

**Cost-Based Price and Value-Based Price: Are They Conflicting Approaches?**

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**Abstract**

While the gap between economic theory and companies' practice, regarding to the pricing setting, has been extensively explored, the gap between the marketing perspective and companies' practice needs further clarification. The general aim of this research is checking whether marketing researchers' claim that the use of cost-based price approach prevails over the use of value-based price approach is pertinent and whether price-setting based on cost plus margin is opposed, in fact, to the value-based price approach. To meet this goal, this paper is guided by the following research question: "Price-setting based on cost plus margin goes against the value-based price approach?" Obtaining an answer to this question is grounded in the application of qualitative analysis techniques, which include reflections on results obtained in previous research and a case study conducted in an industrial company, which follows the action research method. Because of the qualitative focus of this study, it is set a proposition whose defense is grounded in logical reasoning and empirical reality data observed in the case study. This proposition is: certain companies use the mechanics of cost plus margin in the sale price-setting process, but it does not necessarily mean that these companies set prices based on cost. By analyzing this proposition, we aim to fill the gap in the literature about the difference between the marketing normative view and companies' practice. The key contribution of this paper is demonstrating that in certain business environments, such as, for instance, B2B, using the price formation mechanics based on cost plus margin is the way found by companies to enable the approach adopted. The approach may be cost-based price or value-based price. Much research make a conceptual mistake by classifying all price-making companies as those adopting the cost-based price approach simply because they use formulas containing the element cost.

**Keywords:** Pricing, Cost-based price, Value-based price.

## **Introduction**

Over time, studies concerning price-setting approaches have evidenced a mismatch between theory and practice. The oldest gap observed by researchers of the subject shows that the view of neoclassical economic theory does not match the business practice (Hall & Hitch, 1939; Diamantopoulos & Mathews, 1994; Lucas, 2003; Lucas & Rafferty, 2008).

According to Diamantopoulos and Mathews (1994), early criticism about the neoclassical economic theory as for price-setting appeared in Hall and Hitch (1939). In this paper, evidence was raised that companies defined prices by adding a margin to the total cost of products and, therefore, they did not adhere to economic marginalist principles.

At the present time, researchers of marketing have suggested the existence of another gap between price-setting theory and practice. This gap arose when empirical research began reporting that companies were still setting their prices based on cost, rather than starting to provide them with value as a basis (Ingenbleek, 2007; Hinterhuber, 2008).

Various researchers of marketing, e.g. Shipley and Jobber (2001), Ingenbleek, Debruyne, Frambach and Verhallen (2003), Avlonitis and Indounas (2006a), Collins and Parsa (2006), Hinterhuber (2008), Indounas (2009), Raju and Zhang (2010), Hinterhuber and Liozu (2012), and Calabrese and Francesco (2014), segregate price-setting approaches into three groups: (i) cost-based price; (ii) competition-based price; and (iii) value-based price.

Normative guidelines suggest that, among the three approaches, the most appropriate is that based on value, also referred to as client-based or client value-based, because it is the only one that takes client perspective into account to set the price. Nevertheless, study results indicate that the price-setting approach most widely used by companies is the one that receives most criticism from researchers (Skinner, 1970; Tzokas, Hart, Argouslidis, & Saren, 2000; Shipley & Jobber, 2001; Myers, Cavusgil, & Diamantopoulos, 2002; Simon, Butscher, & Sebastian, 2003; Hinterhuber, 2008): the cost-based price approach.

Faced with this paradox, Ingenbleek (2007) and Hinterhuber (2008) regret the fact that the value-based price approach, although providing clear benefits, is not widely used by companies because they prefer the cost-based price approach. According to Ingenbleek (2007) and Cressman Jr. (1999), it is not clear, yet, why companies' managers choose to set prices based on cost instead of value. That is, according to them, the barriers that managers face to set prices through value information and those requiring to set prices through cost information are not fully disclosed.

While the gap between economic theory and companies' practice has been extensively explored and explained, the gap between the marketing normative view and companies' practice needs further clarification. However, considering the way how studies are structured, we still may not claim there are decisive conclusions that the cost-based price approach replaces the value-based price approach.

In this way, the general aim of this research is checking whether researchers' claim that the use of cost-based price approach prevails over the use of value-based price approach is conceptually pertinent. In other words, the general aim of this research is identifying whether price-setting based on cost plus margin is opposed, in fact, to the value-based price approach.

To meet this goal, this paper is guided by the following research question: "Price-setting based on cost plus margin goes against the value-based price approach?" Obtaining an answer to this question is grounded in the application of qualitative analysis techniques, which include reflections on results obtained in previous research and a case study conducted in an industrial

company, which follows the action research method as suggested by Kaplan (1998) and Gummesson (2014).

Because of the qualitative focus of this study, hypotheses are not established, but rather a proposition whose defense is grounded in logical reasoning and empirical reality data observed in the case study. This proposition is: certain companies use the mechanics of cost plus margin in the sale price-setting process, but it does not necessarily mean that these companies set prices based on cost. By analyzing this proposition, we aim to fill the gap in the literature about the difference between the marketing normative view and companies' practice.

The main contribution that this paper provides is based on the revelation that in certain business environments, e.g. business-to-business (B2B), the use of price-setting mechanics based on cost plus margin may be the way found by companies to make the price-setting approach based on value possible. In other words, using the formula of cost plus margin in certain business situations may be the shape and not the essence of the price-setting approach. Thus, price-setting based on cost plus margin does not necessarily mean that the company adopts the cost-based price approach.

## **2 Literature Review**

### **2.1 Marketing Normative View in Studies on Prices**

The marketing normative view may be regarded as recent if compared to traditional economic theory. Nevertheless, several studies have been prepared to suggest, directly or indirectly, the adoption of the value-based price approach: Smith (1995); Collins and Parsa (2006); Ingenbleek (2007); Hinterhuber (2008); Piercy, Cravens and Lane (2010); Liozu and Hinterhuber (2012); Gale and Swire (2012); Liozu, Hinterhuber, Boland and Perelli (2012); Johansson, Hallberg, Hinterhuber, Zbaracki and Liozu (2012); Calabrese and Francesco (2014); and Töytäri and Rajala (2015).

### **2.2 Companies' Practice in Studies on Prices**

In recent decades, many researchers in the fields of management accounting and marketing have addressed the theme of price-setting practices observed in companies. Overall, these researchers show evidence that total cost plus margin is the most frequently applied method to set prices: Govindarajan and Anthony (1983); Shipley (1983); Mills (1988); Hanson (1992); Shim and Sudit (1995); Noreen and Burgstahler (1997); Noble and Gruca (1999); Avlonitis and Indounas (2004, 2005); Guilding, Drury and Tayles (2005); Fabiani et al. (2005); Guerreiro, Pereira and Rezende (2006); Drury and Tayles (2006); Avlonitis and Indounas (2006a, 2006b, 2007a, 2007b); Indounas (2008, 2009); Indounas and Avlonitis (2009, 2011); and Guerreiro, Cornachione Jr. and Kassai (2012).

### **2.3 Criticism to Companies' Practice**

It is noteworthy that the cost-based price approach, despite consisting in the predominant approach in companies' practice, is the focus of much criticism, both from researchers of marketing and management accounting. In the field of marketing, Hinterhuber (2008) reports that the main drawback of the cost-based price approach is the fact it usually sticks to internal factors and ignores what clients think about prices. Skinner (1970) states that it is not possible that clients' willingness and availability to pay do not interfere with price, after

all, there is no use to the company in setting a high price that covers its full costs and brings a bulky profit margin if it does not find any client willing or able to pay that price. It can also happen that the cost-based price approach leads to the setting of a low price, below the value offered to clients, making the company to fail to achieve all the profit that could be achieved (Myers et al., 2002; Simon et al., 2003).

Tzokas et al. (2000) add that the price method based on total cost plus margin has the disadvantage of making companies inflexible with regard to prices. Prices rigidly formed having the sum of a profit margin to costs as a basis hinder sporadic opportunities that require adjustments in prices (Shipley & Jobber, 2001).

In the field of management accounting, Christensen and Demski (1997) argue that it is inappropriate to use total costs in the decision-making process at the level of individual products. Noreen and Burgstahler (1997), more specifically, show that in companies with multiple products, the pricing method based on total cost puts a restriction on the relationship between product prices. This restriction may prevent the company from achieving satisfactory profits, even when it might be possible to achieve them. Balakrishnan and Sivaramakrishnan (2002), in turn, find that using the total cost method plus margin in tactical price decisions causes economic losses.

As we can see, criticism to the cost-based price approach, both from marketing and management accounting researchers, focused on the use of total cost. Subsequently, such use will be addressed in greater depth.

### **3 Conceptual Propositions**

In this section, we introduce arguments and conceptual proposals, fruit of reflections on research previously analyzed. These arguments and propositions, along with case study data, drive the purpose of this paper and the way how we seek to provide the research question with an answer.

Companies may be classified in many ways depending on the reference used and the desired purpose. The classification used in this study, a crucial basis for the propositions that follow, is inspired by the study of Guilding et al. (2005) and it separates companies into (i) price-takers and (ii) price-makers.

Price-taking companies are usually those operating in the B2C (business-to-consumer) environment. In B2C, products are intended to final consumers, usually natural persons, and they often face similar products on the market (Laric, 1980; Hutt & Speh, 2002). It is noteworthy that the allocation to final consumers does not necessarily have to be direct, i.e. it may be made possible by intermediaries, such as dealers and distributors. Gummesson (2014) cites the example of the food companies, which usually sell their products to wholesalers and retailers and the latter resell these products to final consumers. Cravens and Glover (1995), in turn, cite the example of pharmaceutical companies, which hardly sell their products directly to end users, however, much of their production is intended to these users. There are also into the price-taking classification the companies that produce commodities to be used by other companies. These commodities often have their prices traded on stock exchanges.

Either in the B2C environment or in providing commodities, price-takers can easily obtain sale prices of competing products. They get this information by surveying supermarket shelves, store labels, newspaper and television ads, websites, or stock exchanges. So, in price-taking companies, prices may be determined both by external forces (competition

characteristics and client characteristics) and by internal forces (cost structure and installed capacity).

In turn, price-making companies typically operate in the B2B environment, i.e. they have other companies as clients (Laric, 1980; Hutt & Speh, 2002). Cooke (1986) explains that, in B2B, equipment, spare parts, and raw materials are offered to other companies to be used by them in product manufacturing or service designing. Products offered in B2B, except raw materials which are commodities, are usually customized according to the specific needs of each client company (Johansson & Andersson, 2012).

Because of customizations, a key characteristic of the B2B environment is the difficulty of knowing competitors' sale prices. In B2B, unlike B2C, price trading tends to be individualized: as information on competitors' prices is not easily available, it is usually not possible to set a price based on them.

For instance, in the research conducted by Dutta, Zbaracki and Bergen (2003), focused on the process and the price-setting routines in a large price-making company, the authors reported the difficulties to obtain information about competitors' prices. In the case concerned, the company had more than 8,000 product codes to be priced and, as competitors just did not distribute price lists, a lot of effort was needed to set prices for similar products with support of clients with whom the company maintained a close relationship. A great effort was also required from the price-setting team to identify which competitors' products, if any, were functionally equivalent.

Therefore, in B2B companies, it is more advisable to set prices based on data internal to the company interconnected to the value offered to clients than set prices based on competitors. Farres (2012) emphasizes that including the value offered to clients in the B2B environment is also different from including it in the B2C environment. While in B2B it is rather objective and driven by facts, in the B2C it is rather subjective and driven by personal feelings.

Overall, empirical studies conducted on the price-setting approaches do not take into account the classification proposed, i.e. they do not separate companies into price-takers and price-makers. This prevents their results to be properly analyzed and also leads to unexpected conclusions. An example of this fact may be found in the very paper by Guilding et al. (2005), where this classification was proposed in a pioneering way.

Guilding et al. (2005) used size as a proxy to company framework and they established the hypothesis that it was positively associated with the importance attributed to the cost-based price approach. Such a hypothesis, however, was rejected and the authors were stunned by the lack of a statistically significant relationship between company framework and price-setting based on cost. In light of the arguments presented, it may be inferred that the probable cause for the absence of this relationship is the separation of companies due to their size, recognized as something wrong by the authors. In fact, in the way how it was structured, the research did not end up separating the companies into price-takers and price-makers and, perhaps the results reflect a sample mostly made up by large price-taking companies, whose price-setting is driven by references from competitors instead of cost. From these reflections, the first proposition (P1) of this study is prepared: **Companies may be characterized as price-takers and price-makers, and the classification type impacts on the price approaches adopted by the company.**

Considering the two company classification types presented in this study and the price-setting approaches proposed by researchers of marketing, we may go to reflections on the relationship between these variables.

In the case of price-taking companies, it is possible to apply any of the three approaches proposed: (i) cost-based price; (ii) competition-based price; and (iii) value-based price. This is so because price-takers have access to information bases using the three approaches. Of course, they may choose to adopt either a single approach or the three approaches together. This option depends on several factors, such as the bargaining power that the company holds in the supply chain, the number and capacity of its competitors, the quality and distinction of its products, and its internal culture. Despite the specificities, according to Guilding et al. (2005), usually price-taking companies are less inclined to adopt the cost-based price approach, since their prices necessarily mirror competitors' product prices, available for consultation.

In the case of price-making companies, it is not possible to apply the competition-based price approach, because, as previously mentioned, depending on how specific the product is, it is not always possible to capture with ease the prices offered by competitors. In other words, in price-makers, there may be only the application of these approaches: (i) cost-based price; and (ii) value-based price. However, it is worth highlighting that if a typically price-making company occasionally deploys some market intelligence and gets information on competitors' prices, it becomes a price-taking company, as it becomes able to use market benchmark prices to set prices of its own.

Drury and Tayles (2006) explain that cost information plays a key role to set price in companies where using the competition-based approach is not feasible, e.g. in the case of companies from the B2B environment that provide highly customized products and services. As genuinely price-making companies have no information on competitors to mirror themselves on, they need formulas to set the prices of their products. Formulate, from a practical viewpoint, means performing calculations, using a method or formula. Costs are invariably allocated in the formulas of price-setters, however, the way how this allocation occurs depends on several variables, among which stand out the objectives, company conceptual maturity, and the characteristics of products and clients. According to these variables, the company chooses a formula that sets price driven by cost or a formula that sets price driven by value. Given the above, the second proposition (P2) of this study is prepared: **Price-taking companies may use the three price approaches, but price-making companies may use only the price approaches based on cost and based on value.**

Turning specifically to the context of price-makers, it is worth mentioning that, according to Guerreiro et al. (2012), the formula of product price essentially includes two elements: (i) cost; and (ii) margin. The rationale of these elements lies on the fact that price-makers, as they have no price benchmark, follow the predominant guideline of seeking to regain all costs and achieve the desired margin.

In general, product cost may be computed by three different methods, i.e. through the full cost method, the absorption cost method, and the variable cost method. Depending on the cost method used, both the product cost composition and the desired margin composition change, as shown in Table 1.

**Table 1 – Cost and Margin Composition**

Cost Method	Cost Composition	Margin Composition
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Full cost	Total costs + total expenses	Desired profit
Absorption cost	Total costs	Total expenses + desired profit
Variable cost	Variable costs + variable expenses	Fixed costs + fixed expenses + desired profit

Source: Guerreiro et al. (2012, p. 5)

Regardless of cost method used, in order to combine the two elements shown in Table 1, price-makers need to employ a mathematical formula, which is usually expressed as follows:  $pp = pc \times mk$ .

Where:

$pp$  = sale price

$pc$  = product unit cost

$mk$  = mark-up rate over cost

Thus, in cases where the company uses the full cost method, prices are formed having the total cost multiplied by a mark-up rate as a basis, which reflects the addition of profit margin to the total cost. In turn, in cases where the company uses the variable cost method, prices are formed having the variable costs multiplied by a mark-up rate as a basis, which reflects the addition of the desired contribution margin to the variable product cost. Given the above, the third proposition (P3) of this study is that: **Price-making companies need a mathematical formula to set the price. In this price formulation process, they necessarily use the concept of cost plus margin. Product cost may be determined by the variable cost method or by a cost method that includes variable costs and fixed costs, or also expenses, in the composition of product cost.**

However, it is not because the price formula necessarily includes the cost element that the company has necessarily applied the cost-based price approach instead of the value-based price approach. After all, the formula expresses the form, but not the essence of the price-setting approach. A rather detailed analysis of the way how cost information is used by the company shows that any of two approaches can be operated by means of a mathematical formula that includes cost as an element.

In the cases where the company uses the full cost method or the absorption cost method, there is no doubt about using the cost-based price approach. This is so because when applying the element total cost in the formula, the result is offering a price capable of covering all costs (both fixed and variable costs and, in some cases, also all expenses) and, in addition, providing the desired profit margin. The company is faced with zero possibilities to charge a price different from that indicated by the formula, thus it is required to establish the only price that ensures covering all costs and obtaining the desired profit margin. In other words, when the company uses the full cost method or the absorption cost method, it puts price above the cost.

Many studies, such as Drury and Tayles (1995), Govender (2000), Brierley, Cowton and Drury (2001), Brierley (2011), and Guerreiro, Cornachione Jr. and Soutes (2011), demonstrate that companies generally use with more intensity the absorption cost method not only for complying with accounting standards, but also for management purposes. Of course, if this is cost method institutionalized in most companies, it is the method that tends to drive the mechanics of sale price calculation in the environment of price-makers.

For this reason, price calculation based on total cost, although criticized in many studies, such as Skinner (1970), Christensen and Demski (1997), Noreen and Burgstahler (1997),

Tzokas et al. (2000), Balakrishnan and Sivaramakrishnan (2002), Shipley and Jobber (2001), Myers et al. (2002), Simon et al. (2003) and Hinterhuber (2008), is the most frequently used by price-making companies. Given this use, sale price is immobilized in a cast and exclusively driven by cost, leaving little flexibility for price profitability management. Therefore, the fourth proposition (P4) of this study advocates that: **Price-making companies that calculate price having the product cost measured by full cost or absorption cost as a basis adopt the cost-based price approach.**

However, the fact that a price-making company needs a mathematical formula does not mean that it needs to guide its price blindly by product cost. Many companies, combining a modern marketing perspective (client value) to less orthodox management accounting concepts, may employ a mathematical formula that operationalizes the value-based price approach.

Often, empirical studies conducted through surveys on the use of price approaches detect that a significant portion of companies in the sample employ a mathematical formula to calculate the price that includes the element cost. The problem is that, in face of this finding, these studies conclude that this set of companies uses the cost-based price approach, without analyzing and discriminating the formula type used and the rationale type that lies behind the formula.

That is, empirical studies end up labeling all price-making companies as those adopting the cost-based price approach simply because they use formulas that consider the element cost. Both authors in management accounting (Guilding et al., 2005) and in marketing (Noble & Gruca, 1999), as well as in other areas (Fabiani et al., 2005) have made the same kind of mistake. This is a perceptual bias, because many among the surveyed companies might be using a price formulation based on the variable cost concept and a contribution margin inspired by the client's value.

The conventional theory, exposed by several authors, such as Christensen and Demski (1997), Groth, Byers and Simmons (2000), Nagle and Holden (2003) and Indounas (2006), advises using the variable cost method for management purposes in companies. Specific papers also demonstrate the importance of using such a method in pricing decisions. Ifandoudas and Gurd (2010) explore the importance of ToC for pricing deliberations. Guerreiro et al. (2012) focus on using the concept of hourly contribution margin in the process of price-making companies. In Indounas (2006), the importance of the concept of contribution margin in the price formation process is analyzed in depth.

The variable cost method involves using the contribution margin. When expressed as a percentage, this margin may take various forms. For instance, Warren, Reeve and Fess (2001) defined the concept of contribution margin in terms of a percentage over costs and variable expenses. In turn, Nagle and Holden (2003) defined the concept of contribution margin as a percentage over final price instead of a percentage over cost. And Guerreiro et al. (2012) proposed the concept of hourly contribution margin.

The use of contribution margin provides the link between the formula containing the element cost and the value-based price approach. Johansson and Andersson (2012) proclaim the value-based price approach as the most profitable and they argue that it not only can, but must be applied to companies that provide highly customized products. The authors detail the various aspects of value in the context of such companies, however, they do not reveal the way how to operationalize price formulation considering this approach.

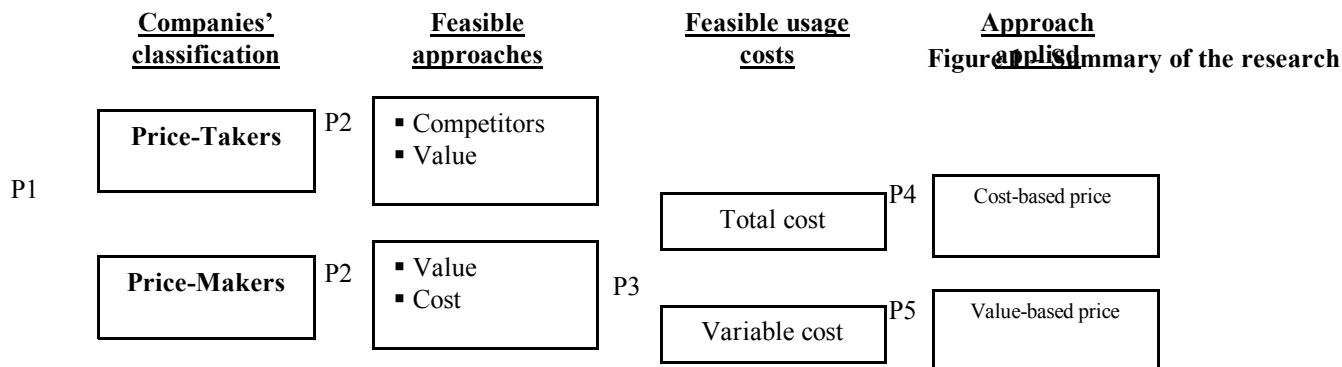


The link between the need to formulate price and the strategic need to use the concept of value is addressed in detail by Indounas (2006) and Guerreiro et al. (2012). These authors show that, in the price formulation process, the variable defining value is the objectified contribution margin. During this disclosure, Indounas (2006, p. 418) clearly characterizes the difference between calculating price based on cost or value, mentioning that:

The contribution margin analysis approach is a value-based pricing method that endeavours to incorporate not only cost, but also competitors' and customers' inputs when levying prices into a single mathematical formula.

Conceptually, the contribution margin required to cover fixed costs, structural fixed costs, and company profit. However, it does not imply the need for all products and all clients to equally promote this coverage. As it is determined by the business policy, not just costs, it may vary depending on the products and clients. Therefore, contribution margin is the element in the price formula reflecting the value a product has to the client. Thus, the use of a mathematical formula that considers the variable product cost plus the contribution margin required, strategically defined, does not mean that the company sets sale price based on cost. As a result, the fifth proposition (P5) of this study is prepared: **Price-making companies that calculate price by the variable cost method and use contribution margin may adopt the price approach based on value.**

To finish this section and summarize the propositions prepared, Figure 1 briefly illustrates what has been exposed.



#### 4 The Case Study of the Company Customized Chairs

##### 4.1 Research Method

Whereas the objective of this research is exploratory and being aware of the need to obtain new and creative views on the conflict between the cost-based and value-based price approaches claimed so far, we chose to study closely a real case (Voss, Tsikiktsis, & Frohlich, 2002). The case study in this research was structured through the action research method, where the actors involved participate, along with the researchers to, in an interactive way, analyze reality, diagnose problems, and propose solutions (Thiollent, 1997).

According to Martins and Theóphilo (2009), in an action research the authors and social actors are mutually implicated: the actors in the research construction and results and the authors in the actions that will guide the research and its findings. Kaplan (1998) and Gummesson (2014) are in favor and strongly recommend the use of this method.

In this research, one of the authors participated in the development team of new conceptual models of the costs and prices planning systems of a Brazilian company. For confidentiality purposes, the actual name of this company is not disclosed, it is replaced herein by “Customized Chairs” (CC). The observations and analyses of this study were carried out concurrently with the development of these new models.

CC is an industrial company, medium-sized, located in southeastern Brazil. Its average annual revenues are around US\$ 60 million and its structure has about 600 employees. CC produces and sells various kinds of chairs, and each line has a large number of analytical products. They are unique products developed by the company to meet the needs of a variety of clients. Some lines have simpler and less expensive products, i.e. products aimed at client segments with lower purchasing power. Other lines have rather sophisticated products aimed at markets that demand higher quality and exclusivity, whose clients have higher purchasing power.

CC’s clients are companies in general, public schools and private schools, and various kinds of service offices. In many situations, individual products are sold as a specific project demanded by the client, as in the case of lecture halls and event spaces. The company does not focus on meeting the domestic needs of natural persons. CC’s competitors are several companies that manufacture similar products for the same business segments. These competitors have relatively the same size of CC.

#### **4.2 Application of the Research Propositions in CC**

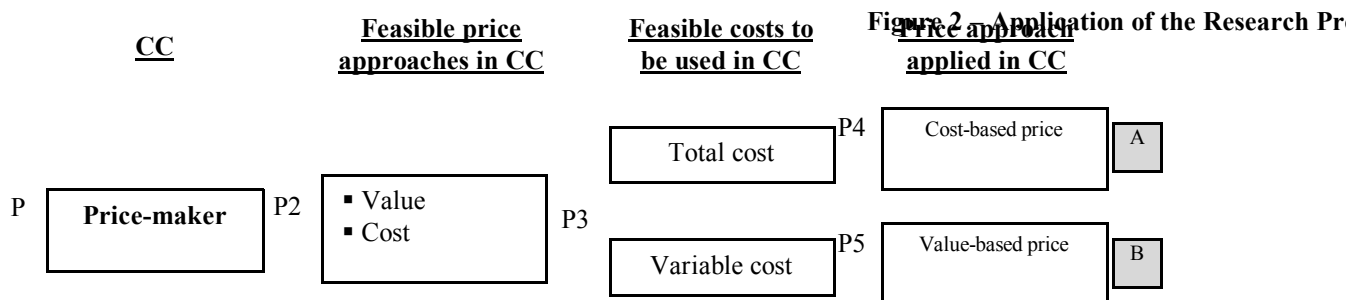
Given the characteristics of its business, as well as its activities in the B2B environment with unique products and highly customized projects, CC, from the viewpoint of sale price decision, is typically a price-maker (P1). As a price-maker, according to the conceptual arguments presented, CC may have its price-setting approach based on cost or based on value (P2). An approach based on competitors is not feasible, because CC cannot get information on which might be its competitors’ prices, since they also work with customized products and projects.

In order to operationalize price-setting and adopt the cost or value-based approach, CC needs a mathematical formula. As it might be expected, the mathematical formula used by CC implies the mechanics of product cost plus desired margin (P3). The product cost included in this formula may be determined by the variable cost method or by a cost method that includes variable costs, fixed costs, and expenses.

The company CC, for a long time, had been setting prices primarily due to total product cost, calculated by using the full cost method, coupled with the desired profit margin. That is, CC had been traditionally adopting the price-setting approach based on cost (P4).

Nevertheless, during the discussions that took place in the conceptual review process of cost models and price planning, several arguments claiming the managerial superiority of the variable cost method when compared to the full cost method were presented. These arguments led the project team to propose adopting the variable cost method to calculate products costs and the use of contribution margin to measure profit. Product cost – according to the conceptual model – started being formed only by the variable cost of raw materials. Margin, in turn, which became the contribution margin in price percentage, began to promote the connection between cost and products values. Therefore, CC started adopting a value-based price-setting approach (P5).

Figure 2 summarizes the application of all these propositions in CC. It also shows that, after a review of the conceptual cost models and price planning, the company replaced the cost-based price approach (adopted at the initial time A) by the value-based price approach (point B), although the mathematical formula used to operationalize price-setting could keep the element (variable) cost.



Subsequently, details that clarify the difference between cost-based and value-based price formation in CC are presented. In section 4.2.1 the steps followed in the adoption of the traditional cost-based price approach are detailed. Later, in section 4.2.2, the steps that CC began to follow when it adopted the value-based price approach are presented.

#### 4.2.1 Cost-Based Price Formation

According to the cost method traditionally used by CC, the product unit cost was the total, while incorporating all manufacturing costs plus administrative and sale expenses (P4). Only variable sale costs (commission and freight rate) were excluded from product cost. CC mark-up focused on total cost.

##### 4.2.1.1 Step One: Product Unit Cost Calculation by the Absorption Cost Method

All manufacturing costs were part of product unit cost, in line with the absorption cost approach and the accounting standards (IAS 2) applied for stock valuation.

Cost of Raw Materials:	\$ 66.66
Manpower:	\$ 21.13
Electric Power:	\$ 0.86
Water:	\$ 0.14
General Factory Expenses:	\$ 4.40
Rent:	\$ 4.21
Depreciation:	\$ 3.00
Tools:	\$ 0.50
<b>Subtotal:</b>	<b>\$ 100.90/unit</b>

##### 4.2.1.2 Step Two: Addition of Administrative and Fixed Sale Expenses to Product Unit Cost

The inclusion of administrative and fixed sale expenses to product unit cost was made through a percentage over the product manufacturing cost. CC used the 25% historical average percentage. At this stage, all costs (except variable sale costs) were allocated to individual product units from a full cost perspective.

Manufacturing Cost:	\$ 100.90	
Fixed Expenses:	\$ 25.22	(25%)
Total Cost:	\$ 126.12	

#### 4.2.1.3 Step Three: Choice of the Desired Profit Margin

The profit margin inserted into price varied depending on the situation. In this case study, we selected a product that had a 10% desired profit margin.

#### 4.2.1.4 Step Four: Definition of Variable Expenses and Taxes Due on Sale

The variable sale expenses were transportation costs (freight rates) and commission on sales. Regarding taxes, the company considered the State Brazilian Tax on Goods and Services (ICMS), and Federal Taxes: Brazilian Social Integration Program (PIS), Brazilian Social Security Funding (COFINS), Brazilian National Social Security Institute Tax (INSS), Brazilian Income Tax (IR) and Brazilian Social Contribution on Net Income (CSLL). Nevertheless, there is a need to notice that the IR and CSLL do not vary in proportion to revenues and, technically, they should not be included in the price-setting process as variable elements depending on sales.

Variable Expenses:	
Freight Rate:	1.50%
Commission:	2.50%
<b>Sum:</b>	<b>4.00%</b>
Taxes on Sale:	
State:	12.00%
Federal:	15.40%
<b>Sum</b>	<b>27.40%</b>

#### 4.2.1.5 Step Five: Mark-Up Index Calculation

The company calculated the dividing mark-up index. Mark-up is an index in the shape of a multiplier or divider, which generates sale price when applied to cost. The calculation of dividing mark-up is 100% (which represents sale price) minus the percentage of variable expenses, taxes, and desired profit margin.

Sale Price:	100.00%
Variable Expenses:	(4.00%)
Taxes:	(27.40%)
Desired Profit:	(10.00%)
<b>Dividing Mark-Up:</b>	<b>58.60%</b>

The 58.60% divisor mark-up is equivalent to the 1.7065 multiplier mark-up (100% divided by 58.60%).

#### 4.2.1.6 Step Six: Sale Price Calculation

Price calculation was made by multiplying total cost for the mark-up index.

$$\begin{aligned} \text{pp (sale price)} &= \text{pc (product unit cost)} \times \text{mk (mark-up rate over cost)} \\ \text{pp} &= \$ 126.12 \times 1.7065 = \$ 215.22 \end{aligned}$$

#### **4.2.1.7 Consequences of Cost-Based Price Formation**

The use of cost-based price approach was bringing problems and various reasons for CC administrators to rethink the company price-setting model. The first reason concerned the fact that the company had been working with an idle factory volume around 30%, which is regarded as very high by managers. Another compelling reason was the fact that the company had been training for the process of exporting its products and the manager in charge of business observed that using the price levels put into practice it might be impossible to sell the products in foreign markets.

There were other rather technical reasons. Commercial managers complained that the process of dividing structural fixed costs and expenses on product cost generated price competitiveness issues. The company financial department, in turn, was not able to measure and evaluate the effective product profitability. This was so because the costing system was fragile and estimated costs in a way to set prices and otherwise to measure effective cost and reveal the actual product sale profitability.

In short, it may be concluded that the price-setting procedures in CC led price to be a hostage of company cost structure. As the only management element was the profit margin to be used in negotiations, very little could be effectively managed in price. In the approach adopted, all information on client and product significance to client had to be reflected only on profit margin, i.e. the inclusion of a higher or lower profit margin within a very narrow range of options.

#### **4.2.2 Value -Based Price Formation**

Given the existing problems by using the cost-based price approach, CC decided to rethink its models of costing and planning sale prices. After going through a process of change, CC began to adopt the variable cost method and the concept of contribution margin as a proxy of value (P5). It is worth recalling that contribution margin is the result provided by product sale to cover the company costs and fixed expenses structure and shape its profit. That is, the focus of CC price-setting became the value that the product represents to client, of course taking into account the company cost structure in a smarter manner.

##### **4.2.2.1 Step One: Variable Product Cost Calculation**

After analyses and reflections, CC managers agreed that the only relevant variable manufacturing cost was that of direct materials. All other company production costs were fixed. Although there was a very small portion of other variable costs, e.g. a part of the electric power cost and consumption materials cost, the administration chose to regard it as consisting of fixed costs to make cost and price calculation routines easier.

Variable Cost (Raw Material): \$ 66.66/unit

##### **4.2.2.2 Step Two: Choice of Desired Contribution Margin**

The contribution margin, instead of the profit margin, has become the distinctive element in the determination process of sale prices in CC. The contribution margin, besides providing decisions with more flexibility, now represents product value to the client. Its choice has become the crux of the price-setting decision because, in order to define it, the characteristics

of products and clients began to be analyzed. For instance, people started evaluating whether the product is sophisticated or simple, if it shows high or low innovation, much or little significance to client project, etc. Client characteristics, such as size, purchasing power, among other variables, also come to be carefully analyzed.

In this case study, we selected a product whose required contribution margin is 42.78%.

#### 4.2.2.3 Step Three: Defining Variable Expenses and Taxes Due on Sale

It must be noticed that variable expenses and taxes which are now considered were those actually variable according to sale revenues. That is, the IR and CSLL were no longer included, since they do not vary in proportion to revenues.

Variable Expenses:	
Freight Rate:	1.50%
Commission:	2.50%
<b>Sum:</b>	<b>4.00%</b>
Taxes on Sale:	
State:	12.00%
Federal:	10.25%
<b>Sum</b>	<b>22.25%</b>

#### 4.2.2.4 Step Four: Mark-up Index Calculation

Sale price:	100.00%
Variable Expenses:	(4.00%)
Taxes:	(22.25%)
Desired Margin:	(42.78%)
<b>Dividing Mark-Up:</b>	<b>30.97%</b>

The 30.97% divisor mark-up is equivalent to the 3.2289 multiplier mark-up over the variable product cost.

#### 4.2.2.5 Step Five: Sale Price Calculation

$$pp \text{ (sale price)} = pc \text{ (product unit cost)} \times mk \text{ (mark-up rate over cost)}$$

$$pp = \$ 66.66 \times 3.2289 = \$ 215.24$$

#### 4.2.2.6 Consequences of Value-Based Price Formation

The use of value-based price approach allowed fighting the problems hitherto existing in CC due to its price-setting model. The much wider range of contribution margin options allowed CC to manage, case by case, its product prices.

For instance, now CC has the possibility of reducing the factory excess capacity, if it made some additional sale with higher prices, at least variable costs might be considered. CC also happened to be able to offer rather attractive prices in the foreign market to make its entry into the export process easier. Finally, the use of variable costs combined to the contribution margin freed CC from its condition of hostage of total costs, allowing it to form prices based on value.

## 5 Discussion

Over this paper, based on reflections and analysis of previous studies, propositions were generated to help grasping and using price approaches established in the literature. The case study carried out is added to the set of propositions, illustrating, in the context of a price-making company, the possibility to apply the cost and value-based price approaches.

This research shows that the threshold to be considered in discussions of price-setting approaches is grasping the context, business characteristics, and consequently the classification of companies as price-makers or price-takers (P1). As a result of this proposition, it is observed that the three price approaches established by the various authors do not apply the same way to different business types (P2). In the environment of price-taking companies, all price-setting approaches may be used (competition-based, cost-based, and value-based price), but in the environment of price-making companies the competition-based price approach may not be applied.

Focusing on the environment of price-making companies, it was found that they need a mathematical formula to set prices, in view of the absence of benchmark prices in the market (P3). In the formulation process, price-making companies necessarily use the concept of cost plus margin. Research shows that the cost of the product most frequently used in this process is determined by the absorption cost method or by some full cost form. In such cases, it may be claimed that companies use the cost-based price approach (P4).

The literature on management accounting does not advise using absorption cost for managerial purposes. The cost method regarded as managerially adequate is the direct or variable cost method. Several studies show that it is still a unique sample of companies employing this cost method for price planning. In the case of price-making companies employing this method, the formula includes the variable product unit cost and the desired contribution margin. These companies adopt the value-based price approach (P5), because contribution margin is included as an element that reflects value. In other words, it is not because they use a mathematical formula containing the element cost (variable cost) that they adopt the cost-based approach. So, it is not correct to state they adopt the cost-based price approach.

## 6 Conclusions

As mentioned in the introduction to this paper, the general objective of this research was analyzing the relevance of the statement in previous studies that using the cost-based price approach prevails over using the value-based price approach. The research question that sought to drive the development of this paper was: “Price-setting based on cost plus margin goes against the value-based price approach?” From this question, the general proposition that certain companies use the mechanics of cost plus margin in their sale price-setting process was established, but this does not necessarily mean that these companies set prices based on costs.

The arguments presented in the shape of propositions (P1 to P5) and the case study findings provide the logical sequence and the support required to conclude that price-setting based on cost plus margin does not conflict with the value-based price approach. As a result, it may be claimed that the general proposition established is theoretically valid, i.e. using a price formula that contains the elements cost and margin does not necessarily mean that the company sets prices based on cost.

The key contribution of this paper is demonstrating that in certain business environments, such as, for instance, B2B, using the price formation mechanics based on cost plus margin is the way found by companies to enable the approach adopted. The approach may be cost-based price or value-based price. Much research make a conceptual mistake by classifying all price-making companies as those adopting the cost-based price approach simply because they use formulas containing the element cost.

Grasping the company types, price-makers and price-takers, and being aware that price-makers require a formula to set prices may cause challenges and bring insights for scholars in the fields of marketing and management accounting. A relevant question for further studies consists in investigating the way how the connection between the concept of value and the concept of contribution margin has been made in the price-setting process. Another relevant research issue focuses on the study of mechanisms to change the business practice and on making comparisons between the performance of companies that use different approaches, as the studies insist on demonstrating the negative aspects of the prevalence of using total cost and, as a consequence, the price approach 'based on cost.'

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