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Costing System in Sales Price (CSSP): analysis of results in small and medium-sized industrial companies located in RS (Brazil)[1]

Sistema de Custos no Preço de Venda (SCPV): análise dos resultados em pequenas e médias empresas industriais situadas no RS (Brasil)

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Resumo

The overall objective of this study was to analyze the results of the implementation of the Costing System in Sales Price (CSSP), using a cost matrix that considers the distribution of indirect costs and fixed expenses in seven small and medium-sized industrial companies, located in "Serra Gaúcha" (RS), through a Reference Apportionment (RA) that parameterizes the revenue with the market value of each product. Data were collected in the year 2015. This study also contextualizes and provides a cost structure in a format similar to the Income Statement (IS), using, as main information source, the accounting data, financial records, analysis of accounting books and production data which were combined with semi-structured interviews. To sum up, this research has established the Costing System in Sales Price (CSSP) and the Reference Apportionment (RA) as criteria for distribution of indirect costs, reinforcing the idea that the sales price should follow the market logic.

Palavras-chave: Reference Apportionment. Sales price. Costing system.

Abstract

O objetivo geral deste estudo foi analisar os resultados da implementação do Sistema de Custeio em Preço de Vendas (CSSP), usando uma matriz de custos que considera a distribuição de custos indiretos e despesas fixas em sete pequenas e médias empresas industriais, localizadas na Serra Gaúcha (RS), através de um Rateio de Referência (RA) que parametriza a receita com o valor de mercado de cada produto. Os dados foram coletados em 2015. Este estudo também contextualiza e fornece uma estrutura de custos em formato semelhante à Demonstração de Resultados (DR), utilizando, como principal fonte de informação, os dados contábeis, controles financeiros, análise dos livros contábeis e dados de produção que foram combinados com entrevistas semiestruturadas. Em suma, esta pesquisa estabeleceu o Sistema de Cálculo de Custos no Preço de Venda (CSSP) e o Rateio de Referência (RA) como critérios para distribuição de custos indiretos, reforçando a ideia de que o preço de venda deve seguir a lógica do mercado.

Keywords: *Rateio de Referência. Preço de venda. Sistema de Cálculo de Custos.*

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1 Introduction

The competitiveness between enterprises, products and services, brings increasing challenges to companies and business management. It is clear that the challenges are permanent and there are opportunities that should be noticed and potentially exploited, avoiding risks in the process. Due to this trend and the economic environment, the need for a restructuring of cost management (BORNIA, 2010) was created, when the decisions of enterprises came from internal and external procedures, considering the context of the company. In this interventional relationship, in which external factors interfere in internal factors of the enterprise and vice-versa, it is not enough that the costs are properly adjusted; the sales price also needs to represent a fair value, adequate to the product.

If the direct costs have the characteristic of direct appropriation of products, they can be quantified and identified through a measure of consumption. While indirect costs require an apportionment criterion for its appropriation, since they do not provide a condition of an objective measure (BORNIA, 2010; MARTINS, 2010; PERES JUNIOR; OLIVEIRA; COSTA, 2012). According to Martins (2010), there is some subjectivity and arbitrariness underlying all forms of assessment. Therefore, it is understood that the apportionment does not favor an equal and fair distribution in the exact dimension of each product, with its features and value. This context causes many companies to fail to adopt a costing system or calculate the individual cost of their products, setting the sales price through markup or similar.

A costing system not only aims to provide cost measurement to external reports, but also to strategic decision-making and operational controls. In this sense, Horngren, Datar and Foster (2004) state that the cost allocations are the main source of discontent and confusion for the affected parts, because managers must develop a solution to the cost allocation problem, trying to identify which goal should dominate the criterion. This is because the establishment of a criterion that best contemplates the distribution of indirect costs and fixed expenses in a cost structure will contribute significantly to give more credibility to the apportionment key and to the consistency of the methodology used. Hence, is there an apportionment criterion able to distribute indirect costs and fixed expenses in a cost structure from the sales price? The findings observed relate to the difficulties that most companies face and is connected to the cost per product, once the cost is related to the product and production but not to its value or financial reality.

Most of the difficulties companies face are due to omission of hidden costs and uncertainties in the structure of the sales price where the result of the operations should be present in the Markup index. However, the cost matrix from CSSP system shall contribute to highlight the cost from the sales price and relate to the data collected from financial statements. It should contribute to show that the reality is different from the costing system typically used by companies, because the cost calculated by the system object of the present study, contemplates all steps in the operation, including market, product, production, financial statements and results. Also, it is due to the way that the CSSP is designed, which considers the hidden costs and expenses, just like the theory of constraints in the system calculation basis. Both factors are expressed, directly or indirectly, in the IS (Income Statement) data. Gimenez (2010) explains that it is difficult to diagnose reduction of Hidden Costs and Expenses (HCE), as they are not related to production processes, but the structure and behavior. The basic idea of the Theory of Constraints (TOC), according to Bornia (1994), is to find the constraints that limit the gain of the company and to ensure the maximization of profit.

Therefore, the apportionment basis of CSSP considers more data and values, which, in some way, represent costs, expenses or opportunities, which must be considered in the calculation, since, somehow, they have related to the operation result. Such findings were possible due to the professional experience of the author as a manager at a financial institution and as a financial consultant. The authors have been researching the subject and trying to provide executives with the necessary information concerning the difficulty to see positive financial results on the cost and sales price of their companies. The estimated margin of the cost and the sales price cannot be found in the financial registers and statements of result of the companies, as it can be seen in this paper.

2 Theoretical support

2.1 Corporate management and controlling

The accounting management is an indispensable tool for business management. Zanluca (2015a, 2015b) states that accountants, managers and those responsible for corporate management are convinced that the magnitude of the accounting information is beyond simple tax calculation and compliance with commercial and social security laws, which in short,

is the use of accounting records and controls, in order to manage an enterprise.

Nascimento and Reginato (2009) state that accounting is the database for the generation of timely, useful and appropriate information, necessary to meet and evaluate the management process and, therefore, is the main element of Comptrollership. Its purpose is the accounting of economic events and the disclosure of all information that help the assessment of operational and financial situation of the company.

According to Ribeiro (2018), it is possible to say that different costing methods resulted may provide a different contribution and gross margins for each product, generating different interpretations for managers. That´s why companies need to analyze what the best and most adequate costing method for the proper company, always respecting the legal issues accepted by Brazilian law.

The value given by the existence of the Comptrollership in the company, according to Borges, Parisi and Gil (2005), is seen in the difference of results obtained by it. The authors explain that, in order to fulfill their duties in a consistent and satisfactory way, they must have the following objectives: a) to promote organizational effectiveness; b) to allow economic management; c) to promote integration with the areas of corporate responsibilities.

2.2 Cost management

Cost accounting arose with the emergence of industrial enterprises (Industrial Revolution), in order to determine the cost of manufactured products. And, before that, the financial accounting was used to evaluate the assets and to calculate the income for the period (BORNIA, 2010). According to the author, the basic scheme of the Income Statement (IS) is still: sales (-) cost goods sold = gross profit (-) expenses: administrative, commercial, financial, etc. = income (profit or loss).

In addition to the costs already known, according to Silva and Severiano Filho (2011), there are hidden costs as part of the production chain and/or the provision of services. Almeida *et al.* (2007) relate the origin of hidden costs with dysfunctions occurred in the relationship between the structure (company) and the behavior of people that, in this context, is part of the Theory of Constraints (TOC). According to Guerreiro (1996), the fundamental emphasis of Goldratt's ideas is the organization's goal and, to achieve it, the company has always one or more constraints. Also, Horngren, Datar and Foster (2004) emphasize the management of operations with bottleneck as key to improve the performance of the operations as a whole, focusing on the improvement by eliminating activities that do not add value and by reducing the costs of activities that add value.

2.3 Costing systems

There are different Costing Systems, and each company uses the best system to its activities and the reality of its structure. The best system is one that collects data from several points and processes the information (MARTINS, 2010). According to Souza and Diehl (2009), cost system is a structured set of principles, methods in order to inform the cost of the object.

In his study Rocha (2019) states that the reverse markup was chosen as a tool in order to analyze the competitor's cost to smaller companies, whose competitors, with sizes similar companies, do not publish their accounting information as is the case with large company's size and publicly traded. This different approach shows that small companies need indication of ways to have a better ratio fixes cost to mark their product sales price closely to the real cost of it.

Bornia (2010) states that it can be made from two points of view in terms of analysis regarding a cost system such as: a) *costing principle*: it is necessary to check if the information generated is adequate to the needs of the company and what important information should be provided; b) *costing method*: with regards to the operational part of the system, that is how data is processed to obtain the information, as it is possible to see on chart 1.

Chart 1 - The methods, concepts, variations and characteristics of each system

Method	Concept	Benefits	Disadvantages
Absorption	Full or total: The totality of costs (fixed and variables) is attributed to the products (BORNIA, 2010). Partial: when only an ideal proportion of fixed costs is attributed to the products (SOUZA; DIEHL, 2009).	Ensures ownership of all costs [...], ensuring the achievement of the desired profit. Allows the calculation of costs by cost centers (ATZ, 2010).	Apportionments are usually performed based on physical volume and may not be a suitable criterion for cause and effect cost [...] (ATZ, 2010).

Standard cost	American method. It is more used to control and monitor the production and as a tool to support management than to actually measure the costs (SILVA, 2015).	Easy to apply in factories that carry out serial production, standardized by its very nature (LEONE, 2000).	The price charged to the product allows full coverage and recovery of all costs associated with "full cost" when compared to the other methods.
Activity-Based Costing (ABC)	ABC provides answers to how, what for and why the costs. The drivers of the costs can be of various kinds, and because it identifies the activity and its relation to cost object, allows better attribution of indirect costs (SOUZA; DIEHL, 2009).	Allows better management of individual profitability of each product (or client) and its contribution to the business.	Most indirect costs are fixed. When determining the cost per unit, ABC modifies the behavior of the element of cost.
Production Unit (PU)	It is a unit of measure of labor and resources used in the production of various products of an organization (MARTINS; ROCHA, 2015)	It enables monitoring of production through physical measures of performance: efficiency, effectiveness and productivity.	Applicable only in the industrial environment. Recommended for the manufacture of serial products.
Direct o Variable funding (Marginal)	Only production and marketing variable expenses should be considered in production costing. Also known as Marginal Costing, since the way to determine the value of each product leads to the calculation of the Contribution Margin.	Fixed costs have no specific connection with the manufacture of any additional unit. It does not involve apportionments and criteria for distribution of costs, facilitating the calculation.	It is not accepted by tax laws for inventory evaluation purposes. It requires a rigorous classification structure between the fixed and variable expenses.
RKW (Reichskuratorium für Wirtschaftlichtlceit)	It consists of apportionment of production costs and all expenses of the company, including financial expenses, to all products (MARTINS, 2003). This is a Full Cost Method also known in Brazil by the acronym RKW.	Price for each product, it allows coverage and full recovery of all costs. Obtaining a planned profit margin is especially important in the setting of prices in the long term (MARTINS, 2003).	Limitations that are established when prices are set based on the mechanisms and forces of supply and demand. The price is influenced or set by the market. It is not based on its costs and expenses (MARTINS, 2001).
Overhead	It divides the indirect manufacturing costs, according to a predetermined apportionment base. It may be the direct labor, or hour/machine: items of predominant use.	Prioritizes the apportionment of indirect costs using a strong baseline.	This method no longer has the importance it had in the past.

Source: provided by the authors, based on Bornia (2010).

2.4 Indirect Costs Distribution Systems (ICDS)

Dutra (1994) states that apportionment is a proportional division by a base that has known data in each of the functions that you want to determine costs, which should provide data with close correlation with the cost, this is, the cost is in similar conditions to the database.

The author uses three ways of apportionment and distribution of costs as follows: a) conventional apportionment, where are allocated portions of the indirect costs to the various cost centers, both support and production ones; b) direct ownership, the accumulated costs from direct appropriation and conventional apportionment in the centers of production support,

are distributed to the production centers by established rates; c) apportionments by production orders, the accumulated costs in production centers, after the appropriation and distribution of the costs of its support centers, are distributed to production orders (manufacturing and packaging) based on hours of labor.

2.5 Relations of Cost-Volume-Profit (CVP) analysis

The Cost-Volume-Profit (CVP) relation is an important management tool. It is a model that allows predicting the impact on profit for the period or on the projected result of changes in sales volume, on current sales prices and on costs and expenses values. It enables the identification of what values should be practiced as the SP (Sales Price) which is the maximum cost of production of goods and how many units must be sold (WERNKE, 2005).

Variables of relations and application of CVP analysis as it is shown on chart 2.

Chart 2 - Variables of the relations and applications of the analysis

CVP variables	Application and characteristics
Contribution Margin (CM)	The CM shows the path to obtain the final profits for each product; it is the difference between the sales price (SP) and the cost / variable cost (VC) for each product, i.e.: CM = SP - VC, (COGAN, 2013).
Break even Point (BP)	It identifies the volume that the company needs to produce or sell so you can pay all fixed costs and expenses, plus costs and variable expenses that it must necessarily incur to manufacture/sell the product (PADOVEZE, 1996).
Safety Margin (SM)	Tool to measure the exact level in which the organization should operate after the balance point, so there is no operating loss (MENEGALI; OLIVEIRA, 2012).
Integrated Cost Accounting (ICA)	It is used for proper evaluation of stocks and it is of fundamental importance for the quantification of the financial results of companies, directly affecting the tax burden (MOREIRA, 2012).
Markup	This index is applied to the cost of a product or service to determine the sales price, based on the idea of cost-plus pricing or margin price, which basically consists of adding to the unit cost of the product or service a profit, in order to obtain a selling price (ALVES, 2012).
Operational Leverage	This tool multiplies the force employed at one end, causing a greater force in the other. It occurs when the percentage growth in earnings is greater than the percentage increase in sales (PERES JUNIOR; OLIVEIRA; COSTA, 2012).
Closing Point (PF)	Above this point it is not beneficial for the company to temporarily stop its activities. It occurs when the contribution margin equals the eliminable fixed costs (BORNIA, 2010).

Source: The authors (2016).

2.6 Sales management and pricing

The sales price, from the perspective of the company, must exceed all costs involved in the product or service and, from the perspective of the market, the price charged should be lower than the value perceived by those who purchase the product or service, as explained by Bruni and Famá (2012). The author warns that any price of any product will be limited by the market and by the attributed value by customers.

Bruni and Famá (2012) also stresses that there are two paths to determine the prices, this is a "front to back" process, starting from the costs; and the determination of the maximum costs "backwards", starting from the value perceived by the marketplace. The customers only pay the price of a product, if the perceived value is greater. The profit for the companies is a result from the difference between the price and the cost; and the benefits desired by the customers come from the difference between perceived value and price. The same author states that the products that are able to add value and have higher prices are those with broader concepts (BRUNI; FAMÁ, 2012).

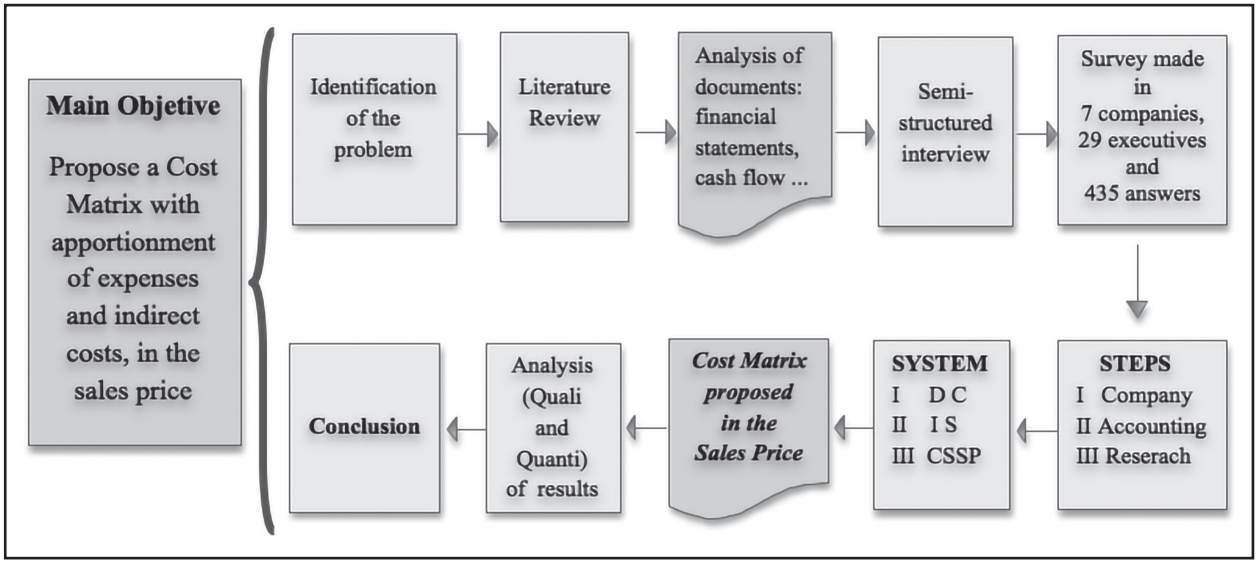
3 Methodology

3.1 Methods

The method may be inductive, deductive and/or hypothetical-deductive and all of them with its own characteristics. The method used in this study is the

deductive, according to Santos (2012), who says that its proposals focus on the situation to explain the circumstances and conclude about the affirmative. According to Antunes Júnior, Dresch and Lacerda (2015), this method is characterized using logic to build the knowledge and part of the laws and theories that cover certain phenomenon and knowledge is developed from the definition of premises and analysis of their interrelation. Figure 1 shows the flowchart of the research method.

Figure 1 - Flowchart and research method



Legend: DC (Direct Cost); IS (Income Statement); CSSP (Cost System in Sales Price)
Source: The authors (2016).

The method of procedure is the comparative, which, according to Marconi and Lakatos (2010), is one of the most substantial steps of the research, since it seeks general explanation of the less abstract phenomena. It has a practical attitude towards the phenomenon, and it is directed to the area and also, according to Santos (2012), are historical, comparative, statistical, functionalist, structural and monographic or case study.

In this study, the research on the technical procedures or research technique was defined as follows: a) indirect documentation: bibliographic and documentary; b) direct documentation: field research, action research; and c) intensive direct observation with interviews.

According to Severino (2007), the research goes beyond understanding since it aims to interfere with the situation in order to modify it and at the same time it performs a diagnosis and analysis of a given situation, proposes changes that lead to improvement of the analyzed practices. Santos (2012) warns that it is a controversial research, and it requires the close relationship between researcher, reality, people and the object of research.

Novaes and Gil (2009) explain that the research has a set of actions that do not necessarily happen in order of time, which are: exploratory phase, development of the problem, formulation of hypotheses, the seminar, sample selection, data collection, analysis and interpretation of data, preparation of the action plan and divulgation of results.

The chart 3 presents the steps of the survey and study detailed.

This research was applied in seven industrial companies, small and medium-sized, located in the Metropolitan Region of Serra Gaúcha, state of Rio Grande do Sul, southern Brazil, with the consequent application of the cost matrix and methodologies used and its results and analysis. The interview was semi-structured, with elements related to control systems that the company has adopted in the calculation of costs, financial controls, accounting system, calculation of economic and financial indicators, in addition to IS of January to December 2015 and the list of items manufactured and sold in 2015. This phase of the research took place from June 2015 to March 2016.

The results obtained were automatically transferred to a summarized report with the elements and costs of the three main products of each company. Allowing the analysis, evaluation and conclusion,

regarding the results presented and related to each methodology applied, through quantitative and qualitative analysis of cataloged data and calculated results. According to Brenner and Jesus (2008), the quantitative analysis is developed, through a field research using data collection, with the application of forms and questionnaires. In relation to the qualitative method, it is applied to very specific issues, regarding data that cannot or should not be quantified (MINAYO, 2007).

Chart 3 - Steps of survey and study

STEPS	Concepts and characteristics (NOVAES; GIL, 2009)	Survey and study	
		Application	Operationalization
Exploratory step	It aims to determine the area of investigation, expectations of those interested and benefits they may offer during the survey.	Metropolitan region of Serra Gaúcha, South of Brazil, where a diversity of industries and activities is found. It has a great potential of contribution and subsidies to conduct the survey.	Selection of seven small and medium sized industries the three main cities of the metropolitan region of Serra Gaúcha, South of Brazil, such as: beverages, packaging, tools, molds and pieces, metal mechanic, furniture and clothing.
Formulation of the problem	It aims to ensure that the problem is precisely formulated.	Investigate criteria of distribution of costs and indirect expenses that are related to the financial reality of each company.	Use of data and financial controls (IS) as an apportionment basis, taking into consideration the sales price of each product.
Hypothesis definition	The definition of hypothesis must be added in a clear, concise, grammatically unambiguous way and providing for empirical verification.	If the sales price is insufficient considering the calculated costs, we shall review costs and reposition the product, packaging and marketing, in order to make the product viable	Matrix identifies the costs per item, allowing to reduce when possible or to adapt to the market, so that the sale is possible and profitable.
Seminar	It brings together the key members of the team and those interested in the survey. From discussion and approval with them, the guidelines for survey and action are created.	Meeting with the key managers of the company and delivery of an invitation letter proposing the survey and showing its objectives as long as all parties agree to it.	Similar procedure in all companies. Meeting and accounting, financial and production data collection with the parties responsible for each area.
Sample selection	When the sample is reduced, a census is taken. When it is large, a sample is made.	The sample has considered the industrial companies in the region and selected those that stood out in each sector or area of activity or microregion.	Selection of three items of higher sale in each company, with a total of 21 items analyzed in traditional medium-sized companies.
Data collection	From the several techniques adopted, we may highlight the interview and the questionnaire, the field diary, among others (direct intensive observation)	Interview with executives, managers, accountants, etc. through a semi-structured questionnaire, with data collection and verification of the company.	Data collected refers to the e year 2015, based on the IS (Income Statement), FC (Fix Costs) and other financial controls, as well as from the commercial and production areas.

Analysis and interpretation of data	In this phase, the analysis may be classic, such as categorization, codification, tabulation, statistical analysis or interpretation and discussion of the data (quantitative and qualitative analysis).	Comparison of results in each calculation system: company and study, with the IS of each company. Quantitative and qualitative analysis of the results obtained in each system, comparing the results of IS of each company.	Analysis of results of the 21 items in each costing system, being: I – company: direct cost II – accountancy: IS III – research: CSSP The result being compared to the result of the IS.
Formulation of an action plan	**Action planning aimed to address the issue subject to investigation.**	Provide an overview of the improvements that a correct cost system can produce in the results of the company, having the sales price as an apportionment reference and the IS as a database.	Presentation and demonstration of the research and content developed with the matrix (CSSP) as the main tool to operationalize and achieve the objectives of the research.
Disclosure of results	**May be done through meetings, seminars, lectures, etc.**	Meeting for presenting the results per product in each company, using the CSSP methodology and its relation to the IS and its results.	Delivery of a business summary for each company with the results verified for each methodology with each of its findings and recommendations.

Source: The authors (2016).

3.2 Costing System in Sales Price (CSSP)

The methodology to develop the Costing System in Sales Price (CSSP) follows the logic and structure of the IS, that finds in Average Monthly Revenue or Sale (AMR) the basis for the calculation of the Referential Apportionment (RA), which results from the equation that divides sales or revenues for the selling price of each product. It is because the referential apportionment will serve as the basis for the distribution of costs and indirect expenses of each product, in addition to direct costs and variable expenses, that, together, represent the total costs and expenses of each item. And, deducted from the sales price, it is possible to know the operation result. Therefore, the CSSP cost calculation format is similar to the IS, with its account structure, data and results, as shown in the chart 4.

Chart 4 - Structure and operation of the costs matrix CSSP

Item	CSSP Costs matrix	Source / data	Operation	Simulation
1	Average Monthly Revenue (AMR)	Financial / IS	AMR or AMS	1,000.00
2	Product identification/Reference	Commercial / product	Name or product code	AA product
3	Sales Price (SP)	Commercial / sales	SP = Market value	10.00
4	Referential Apportionment (RA)	Equation	RA = AMR / SP	100
5	Direct Cost (DC)	Operate / Buying	MP e MOD = acquisition cost	2.00
6	Indirect Cost (CID)	Financial / IS	CID = CIDM / RA	1.80
7	Indirect Expenses (IE)	Financial / IS	IE = DIDM / RA	2.20
8	Variable Expenses (VE)	Financial / % Taxes	VE = % X SP	2.73
9	Total Cost (TC)	Equation	TC=DC+CID+IE+VE	8.73
10	Result (R) and Margin (M)	Equation	R = SP – TC	1.28
11	Determined Sales price (DSP)	Equation	DSP = TC + R	10.00

Source: The authors (2016).

Thus, for this study and its system, the costs are directly related to the management of costs, accounting and financial, associated with the management of prices and sales, being the controller, accountant and financial of great importance in this context (NASCIMENTO; REGINATO, 2009). According to Bruni and Famá (2012), there are two paths for the price's formation, this is, in a "front to back" process, starting from the costs, and the determination of the maximum costs "backwards", starting from the value perceived by the market.

4 Results

4.1 Application of the CSSP matrix

The collection of data, calculation of costs and analysis of the results occurred in three different phases:

The first phase (I) calculated the costs in the companies, when the objective during the active search was to identify the costing system adopted in each company. And if, costs and selling prices were calculated for the three products of higher sales volume. During this research, it was found that the costing system, widely used by companies surveyed, is the Direct Costing (DC) and its corresponded pricing by price markup. The methodology, structure and summary are presented in the chart 5.

The costing system that most companies use is the Direct Costing (DC) with the use of markup to price their products. The pricing is based on the direct cost of products, multiplied by the markup rate to obtain the sales price that form the company's price list.

It was observed that the calculation of costs for the companies is similar in logic to each other. In the context of the companies surveyed, this logic is embodied in the fact that all companies, when calculating the costs, have the actual values of direct costs and, in some cases, also the indirect costs. However, expenses vary greatly, particularly when comparing the planned and the actual amount. This variation always affects the results of companies. This can be seen in the comparative analysis of research results with the IS. Another practice that can be seen in the companies and is clearly characterized in the calculation of costs, is the expected margin and with its prevision of profit. However, this assumption is not always confirmed. The study found that this is common given the difficulty to distribute more accurately the expenses and indirect costs in the proportion of each product. According to Souza and Diehl (2009), those costs and expenses related to the product are difficult to identify which lead the vast majority of companies to price their products, using markup. This happens not because the markup indicator would indicate any problem or discrepancy, but because of the way percentage rates of markup are composed, and the percentage rate will set the selling price.

Chart 5 - Structure of direct cost system (DC) from the companies (I)

Direct cost and mark up (I)						
Direct Cost	**Indirect Cost**	**Other Expenses**	**Total Cost**	**Profit or Losses**	**Sales Price**	**Table of Sales Price**
CD	**IC**	**OE**	**TC**	**P or L**	**SP**	**TSP**
= Cost of acquisition (-) Taxes (+) Additional expenses	= Operational cost or apportion mint referential	= Fixed expenses (+) Percentage of taxes and sales	= DC (+) IC (+) OE	= Ideal margin percentage	= DC (X) Markup or TC (+) L or P	= TC (+) Desired profit

Source: The authors (2016).

The second phase (II) of the study includes the calculation of costs and results by IS, considering that all companies have records and financial data on the technical and accounting standards of the law and international regulations. The chart 6 represents the cost structure, according to the IS.

It is noteworthy that, in the IS, Direct Cost (DC) is the Cost of Goods Sold (CGS). Other expenses correspond to the indirect or fixed expenses plus variable expenses, including taxes contained as a deduction from gross income and charges on the sale, such as commissions, logistics, etc. And considered for analysis the Result Before Provision for Income Tax (RBIT).

Chart 6 - Structure of the costing system from IS (I I)

Cost by income statement (II)					
Operational Gross Revenue	**Direct Cost**	**Indirect Cost**	**Other Expenses**	**Total Cost**	**Results / Profit or Loss**
OGR	**DC**	**IC**	**OE**	**TC**	**R (L or P)**
= Average Monthly Revenue (AMR) or Average Monthly Sale (MAS)	= Purchases and supplies (+) Initial stock (-) Final stock	= Operational cost and manufacturing: production and depreciation	= Fixed and indirect expenses (+) Variable and sales expenses	= DC (+) IC (+) OE	= OGR (-) TC

Source: The authors (2016).

The *third phase (III)* of the study deals with the calculation of costs based on the selling price. It refers to the Costing System in Sales Price (CSSP) method used in the participating companies, object of this study, which has the structure as it is shows on chart 7.

Chart 7 - CSSP structure - Costing System in Sales Price (III)

Cost by income statement (II)								
Apportionment criteria			**Distribution of costs per product**					**Margin**
AMS	**Sales Price**	**Apportionment Refer**	**Direct Cost**	**Indirect Cost**	**Indirect Fixed Expense**	**Variable Expense**	**Total Cost**	**Result**
AMS	**SP**	**AR**	**CD**	**IC**	**IFE**	**VE**	**TC**	**R**
= Average monthly sales = OGR from the IS	= Market value per item = TC (+) R (L or P)	= AMS (:) SP (=) Apportionment referential (apportionment unit)	= Cost of acquisition (-) Taxes (+) Additional expenses	= Operational gross monthly revenue (:) AR Apportionment referential	= Monthly fixed expenses (:) AR Apportionment referential	= Payment of sales (%) of: Taxes, Commissions Logistics, other sales expenses	= DC (+) IC (+) IFE (+) VE	= SP (-) TC

Source: The authors (2016).

The methodology is directly related with the IS. The data considered for distribution costs and indirect expenses are from the company's statement and proportional to the monthly average of their indirect spending, which, divided by the Referential Apportionment, results in the indirect and individualized cost of each product, and from the database, the company already has it available. Therefore, the operation is simplified, and the apportionment key gains a criterion proportional to the value of each product and in accordance with the financial and operational reality of the enterprise.

4.2 Comparative analysis of results

The premises used to calculate the cost of the products with different costing systems followed the same criteria for the seven selected companies that indicated, each one, three products that would better represent the sales and value. They also provided production, product, accounting and financial data related to 2015 to proceed with the calculation of costs, as proposed by this study.

Following, it is the results in every type of operation and according to the properties of each method at each phase. Table 1 brings a summary of the results that was found in each researched company.

Table 1 - Search results and analysis of results

Results of calculation and comparative analysis of the IS					
Companies and research	**Main products**	**Company DC (I)**	**Accounting IS (II)**	**Research CSSP (III)**	**Result comparison with IS**
A.005	001 wow 5	10.00%	10.90%	11.09%	CSSP (III)
	002 wow 4	10.00%	10.90%	11.24%	CSSP (III)
	003 wow 6	10.00%	10.90%	11.27%	CSSP (III)
B.001	2,396,001	8.00%	-5.70%	-4.89%	CSSP (III)
	2,397,002	8.00%	-5.70%	-5.28%	CSSP (III)
	2,360,003	8.00%	-5.70%	5.71%	CSSP (III)
C.007	001 . EAM	5.66%	4.40%	2.54%	DC (I)
	002 .SJP	1.96%	-6.56%	-8.40%	CSSP (III)
	003 . VTS	3.85%	-7.98%	-9.83%	CSSP (III)
D.006	CAV.001	4.95%	-9.70%	-13.23%	CSSP (III)
	ENX.002	4.89%	-20.93%	-16.32%	CSSP (III)
	ESQ.003	13.62%	-22.77%	-16.33%	CSSP (III)
E.004	CPE.001	9.09%	6.20%	6.09%	CSSP (III)
	BBP.002	9.09%	6.20%	7.70%	CSSP (III)
	CHP.003	6.54%	6.20%	3.53%	DC (I)
F.002	CSBF.001	10.71%	20.90%	17.44%	CSSP (III)
	CSSF.002	10.71%	20.90%	14.33%	CSSP (III)
	BFMA.003	9.09%	20.90%	16.10%	CSSP (III)
G.003	TF46,001	5.66%	4.00%	4.78%	CSSP (III)
	TF63,002	7.41%	4.00%	4.78%	CSSP (III)
	CAPP.003	5.66%	4.00%	4.78%	CSSP (III)

Source: The authors (2016).

Of all methodology applied by the survey, the one that is better related to the results of the IS is the CSSP (III). Twenty-one (21) items were analyzed, and nineteen (19) showed better results than the direct costing system - DC (I) used by the companies. The DC system presented only two (2) items with best performance than the CSSP (III), which had approval ratings of over 90% of the items surveyed and compared to the results of the IS of each company.

This result shows that the objectives of this study were fully met and that the Costing System in Sales Price (CSSP), object of this research, is directly related to the values and results presented by the companies' IS. Therefore, a highly significant performance for a very controversial subject, which is the apportionment system of indirect cost and fixed expenses in the composition of costs and pricing of products in industrial enterprises of small and medium size.

Traditional systems of costing and cost calculation observed in companies are focused primarily on the product and production, making the calculation of costs most often isolated and distant from the IS and the reality of the market. This happens because the selling price, in most companies, is the cost of the products plus the desired profit margin and it does not take into account the market value.

Therefore, the basic premises observed by this study and the results point to the conclusion that the IS has the elements and foundations to serve as a good database to calculate costs and that the sales pricing should be researched in the market. All this should be in accordance with the needs of the company and its financial situation, because the IS provides data regarding revenues, costs and expenses plus the result that the company has shown and wishes to accomplish. Thus, the CSSP considers costs as something

related to the companies' financial and accounting, and price, or sale value, is a subject related to the market and not necessarily to the cost.

5 Final considerations

Considering the financial framework and its relation to the researched area with small and medium sized industries, it could be found that the calculated cost in the companies is not as accurate as it should, even though it has certain priority. For all that has been observed, cost and sales price are more a means of boosting sales than a way to get results. The reality can be seen when it is verified that the margin of profit foreseen in the cost and sales is not present in its financial statements and results. This creates uncertainties as to the viability of the company and the impression that the issue is not being addressed in the best possible way and also, the manager can end up committing mistakes that are often irreparable. Bornia (2010) says that the increasing competitiveness and the need to cut costs require executives to have the best information and, therefore, to establish the best cost system for their organizations.

Otherwise, the evidence from this study have indicated that the calculated cost from the sales price, the CSSP system, focuses on the results from the sales price established by the market. A wide accounting and financial database is used, representing the total amount of expenses of the business and not only the operational ones, but also the hidden costs, structure costs and the Theory of Constraints that, in essence, increases results. All this is shown in the income statement, a basic tool for consultancy and support of the present study. The sales price of each product is established, according to the market, and, when added, represent the operational revenues of the company, which meets the demands of cash flow and the profit that brings capital. According to Bruni and Famá (2012), the sales price from the company perspective shall be higher than all costs involved in the product or service and, from the market perspective, the price should be lower than the value perceived by those who purchase the product or the service. The criterion that the present study researched, developed and presented was the cost distribution and indirect expenses system in the sales price. It considers the apportionment referential, which represents the ideal portion of costs and indirect expenses in each product. Through a costs matrix by the CSSP system, object of study of the present article, the model has proved to be capable to meet the demands and expectations of companies, executives, users and professionals working with this area. Due to its properties and characteristics, values and criteria for a proper, direct and simplified allocation of costs was identified, especially costs and indirect expenses, which represent the difficulties in the companies and were pointed out by the system. Souza and Diehl (2009) affirm that such relation with the product is difficult to identify.

As a contribution, this study found that costs should follow the logic of the IS and the sales price should be in accordance with the market logic. In addition, this study indicated that all effort to calculate costs achieves little, even if the calculation is correct, if the sales price established, based on costs, does not have a favorable market for commercialization.

It was observed in the companies researched that the sales price is established based on the cost of the product and priced by the markup index, in order to meet the demands and characteristics of each company. However, it is focused on the product and the production aimed towards the company itself. We can also confirm this in the comparative table of results and the IS. All calculated results of the companies are positive and lucrative, but this is not always confirmed in the IS. Martins (2001) defines that it is better for a company to analyze its costs and expenses to ensure that certain product is viable, a product whose price is influenced by the market, than to determine its price, regarding such costs and expenses.

It can be concluded that the costing system and the apportionment criterion used, tested and approved by this study, and its results confirm that the Referential Apportionment (RA) is the ideal portion of distribution of indirect costs and expenses in the size of their values because it considers the value as a criterion for apportioning. The unit value of each product will be proportional to the monthly income of the enterprise to individual allocation of indirect costs and expenses in each item. The parity between them will always be proportional to the dimension of its values, as evidenced by this study, by its methodology and results, that included the CSSP costs matrix, similar to the IS structure, and considers revenue to deduct costs and expenses and to find the results.

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