purification devices are increasingly used in bars and restaurants, in public "water kiosks" or "water houses" [44] as well as homes to treat tap water by removing chlorine, as well as the bad taste and odors in order to provide safe and palatable drinking water as an alternative to bottled water [18]. In addition, there is a growing consumer sensitivity regarding the environmental impacts of increasing bottled water consumption [36,45]. In fact, the process of extraction, processing, packaging and transportation of bottled water involves considerable environmental impacts, including pollution, climate change and depletion of natural resources [16,25,31,32,44,5]. Essentially, the Italian market of bottled water seems to have reached the maturity stage of its life cycle [32,36] and, thus, competitive pressure has strongly increased. Bottled water producers thus need to revise their marketing strategies in order to reinforce their competitive advantages and defend their profits and market shares from competitors.

A review of the economic literature concerning the bottled water market reveals that most studies have focused on two mainstreams: the analysis of consumer behavior in order to investigate the reasons for the increase in bottled water consumption [1,13,14,21,3,45–47], and the assessment of the environmental impacts of bottled water consumption [16,25,31,32,44,5]. To the best of our knowledge, to date, only a few studies have performed analyses in order to support firms in their decision-making problems [19,36].

This study starts with the observation that a variety of products with different features and prices is now available on the Italian market of bottled water despite the simplicity of "water products", however it is unknown how the retail price of bottled water is affected by its attributes. Our survey aims to fill this gap by measuring whether, and to what extent, the price of bottled water depends upon its extrinsic (brand, packaging, origin), and intrinsic characteristics (mineral composition). We used the hedonic price method [38] to estimate the implicit prices associated with the main characteristics of bottled water. Estimates of the implicit prices of bottled water attributes can provide useful insights for both practitioners and policy makers. First, being aware of their production costs, firms involved in this market can use implicit prices to devise an optimal mix of attributes and more profitable marketing strategies. Second, the hedonic approach isolates the premium for various attributes that affect the environmental impact of bottled water consumption, such as the use of eco-friendly bottles and the distance between the water source and the point of sale [16,17,25,31,32,5].

2. An overview of the italian market of bottled water

In 2013, the Italian consumption of bottled water was over 12 billion litres, the seventh highest in the world after China (39), the USA (38), Mexico (31), Indonesia (18), Brazil (18), and Thailand (15) [20]. In terms of annual per capita consumption, Italy (190 L) is the first European country and third in the world after Mexico (255 L) and Thailand (225 L) [20]. The bottled water consumed in Italy is almost totally produced domestically and foreign trade is very limited [2].

Contrary to other countries in the world like the USA,[1] where purified water is largely sold as bottled water [20], in Italy bottled water is essentially represented by so-called "natural mineral water" [2] as specified in the Legislative Decree n. 176/2011 implementing the European Directive 2009/54/EC. By law, natural mineral water is clearly distinguished from other drinking water by its original purity (absence of chemical treatments) and its favorable health properties.

The annual report of Bevitalia [2] provides an overview of the Italian market of bottled water which is briefly described below. In 2013, the Italian bottled water industry included 143 companies of different sizes, with overall annual gross sales of 2.4 billion euros. The industry is highly concentrated considering that the four largest players (Nestlé Waters, San Benedetto, Norda, and Fonti Vinadio) control more than half of the domestic market. Since many companies adopt a multi-branding strategy, about 270 brands are available on the Italian market of bottled water. Most of these brands are regional or local, and only a few (about a dozen) are national brands. There are also various store brands that have reached a significant cumulative market share accounting for 9% of total sales.

The largest segment of the Italian market of bottled water is represented by still (non-sparkling) water which accounts for 65% of sales volume, while carbonated and naturally carbonated waters account for 19% and 16%, respectively. Still water is ideal for ordinary daily consumption, while sparkling water, given its particular taste, is preferred at mealtimes and is mainly sold in restaurants.

Bottled water with a low mineral content (50–500 mg/L) is the best-selling, accounting for 59% of sales volume, while bottled water with a very low mineral content (<50 mg/L) and medium-high mineral content (>500 mg/L) represent minor market segments (14% and 27%, respectively). Water with a very low mineral content is almost totally tasteless although it is recommended for people who have diuretic problems. It is also more suitable for special purposes such as the formulation of baby foods (e.g. milk powder). Conversely, water with a medium-high mineral content has a stronger and diversified taste, depending on the composition of the dissolved salts, and is recommended for people who need to increase their daily

[1] In the United States, about 44% of all bottled water is sold as "purified water" which is produced by distillation, deionization, reverse osmosis or other processes [16]. The three largest brands of purified water sold in the US market are "Dasani" (Coca-Cola Company), "Aquafina" (Pepsi-Cola Company), and "Pure Life" (Nestlé Waters) [16].

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